

Center Building  
East Campus  
Augusta, Maine

# Center Building Improvements

Bureau of General Services  
Project #3670  
Augusta, Maine

# Project Manual



**Winton Scott Architects**  
5 Milk Street  
Portland, Maine 04101

May 30, 2025



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**00 11 13**  
**Notice to Contractors**

**Center Building Improvements**

BGS #3670

*The Project consists of exterior work including including brick masonry, windows, lead-based paint remediation and painting. Interior work includes intumescent fireproofing, asbestos remediation and general renovations for proposed handicapped access and core bathroom facilities*

The contract shall designate the Substantial Completion Date on or before *29 May 2026*, and the Contract Final Completion Date on or before *26 June 2026*.

1. Submit bids on a completed Contractor Bid Form (section 00 41 13), provided in the Bid Documents, include bid security when required, and scan each item as an attachment to an email addressed to: [BGS.Architect@Maine.gov](mailto:BGS.Architect@Maine.gov), so as to be received no later than **1:30:00 p.m. on 1 July 2025**. The email subject line shall be marked "**Bid for Center Building Improvements**".

Bid submissions will be opened and read aloud at **2:00 p.m.** on the date noted above at the Bureau of General Services office, accessible as a video conference call. Those who wish to participate in the call must submit a request for access to [BGS.Architect@Maine.gov](mailto:BGS.Architect@Maine.gov).

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

2. Questions and comments on the *bid opening process* shall be addressed to: Division of Planning, Design & Construction, Bureau of General Services, 77 State House Station, Augusta, Maine 04333-0077, [BGS.Architect@Maine.gov](mailto:BGS.Architect@Maine.gov).
3. Questions and comments regarding the *project* design specifications or drawings shall be directed in writing to the Consultant during the bid period prior to the question and comment deadline of 5:00 p.m. on *26 June 2025*.

*Winton Scott Architects  
Mark Wilcox  
[mwilcox@wintonscott.com](mailto:mwilcox@wintonscott.com)*

4.  Bid security is required on this project.

The Bidder shall include a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with the completed bid form submitted to the Owner. The Bid Bond form is available on the BGS website.

*or*

- Bid security is not required on this project.

**00 11 13**  
**Notice to Contractors**

5.  Performance and Payment Bonds are required on this project.

If noted above as required, or if any combination of Base Bid and Alternate Bids amounts selected in the award of the contract exceeds \$125,000.00, the selected Contractor shall furnish a 100% contract Performance Bond (section 00 61 13.13) and a 100% contract Payment Bond (section 00 61 13.16) in the contract amount to cover the execution of the Work. Bond forms are available on the BGS website.

*or*

- Performance and Payment Bonds are not required on this project.

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

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

*insert the company name, city and state for each*

*or*

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

8.  An on-site pre-bid conference (  *mandatory* or  *optional* ) will be conducted for this project.

The pre-bid conference is intended for General Contractors. Subcontractors and suppliers are welcome to attend. Contractors who arrive late or leave early for a mandatory meeting may be prohibited from participating in this meeting and bidding.

*June 17, 2025 at 10:00 AM*

*Center Building, East Campus*

*South Side Loading Dock*

*or*

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

9. Bid Documents - full sets only - will be available on or about *June 2, 2025* and may be obtained as a downloadable PDF at no cost on the BGS webside. Website link from:

*<https://maine.gov/dafs/bgs/business-opportunities>*

*Invitation for Bids*

10. Bid Documents may be examined at:

**00 21 13**  
**Instructions to Bidders**

1. Bidder Requirements
  - 1.1 A bidder is a Contractor which is evidently qualified, or has been specifically pre-qualified by the Bureau of General Services, 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 General Services may disallow award of this contract to any Contractor if there is evidence that the Contractor or any of its Subcontractors, through their own fault, have been terminated, suspended for cause, debarred from bidding, agreed to refrain from bidding as part of a settlement, have defaulted on a contract, or had a contract completed by another party.
  - 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.

**00 21 13**  
**Instructions to Bidders**

- 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.

**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.
- 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 dollar value of an acceptable Base Bid, or any combination of Base Bid plus Alternate Bids, as well as other limited cost modifications the Owner determines may best serve the interests of the Owner. An acceptable bid is a duly submitted bid from a responsive and responsible bidder.
- 2.3 The Owner reserves the right to require Bid Bonds or Performance and Payment Bonds for any project of any contract value.

**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 closing date and time. The bid expiration date may be extended in unusual circumstances by mutual consent of the Bidder and the Owner. The bid amount shall not be modified due to the bid expiration date extension.
- 3.3 Any provision contained in a bid which shows cost escalation, or any modification of schedule or other requirements shall not be accepted. Such a provision causes the bid to be invalid, or, at the discretion of the Owner and BGS, that element of the bid submission may be disregarded for the purpose of awarding the contract without that provision.
- 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 recognize that inclusion of contract bonds and the cost of those bonds is dependent on the awarded contract dollar value. Therefore, a Base Bid, or any combination of Base Bid plus Alternate Bids, as well as other limited cost modifications, resulting in a contract award shall include the cost of Performance and Payment Bonds in the submitted bid amount when the construction contract value is over \$125,000.00. Similarly, the cost of Performance and Payment Bonds is excluded in the submitted bid amount when the construction contract value is \$125,000.00 or less unless bonds are specifically required by the Bid Documents. When required for the project, the selected Contractor shall provide these bonds before a contract can be executed, pursuant to 14 M.R.S.A., Section 871, Public Works Contractors' Surety Bond Law of 1971, subsection 3. The form of bonds is shown in section 00 61 13.13 and 00 61 13.16.

**00 21 13**  
**Instructions to Bidders**

- 3.6 Bidders may modify bids in writing, by the same means as the original bid submission, 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 implicitly acknowledge all Addenda issued when they submit the bid form. By usual practice the Consultant shall not issue Addenda less than 72 hours prior to the bid closing time, to allow ample time for bidders to incorporate the information. However, some information, such as extending the bid due date and time, may be issued with shorter notice. 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.
- A bid may be withdrawn without penalty after the bid closing time if, in the determination of the Bureau, evidence provided by the Contractor shows an apparent unintended error such as a miscalculation, or an erroneous number on estimating documents, was the cause of an inaccurate bid. The Bureau may allow withdrawal in consideration of the bid bond or, without utilizing a bid bond, if the Bureau considers documented evidence provided by the Contractor shows 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 The Owner may require, in a Notice of Intent to Award letter to the apparent low bidder, a Schedule of Values, Project Schedule, and List of Subcontractors and Suppliers as both a demonstration of capability of the Bidder and as a condition of award.
- 3.11 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.
- 3.12 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.
- 3.13 The Owner is exempt from the payment of Maine State sales and use taxes as provided in 36 M.R.S. §1760 (1). The Contractor and Subcontractors shall not include taxes on exempt items in the construction contract.



**00 41 13**  
**Contractor Bid Form**

**Center Building Improvements**

BGS Project #3670

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

Bid Administrator:

*Ms. Desiree Snow, Senior Project Manager*                           BGS.Architect@Maine.gov  
Bureau of General Services  
111 Sewall Street, Cross State Office Building, 4th floor  
77 State House Station  
Augusta, Maine 04333-0077

Bidder:

Signature: \_\_\_\_\_

Printed name and  
title: \_\_\_\_\_

Company name: \_\_\_\_\_

Mailing address: \_\_\_\_\_

City, state, zip code: \_\_\_\_\_

Phone number: \_\_\_\_\_

Email address: \_\_\_\_\_

State of  
incorporation,  
if a corporation:  
\_\_\_\_\_

List of all partners,  
if a partnership:  
\_\_\_\_\_

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

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

**00 41 13**  
**Contractor Bid Form**

- The Bidder, having carefully examined the Center Building Improvements Project Manual dated May 30, 2025, prepared by Winton Scott Architects, as well as Specifications, Drawings, and any Addenda, the form of contract, and the premises and conditions relating to the work, proposes to furnish all labor, equipment and materials necessary for and reasonably incidental to the construction and completion of this project for the **Base Bid** amount of:

\$ \_\_\_\_\_ .00

- Allowances *are not included* on this project.

*No Allowances*

<i>1 Not Used</i>	<i>\$ 0.00</i>
<i>2 Not Used</i>	<i>\$ 0.00</i>
<i>3 Not Used</i>	<i>\$ 0.00</i>
<i>4 Not Used</i>	<i>\$ 0.00</i>

- Alternate Bids *are included* on this project.

*Alternate Bids are as shown below*

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

<i>1 Alternate #1 : Exterior Lead-Based Paint Removal</i>	<i>\$ _____ .00</i>
<i>2 Alternate #2 : Basement Window Openings Infill Panels</i>	<i>\$ _____ .00</i>
<i>3 Not Used</i>	<i>\$ _____ .00</i>
<i>4 Not Used</i>	<i>\$ _____ .00</i>

- Bid security *is required* on this project.

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

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

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

**00 43 13  
Contractor Bid Bond**

Bond No.: **insert bond number**

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

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

Now therefore:

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

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

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

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

**00 43 13**  
**Contractor Bid Bond**

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

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

**Contractor**

---

(Signature)

*insert name and title*

*insert company name*

*insert address*

*insert city state zip code*

**Surety**

---

(Signature)

*insert name and title*

*insert company name*

*insert address*

*insert city state zip code*

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

**State of Maine  
CONSTRUCTION CONTRACT**

**Large Construction Project**

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

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

BGS Project No.: number assigned by BGS

Other Project No.: \_\_\_\_\_

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

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

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

**ARTICLE 1 COMPENSATION AND PAYMENTS**

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

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

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

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

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

**ARTICLE 2 COMMENCEMENT AND COMPLETION DATES**

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

**2.2** The Substantial Completion Date shall be \_\_\_\_\_.

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

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

### **ARTICLE 3 INELIGIBLE BIDDER**

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

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

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

### **ARTICLE 4 CONTRACTOR'S RESPONSIBILITIES**

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

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

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

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

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

## ARTICLE 5 OWNER'S RESPONSIBILITIES

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

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

## ARTICLE 6 INSTRUMENTS OF SERVICE

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

## ARTICLE 7 MISCELLANEOUS PROVISIONS

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

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

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

## ARTICLE 8 CONTRACT DOCUMENTS

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

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

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

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

BGS Project No.: \_\_\_\_\_

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

**OWNER****CONTRACTOR**

---

*Signature  
name and title**Date*

---

*Signature  
name and title**Date**name of contracting entity  
address**name of contractor company  
address**telephone  
email address**telephone  
email address  
Vendor Number*

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

**select proper approval authority****Reviewed by:****Approved by:**

---

*Signature  
insert name**Date*

---

*Signature  
John Kenney, P.E.**Date**Project Manager/ Contract Administrator**Director, Planning Design and Construction  
Division (PDCD)*

**00 61 13.13  
Contractor Performance Bond**

Bond No.: insert bond number

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

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

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

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

**00 61 13.13  
Contractor Performance Bond**

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

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

**Contractor**

---

(Signature)

*insert name and title*

*insert company name*

*insert address*

*insert city state zip code*

**Surety**

---

(Signature)

*insert name and title*

*insert company name*

*insert address*

*insert city state zip code*

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

**00 61 13.16  
Contractor Payment Bond**

Bond No.: **insert bond number**

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

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

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

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

**00 61 13.16**  
**Contractor Payment Bond**

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

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

**Contractor**

---

(Signature)

*insert name and title*

*insert company name*

*insert address*

*insert city state zip code*

**Surety**

---

(Signature)

*insert name and title*

*insert company name*

*insert address*

*insert city state zip code*

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

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

**Project name**  
location / school / campus

Application Number: **1**

**Contractor Company name**  
address  
city state zip code

Period Start Date: **1-Jul-2020**  
Period End Date: **31-Jul-2020**  
BGS Project No.: **n**  
Other Project No.: **x**

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

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

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

**Contractor**

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

-----  
signature \_\_\_\_\_ date \_\_\_\_\_

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

**Consultant (Architect or Engineer)**

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

-----  
signature \_\_\_\_\_ date \_\_\_\_\_

**Owner**

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

-----  
signature \_\_\_\_\_ date \_\_\_\_\_

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

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

-----  
signature \_\_\_\_\_ date \_\_\_\_\_

**Bureau of General Services**

Type person's name, title here

-----  
signature \_\_\_\_\_ date \_\_\_\_\_



**State of Maine  
CONSTRUCTION CONTRACT  
Application for Payment - Continuation Sheet**

Application Number: 1  
Period Start Date: 1-Jul-2020  
Period End Date: 31-Jul-2020  
BGS Project No.: n  
Other Project No.: x

## Project name

## **Contractor Company name**

page  
of



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

**Project name**  
location / school / campus

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

**Contractor Company name**  
address  
city state zip code

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

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

\* Calendar Days refers to Contract Final Completion Date only.

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

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

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

<b>Consultant</b> (Architect or Engineer)	Type firm name here Type person's name, title here	----- signature	----- date
<b>Contractor</b>	Type company name here Type person's name, title here	----- signature	----- date
<b>Owner</b>	Type contracting entity name here Type person's name, title here	----- signature	----- date
<b>Owner's Rep</b>	Type entity name here Type person's name, title here	----- signature	----- date
<b>Bureau of General Services</b>	Division of Planning, Design & Construction Type person's name, title here	----- signature	----- date



**State of Maine  
CONSTRUCTION CONTRACT  
Change Order**

**Project name**  
location / school / campus

Change Order Number: **1**

**Contractor Company name**  
address  
city state zip code

Issue Date of this Document: **31-Dec-2022**

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

**Cost Change**

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

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

**Time Change**

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

	Add	Deduct	Total
Net Calendar Days Adjusted by this Change Order	0	0	
Net Calendar Days Adjusted by Previous Change Orders	0	0	
Net of Change Orders to Date	0	0	0
Original Contract Final Completion Date			<b>31-Dec-2023</b>
<b>Revised Contract Final Completion Date*</b>			<b>31-Dec-2023</b>

**Consultant (Architect or Engineer)**

Type firm name here

Type person's name, title here

-----  
signature

-----  
date

**Contractor**

Type company name here

Type person's name, title here

-----  
signature

-----  
date

**Owner**

Type contracting entity name here

Type person's name, title here

-----  
signature

-----  
date

**Type Entity, such as "Owner's Rep", or "not used"**

Type entity name here

Type person's name, title here

-----  
signature

-----  
date

**Bureau of General Services**

Division of Planning, Design & Construction

Type person's name, title here

-----  
signature

-----  
date

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

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

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

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

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

<b>1-Dec-2023</b>
<b>31-Dec-2023</b>
<b>29-Feb-2024</b>



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 the 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. See also *Responsive and Responsible Bidder*.
- 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 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 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 Expiration Date:* Date determined by the Owner as a deadline for internal management of contract accounts. This allows time after the Contract Final Completion Date for processing the final Requisition for Payment. The Contract Expiration Date does not directly relate to any contract obligation of the Contractor.
- 1.22 *Contract Final Completion Date:* Point of time 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.
- 1.23 *Contract Price:* The dollar amount of the construction contract, also called *Contract Sum*.

- 1.24 *Contract Time:* The designated duration of time to execute the Work of the contract, with a specific date for completion.
- 1.25 *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.
- 1.26 *Consultant:* The Architect or Engineer acting as Professional-of-Record for the Project. The Consultant is responsible for the design of the Project.
- 1.27 *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.
- 1.28 *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.
- 1.29 *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.
- 1.30 *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.
- 1.31 *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.
- 1.32 *Owner's Representative:* The individual or entity contracted by the Owner to be an advisor and information conduit regarding the Project.
- 1.33 *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.
- 1.34 *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.
- 1.35 *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.

- 1.36 *Project:* The construction project proposed by the Owner to be constructed according to the Contract Documents. The Project, a public improvement, may be tied logically to other public improvements and other activities conducted by the Owner or other contractors.
- 1.37 *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.
- 1.38 *Proposal Request (PR):* An Owner's written request to the Contractor for a Change Order Proposal.
- 1.39 *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.
- 1.40 *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 the Work.
- 1.41 *Request For Proposal (RFP):* An Owner's written request to the Contractor for a Change Order Proposal.
- 1.42 *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*.
- 1.43 *Responsive and Responsible Bidder:* A bidder who complies, when submitting a bid on a given project, with the following *responsive* standards, as required by the Bid Documents:
  - submits specific qualifications to bid the project, if required;
  - attends mandatory pre-bid conferences, if required;
  - submits a bid prior to the close of the bid period;
  - submits a complete bid form;
  - submits a bid without indications of intent contrary to the stated requirements;
  - submits other materials and information, such as bid security, as required;and, meets the following minimums regarding these *responsible* standards:
  - sustains a satisfactory record of project performance;
  - maintains a permanent place of business in a known physical location;
  - possesses the financial means for short- and long-term operations;
  - possesses the appropriate technical experience and capabilities;
  - employs adequate personnel and subcontractor resources;

maintains the equipment needed to perform the work;  
complies with the proposed implementation schedule;  
complies with the insurance and bonding requirements;  
provides post-construction warranty coverage;  
and other criteria which can be considered relevant to the contract.

- 1.44 *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.)
- 1.45 *Sample:* A physical example provided by the Contractor which illustrates materials, equipment or workmanship and establishes standards by which the Work will be judged.
- 1.46 *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.
- 1.47 *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*.
- 1.48 *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.
- 1.49 *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.
- 1.50 *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.
- 1.51 *Substantial Completion Date:* Point of time 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.
- 1.52 *Superintendent:* The representative of the Contractor on the job site, authorized by the Contractor to receive and fulfill instructions from the Consultant.
- 1.53 *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.

**00 71 00**  
**Definitions**

- 1.54 *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.

**00 72 13**  
**General Conditions**

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**1. Preconstruction Conference**

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

**2. Intent and Correlation of Contract Documents**

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

**00 72 13**  
**General Conditions**

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

**3. Additional Drawings and Specifications**

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

**4. Ownership of Contract Documents**

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

**5. Permits, Laws, and Regulations**

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

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

**6. Taxes**

- 6.1 The Owner is exempt from the payment of Maine State sales and use taxes as provided in 36 M.R.S. §1760 (1). The Contractor and Subcontractors shall not include taxes on exempt items in the construction contract.
- 6.2 Section 1760 further provides in subsection 61 that sales to a construction contractor or its subcontractor of tangible personal property that is to be physically incorporated in, and become a permanent part of, real property for sale to or owned by the Owner, are exempt from Maine State sales and use taxes. Tangible personal property is defined in 36 M.R.S. §1752 (17).
- 6.3 The Contractor may contact Maine Revenue Services, 24 State House Station, Augusta, Maine 04333 for guidance on tax exempt regulations authorized by 36 M.R.S. §1760 and detailed in Rule 302 (18-125 CMR 302).

**7. Labor and Wages**

- 7.1 The Contractor shall conform to the labor laws of the State of Maine, and all other laws, ordinances, and legal requirements affecting the work in Maine.
- 7.2 The Consultant shall include a wage determination document prepared by the Maine Department of Labor in the Contract Documents for state-funded contracts in excess of \$50,000. The document shows the minimum wages required to be paid to each category of labor employed on the project.
- 7.3 On projects requiring a Maine wage determination, the Contractor shall submit monthly payroll records to the Owner ("the contracting agency") showing the name and occupation of all workers and all independent contractors employed on the project. The monthly submission must also include the Contractor's company name, the title of the project, hours worked, hourly rate or other method of remuneration, and the actual wages or other compensation paid to each person.
- 7.4 The Contractor shall not reveal, in the payroll records submitted to the Owner, personal information regarding workers and independent contractors, other than the information described above. Such information shall not include Social Security number, employee identification number, or employee address or phone number, for example.
- 7.5 The Contractor shall conform to Maine statute (39-A M.R.S. §105-A (6)) by providing to the Workers' Compensation Board a list of all subcontractors and independent contractors on the job site and a record of the entity to whom that subcontractor or independent contractor is directly contracted and by whom that subcontractor or independent contractor is insured for workers' compensation purposes.
- 7.6 The Contractor shall enforce strict discipline and good order among their employees at all times, and shall not employ any person unfit or unskilled to do the work assigned to them.

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7.7 The Contractor shall promptly pay all employees when their compensation is due, shall promptly pay all others who have billed and are due for materials, supplies and services used in the Work, and shall promptly pay all others who have billed and are due for insurance, workers compensation coverage, federal and state unemployment compensation, and Social Security charges pertaining to this Project. Before final payments are made, the Contractor shall furnish to the Owner affidavits that all such payments described above have been made.

7.8 The Contractor may contact the Maine Department of Labor, 54 State House Station, Augusta, Maine 04333 for guidance on labor issues.

7.9 The Contractor may contact the Maine Workers' Compensation Board, 27 State House Station, Augusta, Maine 04333 for guidance on workers' compensation issues.

**8. Indemnification**

8.1 The Contractor shall indemnify and hold harmless the Owner and its officers and employees from and against any and all damages, liabilities, and costs, including reasonable attorney's fees, and defense costs, for any and all injuries to persons or property, including claims for violation of intellectual property rights, to the extent caused by the negligent acts or omissions of the Contractor, its employees, agents, officers or subcontractors in the performance of work under this Agreement. The Contractor shall not be liable for claims to the extent caused by the negligent acts or omissions of the Owner or for actions taken in reasonable reliance on written instructions of the Owner.

8.2 The Contractor shall notify the Owner promptly of all claims arising out of the performance of work under this Agreement by the Contractor, its employees or agents, officers or subcontractors.

8.3 This indemnity provision shall survive the termination of the Agreement, completion of the project or the expiration of the term of the Agreement.

**9. Insurance Requirements**

9.1 The Contractor shall provide, with each original of the signed Contract, an insurance certificate or certificates acceptable to the Owner and BGS. The Contractor shall submit insurance certificates to the Owner and BGS at the commencement of this Contract and at policy renewal or revision dates. The certificates shall identify the project name and BGS project number, and shall name the Owner as certificate holder and as additional insured for general liability and automobile liability coverages. The submitted forms shall contain a provision that coverage afforded under the insurance policies will not be canceled or materially changed unless at least ten days prior written notice by registered letter has been given to the Owner and BGS.

9.2 The Owner does not warrant or represent that the insurance required herein constitutes an insurance portfolio which adequately addresses all risks faced by the Contractor or its Subcontractors. The Contractor is responsible for the existence, extent and adequacy of insurance prior to commencement of work. The Contractor shall not allow any Subcontractor to commence work until all similar insurance required of the Subcontractor has been confirmed by the Contractor.

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

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**10. Contract Bonds**

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

**11. Patents and Royalties**

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

**12. Surveys, Layout of Work**

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

**13. Record of Documents**

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

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

**14. Allowances**

- 14.1 The Contract Price shall include all allowances described in the Contract Documents. The Contractor shall include all overhead and profit necessary to implement each allowance in their Contract Price.
- 14.2 The Contractor shall not be required to employ parties for allowance work against whom the Contractor has a reasonable objection. In such a case, the Contractor shall notify the Owner in writing of their position and shall propose an alternative party to complete the work of the allowance.

**15. Shop Drawings**

- 15.1 The Contractor shall administer Shop Drawings prepared by the Contractor, Subcontractors, suppliers or others to conform to the approved Schedule of the Work. The Contractor shall verify all field measurements, check and authorize all Shop Drawings and schedules required by the Work. The Contractor is the responsible party and contact for the Contractor's work as well as that of Subcontractors, suppliers or others who provide Shop Drawings.
- 15.2 The Consultant shall review and acknowledge Shop Drawings, with reasonable promptness, for general conformity with the design concept of the project and compliance with the information provided in the Contract Documents.
- 15.3 The Contractor shall provide monthly updated logs containing: requests for information, information bulletins, supplemental instructions, supplemental sketches, change order proposals, change orders, submittals, testing and deficiencies.
- 15.4 The Contractor shall make any corrections required by the Consultant, and shall submit a quantity of corrected copies as may be needed. The acceptance of Shop Drawings or schedules by the Consultant shall not relieve the Contractor from responsibility for deviations from Drawings and Specifications, unless the Contractor has called such deviations to the attention of the Consultant at the time of submission and secured the Consultant's written approval. The acceptance of Shop Drawings or schedules by the Consultant does not relieve the Contractor from responsibility for errors in Shop Drawings or schedules.

**16. Samples**

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

**17. Substitutions**

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

**18. Assignment of Contract**

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

**19. Separate Contracts**

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

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- 19.4 The Contractor shall report to the Consultant and Owner any conflicts or claims for damages with the Owner's other contractors and settle such conflicts or claims for damages by mutual agreement or arbitration, if necessary, at no expense to the Owner.
- 19.5 In the event the Owner's other contractors sue the Owner regarding any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at the Contractor's expense. The Contractor shall pay or satisfy any judgment that may arise against the Owner, and pay all other costs incurred.

**20. Subcontracts**

- 20.1 The Contractor shall not subcontract any part of this contract without the written permission of the Owner.
- 20.2 The Contractor shall submit a complete list of named Subcontractors and material suppliers to the Consultant and Owner for approval by the Owner prior to commencing work. The Subcontractors named shall be reputable companies of recognized standing with a record of satisfactory work.
- 20.3 The Contractor shall not employ any Subcontractor or use any material until they have been approved, or where there is reason to believe the resulting work will not comply with the Contract Documents.
- 20.4 The Contractor, not the Owner, is as fully responsible for the acts and omissions of Subcontractors and of persons employed by them, as the Contractor is for the acts and omissions of persons directly or indirectly employed by the Contractor.
- 20.5 Neither the Contract Documents nor any Contractor-Subcontractor contract shall indicate, infer or create any direct contractual relationship between any Subcontractor and the Owner.

**21. Contractor-Subcontractor Relationship**

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

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

**22. Supervision of the Work**

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

**23. Observation of the Work**

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

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

**24. Consultant's Status**

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

**25. Management of the Premises**

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

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- 25.2 The Contractor shall not use the premises for any purpose other than that which is directly related to the scope of work. The Owner shall not use the premises for any purpose incompatible with the proposed work simultaneous to the work of the Contractor.
- 25.3 The Contractor shall enforce the Consultant's instructions regarding information posted on the premises such as signage and advertisements, as well as activities conducted on the premises such as fires, and smoking.
- 25.4 The Owner may occupy any part of the Project that is completed with the written consent of the Contractor, and without prejudice to any of the rights of the Owner or Contractor. Such use or occupancy shall not, in and of itself, be construed as a final acceptance of any work or materials.

**26. Safety and Security of the Premises**

- 26.1 The Contractor shall designate, and make known to the Consultant and the Owner, a safety officer whose duty is the prevention of accidents on the site.
- 26.2 The Contractor shall continuously maintain security on the premises and protect from unreasonable occasion of injury all people authorized to be on the job site. The Contractor shall also effectively protect the property and adjacent properties from damage or loss.
- 26.3 The Contractor shall take all necessary precautions to ensure the safety of workers and others on and adjacent to the site, abiding by applicable local, state and federal safety regulations. The Contractor shall erect and continuously maintain safeguards for the protection of workers and others, and shall post signs and other warnings regarding hazards associated with the construction process, such as protruding fasteners, moving equipment, trenches and holes, scaffolding, window, door or stair openings, and falling materials.
- 26.4 The Contractor shall restore the premises to conditions that existed prior to the start of the project at areas not intended to be altered according to the Contract Documents.
- 26.5 The Contractor shall protect existing utilities and exercise care working in the vicinity of utilities shown in the Drawings and Specifications or otherwise located by the Contractor.
- 26.6 The Contractor shall protect from damage existing trees and other significant plantings and landscape features of the site which will remain a permanent part of the site. If necessary or indicated in the Contract Documents, tree trunks shall be boxed and barriers erected to prevent damage to tree branches or roots.
- 26.7 The Contractor shall repair or replace damage to the Work caused by the Contractor's or Subcontractor's forces, including that which is reasonably protected, at the expense of the responsible party.
- 26.8 The Contractor shall not load, or allow to be loaded, any part of the Project with a force which imperils personal or structural safety. The Consultant may consult with the Contractor on such means and methods of construction, however, the ultimate responsibility lies with the Contractor.
- 26.9 The Contractor shall not jeopardize any work in place with subsequent construction activities such as blasting, drilling, excavating, cutting, patching or altering work. The Consultant must

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

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

**27. Changes in the Work**

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

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

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**General Conditions**

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

**28. Correction of the Work**

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

**29. Owner's Right to do Work**

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

**30. Termination of Contract and Stop Work Action**

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

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**General Conditions**

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

- .1 the contractor is adjudged bankrupt, or makes a general assignment for the benefit of its creditors, or
  - .2 a receiver is appointed due to the Contractor's insolvency, or
  - .3 the Contractor persistently or repeatedly refuses or fails to provide enough properly skilled workers or proper materials, or
  - .4 the Contractor fails to make prompt payment to Subcontractors or suppliers of materials or labor, or
  - .5 the Contractor persistently disregards laws, ordinances or the instructions of the Consultant, or is otherwise found guilty of a substantial violation of a provision of the Contract Documents.
- 30.2 The Contractor is not entitled, as a consequence of the termination of the employment of the Contractor as described above, to receive any further payment until the Work is finished. If the unpaid balance of the contract amount exceeds the expense of finishing the Work, including compensation for additional architectural, managerial and administrative services, such balance shall be paid to the Contractor. If the expense of finishing the Work exceeds the unpaid balance, the Contractor shall pay the difference to the Owner. The Consultant shall certify the expense incurred by the Contractor's default. This obligation for payment shall continue to exist after termination of the contract.
- 30.3 The Contractor may, if the Work is stopped by order of any court or other public authority for a period of thirty consecutive days, and through no act or fault of the Contractor or of anyone employed by the Contractor, with seven days written notice to the Owner and the Consultant, terminate this contract. The Contractor may then recover from the Owner payment for all work executed, any proven loss and reasonable profit and damage.
- 30.4 The Contractor may, if the Consultant fails to issue a certificate for payment within seven days after the Contractor's formal request for payment, through no fault of the Contractor, or if the Owner fails to pay to the Contractor within 30 days after submission of any sum certified by the Consultant, with seven days written notice to the Owner and the Consultant, stop the Work or terminate this Contract.
31. Delays and Extension of Time
- 31.1 The completion date of the contract shall be extended if the work is delayed by changes ordered in the work which have approved time extensions, or by an act or neglect of the Owner, the Consultant, or the Owner's Contractor, or by strikes, lockouts, fire, flooding, unusual delay in transportation, unavoidable casualties, or by other causes beyond the Contractor's control. The Consultant shall determine the status of all claimed causes.
- 31.2 The contract shall not be extended for delay occurring more than seven calendar days before the Contractor's claim made in writing to the Consultant. In case of a continuing cause of delay, only one claim is necessary.
- 31.3 The contract shall not be extended due to failure of the Consultant to furnish drawings if no schedule or agreement is made between the Contractor and the Consultant indicating the dates

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**General Conditions**

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

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

**32. Payments to the Contractor**

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

**00 72 13**  
**General Conditions**

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

**33. Payments Withheld**

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

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

**34. Liens**

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

**35. Workmanship**

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

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**General Conditions**

- 35.2 The Contractor shall know local labor conditions for skilled and unskilled labor in order to apply the labor appropriately to the Work. All labor shall be performed by individuals well skilled in their respective trades.
- 35.3 The Contractor shall perform all cutting, fitting, patching and placing of work in such a manner to allow subsequent work to fit properly, whether that be by the Contractor, the Owner's Contractors or others. The Owner and Consultant may advise the Contractor regarding such subsequent work. Notwithstanding the notification or knowledge of such subsequent work, the Contractor may be directed to comply with this standard of compatible construction by the Consultant at the Contractor's expense.
- 35.4 The Contractor shall request clarification or revision of any design work by the Consultant, prior to commencing that work, in a circumstance where the Contractor believes the work cannot feasibly be completed at the highest quality, or as indicated in the Contract Documents. The Consultant shall respond to such requests in a timely way, providing clarifying information, a feasible revision, or instruction allowing a reduced quality of work. The Contractor shall follow the direction of the Consultant regarding the required request for information.
- 35.5 The Contractor shall guarantee the Work against any defects in workmanship and materials for a period of one year commencing with the date of the Certificate of Substantial Completion, unless specified otherwise for specific elements of the project. The Work may also be subdivided in mutually agreed upon components, each defined by a separate Certificate of Substantial Completion.

**36. Close-out of the Work**

- 36.1 The Contractor shall remove from the premises all waste materials caused by the work. The Contractor shall make the spaces "broom clean" unless a more thorough cleaning is specified. The Contractor shall clean all windows and glass immediately prior to the final inspection, unless otherwise directed.
- 36.2 The Owner may conduct the cleaning of the premises where the Contractor, duly notified by the Consultant, fails to adequately complete the task. The expense of this cleaning may be deducted from the sum due to the Contractor.
- 36.3 The Contractor shall participate in all final inspections and acknowledge the documentation of unsatisfactory work, customarily called the "punch list", to be corrected by the Contractor. The Consultant shall document the successful completion of the Work in a dated Certificate of Substantial Completion, to be signed by Owner, Consultant, and Contractor.
- 36.4 The Contractor shall not call for final inspection of any portion of the Work that is not completely and permanently installed. The Contractor may be found liable for the expenses of individuals called to final inspection meetings prematurely.
- 36.5 The Contractor and all major Subcontractors shall participate in the end-of-warranty-period conference, typically scheduled close to one year after the Substantial Completion date.

**00 72 13**  
**General Conditions**

**37. Date of Completion and Liquidated Damages**

- 37.1 The Contractor may make a written request to the Owner for an extension or reduction of time, if necessary. The request shall include the reasons the Contractor believes justifies the proposed completion date. The Owner may grant the revision of the contract completion date if the Work was delayed due to conditions beyond the control and the responsibility of the Contractor. The Contractor shall not conduct unauthorized accelerated work or file delay claims to recover alleged damages for unauthorized early completion.
- 37.2 The Contractor shall vigorously pursue the completion of the Work and notify the Owner of any factors that have, may, or will affect the approved Schedule of the Work. The Contractor may be found responsible for expenses of the Owner or Consultant if the Contractor fails to make notification of project delays.
- 37.3 The Project is planned to be done in an orderly fashion which allows for an iterative submittal review process, construction administration including minor changes in the Work and some bad weather. The Contractor shall not file delay claims to recover alleged damages on work the Consultant determines has followed the expected rate of progress.
- 37.4 The Consultant shall prepare the Certificate of Substantial Completion which, when signed by the Owner and the Contractor, documents the date of Substantial Completion of the Work or a designated portion of the Work. The Owner shall not consider the issuance of a Certificate of Occupancy by an outside authority a prerequisite for Substantial Completion if the Certificate of Occupancy cannot be obtained due to factors beyond the Contractor's control.
- 37.5 Liquidated Damages may be deducted from the sum due to the Contractor for each calendar day that the Work remains uncompleted after the completion date specified in the Contract or an approved amended completion date. The dollar amount per day shall be calculated using the Schedule of Liquidated Damages table shown below.

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

**38. Dispute Resolution**

**38.1 Mediation**

- 38.1.1 A dispute between the parties which arises under this Contract which cannot be resolved through informal negotiation, shall be submitted to a neutral mediator jointly selected by the parties.
- 38.1.2 Either party may file suit before or during mediation if the party, in good faith, deems it to be necessary to avoid losing the right to sue due to a statute of limitations. If suit is filed before good faith mediation efforts are completed, the party filing suit shall agree to stay all proceedings in the lawsuit pending completion of the mediation process, provided such stay is without prejudice.

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**General Conditions**

- 38.1.3 In any mediation between the Owner and the Consultant, the Owner has the right to consolidate related claims between Owner and Contractor.

**38.2 Arbitration**

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

**00 73 46**  
**Wage Determination Schedule**

**PART 1- GENERAL**

1.1 Related Documents

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

1.2 Summary

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

1.3 Requirements

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

**PART 2 - PRODUCTS (not used)**

**PART 3 - EXECUTION (not used)**

**00 73 46**  
**Wage Determination Schedule**

**THIS DOCUMENT MUST BE CLEARLY POSTED AT ALL CONSTRUCTION SITES FUNDED IN PART WITH STATE FUNDS**

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

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

**2025 Fair Minimum Wage Rates -- Building 2 Androscoggin County (other than 1 or 2 family homes)**

Occupational Title	Minimum Wage	Minimum Benefit	Total
Brickmasons And Blockmasons	\$33.00	\$11.13	\$44.13
Bulldozer Operator	\$34.90	\$2.24	\$37.14
Carpenter	\$28.72	\$19.38	\$48.10
Cement Masons And Concrete Finisher	\$26.31	\$0.20	\$26.51
Construction And Maintenance Painters	\$27.00	\$1.18	\$28.18
Construction Laborer	\$18.66	\$11.38	\$30.04
Crane And Tower Operators	\$40.00	\$12.08	\$52.08
Crushing Grinding And Polishing Machine Operators	\$27.50	\$5.64	\$33.14
Earth Drillers - Except Oil And Gas	\$23.30	\$0.99	\$24.29
Electrical Power - Line Installer And Repairers	\$43.26	\$16.55	\$59.81
Electricians	\$37.43	\$20.07	\$57.50
Elevator Installers And Repairers	\$71.21	\$43.75	\$114.96
Excavator Operator	\$32.00	\$4.29	\$36.29
Fence Erectors	\$26.00	\$2.63	\$28.63
Flaggers	\$20.50	\$0.40	\$20.90
Floor Layers - Except Carpet/Wood/Hard Tiles	\$26.50	\$3.83	\$30.33
Glaziers	\$46.26	\$22.61	\$68.87
Grader/Scraper Operator	\$31.00	\$6.86	\$37.86
Hazardous Materials Removal Workers	\$20.50	\$0.94	\$21.44
Heating And Air Conditioning And Refrigeration Mechanics And Installers	\$35.00	\$5.56	\$40.56
Heavy And Tractor - Trailer Truck Drivers	\$25.00	\$1.54	\$26.54
Highway Maintenance Workers	\$22.85	\$4.79	\$27.64
Industrial Machinery Mechanics	\$30.00	\$4.60	\$34.60
Industrial Truck And Tractor Operators	\$26.17	\$3.49	\$29.66
Insulation Worker - Mechanical	\$24.00	\$4.47	\$28.47
Ironworker - Ornamental	\$31.37	\$25.82	\$57.19
Light Truck Or Delivery Services Drivers	\$27.99	\$1.97	\$29.96
Loading Machine And Dragline Operators	\$25.50	\$4.99	\$30.49
Millwrights	\$35.95	\$13.84	\$49.79
Mobile Heavy Equipment Mechanics - Except Engines	\$30.00	\$5.67	\$35.67
Operating Engineers And Other Equipment Operators	\$28.50	\$3.54	\$32.04
Paving Surfacing And Tamping Equipment Operators	\$28.60	\$12.03	\$40.63
Pile-Driven Operators	\$36.00	\$2.87	\$38.87
Pipe/Steam/Sprinkler Fitter	\$43.76	\$25.44	\$69.20
Pipeliners	\$27.48	\$4.72	\$32.20
Plumbers	\$38.75	\$22.96	\$61.71
Pump Operators - Except Wellhead Pumpers	\$56.03	\$34.76	\$90.79
Radio Cellular And Tower Equipment Installers	\$30.00	\$4.85	\$34.85
Reinforcing Iron And Rebar Workers	\$56.69	\$2.27	\$58.96
Riggers	\$31.95	\$25.00	\$56.95
Roofers	\$29.00	\$0.00	\$29.00
Sheet Metal Workers	\$28.38	\$5.85	\$34.23
Structural Iron And Steel Workers	\$31.95	\$25.00	\$56.95
Tapers	\$29.00	\$2.40	\$31.40
Telecommunications Equipment Installers And Repairers - Except Line Installers	\$30.42	\$9.75	\$40.17
Telecommunications Line Installers And Repairers	\$28.50	\$4.20	\$32.70

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

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

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

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

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

A true copy

Attest: Scott R. Cotnoir

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

Expiration Date: 12-31-2025  
 Revision Date: 2-3-2025

End of Section 00 73 46

SECTION 01 10 00  
SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
  - 1. Work covered by the Contract Documents.
  - 2. Type of the Contract.
  - 3. Work under other contracts.
  - 4. Use of premises.
  - 5. Owner's occupancy requirements.
  - 6. Specification formats and conventions.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Project consists of interior renovations.
  - 1. Project Location: Center Building, Augusta, Maine.
  - 2. Owner: State of Maine.
- B. Architect Identification: The Contract Documents, dated May 30, 2025, were prepared for the Project by Winton Scott Architects, P.A., 217 Commercial Street, Portland, ME 04101. Tel: 207-774-4811.
- C. The Work consists of exterior work including brick masonry, windows, lead-based paint remediation and painting. Interior work includes intumescent fireproofing, asbestos remediation and general renovations for proposed handicapped access and core bathroom facilities.

1.3 COMPLETION DEADLINE

- A. The work shall be substantially complete on or before June 30, 2026.
- B. Work on-site shall begin following execution of the contract for construction.
  - 1. Occupants of the building will continue use of the building during construction.

1.4 TYPE OF CONTRACT

- A. Project will be constructed under a single prime contract.
- B. Contract Type: State of Maine - Section 2-E, Contract Agreement (State Projects).

1.5 WORK UNDER OTHER CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

1.6 USE OF PREMISES

- A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period and shall coordinate locations of staging and support for the work with the Owner.
- B. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Owner Occupancy: Allow for Owner occupancy of Project site around building.
  - 2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Use of Existing Building: Maintain the existing building in a weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period. Coordinate precautions with Owner.
- D. Time Restrictions for Performing Interior and Exterior Work: Monday through Friday; 7 am to 5 p.m., unless arrangements are made with the Owner prior to the start of work.
  - 1. Provide 24 hour notice to Architect when performing work other than normal working hours.

#### 1.7 OWNER'S OCCUPANCY REQUIREMENTS

- A. The Owner will occupy the building during the construction period.
  - 1. Continuous use of the existing building shall be maintained through the project.
  - 2. Work areas shall be phased as shown.
  - 3. The Owner shall move furniture before the start of work of each phase as needed.
  - 4. Noise-producing activities shall be scheduled for nights and/or weekends.
  - 5. The Owner shall conduct a background check on all on-site construction personnel. The General Contractor shall provide the names and SSN's of staff.
- B. Precautions to minimize noise shall be required throughout the course of the work.

#### 1.8 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI/CSC's "MasterFormat 2004" numbering system.
  - 1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
  - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
- C. References to Related Sections: This paragraph lists only products, construction, and equipment that the reader might expect to find in this Section but are specified elsewhere. This is not meant to be a continuation of a list of work included in each section.

#### 1.9 MISCELLANEOUS PROVISIONS

- A. Contract Documents: These documents, including the Contract, General Conditions, Supplementary Conditions, Specification sections, Drawings, Addenda and Modifications, indicate the work of the Contract and related requirements and conditions that have an impact on the project. It is recognized that work of the contract is also unavoidably affected or influenced by natural phenomenon including weather conditions and other forces outside the contract documents. Allow for additional time in the construction schedule for abnormal weather conditions. No change orders will be approved for adverse weather conditions. No change orders will be approved for additional winter heating expenses due to cold weather or rise in fuel costs.
- B. Hazardous Materials other than Asbestos: Included in the work may be the removal and/or covering over of hazardous materials. It is the responsibility of the contractor to follow applicable Federal, State and Local guidelines to insure safe and proper handling of these materials.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION



SECTION 01 14 00

WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations areas shown.
2. Owner Occupancy: Allow for Owner occupancy of site and use by the public.
3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
  - a. Schedule deliveries to minimize use of driveways and entrances.
  - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

- B. Use of Existing Building: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

- C. General: Limitations on site usage as well as specific requirements that impact site utilization are indicated on the drawings and by other contract documents. In addition to these limitations and requirements administer allocation of available space equitably among entities needing both access and space so as to produce the best overall efficiency in performance of the total work of the project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

- D. Special Provisions: The Owner shall be consulted in advance in all premises matters regarding use of the site. All deliveries and transport at the premises are to be coordinated through the Project Manager. In the event of an apparent conflict of activities, the Owner's needs shall have priority.

1. Secure Access: The job site is located inside a special access area. Personnel must be cleared to be in the work areas.
2. Work Areas: Staging areas shall be limited to the immediate work area on an adjacent roof. All tools, ladders, dumpster, debris etc. shall be confined within the staging areas. The Contractor shall provide the following:

- a. Dumpster with a locking lid.
  - b. Porta potty with a locking door. The door must be locked at all times.
3. Tools and Storage: Tools shall be stored in locked boxes when not in use on the roof.
- a. Tools shall be stored in locked boxes when not in use on the roof. No tools shall be left unguarded or unattended.
  - b. Ladders shall be chained when not in use.
4. Smoking: Smoking is not allowed anywhere on the property. A minimum penalty of \$100 shall be withheld from the Contractor's payment for each item of tobacco product or portion thereof found on the construction site.
- E. Notify Owner and get approval prior to commencing any loud or noisy activity.

### 1.3 OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations.
- B. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
- 1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
  - 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
  - 3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.
  - 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 23 00

ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.

- D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Exterior Lead-Based Paint Removal
1. Base Bid: Includes painting of existing previously-painted metal dormer wall panels, eave soffits, eaves and corner trim.
  2. Alternate: Prior to the undertaking of the above base bid painting, remove the existing lead-based paint. Include an additional primer coat for the finish painting work.
- B. Alternate No. 2: Basement Window Openings Infill Panels
1. Base Bid: Includes no work on the existing plywood window infill panels.
  2. Alternate: Remove the existing panel infill and existing metal window frame. Provide masonry infill at each existing opening in the masonry or concrete foundation wall. Include interior rigid insulation and backer board.

END OF SECTION

## SECTION 01 30 00

### ALTERATIONS, GENERAL

#### 1. GENERAL

- 1.01 **GENERAL CONDITIONS:** The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.
- 1.02 **DESCRIPTION:**
- A. The work covered by all sections of specifications shall conform to the conditions of this Section.
  - B. The phrase “match existing” shall mean the following: Where Contract Documents call for exact matching, match existing work exactly in quality and appearance. When Contract Documents do not call for exact matching, match existing work as nearly as possible, using normally available materials and workmanship. If normally available materials and workmanship do not approximate existing work notify Architect. If in the Architect’s judgment it is impossible to approximate existing work with normally available materials and workmanship, the Architect may issue suitable Change Orders. Changes imposing extra costs to the Contractor will not be ordered without the Contractor’s approval. Existing structures and materials are indicated “existing”.
  - C. In general, structures and materials which are not indicated existing are included in the work.

#### 2. PRODUCTS

2.01 **GENERAL**

- A. Materials used to replace, patch or repair existing exposed work shall match or be compatible with existing adjacent finished surfaces.
- B. Materials used for such replacement, patching and repairing shall be as specified in the applicable section of this specification and/or as indicated on the drawings, or as approved by the Architect.

#### 3. EXECUTION

3.01 **TEMPORARY PARTITIONS** Construct necessary temporary dust proof partitions to isolate construction work from adjacent areas and remove partitions when work in area is completed.

3.02 **CUTTING AND PATCHING**

- A. Contractor shall do all demolition, cutting, altering, removing, replacing and patching as necessary for the performance of the contract. Unless otherwise provided by the

drawings or specifications, no structural members shall be cut or altered without authorization of the Architect.

- B. Where any alteration or new work is indicated it will be required that the contractor perform all necessary cutting, patching, altering and rebuilding necessary to produce a complete, finished and operational element.
- C. Work remaining in place which is damaged or defaced by reason of work done under this contract shall be restored equal to its condition at the time of the award of the contract.
- D. Where existing work is removed, exposed surfaces shall be finished to match adjacent surfaces.
- E. All disturbed plaster areas and all holes, cracks and loose plaster shall be patched to provide a smooth uniform and sound wall, matching existing surfaces. Plaster around new openings in existing walls shall be cut back to firm bond and patched to match surrounding area. Materials for patching shall be similar to adjacent materials. Bonding agents shall be used as required to produce positive bond.
- F. Contractor shall provide all necessary shoring and temporary supports required for proper support of existing and new work during execution of the contract and shall remove same when support is no longer required.

3.03 **COOPERATION:** The Owner shall have the right, at any time during the construction of the structure, to enter the same for the purpose of installing any necessary work, or for any other purpose in connection with the installation of facilities, it being mutually understood and agreed, however, that the Contractor and the Owner will labor to mutual advantage where their several works in the above mentioned or unforeseen instances touch upon or interfere with each other.

3.04 **SALVAGE** All materials which are removed will become the property of the Contractor and shall be removed from the premises, unless indicated otherwise on the drawings or in these specifications.

END OF SECTION

## SECTION 01 31 00

### PROJECT MANAGEMENT AND COORDINATION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Information (RFIs).

- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

- C. Related Sections include the following:

1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

##### 1.3 DEFINITIONS

- A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

##### 1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
  1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

## 1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
  1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  1. Preparation of Contractor's Construction Schedule.
  2. Preparation of the Schedule of Values.
  3. Installation and removal of temporary facilities and controls.
  4. Delivery and processing of submittals.
  5. Progress meetings.
  6. Preinstallation conferences.
  7. Project closeout activities.
  8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

## 1.6 REQUESTS FOR INFORMATION (RFIs)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in either of the form(s) specified.
  1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
  1. Project name.
  2. Project number.
  3. Date.
  4. Name of Contractor.
  5. Name of Architect and Construction Manager.
  6. RFI number, numbered sequentially.
  7. RFI subject.
  8. Specification Section number and title and related paragraphs, as appropriate.
  9. Drawing number and detail references, as appropriate.
  10. Field dimensions and conditions, as appropriate.
  11. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  12. Contractor's signature.
  13. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
    - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. Hard-Copy RFIs: Form at end of this Section.
  1. Identify each page of attachments with the RFI number and sequential page number.
- D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.
  1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:
  - a. Requests for approval of submittals.
  - b. Requests for approval of substitutions.
  - c. Requests for coordination information already indicated in the Contract Documents.
  - d. Requests for adjustments in the Contract Time or the Contract Sum.
  - e. Requests for interpretation of Architect's actions on submittals.
  - f. Incomplete RFIs or RFIs with numerous errors.
2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
  - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
- G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
  1. Project name.
  2. Name and address of Contractor.
  3. Name and address of Architect and Construction Manager.
  4. RFI number including RFIs that were dropped and not submitted.
  5. RFI description.
  6. Date the RFI was submitted.
  7. Date Architect's response was received.
  8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
  9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

## 1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
  1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: General progress items and discussions will be recorded by the Architect and distributed.

- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.
    - d. Designation of key personnel and their duties.
    - e. Procedures for processing field decisions and Change Orders.
    - f. Procedures for RFIs.
    - g. Procedures for testing and inspecting.
    - h. Procedures for processing Applications for Payment.
    - i. Distribution of the Contract Documents.
    - j. Submittal procedures.
    - k. Construction waste management.
    - l. Construction indoor air quality.
    - m. Preparation of Record Documents.
    - n. Use of the premises and existing building.
    - o. Work restrictions.
    - p. Working hours.
    - q. Owner's occupancy requirements.
    - r. Responsibility for temporary facilities and controls.
    - s. Procedures for moisture and mold control.
    - t. Procedures for disruptions and shutdowns.
    - u. Construction waste management and recycling.
    - v. Parking availability.
    - w. Office, work, and storage areas.
    - x. Equipment deliveries and priorities.
    - y. First aid.
    - z. Security.
    - aa. Progress cleaning.
  3. Minutes: The Architect will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
  2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

- a. The Contract Documents.
  - b. Options.
  - c. Related RFIs.
  - d. Related Change Orders.
  - e. Purchases.
  - f. Deliveries.
  - g. Submittals.
  - h. Review of mockups.
  - i. Possible conflicts.
  - j. Compatibility problems.
  - k. Time schedules.
  - l. Weather limitations.
  - m. Manufacturer's written recommendations.
  - n. Warranty requirements.
  - o. Compatibility of materials.
  - p. Acceptability of substrates.
  - q. Temporary facilities and controls.
  - r. Space and access limitations.
  - s. Regulations of authorities having jurisdiction.
  - t. Testing and inspecting requirements.
  - u. Installation procedures.
  - v. Coordination with other work.
  - w. Required performance results.
  - x. Protection of adjacent work.
  - y. Protection of construction and personnel.
3. Construction Manager will record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
  4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
  5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner, Construction Manager, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to

do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- 1) Review schedule for next period.
  - b. Review present and future needs of each entity present, including the following:
    - 1) Interface requirements.
    - 2) Sequence of operations.
    - 3) Status of submittals.
    - 4) Deliveries.
    - 5) Off-site fabrication.
    - 6) Access.
    - 7) Site utilization.
    - 8) Temporary facilities and controls.
    - 9) Progress cleaning.
    - 10) Quality and work standards.
    - 11) Status of correction of deficient items.
    - 12) Field observations.
    - 13) Status of RFIs.
    - 14) Status of proposal requests.
    - 15) Pending changes.
    - 16) Status of Change Orders.
    - 17) Pending claims and disputes.
    - 18) Documentation of information for payment requests.
    - 19) Construction waste management.
    - 20) Construction indoor air quality.
  3. Minutes: Construction Manager will record and distribute to Architect the meeting minutes.
  4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
    - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- E. Project Closeout Conference: Construction Manager will schedule and conduct a Project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  2. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.

- b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
  - c. Submittal of written warranties.
  - d. Requirements for preparing sustainable design documentation.
  - e. Requirements for preparing operations and maintenance data.
  - f. Requirements for demonstration and training.
  - g. Preparation of Contractor's punch list.
  - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
  - i. Submittal procedures.
  - j. Coordination of separate contracts.
  - k. Owner's partial occupancy requirements.
  - l. Installation of Owner's furniture, fixtures, and equipment.
  - m. Responsibility for removing temporary facilities and controls.
4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- F. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
- 1. Attendees: Each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    - b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    - c. Review present and future needs of each contractor present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Status of submittals.
      - 4) Deliveries.
      - 5) Off-site fabrication.
      - 6) Access.
      - 7) Site utilization.
      - 8) Temporary facilities and controls.
      - 9) Work hours.

- 10) Hazards and risks.
  - 11) Progress cleaning.
  - 12) Quality and work standards.
  - 13) Change Orders.
3. Reporting: Record meeting results and distribute copies to Architect and everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

Center Building Improvements  
Augusta, ME

May 30, 2025  
Issued For Construction

## REQUEST FOR INFORMATION

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Project: \_\_\_\_\_ R.F.I. Number: \_\_\_\_\_

To: \_\_\_\_\_ From: \_\_\_\_\_

Date: \_\_\_\_\_ A/E Project Number: \_\_\_\_\_

Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

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Specification Section: \_\_\_\_\_ Paragraph: \_\_\_\_\_ Drawings Reference: \_\_\_\_\_ Detail: \_\_\_\_\_

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Request:

Signed by:

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Response:

\_\_\_\_ Attachments

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Response from: \_\_\_\_\_ To: \_\_\_\_\_ Date Rec'd \_\_\_\_\_ Date Ret'd \_\_\_\_\_

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Signed by:  
\_\_\_\_\_

Copies to:  
\_\_\_\_\_

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## SECTION 01 32 00

### CONSTRUCTION PROGRESS DOCUMENTATION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Start-up construction schedule.
2. Contractor's Construction Schedule.
3. Daily construction reports.
4. Material location reports.
5. Field condition reports.
6. Special reports.

- B. Related Sections include the following:

1. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
3. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
4. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

##### 1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
  2. Predecessor Activity: An activity that precedes another activity in the network.
  3. Successor Activity: An activity that follows another activity in the network.
- B. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- C. Event: The starting or ending point of an activity.

- D. Float: The measure of leeway in starting and completing an activity.
- E. Major Area: A story of construction, a separate building, or a similar significant construction element.
- F. Milestone: A key or critical point in time for reference or measurement.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. Two paper copies.
- B. Start-up construction schedule.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- D. Daily Construction Reports: Submit at monthly intervals.
- E. Material Location Reports: Submit at monthly intervals.
- F. Field Condition Reports: Submit at time of discovery of differing conditions.
- G. Special Reports: Submit at time of unusual event.
- H. Qualification Data: For scheduling consultant.

#### 1.5 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:
  - 1. Review software limitations and content and format for reports.
  - 2. Verify availability of qualified personnel needed to develop and update schedule.
  - 3. Discuss constraints, including work stages, area separations and milestones.
  - 4. Review time required for review of submittals and resubmittals.
  - 5. Review requirements for tests and inspections by independent testing and inspecting agencies.
  - 6. Review time required for completion and startup procedures.
  - 7. Review and finalize list of construction activities to be included in schedule.
  - 8. Review submittal requirements and procedures.
  - 9. Review procedures for updating schedule.

## 1.6 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from parties involved.
  - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

## PART 2 - PRODUCTS

### 2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of Final Completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
  - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
  - 2. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
  - 3. Startup and Testing Time: Include not less than 5 days for startup and testing.
  - 4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
  - 5. Punch List and Final Completion: Include not more than 30 days for punch list and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
  - 1. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Coordination with existing construction.
    - b. Limitations of continued occupancies.
    - c. Uninterruptible services.
    - d. Partial occupancy before Substantial Completion.
    - e. Use of premises restrictions.

- f. Provisions for future construction.
  - g. Seasonal variations.
  - h. Environmental control.
2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
- a. Subcontract awards.
  - b. Submittals.
  - c. Purchases.
  - d. Mockups.
  - e. Fabrication.
  - f. Sample testing.
  - g. Deliveries.
  - h. Installation.
  - i. Tests and inspections.
  - j. Adjusting.
  - k. Curing.
  - l. Startup and placement into final use and operation.
3. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
  - b. Permanent space enclosure.
  - c. Completion of mechanical installation.
  - d. Completion of electrical installation.
  - e. Substantial Completion.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
  - 2. Unanswered Requests for Information.
  - 3. Rejected or unreturned submittals.
  - 4. Notations on returned submittals.

## 2.2 START-UP CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for commencement of the Work.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

### 2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for commencement of the Work. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
  - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

### 2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
  - 1. List of subcontractors at Project site.
  - 2. List of separate contractors at Project site.
  - 3. Approximate count of personnel at Project site.
  - 4. Equipment at Project site.
  - 5. Material deliveries.
  - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
  - 7. Accidents.
  - 8. Meetings and significant decisions.
  - 9. Unusual events (refer to special reports).
  - 10. Stoppages, delays, shortages, and losses.
  - 11. Meter readings and similar recordings.
  - 12. Emergency procedures.
  - 13. Orders and requests of authorities having jurisdiction.
  - 14. Change Orders received and implemented.
  - 15. Construction Change Directives received and implemented.
  - 16. Services connected and disconnected.
  - 17. Equipment or system tests and startups.
  - 18. Partial completions and occupancies.
  - 19. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
  - 1. Material stored prior to previous report and remaining in storage.
  - 2. Material stored prior to previous report and since removed from storage and installed.
  - 3. Material stored following previous report and remaining in storage.

- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

## 2.5 SPECIAL REPORTS

- A. General: Submit special reports directly to Architect within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

# PART 3 - EXECUTION

## 3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, review schedule for actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
  2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

## SECTION 01 40 00

### QUALITY REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
  - 1. Division 01 Section "Allowances" for testing and inspecting allowances.
  - 2. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
  - 3. Division 01 Section "Execution" for repair and restoration of construction disturbed by testing and inspecting activities.
  - 4. Divisions 02 through 48 Sections for specific test and inspection requirements.

##### 1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
- D. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- J. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

#### 1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems.
  - 1. Seismic-force resisting system, designated seismic system, or component listed in the designated seismic system quality assurance plan prepared by the Architect.
  - 2. Main wind-force resisting system or a wind-resisting component listed in the wind-force-resisting system quality assurance plan prepared by the Architect.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Description of test and inspection.
  - 3. Identification of applicable standards.
  - 4. Identification of test and inspection methods.
  - 5. Number of tests and inspections required.
  - 6. Time schedule or time span for tests and inspections.
  - 7. Entity responsible for performing tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

## 1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice of Award or Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
  - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: Include in quality-control plan a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  - 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

## 1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.

13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
  1. Name, address, and telephone number of technical representative making report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
  1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.8 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- K. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

- d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
  - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
  - f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- L. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
- 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
  - 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
  - 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at the Project.
  - 4. Demonstrate the proposed range of aesthetic effects and workmanship.
  - 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
    - a. Allow seven days for initial review and each re-review of each mockup.
  - 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  - 7. Demolish and remove mockups when directed, unless otherwise indicated.

## 1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated in individual specification sections as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
- 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  - 2. Payment for these services will be made by Owner.
  - 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.

- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's and Construction Manager's reference during normal working hours.

### 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

## SECTION 01 70 00

### EXECUTION REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Coordination Drawings
3. General installation of products.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

- B. Related Sections include the following:

1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
2. Division 1 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
3. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

##### 1.3 QUALITY ASSURANCE

- A. General: Develop and maintain procedures to ensure that entities performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality-levels for workmanship in completed work. Remove and replace work which does not comply with workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deteriorated by faulty workmanship or its replacement.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
  - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of utilities and other construction affecting the Work.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations. Reject damaged and defective items.
  - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
    - a. Description of the Work.
    - b. List of detrimental conditions, including substrates.
    - c. List of unacceptable installation tolerances.
    - d. Recommended corrections.
  - 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  - 5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and/or Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect and Owner not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Owner's written permission.
- C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Lay out the Work using accepted surveying practices.
  1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  3. Inform installers of lines and levels to which they must comply.
  4. Check the location, level and plumb, of every major element as the Work progresses.
  5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
  6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  1. Make vertical work plumb and make horizontal work level.
  2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
  4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion. Isolate each unit of work from incompatible work as necessary to prevent deterioration.
- D. Recheck measurements and dimensions of the work, as an integral step of starting each installation.
- E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- F. Coordinate enclosure of the work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose. Apply protective finish to items before concealment. Paint aluminum, built into masonry or buried, with one coat bituminous paint. Paint other concealed materials with same finish specified for exposed surfaces. Concealed corrosion-protected materials need not be painted unless so specified.
- G. Tools and Equipment: Do not use tools or equipment that produce objectionable noise levels. Owner shall determine times during which noise producing operations may be performed. Such times may include scheduling of operations for weekend work.
- H. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work. Installed items shall be able to withstand 150% of maximum anticipated load, as estimated by the Architect.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect. Refer questionable mounting height choices to the Architect/Engineer for final decision.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Provide galvanic insulation between dissimilar metals.
  - 4. All fasteners used by all trades on the exterior or where exposed to dampness shall be corrosion resistant. Exposed fasteners used for finished metals shall match adjacent metals in finish. Exposed fasteners used for other materials shall have hardware finish specified in FINISH HARDWARE section. Nails used for exterior siding and trim, whether set and puttied or not, shall be stainless steel. Concealed and painted fasteners for wood and ferrous metal shall be galvanized or zinc plated.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints. Make joints tight to the extent provided in the design or per industry standards. If such is impossible, and if directed by the Architect, apply moldings, sealant, or other closure.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- K. Provide adequate blocking, bracing, nailers and fastenings. Install items securely.

### 3.5 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
  - 1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### 3.6 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

### 3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

### 3.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 70 00

SECTION 01 73 10

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
1. Division 1 Section "Selective Demolition" for demolition of selected portions of the building for alterations.
  2. Divisions 2 through 16 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
    - a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 22, 23 & 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
  2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
  3. Products: List products to be used and firms or entities that will perform the Work.

4. Dates: Indicate when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

## 1.5 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
  1. Primary operational systems and equipment.
  2. Air or smoke barriers.
  3. Fire-protection systems.
  4. Control systems.
  5. Communication systems.
  6. Conveying systems.
  7. Electrical wiring systems.
  8. Operating systems of special construction in Division 13 Sections.
- C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
  1. Water, moisture, or vapor barriers.
  2. Membranes and flashings.
  3. Exterior curtain-wall construction.
  4. Equipment supports.
  5. Piping, ductwork, vessels, and equipment.
  6. Noise- and vibration-control elements and systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
  1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.

- a. Processed concrete finishes.
  - b. Stonework and stone masonry.
  - c. Ornamental metal.
  - d. Matched-veneer woodwork.
  - e. Preformed metal panels.
  - f. Roofing.
  - g. Firestopping.
  - h. Window wall system.
  - i. Stucco and ornamental plaster.
  - j. Terrazzo.
  - k. Finished wood flooring.
  - l. Fluid-applied flooring.
  - m. Aggregate wall coating.
  - n. Wall covering.
  - o. HVAC enclosures, cabinets, or covers.
- E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- F. Prevent movement or settlement of adjacent elements of construction. Provide and place bracing or shoring and be responsible for safety and support of structure. Be liable for any such movement or settlement and any damage or injury caused.

## 1.6 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

### 3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- D. Cease operations and notify the Architect immediately, if safety of structure appears to be endangered. Take all precautions to properly support structure. Do not resume operations until permission is granted by the Architect and authorities having jurisdiction.

END OF SECTION 01731



SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Complete final cleaning requirements, including touchup painting.
9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for Final Completion.

#### 1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
  2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

#### 1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

#### 1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and anti-pollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Remove snow and ice to provide safe access to building.

- f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - h. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
  - i. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

## SECTION 01 85 00

### DUST CONTROL MEASURES

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.
- B. Contract Documents: Indicate the work of the Contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:
  - 1. Existing conditions and restrictions on the use of the floor.
  - 2. Requirements for partial Owner occupancy of portions of the work prior to substantial completion of the Contract Work.

##### 1.02 SUMMARY OF DUST CONTROL MEASURES

- A. The work of this section can be summarized as follows:
  - 1. The purpose of this Section is to develop and implement actions required to be taken to compensate for hazards posed by dust which may be dislodged during construction.
  - 2. All temporary construction partitions shall be extended from the floor through the suspended ceiling, to the underside of the floor deck above. In areas where the presence of asbestos above the ceiling system prohibits the temporary partitions to be extended to the deck, the temporary partition shall be constructed to the ceiling system, and shall be taped against the ceiling system for a complete seal.
  - 3. The construction area shall be vacuumed prior to beginning construction, using a vacuum cleaner equipped with a HEPA filtering system.
  - 4. All penetrations into the construction area shall be sealed, windows closed, and all supply, exhaust / return air ducts capped when possible. Coordinate this work with the Owner.
  - 5. Temporary partitions to isolate the construction site shall have gasketed doors with self-closing latching hardware and dampened walk-off mats both inside and outside the construction area.
  - 6. Negative pressure shall be maintained within the construction site at all times by the use of negative air fans fitted with high-efficiency particulate air (HEPA) filters. Route ductwork from the negative-air fans to the exterior of the building, filtering the air in the duct prior to being discharged, by means of a standard furnace air filter.
  - 7. Audible and/or visual alarms shall be installed so that any loss of negative pressure in the construction site can be known immediately to those outside the site.
  - 8. Provide and install a magnehelic diaphragm-activated negative pressure gauge equal to Dwyer model 2000-0, with a water range of 0-5", in each negative pressure construction area. Install the negative pressure gauge adjacent to the access door. Route a piece of plastic tubing from the gauge to a space not under construction, and not more than 20' away.

9. Debris removal from the construction site shall be completed by a predetermined route at times when staff are in their rooms with their doors closed, or during off hours. Debris shall be transported in clean containers with tight-fitting covers.
10. Any dust tracked out of the construction site shall be removed immediately. Cleaning in patient-occupied areas shall be with HEPA-filtered vacuum cleaners.
11. All air-handling ducts shall be shut down or covered whenever possible during demolition activities.
12. The negative air pressure system shall be activated prior to the commencement of work each day, and remain operating until one-half hour after the stop of work for each day.
13. All temporary partitions shall remain in place until all cleaning within the work areas has been completed.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION (Reserved).

END OF SECTION 01 85 00

SECTION 02 41 19  
SELECTIVE DEMOLITION

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Demolition and removal of selected portions of a building.
  - 2. Demolition and removal of selected site elements.
  - 3. Patching and repairs.
- B. See Section 01 23 00 for alternates which affect the work of this section.

**1.2 DEFINITIONS**

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

**1.3 PERFORMANCE REQUIREMENTS**

- A. Design, furnish, install, monitor, and maintain temporary shoring, support and protection systems capable of supporting existing structure and construction loads.
  - 1. Provide professional engineering services needed to assume engineering responsibility, including preparation of Shop Drawings and a comprehensive engineering analysis by a qualified professional engineer.
  - 2. Install temporary shoring, support and protection systems without damaging existing buildings, pavements, and other improvements adjacent to demolition area.

**1.4 SUBMITTALS**

- A. Shop Drawings for Information: Prepared by or under the supervision of a qualified professional engineer for temporary shoring, support and protection systems.
  - 1. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation.
- B. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- C. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
  - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
  - 3. Coordination for shutoff, capping, and continuation of utility services.

4. Use of elevator and stairs.
5. Detailed sequence of selective demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
7. Locations of temporary partitions and means of egress.

#### 1.5 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
  1. Inspect and discuss condition of construction to be selectively demolished.
  2. Review structural load limitations of existing structure.
  3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

#### 1.6 PROJECT CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials:
  1. Hazardous materials will be removed as shown prior to the start each phase of the Work as shown.
  2. If additional materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  1. Maintain fire-protection facilities in service during selective demolition operations.

#### 1.7 WARRANTY

- A. Existing Special Warranty: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

### PART 2 - PRODUCTS (Not Applicable)

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect.
- E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

### 3.2 UTILITY SERVICES

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
  - 1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."
  - 2. Provide not less than 72 hours' notice to Owner if shutdown of service is required during changeover.
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
  - 2. Arrange to shut off indicated utilities with utility companies.
  - 3. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.
  - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.
    - a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

### 3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Comply with requirements for access and protection specified in Division 1 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 1 Section "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

### 3.4 SELECTIVE DEMOLITION, GENERAL

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly.
- B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Cut concrete to a depth of at least **3/4 inch (19 mm)** at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove

remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
  - 1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- F. Roofing: Remove no more existing roofing than can be covered in one day by new roofing and so that building interior remains watertight and weathertight. Refer to Division 7 Sections for new roofing requirements.
  - 1. Remove existing roof membrane, flashings, copings, and roof accessories.
  - 2. Remove existing roofing metal edge flashings.
  - 3. Existing roofing wood nailers shall remain in place.
  - 4. Existing roof rigid insulation shall remain in place; remove insulation in designated areas only.
- G. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

### 3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.
- D. Enter into a contract for the transportation and disposal of all solid waste in accordance with the applicable State, Local and Federal regulations.

### 3.7 CLEANING

- A. Sweep the building broom clean on completion of selective demolition operation.
- B. Change filters on air-handling equipment on completion of selective demolition operations.

END OF SECTION

Center Building Improvements  
Augusta, ME

May 30, 2025  
Issued for Construction

SECTION 02 82 10  
ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the Contract and General Conditions and all Sections within Division 01 General Requirements and Division 02 Existing Conditions which are hereby made a part of this Section of the Specifications.

1.2 SUMMARY

- A. This Section includes furnishing labor, materials, equipment, supplies, and performing all operations necessary to complete the removal of asbestos-containing materials (ACM) by a qualified Asbestos Abatement Subcontractor with competent persons willing, trained, knowledgeable and qualified in the techniques of asbestos abatement, handling and disposal of ACM and asbestos-contaminated materials, the subsequent cleaning of contaminated areas, and complying with all applicable federal, state, and local regulations in accordance with the attached drawings and these specifications.

1.3 SCOPE OF WORK

- A. Remove identified and similar presumed ACM impacted by work associated with the planned Improvements Project for Center Building, East Campus, Augusta, Maine as described in Section 02 41 19 – Selected Demolition and Figures H200 Basement Plan Asbestos Abatement and A501 Basement Interior Fireproofing Plan.
- B. The work to be performed under this Contract includes the removal and disposal of ACM present on the interior and exterior of the Center Building, impacted by the planned demolition of the buildings as described in **Section 1.4 Summary of Materials, Table 1: Summary of Identified Asbestos**. The Asbestos Abatement Subcontractor, prior to submission of bids, is responsible for identifying and confirming existing quantities of ACM to be removed under this Contract along with becoming familiar with existing conditions and, if necessary, take measurements to meet the intent of the contract documents.
- C. The Asbestos Abatement Subcontractor shall be responsible for the preparation of site-specific asbestos abatement project designs and work plans. An Asbestos Abatement Design Consultant licensed by the Maine Department of Environmental Protection (MDEP) shall prepare the design. The site-specific asbestos abatement project design and work plan shall be signed by the licensed Asbestos Abatement Design Consultant prior to approval to proceed with work.
- D. The Asbestos Abatement Subcontractor shall be responsible for the submission of all appropriate Federal, State and local notifications and associated fees.
- E. The Asbestos Abatement Subcontractor shall be responsible for providing an MDEP licensed independent air monitor for all visual evaluations and air clearances.
- F. The Asbestos Abatement Subcontractor shall be responsible for conducting personal exposure monitoring on their employees during abatement activities.

#### 1.4 SUMMARY OF MATERIALS

- A. See **TABLE 1: Summary of Identified Asbestos**

LOCATION	IDENTIFIED ACM	TOTAL ESTIMATED QUANTITY
Basement	Pipe insulation and associated mud-insulated pipe fittings	512 Linear Feet (LF)
Exterior	Window with asbestos-containing Window caulk	85 Each (EA)

#### 1.5 RELATED REQUIREMENTS

- A. Drawings, Project Manual, and general provisions of the Contract, including, without limitation, General Conditions of the Contract, additional General Conditions of the Contract, and Division 00 and Division 01 specification sections, apply to this Section.
- B. Section 01 85 00 – Dust Control.
- C. Section 02 41 19 - Selective Demolition.

#### 1.6 REFERENCES

- A. Applicable Code of Federal Regulations (CFR):
  1. 29 CFR 1910.1001 - General Industry Standard for Asbestos.
  2. 29 CFR 1926.1101 - Construction Standard for Asbestos.
  3. 29 CFR 1910.134 - General Industry Standard for Respiratory Protection.
  4. 29 CFR 1910.1200 - Hazard Communication.
  5. 40 CFR 61 - Subpart M National Emission Standards for Hazardous Air Pollutants – Asbestos.
- B. Applicable Code of Maine Rules (C.M.R.):
  1. 06-096 C.M.R.Ch. 425 - Asbestos Management Regulations.
  2. 06-096 C.M.R.Ch. 411 - Non-Hazardous Waste Transporter Licensing Regulations.
  3. 06-096 C.M.R.Ch. 405 - Solid Waste Management Regulations.

#### 1.7 SUBMITTALS

- A. Submittals will be received by the Owner in accordance with this section before material or equipment is purchased or work is performed. The Asbestos Abatement Subcontractor shall submit to the Owner, for review, two copies of the information required herein. The adequacy and accuracy of submittals and their compliance with contract documents are the responsibility of the Asbestos Abatement Subcontractor. All reviewing actions taken by the Owner will in no way relieve the Asbestos Abatement Subcontractor of quality control requirements.
- B. General
  - The Contractor shall submit prior to award:
    1. A list of proposed subcontractors with their addresses, specialties, licenses, and qualifications.
    2. Certificate(s) of Insurance indicating coverage for asbestos abatement work.

C. Work Practices and Procedures:

1. Design and Work Plan: The Asbestos Abatement Subcontractor shall be responsible for the preparation of a site-specific asbestos abatement project design and work plan for each work area. An Asbestos Abatement Design Consultant licensed by the MDEP will prepare and sign the design.

The Asbestos Abatement Subcontractor shall submit a written work plan and sketches of the work procedures to be used in the removal, disposal and replacement of materials. The abatement plan will, at a minimum, include location of asbestos control area, decontamination area, equipment decontamination enclosure, interface of trades involved in the construction, sequencing of asbestos-related work, disposal plan, type of wetting agent and sealant to be used, site specific air monitoring plan, personal air monitoring program and a description of the method to be employed to reduce fiber releases. For each work area, the abatement plan will show the point of controlled access to the building for transporting ACM from the regulated area to the exterior of the building. The abatement plan will show auxiliary make-up air points, location of HEPA exhaust ventilation units, location of HEPA exhaust, and location of pressure differential monitors.

2. Project Log: The Asbestos Abatement Subcontractor shall maintain a Project Log throughout the project. The log will contain notes concerning accidents that may happen and deviation from standard work procedures and project information. At project completion, the original log will be submitted to the Owner.
3. Waste Disposal: The Asbestos Abatement Subcontractor shall identify the proposed waste disposal landfill for the project and provide a copy of the state approval certification Permits. The Asbestos Abatement Subcontractor shall provide a list of all permits, licenses, or manifests to be applied for, including notification of the MDEP.
4. The Asbestos Abatement Subcontractor shall prepare, for signature by the Owner, an MDEP *Project Monitoring Disclosure Form*.
5. The Asbestos Abatement Subcontractor shall prepare for signature by the Owner, an MDEP Asbestos Consultant Independent Business Relationship Disclosure Form.

D. Product and Equipment Data

1. Submit manufacturers' literature, catalog cuts, and product data sheets for products and equipment to be used in the asbestos abatement project. Attach Safety Data Sheets (SDS) to Product Data Sheets.
2. Submit SDS for products containing chemicals the Asbestos Abatement Subcontractor may be using on the project.
3. The Asbestos Abatement Subcontractor shall submit to the Contractor And Owner, two copies of the SDS attached to the Product Data sheet for new products brought on site for which an SDS has not been previously submitted. These submissions do not relieve the Asbestos Abatement Subcontractor of the OSHA requirements or Asbestos Abatement Subcontractor responsibilities with reference to the SDS nor does it relieve the Asbestos Abatement Subcontractor of responsibility for the subsequent proper use of the product.

E. Personnel, Training, Medical, and Respiratory Fit Test Documentation.

The Asbestos Abatement Subcontractor shall submit the following:

1. Experience Summary: Submit name and experience summary of project supervisors and foremen.
2. Personnel: Submit copies of Personnel Training Certificates, Medical Examinations, Medical Questionnaires, and Respirator Fit Tests:

- a. Summary Sheet: Submit a summary sheet of employees, listed in alphabetical order, to include name, social security number, classification, MDEP certificate number, and dates of training, medical examinations, medical questionnaires and respirator fit tests.
- F. Asbestos Abatement Subcontractor's License: Submit a copy of the Asbestos Abatement Subcontractor's MDEP license and the name of the Asbestos Abatement Subcontractor's project Contract Representative.
- G. Independent Asbestos Abatement Project Monitor (APM): Submit the name, associated firm and copy of MDEP license of the independent APM.

## 1.8 QUALITY ASSURANCE

- A. Job Site References: The Asbestos Abatement Subcontractor shall have on site, at all times, at least one copy of each of the following:
  1. Project Manual including Drawings and Specifications.
  2. Guidance for Controlling Asbestos Containing Materials in Building (EPA 560/5-85-024), June 1985.
  3. Asbestos Waste Management Guidance (EPA/530-SW-85-007) May 1985.
  4. A Guide to Respiratory Protection for the Asbestos Abatement Industry (EPA-560-OPTS-86-001), September 1986.
  5. OSHA Workplace Safety Standards, (29 CFR Parts 1910 and 1926).
  6. NESHPAs Asbestos Regulations (40 CFR Part 61 Subpart M).
  7. MDEP Asbestos Management Regulations (06-096 C.M.R. Chapter 425 (2011)).
- B. Safety Compliance: The Asbestos Abatement Subcontractor shall, in addition to detailed requirements of this specification:
  1. Comply with laws, ordinances, rules and regulations of federal, state, regional and local authorities regarding handling, storing, transporting and disposing of asbestos waste materials.
  2. Comply with the applicable requirements of the current issue of 29 CFR 1910.1001; 40 CFR 61, Subparts M and 29 CFR 1926.1101.
  3. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification and referenced documents vary, the most stringent requirement will apply.
- C. Respirator Program: The Asbestos Abatement Subcontractor shall establish a respirator program as required by 29 CFR 1910.1001 and 29 CFR 1926.1101. This program will comply with all paragraphs of 29 CFR 1910.134.

## 1.9 AUTHORITY TO STOP WORK

- A. The Owner has the authority to stop the abatement work at any time that conditions are not within the specifications and applicable regulations. The stoppage of work will continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the Owner. The standby time required for the Asbestos Abatement Subcontractor's personnel and the APM to resolve violations will be at the Asbestos Abatement Subcontractor's expense.
- B. Stop-Work Airborne Fiber Levels will be as follows:
  1. Inside Contained Work Area (Removal): 0.5 f/cc (with wet methods).
  2. Outside Contained Work Area: 0.01 f/cc as measured in clean room and/or the HEPA exhaust.

- C. Stop work orders will be issued for, but not be limited, to the following:
1. Excessive airborne fiber concentrations inside and/or outside the work area.
  2. Breaks in containment barriers.
  3. Loss of negative air pressure (0.02 inches of water – minimum negative pressure to be maintained).
  4. Failure of workers to wear appropriate respiratory protection.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. The Asbestos Abatement Subcontractor shall furnish materials as necessary to perform the work specified herein and to comply with current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011).

### 2.2 GENERAL EQUIPMENT TO BE PROVIDED BY ASBESTOS ABATEMENT SUBCONTRACTOR

- A. The Asbestos Abatement Subcontractor shall furnish equipment, including personnel protective equipment, as necessary to perform the work specified herein and to comply with current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011).
- B. Workers and authorized visitors exposed to airborne concentrations of asbestos fibers will be provided with disposable, protective, whole-body clothing, head coverings, gloves, and foot coverings, and use of tape. Protective clothing will be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing. Goggles will be provided in accordance with ANSI Z87.1 to personnel engaging in certain asbestos operations when a full-face respirator is not required.
- C. The Asbestos Abatement Subcontractor shall provide connections to existing water and electrical services, where available and as necessary to perform asbestos abatement related activities.

### 2.3 ENCAPSULANTS

- A. Encapsulants will not be used on this project. Should it be determined that encapsulation is necessary, a spray type encapsulant will be used as a lockdown of exposed surfaces and piping, only if previously approved by the Owner. Any encapsulant used must be able to withstand heat and have the capacity to be applied pre-heated.

### 2.4 ELECTRICAL

- A. Electrical installations or modifications (including de-energization for the purposes of demolition of electrical components) are the responsibility of the Asbestos Abatement Subcontractor. The Asbestos Abatement Subcontractor shall coordinate all electrical work with the Contractor and Owner.
- B. The Asbestos Abatement Subcontractor shall furnish and install a portable GFCI Power Supply Board and receptacles including the following:
1. All circuits individually GFCI-protected.
  2. Weatherproof enclosure NEMA 3 (rain-tight) with receptacle covers.
  3. Construction durable, 16-gauge steel construction.
  4. At least two 20-amp circuits (for APM).

5. Main circuit breaker.
  6. Components UL listed.
- C. The Decontamination Facility will be furnished with a power supply board with one 20-amp circuit for the APM.

### PART 3 - EXECUTION

#### 3.1 WORKER PROTECTION

- A. General:
1. Asbestos abatement work will be performed in accordance with current OSHA standards 29 CFR 1910.1001, 29 CFR 1926.1101, and current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011), and as specified herein.
  2. The Asbestos Abatement Subcontractor shall provide all authorized visitors with protective clothing, headgear, eye protection, footwear, and hard hats as in the procedures described herein and afford them the use of all facilities to hold them free of contamination of asbestos fibers.
  3. All authorized visitors shall be responsible for providing their own respirators with current copies of their medical clearance and fit test records prior to being allowed to enter the containment.
  4. The Asbestos Abatement Subcontractor shall provide the decontamination and work procedures to be followed by workers, as well as the results of the personal air monitoring. This information must be posted outside of the clean room.
- B. Respiratory Protection:
1. Respiratory protection will be worn by all persons potentially exposed to asbestos from the initiation of the asbestos abatement project until all areas have been given clearance. Clearance will be obtained by visual observation and air monitoring conducted by the APM.
  2. Personal samples will be collected within the worker's breathing zone. Personal sampling will be the responsibility of the Asbestos Abatement Subcontractor. Personal sampling results will be available on site no later than 24 hours after sampling.
  3. The filters provided for respirators used during this work will be NIOSH approved for asbestos fibers.
- C. Protective Clothing:
1. The Asbestos Abatement Subcontractor shall provide to all workers, foreman and superintendents, protective disposable clothing consisting of full body coveralls, head covers, gloves and 18-inch-high boot-type covers, and reusable footwear.
  2. The Asbestos Abatement Subcontractor shall provide eye protection and hard hats as required by job conditions and safety regulations.
  3. Reusable footwear, hard hats, and eye protection devices will be left in the "contaminated equipment room" until the end of the asbestos abatement work.
  4. Upon completion of asbestos abatement, the footwear will be disposed of as contaminated waste or cleaned thoroughly inside and out using soap and water before removing it from the work area or from the equipment and access area.
  5. All disposable protective clothing will be discarded and disposed of as asbestos waste when the wearer exits from the workspace to the outside through the decontamination facilities.
  6. The color of the disposable clothing worn outside the work area will be a different color than the disposable clothing worn inside the work area.

### 3.2 DECONTAMINATION FACILITY

- A. For each abatement area the Asbestos Abatement Subcontractor shall provide decontamination facilities located in an area established in the Asbestos Abatement Design.
- B. The decontamination facility will be constructed and maintained as specified herein and in compliance with current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011)

### 3.3 MAINTENANCE OF THE WORK AREA

- A. The Asbestos Abatement Subcontractor shall maintain the work area as specified herein and in compliance with current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011).

### 3.4 ASBESTOS CONTROL AREA CONSTRUCTION

- A. The Asbestos Abatement Subcontractor shall prepare and maintain the asbestos control area (e.g., the Containment Area) as necessary to perform the work specified herein and in compliance with current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011).
- B. The Asbestos Abatement Subcontractor shall prepare and maintain the asbestos control area (e.g., the Containment Area) as necessary to perform the work specified herein and in compliance with current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011).

### 3.5 ACM ABATEMENT METHODS

- A. ACM Removal:
  - 1. The Asbestos Abatement Subcontractor shall conduct ACM removal as specified herein and in compliance with current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011).
  - 2. The Asbestos Abatement Subcontractor shall be responsible for obtaining work practice variances from MDEP as necessary to complete the work. Copies of obtained variances from MDEP shall be provided to the Owner.

### 3.6 FINAL CLEANUP AND INSPECTION PROCEDURE

- A. Each work area will be evaluated for completion following the removal of visible residue from surfaces of equipment, floors and walls, and the removal of containers and equipment. Waste containers (except those containers necessary for waste from final cleanup) will be packed, cleaned, and removed from the work area prior to final cleanup and monitoring. This evaluation will be completed by the Asbestos Abatement Subcontractor's Supervisor, subsequent to the completion of successful asbestos abatement clearance inspection, sampling, and analysis for each work area.

Visual evaluation protocol will include:

- 1. Entering the work area where the abatement/clean-up/remediation activity was performed.
- 2. Inspection of the surfaces from which ACM and associated residue was removed.
- 3. Examination of the permanent features within the work area such as walls, floors, ceilings, conduits, pipes, tanks, etc., and attempting to determine whether residual materials or visible debris is present.

4. Examination of the decontamination and waste-load out facilities and observe whether residual material or visible debris is present. The waste will be evaluated to determine proper containerization and labeling.
- B. The Asbestos Abatement Subcontractor shall re-clean if necessary and the area re-inspected.
- C. The Asbestos Abatement Subcontractor is responsible for providing final asbestos abatement clearance inspection, sampling, and analysis for each work area. Clearance inspections, sampling, and analysis will be performed in accordance with MDEP regulations by an independent, MDEP licensed APM.
- D. After an area passes the clearance inspection, sampling, and analysis, the work area may be deregulated.

### 3.7 WASTE DISPOSAL

- A. All waste material shall be properly handled, wetted, containerized, and disposed of in accordance with current MDEP Asbestos Management Regulations, 06-096 C.M.R. Chapter 425 (2011). The Asbestos Abatement Subcontractor shall count or measure the volume of each filled container leaving the work area and will maintain a written record of such.
- B. Warning labels, having waterproof print and permanent adhesive, will be affixed to the sides of all waste bags or transfer containers. Warning labels will be conspicuous and legible and in accordance with 29 CFR 1926.1101.
- C. Removal of waste (both asbestos and non-asbestos wastes) from the work area will be completed prior to the end of each work shift. Project related waste will not be allowed to accumulate in the work area.
- D. Once a dumpster or waste container is full, the Asbestos Abatement Subcontractor shall arrange for transportation to the landfill, or to a pre-designated and Owner approved off-site temporary storage location. Waste will not remain on-site longer than five days following completion of asbestos abatement activities.
- E. Waste Transportation and Disposal Regulations:
  1. It is the responsibility of the Asbestos Abatement Subcontractor to determine and ensure compliance with the current waste handling regulations applicable to the work site and the current regulations for waste transportation to and disposal at each ultimate landfill. The Asbestos Abatement Subcontractor shall comply fully with these regulations and with all U.S. Department of Transportation (DOT) and U.S. Environmental Protection Agency (USEPA) requirements.
  2. If required, the Asbestos Abatement Subcontractor (or Waste Transportation Subcontractor), at no additional cost, will maintain a valid hazardous waste transporter's permit and identification number, and will document and fully comply with any hazardous waste manifesting requirements.
  3. The Asbestos Abatement Subcontractor shall provide legal transportation of this waste to the ultimate disposal landfill and will have the waste hauler and landfill Owner complete all other required manifests, dump slips, or other forms. The completed original of the Waste Shipment Record and copies of the other forms will be sent to the Owner within five calendar days.

4. Waste may be transported to and temporarily stored at a pre-approved off-site storage area owned by the Asbestos Abatement Subcontractor, when approved by Owner, but it must ultimately be disposed of at the specified landfill before final payments are made.
- F. Waste Disposal Fees: All contaminated waste handling costs, such as waste packaging, on-site/off-site storing and handling, transport and disposal, permitting, recordkeeping, and non-contaminated waste handling, must be included in the Asbestos Abatement Subcontractor's proposal or bid as applicable to removal of asbestos materials and/or performance of the related abatement activities.

END OF SECTION



SECTION 02 85 50  
LEAD-BASED PAINT REMOVAL AND DISPOSAL

**PART 1 - GENERAL**

**1.1 SCOPE OF WORK**

- A. Summary: Removal and/or surface preparation of all identified Lead-Based Paint (LBP) and/or LBP coated building materials impacted by work associated with the Center Building Improvements, East Campus in Augusta, Maine, as described in the Project Manual and Drawings. LBP has been identified on the exterior surfaces of the Dormers as noted on Drawings D201 South and East Elevations Demolition and D202 North and West Elevations Demolition.
- B. Identified LBP present on the surfaces of the affected substrates or components will be abated and/or surfaces prepared for painting, in accordance with the requirements presented within. All work shall be performed in accordance with Occupational Safety and Health Administration (OSHA) requirements.

**1.2 SCHEDULE**

- A. Schedule: Work shall be carried out in accordance with the schedule agreed upon by the Owner at the Pre-Construction meeting. The sequencing work for this project will be between the General Contractor and Lead Abatement Contractor relative to this portion of the job.

**1.3 RELATED REQUIREMENTS**

- A. Drawings, Project Manual, and general provisions of the Contract, including, without limitation, General Conditions of the Contract, additional General Conditions of the Contract, and Division 00 and Division 01 specification sections, apply to this Section.
- B. Section 01 85 00 – Dust Control.
- C. Section 02 41 19 - Selective Demolition.
- D. Section 02 82 10 - Asbestos Abatement.

**1.4 REFERENCES**

- A. In addition to the publications referenced in the Construction Contract Clauses, the following publications are referenced and are applicable to this project:
  1. Occupational Safety and Health Administration (OSHA) Lead Standard 1910.1025 and 29 CFR 1926.62 (1993).
  2. Occupational Safety and Health Administration (OSHA) regulations at 29 CFR 1910.1001 and 29 CFR 1926.62 (1993).
  3. OSHA Interim Final Rule for Lead in Construction - 29 CFR 1926.62.
  4. Maine Department of Environmental Protection (MEDEP) Chapter 424 – Lead Management Regulations (December 11, 2004).

All incorporations by reference of federal regulations or standards and the standards of nationally recognized organizations refer to the regulation or standard on the date specified and do not include any additions or deletions subsequent to the date specified.

## 1.5 SUBMITTALS

A. Submittals will be received by the Owner in accordance with this section before material or equipment is purchased or work is performed. The Lead Mitigation Subcontractor shall submit to the Owner, for review, two copies of the information required herein. The adequacy and accuracy of submittals and their compliance with contract documents are the responsibility of the Lead Mitigation Subcontractor. All reviewing actions taken by the Owner will in no way relieve the Lead Mitigation Subcontractor of quality control requirements.4.

B. General

The Subcontractor shall submit prior to award:

1. A list of proposed subcontractors with their addresses, specialties, licenses, and qualifications.
2. Certificate(s) of Insurance indicating coverage for LBP mitigation work.

C. Lead Mitigation Action Plan. The Subcontractor shall prepare and submit a Lead Mitigation Action Plan (Plan). The Plan shall be submitted to the Owner's Representative for review and approval at least 10 calendar days prior to the start of the work. No work shall be allowed until the Plan has been approved.

The Plan shall include drawings and narratives, sufficient in detail to demonstrate and indicate the following as applicable:

1. The specific areas of work in the building.
2. Areas of the building which will be occupied during the work.
3. Proposed work practices and procedures to be implemented.
4. Locations of critical barriers.
5. Delineation of each work area.
6. Location of Decontamination Enclosure Systems.
7. Location of waste accumulation.
8. Route of workers from outside the building, into the work area, from decontamination to break areas and to out of doors.
9. Route of containerized waste containers from the work area to out door.
10. Location of enclosures.
11. Location of remote decontamination enclosure system (if applicable).
12. Location of negative air machine exhaust points and path of exhaust ducts.
13. A narrative sequencing plan with a detailed schedule clearly indicating the various aspects of the work.
14. The contractors plan for tracking and accumulating lead waste and for managing the accumulation and for disposal.

D. Additional Submittals. At least 10 calendar days prior to the commencement of any work, the Subcontractor shall submit the following information to the Owner's Representative for review and approval prior to starting the work:

1. Documentation that arrangements have been made for the transport and disposal of waste generated at this project and the name and location of the disposal sites.

- E. The Subcontractor shall provide the following information if applicable, during the mitigation work:
  - 1. Results of air monitoring from the previous 24-hour period.
  - 2. Differential air pressure readings for each containment area.
  - 3. Signed manifests or waste shipment records.
  - 4. Job progress reports detailing the mitigation activities, including a review of progress with respect to previously established schedules, problems, and actions taken injury reports, and equipment breakdowns, if applicable.
  - 5. Copies of worksite entry logs showing the name, date and time for worker and visitor access to the work area.
  - 6. Logs documenting filter changes on respirators, HEPA vacuums, negative pressure ventilation units, and other engineering controls.
- F. At the completion of the project. The Subcontractor shall submit the following:
  - 1. The Subcontractor's report detailing the work that was completed and the procedures that were used.
  - 2. Subcontractor's air sampler's report summarizing the results of all exposure monitoring that occurred.
  - 3. A complete set of the Subcontractor's daily logs and waste manifests or waste shipment records.

## 1.6 ALTERNATE PROCEDURES AND VARIANCES

- A. A Variance to the Work Practices prescribed here in may be requested by submitting a written proposal to the Owner's Representative a minimum of 10 calendar days before the commencement of work. The written proposal shall include a detailed description of the procedure(s) to be used in lieu of the requirements described herein. The Owner's Representative will notify the applicant in writing of its decision to either grant or deny the variance within 10 calendar days of receipt of the request.

## PART 2 - PRODUCTS (Not Applicable)

## PART 3 - EXECUTION

### 3.1 REMOVAL METHODS

- A. The following methods SHALL NOT be used for mitigation of lead-based paint:

- 1. Open flame burning;
- 2. Dry-sanding.
- 3. Open abrasive blasting.
- 4. Methylene chloride.
- 5. Dry-scraping.

- B. Mitigation of lead-bearing substances shall employ only the following methods:

Replacement: Any component part of a building may be abated by replacement with a part free of lead-bearing substances. Components that are removed shall be temporarily wrapped for transport to designated waste dumpster(s). Care shall be taken when transporting leaded components from the work area to the dumpster

Removal: Lead-based paint shall be removed from the substrate using the following techniques:

1. Offsite chemical stripping;
2. Heat gun (The temperature of the heat gun shall not exceed 1,100~ F.);
3. Nonflammable chemical strippers which do not contain methylene chloride.
4. Sander equipped with HEPA vacuum;
5. Enclosed abrasive blasting;
6. Vacuum-blasting in exterior work areas only; and
7. Mechanical paint removal systems equipped with a HEPA vacuum.

- C. Surface Preparation: Components to be repainted (encapsulated) that contain gross areas of loose, peeling paint shall be wet scraped or HEPA vacuumed prior to application of encapsulant. Surface preparation work shall be completed in accordance with OSHA requirements and will require the use of regulated areas, critical barriers, drop cloths, and remote Worker Decontamination Enclosure System. The paint chips shall be contained either in the HEPA vacuum or in a separate six (6) mil polyethylene bag.

Upon completion of removal/surface preparation, clean work areas, including critical barriers, which shall remain intact. When applicable, the Owner's representative shall perform visual assessment of the treated surfaces to determine completeness of work. If no loose/flaking paint and/or dust/debris are present then encapsulation may proceed.

- D. The use of non-flammable chemical strippers and/or mechanical paint removal systems equipped with HEPA vacuums/shrouds shall be completed in accordance with OSHA requirements and will require the use of regulated areas, critical barriers, drop cloths, and remote Worker Decontamination Enclosure System. All other mitigation techniques shall require the construction of negative pressure containments and contiguous Worker Decontamination Enclosure System.

### 3.2 PROTECTION OF BUILDING OCCUPANTS

- A. Occupants, if present, shall use alternative entrances and exits which do not require passage through the work site or work area.

### 3.3 WORK AREA PREPARATION (for all methods other than surface preparation (as described in Paragraph 3.01 C of this section). The use of chemical strippers and/or HEPA equipped mechanical paint removal systems).

- A. The Subcontractor shall perform the following steps, in the order that they appear, to prepare the work area:
1. Establish the work area(s) with the placement of Separation Barriers. These barriers, such as temporary walls, ceilings, and floors that are necessary for enclosing the work area, shall be erected and inspected and approved by the Owner's representative prior to performing any other work.
  2. Demarcate the Work Area and post appropriate signs.
  3. Post Caution Signs meeting the requirements of 29 CFR 1926.62. Caution signs shall be posted to permit a person to read the sign and then take the necessary protective measures in order to avoid personal exposure before entering a work area.

4. Shut Down and Lock Out electric power to the work areas. "Shut Down and Lock Out Power" means to switch off every electrical circuit breaker serving power or lighting circuits which run to, or through, the work area. Label circuit breakers with tape over the breakers with the notation "DANGER, Circuit being worked on" Lock the electrical panel or door with separate locks, one for the contractor's supervisor and one for the Property Manager/Project Manager.
5. Provide temporary power and lighting to the work area. Power to and for the work area shall be brought in from outside the area through ground-fault circuit interrupters at the source.
6. Shut down and isolate heating, cooling, and ventilation air systems to prevent dispersal of dust and fibers from the work area into other areas of the building.
7. Seal off all openings to windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetrations of the work areas, with six mil plastic or equivalent sheeting sealed with tape. Also seal seams in system components that pass through the work areas.
8. Clean moveable objects within the proposed work area using HEPA filtered equipment and/or wet cleaning methods using water with a phosphate-containing detergent or trisodium phosphate (TSP), or a phosphate-free lead-dissolving detergent and remove the objects from work areas to a temporary location.
9. Utilize the "top-down" cleaning method to clean the designated work area prior to lead mitigation activities. Prior to cleaning, remove the contents of any cabinet, shelves, and removable miscellaneous materials within the "Designated Work Area."

Open the HVAC return grills, vacuum the inside of the duct and the face of the grill.  
HEPA vacuum surfaces, from top to bottom.  
HEPA vacuum the floor.
10. Clean fixed objects and items which will remain in the work area using HEPA filtered vacuums and/or wet wiping methods. After cleaning using water and a phosphate-containing detergent or trisodium phosphate (TSP), or a phosphate-free lead-dissolving detergent, the contractor shall cover the objects with one layer of six mil plastic or equivalent.
11. Clean the proposed work area using HEPA filtered vacuums and/or wet wiping methods. Dry sweeping and the use of non-HEPA filtered vacuums is prohibited. Asbestos Containing Material shall not be disturbed during cleaning or work area preparation.
12. Construct the Worker's Decontamination Enclosure System and ensure that there is hot and cold running water in each shower enclosure and that the water temperature is controllable by the shower user.
13. Cover the floors and walls of the proposed work areas with plastic sheeting sealed with duct tape. Use a minimum of two layers of six mil plastic or equivalent on the floors (no plastic on the floors is required when the project includes removal of lead-based paint from the floor) and one layer of four mil plastic sheeting or equivalent on walls. Cover floors first so that plastic extends at least 12 inches up the walls, then cover walls with plastic sheeting to the floor level, thus overlapping the floor plastic by a minimum of 12 inches. Seams shall be staggered.
14. Remove and clean ceiling mounted objects such as light fixtures, electrical tracks, ventilation equipment, and other items that were not previously sealed off, that interfere with the work.
15. Maintain emergency and fire exits from the work area. Spray paint the wall plastic with red paint using arrows to indicate the direction to the exits from the work area. Each wall of the containment area must have a directional arrow painted on it. After the wall plastic

is removed, paper signs with red arrows shall be affixed to each interior wall showing the direction to the work area exits.

16. Collect lead waste daily and accumulate the waste in appropriate containers.
- B. If at any time water, visible emissions or breaches in the containment are detected, the work inside of the work area shall cease until the source of the emissions or the breeches are repaired.

### 3.4 WORKER DECONTAMINATION ENCLOSURE SYSTEM

- A. Contractor shall erect and maintain at least one Worker Decontamination Enclosure System shall for each work area that does not utilize a remote Worker Decontamination Enclosure System.
  1. The contractor shall construct and maintain in good working order a Worker Decontamination Enclosure System (WDES) in accordance with current, applicable federal and state regulatory requirements.

### 3.5 REMOTE WORKER DECONTAMINATION ENCLOSURE SYSTEM

- A. Remote Worker Decontamination Enclosure System may be used for exterior projects.
  1. The construction of the Remote Worker Decontamination Enclosure System shall be identical to the Worker's Worker Decontamination Enclosure System.
- B. The Subcontractor shall maintain the Remote Decontamination Enclosure System in a well lit, clean, and hygienically acceptable state at all times.

### 3.6 CLEAN-UP PROCEDURES

- A. The Subcontractor shall perform the cleanup in accordance with the following procedures as applicable to the work practices employed:
  1. The negative pressure ventilation units shall remain in continuous operation.
  2. Decontamination Enclosure Systems shall remain intact and fully functional.
  3. Contractor Supervisor will ensure all debris and extraneous material has been removed from the designated work area.
  4. Wet clean and HEPA vacuum poly surfaces from top down.
  5. HEPA vacuum all surfaces inside the work area.
  6. Wet wipe all surfaces inside the work area.

### 3.7 CLEARANCE CRITERIA

- A. Work areas will be evaluated (visually and through tactile methods) for the presence of residual paint and dust on the surfaces within the defined work area. The evaluation will be performed by the project manager and/or the Owner's representative.
- B. If the Clearance Requirements are not met, the work area shall be re-cleaned by the Contractor and the evaluation repeated.

### 3.08 WHOLE COMPONENT REMOVAL and DEMOLITION

- A. Prior to removal of whole components or demolition of LBP coated architectural members, the Subcontractor shall isolate the area from non-work areas and initiate dust control procedures (wet methods and HEPA filtration units). Whole component removal and/or demolition shall be

performed in a fashion to reduce the impact to LBP and minimize dust generation. Materials shall be removed and placed within covered waste containers, or temporary containers used to transport the materials and debris to a construction and demolition debris dumpster. Upon completion of the demolition work the area shall be HEPA vacuumed and wet wiped to remove LBP chips and dust that may have been disturbed during the demolition/removal work. The area shall be visually evaluated for the presence of dust and/or paint chips prior to re-occupation.

Note: this work must be performed in accordance with applicable OSHA standards.

### 3.09 LEAD WASTE

#### A. Waste collection and disposal procedures.

1. Deposit all lead waste, including sealing tape and plastic sheeting, in double plastic bags at least 4 mils thick or single bags 6 mils thick or equivalent, and seal the bags;
2. Deposit all lead waste from clean-up, including mop heads, sponges, filters, and disposable clothing, in double plastic bags at least 4 mils thick or single bags 6 mils thick, and seal the bags.
3. Remove lead waste from the site not later than 48 hours after completing the final cleanup.
4. Place lead-based paint chips, debris, and lead dust in double 4-mil or single 6-mil polyethylene bags or equivalent that is air-tight and puncture-resistant. Pieces of wood or other large items that do not fit into plastic bags shall be wrapped with double 4-mil or single 6-mil plastic sheeting and sealed.
5. Place all disposable cleaning materials, such as sponges, mop heads, filters, disposable clothing, and brooms in double 4-mil or single 6-mil plastic bags, or equivalent, and seal.
6. Remove plastic sheeting and tape from covered surfaces. Prior to removing the plastic sheeting, the sheeting shall be lightly misted in order to keep dust down and folded inward to form tight small bundles to bag for disposal. All plastic sheeting shall be placed in double 4-mil or single 6-mil thick plastic bags, or equivalent, and shall be sealed.
7. Bag and seal vacuum cleaner bags and filters in double 4-mil or single 6-mil thick plastic bags or equivalent.
8. Place all contaminated clothing or clothing covers used during abatement and cleanup in plastic bags for disposal prior to leaving equipment room, work site or work area.
9. Place solvent residues and residues from strippers in drums made from materials that cannot be dissolved or corroded by chemicals contained in those solvents and strippers. Solvents shall be tested to determine if they are hazardous. Solvents and caustic and acid waste shall not be stored in the same containers.
10. Contain and properly dispose of liquid waste, including lead dust contaminated wash water.
11. HEPA vacuum the exterior of all waste containers prior to removing the waste containers from the work site or area and wet wipe the containers to ensure that there is no residual contamination. Containers that have been cleaned shall be moved out of the work site or area into a designated storage area.
12. Carefully place the containers into the truck or dumpster used for disposal.
13. Ensure that all waste is transported in covered vehicles to a landfill approved by its State to accept lead waste.

#### B. Hazardous Waste.

1. The waste must be tested to determine if it is a hazardous waste. The entire waste stream (e.g., paint chips, blasting grit with paint chips, and stripping agent with paint chips) must be analyzed. LBP waste that meets the definition of special waste is hazardous if it has a concentration of lead equal to or greater than 5.0 mg/l as determined by the Toxicity

Characteristic Leaching Procedure (TCLP). In addition, other parameters must be below the regulatory limits for toxicity and other characteristics and listings. The handling and disposal of hazardous waste must be conducted in accordance with applicable State laws and the Resource Conservation and Recovery Act (RCRA) regulations applicable to the activity being conducted.

2. If the generator/contractor determines that the LBP waste is hazardous, then the waste must be treated prior to disposal at a facility permitted by the EPA to receive the waste. The treatment technology that is used is stabilization. The treatment of hazardous LBP waste must render the waste non-hazardous prior to disposal at a properly permitted facility.
3. Hazardous LBP waste may not be stored on-site for greater than 90 days (or 180 days for a small-quantity generator; 270 days for a small-quantity generator that transports his/her waste greater than 200 miles) without a RCRA permit.
4. If the special waste is determined to not be a hazardous waste, the waste may be certified by the generator to be just solid waste provided it does not exhibit certain characteristics. The generator of the special waste may certify the waste, if the waste passes the paint filter test (is not a liquid), does not contain PCBs, is not a hazardous waste, is not regulated asbestos-containing material, does not result from shredding recyclable metals, and is not former hazardous waste rendered non-hazardous.

Documentation of the certification must be maintained by the generator and supplied to the Owner. If the special waste is certified, it may be handled as general refuse and no manifest or additional recordkeeping requirements are applicable.

C. Demolition Debris and Whole Component:

Demolition debris and whole component architectural materials shall be placed in a solid waste dumpster. The dumpster shall be covered and will contain only construction related waste and demolition debris. These materials may be disposed of at a Maine-licensed Construction and Demolition (C&D) Debris landfill. Prior to disposal of these materials, the Contractor shall submit the name and location of the landfill for approval as well as a letter from the disposal facility stating that it is licensed to accept LBP waste and will accept the waste from this specific project.

3.10 CONTRACTOR CERTIFICATION

- A. At the completion of the work, the Contractor shall certify that the work was performed in compliance with applicable OSHA, EPA, and State rules and regulations. The lead-based paint materials were mitigated and wastes have been removed from the site with the work areas cleaned, waste legally transported, treated, disposed of at a permitted facility, and the manifests delivered to the Owner.

END OF SECTION

SECTION 04 20 00

UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:

1. Face brick.
2. Face brick restoration.
3. Mortar and grout.
4. Reinforcing steel.
5. Masonry joint reinforcement.
6. Ties and anchors.
7. Embedded flashing.
8. Miscellaneous masonry accessories.
9. Bituminous dampproofing and waterproofing.

- B. See Section 01 23 00 for alternates which affect the work of this section.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.

1. Mortar Analysis: Submit copy of mortar analysis.

- B. Samples for Selection: For the following:

1. Face brick to match existing, in the form of straps of five or more bricks.
2. Pigmented mortar. Make Samples using same sand and mortar ingredients to be used on Project. Label Samples to indicate types and amounts of pigments used.

- C. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.

1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.

- D. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
1. Masonry units.
    - a. Include material test reports substantiating compliance with requirements.
    - b. For bricks, include size-variation data verifying that actual range of sizes falls within specified tolerances.
    - c. For exposed brick, include material test report for efflorescence according to ASTM C 67.
    - d. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
  2. Cementitious materials. Include brand, type, and name of manufacturer.
  3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
  4. Grout mixes. Include description of type and proportions of ingredients.
  5. Reinforcing bars.
  6. Joint reinforcement.
  7. Anchors, ties, and metal accessories.
- E. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
- F. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.
- G. Maine State Housing Authority Green Standards Submittals:
1. Product Data indicating location of material manufacturer for regionally manufactured materials.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years experience.
- B. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
- C. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.

- D. Mortar Analysis: Engage the services of company to provide mortar analysis of existing mortar samples from around the building, including areas of repair and restoration. Provide a minimum of 5 samples.
- E. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
- F. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by ACI 216.1 / TMS 216, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
- G. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Build mockups for typical exterior wall brick infill in sizes approximately 48 inches long by 48 inches high by full thickness, including face and backup wythes and accessories.
  - 2. Where masonry is to match existing, erect mockups in one of the proposed openings.
  - 3. Clean exposed faces of mockups with masonry cleaner as indicated.
  - 4. Protect accepted mockups from the elements with weather-resistant membrane.
  - 5. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
    - a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
    - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.
  - 6. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- H. Brick Color and Dimensions Verification:
  - 1. Prior to submission of facebrick provide masonry cleaning of a 4 foot wide x 4 foot high area of the existing brick. Provide this area at both Building 1 and Building 2.
  - 2. This area shall be used for verification of proposed brick dimensions, color and texture, as well as mortar joint thickness, color and texture.
  - 3. Submittal samples shall be field verified by the Architect.
- I. Preinstallation Conferences: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
  - 1. At least 7 days prior to starting veneer masonry, conduct a meeting to review detailed requirements for mortar mixes and to determine procedures for satisfactory construction operations. Review requirements of submittals, status of coordinating work, and availability of materials. Review requirements tenting and heating. Establish preliminary work progress schedule and procedures for materials inspection, testing, and certifications.

Require representatives of each entity directly concerned with masonry construction to attend, including the following:

- a. Contractor's superintendent.
- b. Masonry foreman.
- c. Architect.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

## 1.6 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
  - 2. Where 1 wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
  - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  - 2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates or setting beds. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with the following requirements:
1. Cold-Weather Construction: When the anticipated daytime low temperature is within the limits indicated, use the following procedures:
    - a. 40 to 32 deg F: Heat mixing water or sand to produce mortar temperatures between 40 and 120 deg F.
    - b. 32 to 25 deg F: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F. Heat grout materials to produce grout temperatures between 40 and 120 deg F. Heat masonry units to 40 deg F. Maintain mortar and grout above freezing until used in masonry. Use heat on both sides of walls under construction.
    - c. 25 to 20 deg F: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F. Heat grout materials to produce grout temperatures between 40 and 120 deg F. Maintain mortar and grout above freezing until used in masonry. Heat masonry units to 40 deg F.
    - d. 20 deg F and Below: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F. Heat grout materials to produce grout temperatures between 40 and 120 deg F. Maintain mortar and grout above freezing until used in masonry. Heat masonry units to 40 deg F.
  2. Cold-Weather Protection: When the anticipated daytime low temperature is within the limits indicated, coordinate with the General Contractor to provide the following protection. This is in addition to construction procedures specified above:
    - a. 40 to 32 deg F: Cover masonry with insulating blankets for 48 hours after construction.
    - b. 32 deg F and Below: Provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 72 hours after construction.
  3. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried out, but not less than 7 days after completion of cleaning.
- E. Hot-Weather Requirements: Coordinate with the General Contractor to protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.
1. When ambient temperature exceeds 100 deg F, or 90 deg F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
  - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

### 2.2 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.
- B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
- C. Provide product that is manufactured within 500 miles of project site.

### 2.3 CONCRETE MASONRY UNITS (CMUs)

- A. Shapes: Provide shapes indicated and as follows:
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  - 2. Provide square-edged units for outside corners, unless otherwise indicated.
- B. Concrete Masonry Units: ASTM C 90.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
  - 2. Weight Classification: Normal weight.
  - 3. Curing: Allow masonry units to cure 28 days to permit drying shrinkage before laying.
  - 4. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
  - 5. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.

### 2.4 MASONRY LINTELS

- A. Masonry Lintels: Built-in-place masonry lintels made from bond beam concrete masonry units with reinforcing bars placed as indicated and filled with coarse grout. Temporarily support built-in-place lintels until cured.

## 2.5 BRICK

- A. General: Provide shapes indicated and as follows:
  1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
  2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
  3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
  4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Face Brick for patching and reconstruction of existing brickwork: Match existing brick by salvaging existing brick or manufacturing new matching brick.
  1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 8000 psi.
  2. Initial Rate of Absorption: Less than 18 g/30 sq. in. per minute when tested per ASTM C 67.
  3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
  4. Where shown to "match existing," provide face brick matching color range, texture, and size of existing adjacent brickwork.
  5. Cored brick shall not be allowed.

## 2.6 MORTAR MATERIALS FOR EXTERIOR BRICK

- A. General: Provide materials recommended in the mortar analysis.

## 2.7 MORTAR AND GROUT MATERIALS FOR CMU

- A. Portland Cement: ASTM C 150, Type I or II.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Aggregate for Mortar: ASTM C 144.
- D. Aggregate for Grout: ASTM C 404.
- E. Water: Potable.

## 2.8 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
- B. Masonry Joint Reinforcement, General: ASTM A 951.

1. Interior Walls: Mill- galvanized, carbon steel.
  2. Exterior Walls: Hot-dip galvanized, carbon steel.
  3. Wire Size for Side Rods: W1.7 or 0.148-inch diameter for interior walls and W2.8 or 0.188-inch diameter for exterior walls.
  4. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
  5. Wire Size for Veneer Ties: W1.7 or 0.148-inch diameter.
  6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
  7. Provide in lengths of not less than 10 feet.
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.
1. Available Products:
    - a. Dayton Superior Corporation, Dur-O-Wal Division; DA 320 Ladur.
    - b. Hohmann & Barnard, Inc.; #200 Ladder-Mesh.
    - c. Wire-Bond; Series 200, Single Wythe.

## 2.9 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with subparagraphs below, unless otherwise indicated.
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
  2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M.
  3. Stainless Steel: ASTM A 580 – AISI Type 304
- B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.
- C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.
1. Where wythes are of different materials, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches.
  2. Wire: Fabricate from 3/16-inch- diameter, hot-dip galvanized steel wire.
- D. Partition Top anchors: 0.097-inch- thick metal plate with 3/8-inch- diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.
1. Available Products:
    - a. Hohmann and Barnard #PTA 420.
    - b. Heckman: No. 419, Pin type.
    - c. Wire Bond: Partition Top Anchor.

- E. Rigid Strap Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins, unless otherwise indicated.
  - 1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M.
- F. Adjustable Masonry-Veneer Anchors
  - 1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
    - a. Structural Performance Characteristics: Capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch.
  - 2. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
    - a. Anchor Section: Zinc-alloy barrel section with adjustable flanged head with eye and corrosion-resistant, self-drilling screw. Eye designed to receive wire tie and to serve as head for drilling fastener into framing. Barrel length to suit sheathing thickness, allowing screw to seat directly against framing with flanged head covering hole in sheathing.
    - b. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.188-inch-diameter, stainless steel wire.
    - c. Product:
      - 1) Heckmann Building Products Inc.; No. 77 Wing-Nut Pos-I-Tie.
      - 2) Hohman & Barnard, Inc.; "2-Seal Tie".

## 2.10 MISCELLANEOUS ANCHORS

- A. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.
- B. Postinstalled Anchors: Provide chemical or torque-controlled expansion anchors, with capability to sustain, without failure, a load equal to six times the load imposed when installed in solid or grouted unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
  - 1. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (5 microns) for Class SC 1 service condition (mild).

## 2.11 EMBEDDED FLASHING MATERIALS

- A. Flexible Flashing: For flashing not exposed to the exterior, use the following, unless otherwise indicated:

1. Copper-Laminated Flashing: 5-oz./sq. ft. copper sheet bonded with asphalt between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
  - a. Available Products:
    - 1) Advanced Building Products Inc.; Copper Fabric Flashing.
    - 2) AFCO Products Inc.; Copper Fabric.
    - 3) Hohmann & Barnard, Inc.; H & B C-Fab Flashing.
    - 4) Phoenix Building Products; Type FCC-Fabric Covered Copper.
    - 5) Polytite Manufacturing Corp.; Copper Fabric Flashing.
    - 6) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
    - 7) York Manufacturing, Inc.; York Copper Fabric Flashing.
  - b. Asphalt-Free copper-laminated flashing products will also be acceptable. Similar to Multi-Flash 500 Series by York.
- B. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

## 2.12 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.
  1. Holmann & Barnard: #NS – Closed Cell Neoprene.
  2. Wire Bond: 3000 Horizontal.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall.
- C. Weep/Vent Products: Use the following, unless otherwise indicated:
  1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.

- a. Available Products:

- 1) Advanced Building Products Inc.; Mortar Maze weep vent.
- 2) Dayton Superior Corporation, Dur-O-Wal Division; Cell Vents.
- 3) Heckmann Building Products Inc.; No. 85 Cell Vent.
- 4) Hohmann & Barnard, Inc.; Quadro-Vent.
- 5) Wire-Bond; Cell Vent.

D. Cavity Drainage Material: 2-inch- thick, free-draining mesh; made from polyethylene strands and shaped to avoid being clogged by mortar droppings.

1. Available Products:

- a. Mortar Net by Mortar Net USA, LTD.; Model MN 10-2.
- b. Mortar Break by Advanced Building Products; Mortar Break II.

E. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated.

1. Available Products:

- a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
- b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
- c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
- d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

F. Grout Screen: Monofilament screen fabricated from high-strength, non-corrosive, polypropylene polymers.

1. Available Products: Subject to compliance with requirements, grout screen materials that may be incorporated into the Work include, but are not limited to, the following:

- a. AA3260; AA Wire Products.
- b. Dur-O-Stop; Dur-O-Wal, Inc.
- c. MGS; Hohmann and Barnard.

## 2.13 CAVITY-WALL INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C 578, Type IV, closed-cell product extruded with an integral skin. Provide 4 by 8 foot sheets with shiplapped edges, thickness as indicated on the drawings.

1. Available Products:

- a. Dow Chemical Company; Cavitymate SC.

B. Adhesive: Type recommended by insulation board manufacturer for application indicated.

## 2.14 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of 1/2-cup dry measure tetrasodium polyphosphate (Spic and Span) and 1/2-cup dry measure laundry detergent dissolved in 1 gal. of water.

- B. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Available Manufacturers:

- a. 202V Vana-Stop; Diedrich Technologies, Inc.
- b. Sure Klean Vana Trol; ProSoCo, Inc.

**2.15 MORTAR MIXES FOR EXTERIOR BRICK**

- A. Provide mortar mix as recommended in the mortar analysis.

**2.16 MORTAR AND GROUT MIXES FOR CMU**

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
  2. Limit cementitious materials in mortar to portland cement and lime.
- B. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification. Provide type S mortar for all applications stated unless another type is indicated.
- C. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
  2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
1. Verify that foundations are within tolerances specified.
  2. Verify that reinforcing dowels are properly placed.
  3. Verify that built-in items are in proper location and ready for roughing into masonry work.
  4. Examine wall framing and sheathing to verify that stud locations are suitable for spacing of veneer anchors and that installation will result in a weatherproof covering.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- D. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
  1. Mix units from several pallets or cubes as they are placed.
- E. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.
- F. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
  1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
  2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
  3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
  4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
  5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
  6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.
  7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

### 3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4-inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Where cutting and patching of existing masonry walls, tooth in new work where finished product will be exposed to view.
- F. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- G. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- H. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- I. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- J. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
  - 1. At non-fire rated partitions, install compressible filler in joint between top of partition and underside of structure above.
  - 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c., unless otherwise indicated.
  - 3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Fire-Resistive Joint Systems."

### 3.4 MORTAR BEDDING AND JOINTING

- A. Lay hollow concrete masonry units as follows:
  - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
  - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
  - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
  - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

- B. Lay solid masonry units or brick with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.
- E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment is necessary, remove mortar and replace.

### 3.5 CAVITY WALLS

- A. Keep cavities clean of mortar droppings and other materials during construction. Strike joints facing cavities flush.
  - 1. Install the specified cavity drainage material in thickness to fill the cavity above flashings as work progresses.
- B. Coat cavity face of backup wythe to comply with Division 07 Section "Bituminous Damproofing."
- C. Installing Cavity-Wall Insulation: At sheathing, place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose.
  - 1. Fill cracks and open gaps in insulation with foam insulation specified in Division 07 section "Thermal Insulation".

### 3.6 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
  - 1. Space reinforcement not more than 16 inches o.c., unless noted otherwise.
  - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
  - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
    - a. Reinforcement above is in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
  - 1. At "T" intersection of walls, Strap Anchors may be used in lieu of masonry joint reinforcement. Install 16 inches on center.

- D. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### 3.7 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:
1. Fasten screw-attached anchors through insulation, air/vapor barrier, and sheathing to wall framing with metal fasteners of type indicated.
  2. Embed tie sections in masonry joints. Provide not less than 2 inches of air space between back of masonry veneer and face of cavity insulation.
  3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
  4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally, with not less than 1 anchor for each 1.77 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.

### 3.8 CONTROL AND EXPANSION JOINTS

- A. General: Install control joints in unit masonry where indicated. Provide control joints in masonry partitions at changes in wall heights, at control joints in the wall bottom support material, within 8' of wall corners or intersections for walls greater than 16', and at not less than 24' on center for straight walls. Build-in related items as masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
- B. Install control joints in veneer masonry as indicated on the drawings or, if not indicated, at a maximum spacing of 24 feet on center. Locate joints at door and window jambs inasmuch as possible.
1. Provide joints at both sides of windows and doors 6 foot wide or wider.
- C. Form control joints in concrete masonry as follows:
1. Install preformed control-joint gaskets designed to fit standard sash block.
  2. Joint reinforcement shall be discontinuous at control joints.
  3. Structural bond beam reinforcement shall be continuous through control joints.
- D. Form expansion joints in brick made from clay or shale as follows:
1. Build in compressible joint fillers and set back from face of veneer to form open joint 3/4 inch deep and not less than 3/8 inch for installation of sealant and backer rod specified in Division 07 Section "Joint Sealants."

### 3.9 LINTELS

- A. Install steel lintels where indicated.

- B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
- C. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

### 3.10 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows, unless otherwise indicated:
  1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
  2. Extend flexible flashing over metal flashing through outer wythe, across air space and insulation, turned up a minimum of 8 inches and adhering to air barrier membrane. Apply termination bar and continuous bead of termination mastic along rubberized-asphalt flashing seams, cuts, and penetrations.
  3. At lintels, extend flexible flashing a minimum of 8 inches into masonry at each end. At heads and sills, extend flashing 8 inches at ends and turn up 2 inches to form end dams.
- C. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
  1. Use specified weep/vent products to form weep holes.
  2. Space weep holes 24 inches o.c., unless otherwise indicated.
  3. Provide weep holes not more than 8 inches from end of lintels.
- D. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.
- E. Install vents in vertical head joints at the top of each continuous cavity. Use specified weep/vent product to form vents.
  1. Space vents 24 inches o.c.

### 3.11 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
  1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  2. Limit height of vertical grout pours to not more than 60 inches.

### 3.12 FIRESTOPPING

- A. Firestopping: Refer to Division 07 Section "Penetration Firestopping" for installation requirements. Provide firestopping, as part of the work of this section, at the top of fire-rated masonry walls between top of partition and underside of structure above, both for new and existing conditions. Where gypsum wallboard is installed at the top of rated existing masonry walls, the firestopping will be provided by others.
1. Bearing walls, not subject to vertical movement, may be grouted solid between top of wall and underside of structure, in lieu of firestopping.

### 3.13 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  2. Test cleaning methods on sample wall panel; leave one-half of panel uncleared for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
  3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.

4. Protect metal roof and/or floor deck from contact with cleaner by covering with polyethylene film. Should damage occur to metal deck, repair damaged deck finish by re-priming steel deck materials or applying a ZRC coating to galvanized deck materials.
5. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
6. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20 Revised, and manufacturer's printed instructions.
7. Clean concrete masonry with job-mixed detergent solution by cleaning method indicated in NCMA TEK 8-2A and as applicable to type of stain on exposed surfaces.

3.14 MASONRY WASTE DISPOSAL

- A. Excess Masonry Waste: Remove excess clean masonry waste and legally dispose of off Owner's property.

END OF SECTION 04 20 00



## SECTION 05 50 00

### METAL FABRICATIONS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes the following:
1. Metal hand rails.
- B. Related Sections include the following:
1. Division 06 Section "Rough Carpentry" for metal framing anchors.

##### 1.3 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

##### 1.4 SUBMITTALS

- A. Product Data: For the following:
1. Paint products.
- B. Shop Drawings: Show fabrication and installation details for metal fabrications.
1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
  2. Provide templates for anchors and bolts specified for installation under other Sections.
  3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

##### 1.5 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to the following:
1. AWS D1.1, "Structural Welding Code--Steel."
  2. AWS D1.3, "Structural Welding Code--Sheet Steel."

## 1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
  - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
  - 2. Provide allowance for trimming and fitting at site.

## 1.7 COORDINATION

- A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
  - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

## 2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

## 2.3 FERROUS METALS

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Steel Tubing: ASTM A 500, cold-formed steel tubing.

- D. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.
- E. Cast Iron: ASTM A 48/A 48M, Class 30, unless another class is indicated or required by structural loads.

## 2.4 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts and, where indicated, flat washers; ASTM F 593 for bolts and ASTM F 594 for nuts, Alloy Group 1.
- D. Anchor Bolts: ASTM F 1554, Grade 36.
  - 1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.
- E. Eyebolts: ASTM A 489.
- F. Machine Screws: ASME B18.6.3.
- G. Lag Bolts: ASME B18.2.1.
- H. Wood Screws: Flat head, ASME B18.6.1.
- I. Plain Washers: Round, ASME B18.22.1.
- J. Lock Washers: Helical, spring type, ASME B18.21.1.
- K. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.
- L. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 1. Material for Anchors in Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.

2. Material for Anchors in Exterior Locations: Alloy Group 1 stainless-steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594.

## 2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer.
  1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

## 2.6 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.
  3. Remove welding flux immediately.
  4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
  1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch

embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

## 2.7 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
- C. Galvanize miscellaneous framing and supports where indicated.

## 2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.

## 2.9 STEEL AND IRON FINISHES

- A. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
  1. Exteriors (SSPC Zone 1B) and Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."
- B. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
  1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

## 2.10 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.
  3. Remove welding flux immediately.
  4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

## 2.11 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

## 2.12 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
1. Use non-shrink grout, nonmetallic, in concealed and exposed locations, unless otherwise indicated.
  2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

## 2.13 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

## SECTION 06 10 53

### MISCELLANEOUS ROUGH CARPENTRY

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  1. Wood blocking, shims and nailers.
  2. Roof framing, curbs and blocking
  3. Interior handrail and bathroom accessories blocking
- B. Related Requirements:

##### 1.3 DEFINITIONS

- A. Boards or Strips: Lumber of less than 2 inches nominal (38 mm actual) size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater size but less than 5 inches nominal (114 mm actual) size in least dimension.

##### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
  2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
  3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.
  4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
  - 1. Power-driven fasteners.
  - 2. Post-installed anchors.

## 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

# PART 2 - PRODUCTS

## 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal (38-mm actual) thickness or less, 19 percent for more than 2-inch nominal (38-mm actual) thickness unless otherwise indicated.

## 2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use

material that is warped or does not comply with requirements for untreated material.

- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat all miscellaneous carpentry unless otherwise indicated, items indicated on Drawings, and the following:
  - 1. Wood nailers, curbs, blocking, and similar members in connection with flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, blocking, and similar concealed members in contact with masonry or concrete.

## 2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  - 1. Blocking.
  - 2. Nailers.
  - 3. Shims.
- B. Dimension Lumber Items: Construction or No. 2 or better grade lumber of any of the following species:
  - 1. Hem-fir (north); NLGA.
  - 2. Mixed southern pine or southern pine; SPIB.
  - 3. Spruce-pine-fir; NLGA.
  - 4. Hem-fir; WCLIB or WWPA.
  - 5. Northern species; NLGA.
- C. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- D. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

## 2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M or of Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01] or ICC-ES AC193, as appropriate for the substrate.
  - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.
  - 2. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 (ASTM F738M and ASTM F836M, Grade A1 or A4).

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- C. Do not splice structural members between supports unless otherwise indicated.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
  - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.
- E. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
  - 1. Use inorganic boron for items that are continuously protected from liquid water.
  - 2. Use copper naphthenate for items not continuously protected from liquid water.
- G. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- H. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
  - 2. ICC-ES evaluation report for fastener.

#### 3.2 INSTALLATION OF WOOD BLOCKING AND NAILER

- A. Install where indicated and where required for attaching other work. Form to shapes indicated

and cut as required for true line and level of attached work. Coordinate locations with other work involved.

- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

### 3.3 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061053



SECTION 06 20 00

FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
1. Cellular PVC trim and panels.
  2. Building wrap.
  3. Interior standing and running trim.

- B. Related Sections include the following:
1. Division 06 Section "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view.
  2. Division 07 Section "Siding" for fiber-cement siding and trim.

1.3 ARCHITECTURAL DOCUMENTATION

- A. General: The exterior wood trim at the existing Porch requires replacement and Architectural Documentation is necessary to record the existing conditions. Documentation permits accurate repair or reconstruction of parts of a property, records existing conditions for easements, or may preserve information about a property that is to be demolished.
1. Identification: Provide the project name, date of documentation,
- B. Measured Drawings: Submit scaled drawings of existing wall panels, trim, moldings, accurately depicting existing material shapes and configurations. Provide drawings of each type of wall and trim sections. Provide full-scale sections of special molding profiles. Identify species of wood.
- C. Photographs: Prior to demolition of existing materials, provide color photographs of existing conditions of each elevation and details of wood panel and trim conditions on the Porch. Provide photos of scaled drawing conditions.
- D. Written Data: Provide a detailed written description of each type of wall panel, trim and molding condition on the structure. Identify the various species of woods found and indicate their respective locations.
- E. Mock-up: After photos and written data have been obtained, remove and recreate and exact replica of existing wall panel, trim and molding conditions on a full-scale mock-up using samples of existing materials.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.
  - 1. For building wrap, include data on air-/moisture-infiltration protection based on testing according to referenced standards.
- B. Samples for Verification: For each product.
- C. Warranties: Special warranties specified in this Section.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect materials against weather and contact with damp or wet surfaces. Stack materials as recommended by the manufacturer. Provide for air circulation within and around stacks and under temporary coverings.

#### 1.6 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS, GENERAL

- A. Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by the American Lumber Standards' Committee Board of Review.
  - 1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.
  - 2. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by inspection agency.
- B. Softwood Plywood: DOC PS 1.
- C. Hardwood Plywood: HPVA HP-1.
- D. Particleboard: ANSI A208.1, Grade M-2.

#### 2.2 CELLULAR PVC PANELS

- A. General: Solid cellular PVC material.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Azek.
  - 2. Panel Texture: 48-inch- wide sheets with smooth texture.

3. Trim: Provide sizes as indicated on the drawings.
4. Trim Fasteners: Manufacturer's approved metal fastening system.
5. Factory Finishing: Manufacturer's standard acrylic finish.

## 2.3 ACCESSORIES

- A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.
- B. Aluminum Accessories: Where aluminum accessories are indicated, provide accessories complying with AAMA 1402.
  1. Texture: Smooth.
  2. Nominal Thickness: 0.019 inch.
  3. Finish: Manufacturer's standard three-coat PVDF.
- C. Flashing: Provide aluminum Z- flashing at window and door heads and where indicated.
  1. Nominal Thickness: 0.019 inch.
  2. Finish: Manufacturer's standard three-coat PVDF.
- D. Fasteners:
  1. For fastening fiber cement, use stainless-steel fasteners.

## 2.4 CELLULAR PVC TRIM

- A. Acceptable products: AZEK® Trimboards manufactured by Vycom Corporation, 801 Corey Street, Moosic, PA 18507.
- B. Material: Free foam cellular pvc material with a small-cell microstructure and density of 0.55 grams/cubic centimeter.

## 2.5 WEATHER-RESISTANT BUILDING WRAP

- A. Building Wrap: ASTM E 1677, Type I air retarder; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.
  1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work shall be limited to, the following:
    - a. DuPont (E. I. du Pont de Nemours and Company); Tyvek.
  2. Water-Vapor Permeance: Not less than 58 g through 1 sq. m of surface in 24 hours per ASTM E 96, Desiccant Method (Procedure A).
  3. Allowable UV Exposure Time: Not less than three months.
- B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

## 2.6 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide nails or screws of the following materials, in sufficient length to penetrate minimum of 1-1/2 inches (38 mm) into substrate, unless otherwise recommended by manufacturer:
  1. Stainless steel.
- B. Flashing: Comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim" for flashing materials installed in finish carpentry.
  1. Horizontal Joint Flashing for Siding: Preformed aluminum Z-shaped flashing.
- C. Sealants: Comply with requirements in Division 7 Section "Joint Sealants" for materials required for sealing siding work.
- D. Fasteners for Exterior Decking: Provide fasteners as recommended by the decking manufacturer.

## 2.7 FABRICATION

- A. Wood Moisture Content: Comply with requirements of specified inspection agencies and with manufacturer's written recommendations for moisture content of finish carpentry at relative humidity conditions existing during time of fabrication and in installation areas.
- B. Recreation of Existing Wood Trim and Moldings: Where indicated, provide wood trim and moldings matching existing shape and size.
- C. Back out or kerf backs of the following members, except members with ends exposed in finished work:
  1. Exterior standing and running trim wider than 5 inches (125 mm).
  2. Interior standing and running trim, except shoe and crown molds.
- D. Ease edges of lumber less than 1 inch (25 mm) in nominal thickness to 1/16-inch (1.5-mm) radius and edges of lumber 1 inch (25 mm) or more in nominal thickness to 1/8-inch (3-mm) radius.

## 2.8 INTERIOR STANDING AND RUNNING TRIM

- A. Softwood Lumber Trim for Paint Finish:
  1. Species and Grade: Eastern white pine, C Select or better; NeLMA or NLGA.
  2. Species Option: Clear poplar
  3. Finger Jointing: Not allowed.
  4. Face Surface: Surfaced (smooth).
  5. Provide wood-based materials and products produced from wood obtained from forests certified in accordance with Forest Stewardship Council's Principles and Criteria.

## 2.9 INTERIOR TRIM FABRICATION

- A. Back out or kerf backs of the following members except those with ends exposed in finished work:
  1. Interior standing and running trim except shoe and crown molds.
  2. Wood board paneling.

- B. Ease edges of lumber less than 1 inch in nominal thickness to 1/16-inch radius and edges of lumber 1 inch or more in nominal thickness to 1/8-inch radius.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Before installing finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours.
- C. Prime lumber for exterior applications to be painted, including both faces and edges. Cut to required lengths and prime ends. Comply with requirements in Division 9 Section "Painting."

### 3.3 INSTALLATION, GENERAL

- A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.
  - 1. Do not use manufactured units with defective surfaces, sizes, or patterns.
- B. Install finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
  - 1. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
  - 2. Countersink fasteners, fill surface flush, and sand where face fastening is unavoidable.
  - 3. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
  - 4. Coordinate finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate finish carpentry.

### 3.4 STANDING AND RUNNING TRIM INSTALLATION

- A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches (610 mm) long, except where necessary. Stagger joints in adjacent and related standing and running trim. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
  - 1. Match color and grain pattern across joints.

2. Install trim after gypsum board joint finishing operations are completed.
  3. Drill pilot holes in hardwood before fastening to prevent splitting. Fasten to prevent movement or warping. Countersink fastener heads on exposed carpentry work and fill holes.
  4. Fit exterior joints to exclude water. Apply flat grain lumber with bark side exposed to weather.
- B. Exterior Trim at Porch: Install wood trim and moldings to match original existing conditions.

### 3.5 WEATHER-RESISTANT BUILDING WRAP INSTALLATION

- A. General: Cover sheathing with weather-resistant building wrap as follows:
  1. Cut back barrier 1/2 inch (13 mm) on each side of the break in supporting members at expansion- or control-joint locations.
  2. Apply barrier to cover vertical flashing with a minimum 4-inch (100-mm) overlap, unless otherwise indicated.
- B. Building Wrap: Comply with manufacturer's written instructions.
  1. Seal seams, edges, fasteners, and penetrations with tape.
  2. Extend into jambs of openings and seal corners with tape.

### 3.6 ADJUSTING

- A. Replace exterior finish carpentry that is damaged or does not comply with requirements. Exterior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.

### 3.7 CLEANING

- A. Clean exterior finish carpentry on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION

## SECTION 07 66 00

### SELF-ADHERED FLEXIBLE FLASHING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes: Installation of flexible, self-adhering flashing membrane consisting of, but not limited to, the sealing and flashing of above-grade building areas needing protection against water intrusion. Modified bituminous sheet Flexible Flashing.
- B. Related Requirements:
  - 1. Section 061053 'Miscellaneous Rough Carpentry'
  - 2. Section 079200 'Joint Sealants'
  - 3. Section 085450 'Metal Clad Windows'

##### 1.2 REFERENCES

- A. ASTM — American Society for Testing and Materials
  - 1. D 142-97 Test Methods for Sampling and Testing Bitumen – Saturated Felts and Woven Fabrics for Roofing and Flexible Flashing
  - 2. D 412-97 Test Methods for Rubber Properties in Tension
  - 3. D 903-93 Test Methods for Peel or Stripping Strength of Adhesive Bonds
  - 4. D 3767-96 Practice for rubber – Measurement of Dimensions
  - 5. E 96-94 Test Methods for Water Vapor Transmission of Materials
  - 6. E-2112-07 Standard Practice for Installation of Exterior Windows, Doors, and Skylights
- B. AAMA – American Architectural Manufacturers Association
  - 1. IM-TM – Installation Masters Training Manual, June 2000
  - 2. 711-05 Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Penetration Products
  - 3. AAMA/WDMA 1600/I.S.7 – Voluntary Specifications for Skylights, 2000

##### 1.3 SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, and tested physical and performance properties of Flexible Flashing.
  - 2. Include manufacturer's written installation instructions for evaluating, preparing, and treating substrate.
  - 3. Material Safety Data Sheets (MSDS)

#### 1.4 QUALITY ASSURANCE

- A. Applicator shall be familiar with flexible, self-adhering flashing products and shall have experience in flexible, self-adhering flashing installation. Flashing shall be installed by skilled workers trained for this type of work with 3 years minimum experience.

#### 1.5 FIELD CONDITIONS

- A. Environmental Limitations: Apply Flexible Flashing within the range of ambient and substrate temperatures recommended in writing by Flexible Flashing manufacturer. Do not apply Flexible Flashing to frozen, damp, or wet substrates.
  - 1. Do not apply Flexible Flashing when snow, rain, fog, or mist is present.
- B. Maintain adequate ventilation during preparation and application of Flexible Flashing materials.

#### 1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job site in sealed, unopened cartons and containers.
- B. Store products with protection from direct weather exposure. Store in original sealed packaging at temperatures between 5°-32°C (40°-90°F), and under moisture-free conditions.
- C. Stack preformed material to prevent twisting, bending, or abrasion, and to provide ventilation. D. Prevent contact with materials during storage which may cause discoloration, staining, or damage.
- E. Read and follow instructions from MSDS for proper handling and disposal of materials.

#### 1.7 COORDINATION

- A. Coordinate Work under this Section with adjacent existing conditions.
- B. Coordinate requirements for concrete formwork to provide suitable substrate for Flexible Flashing and to minimize penetrations through Flexible Flashing.

#### 1.8 WARRANTY

- A. Manufacturer's Warranty:
  - 1. Flexible Flashing Warranty: Manufacturer agrees to furnish replacement flashing material for flashing that does not comply with requirements or that fails to remain watertight within specified warranty period.
    - a. Warranty Period: Five years from date of Substantial Completion.

### PART 2 - PRODUCTS

2.1 Manufacturers

A. Including but not limited to Basis of Design:

1. Berry Plastics: Polyken® and Nashua® Flashing Tapes consist of a butyl rubber adhesive with an outer facing and LDPE (low density polyethylene) release liner. The Polyken® and Nashua® Flashing Tapes provide a flexible and self-adhering strip of flashing membrane. Specific Products:

- a. Polyken® 626-35 Foilastic: 2 mil aluminum foil facing, butyl rubber adhesive membrane, LDPE release liner.
  - b. Polyken® 627-35 Shadowlastic: 6.5 mil LDPE black facing, butyl rubber adhesive membrane, LDPE release liner.
  - c. Nashua® 626-20 Optiflash: 2 mil aluminum, butyl rubber adhesive
  - d. Nashua® 627-20 Optiflash: 6 mil LDPE black facing, butyl rubber adhesive
  - e. Nashua® 697-40 Contour: creped, polyolefin facing, butyl rubber adhesive, coated paper release liner
2. Dupont: Weathermate

## 2.2 SOURCE LIMITATIONS

- A. Flexible Flashing System: Obtain Flexible Flashing materials and accessories from single source from single manufacturer.

## 2.3 ACCESSORIES FOR FEXIBLE FLASHING

- A. Primer: Primer for use with porous substrates. Concrete, masonry, OSB and gypsum-core sheathings should be primed for better flashing adhesion.
  1. Basis of Design: Polyken #1027
- B. Sealant: As specified in Section 07900.
  1. Chemical Compatibility: Generally, sealants made with polyurethane, butyl, and silicone elastomers will have chemical compatibility to the facing and adhesive sides of flashing tapes.
  2. Manufacturer: Check and confirm with specific sealant manufacturers regarding adhesion of specific sealants and application to flashing tapes and the particular materials selected for fenestration product and the weather-resistant barrier.
  3. Adhesion: Absent specific product selection for sealants, use the following general guide for adhesion to facings. Check with sealant manufacturer for specific product information.

## PART 3 – EXECUTION

### 3.1 PREPERATION

- A. Inspect and field measure site conditions and substrates prior to field fabricating work.
- B. Substrates shall be clean, dry, uniform, and smooth prior to flashing application. Remove protrusions and fill voids at substrates as necessary. Ensure fasteners are flush with surface of sheathing substrates.
- C. Allow wet substrates to dry thoroughly. Clean dust and debris from all substrates and surfaces receiving the flashing.

- D. Prime porous substrates with primer according to manufacturer's recommendations. Prime concrete, masonry, and wood blocking.

- E. Provide solid continuous backing or substrate filler to support all portions of flexible flashing. Fill joints or gaps in substrate 1/8" or wider

### 3.2 INSTALLATION

- A. General
1. Manufactured products: Comply with manufacturer's written instructions.
  2. Proceed with installation in conjunction with related weather-resistive barrier and flashing in each area of building envelope construction.
  3. Do not dilute primers or sealants
  4. Keep containers closed except when removing materials from them.
- B. Except as otherwise specifically indicated or shown on reviewed shop drawings, conform to drawing details included in manufacturer's recommendations.
- C. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- D. Cut flashing strip to length. Form pieces in longest practical lengths. Peel back release liner and discard with small pieces of flashing. Align the flashing strip and press by hand into place. With larger flashing pieces, remove a small part of the release liner at the end of a flashing strip (4 to 6 inches). Then set the exposed flashing against the substrate and press into place. Afterwards, the remaining release liner still attached to the flashing is pulled back between the flashing and substrate. The release liner is peeled away, exposing additional adhesive in 12 to 24 inch long sections working away from the starting point.
- E. Fit flashings tight in place. Make corners uniform, surfaces flat and straight in planes, and lines accurate to profiles.
- F. Fabricate corners, transitions and terminations with a minimum number of pieces.
- G. Lap joints for continuous contact. All seams and splices shall be overlapped 3 inches minimum. Lap joints in direction of moisture drainage, in shingle fashion, unless specifically designated otherwise.
- H. Roll all flashings with a hand roller, taking special care at laps, seams, splice areas, and T joints to remove any voids and trapped air according to manufacturer's recommendations.
- I. Do not apply flexible flashings to bridge or cover unsupported voids, gaps, or offset materials.

### 3.3 POST-INSTALLATION PROTECTION

- A. Protect exposed flashings after installation from mechanical damage, falling debris and prolonged direct weather exposure.
- B. Inspect for tears, rips, punctures, and other damage. Repair damage to flashings prior to covering flashings. Repair damage according to manufacturer's recommendations.
- C. Apply exterior finish coverings over flashings in the proper construction sequence as soon as

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Augusta, ME

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practical.

END OF SECTION 07660



SECTION 07 81 23

INTERIOR FIREPROOFING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Preparing surfaces to receive fireproofing.
- B. Protection of adjacent surfaces from overspraying.
- C. Spray application of water based, intumescent, fireproofing on interior, exposed structural steel wide flange columns, beams, pipe columns, and related exposed structural steel to provide rated fireproofing.

1.02 REFERENCES

- A. ASTM D 256 - Impact Resistance Test.
- B. ASTM D 638 - Tensile Strength.
- C. ASTM D 695 - Standard Test Method for Compressive Strength.
- D. ASTM D 790 - Standard Test Method for Flexural Strength.
- E. ASTM D 1002 - Standard Test Method for Bond Strength.
- F. ASTM D 1044 - Standard Test Method for Abrasion Resistance Test.
- G. ASTM D 4541 - Bond Strength.
- H. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
- I. ASTM E 119 - Fire Tests of Building Construction and Materials.
- J. U.L., Inc. - Fire Resistance Directory.
- K. SSPC-SP-1 Solvent Cleaning - Steel Structures Painting Council (SSPC).
- L. SSPC-SP-2 Hand Tool Cleaning - Steel Structures Painting Council (SSPC).
- M. SSPC-SP-3 Power Tool Cleaning - Steel Structures Painting Council (SSPC).
- N. SSPC-SP-6 Commercial Blast Cleaning - Steel Structures Painting Council (SSPC).

1.03 PERFORMANCE REQUIREMENTS

- A. Intumescent fireproofing system to provide a fire rating of one, one and one half, two, two and one half, three, three and one half hours.

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00 Submittal Requirements.
  - 1. Indicate product characteristics, performance, and limitation criteria.
- B. Submit manufacturer's installation instructions and product certifications.
- D. Submit test reports that products meet or exceed specified requirements.

- E. Submit certified test reports indicating the following:
  1. Fire test reports of fireproofing application to substrate materials similar to project conditions.
  2. U.L. Design Listings from U.L., Inc.
  3. Submit applicator's current certification, by product manufacturer, as a factory trained and manufacturer approved installer of this product.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years documented experience.
- B. Applicator: Company specializing in applying the work of this Section with minimum 3 years documented experience and approved by manufacturer.

#### 1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for fire resistance ratings.
- B. Submit certification of acceptability of fireproofing materials to authority having jurisdiction and to Architect.

#### 1.07 MOCKUP

- A. Provide mockup of applied intumescent fireproofing under provisions for approval by Architect.
- B. Comply with project requirements as to thickness, density, fire rating, and finish texture.
- C. Examine installation to determine variances.
- D. If accepted, mockup will demonstrate minimum standard for the Work. Mockup may remain as part of the Work.

#### 1.08 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply when surface temperature is less than 50 degrees F or when surface temperature is less than 5 degrees F above the dew point.
- B. Provide ventilation in areas to receive fireproofing during and 72 hours, minimum, after application, to dry materials and dissipate solvent odors.
- C. Maintain non-toxic, unpolluted working area. Provide temporary enclosure to prevent spray from contaminating air.

#### 1.9 SEQUENCING AND SCHEDULING

- A. Sequence work in conjunction with placement of ceiling hanger tabs, mechanical component hangers, and electrical components so that fireproofing follows installation of these items, minimizing the need for follow up patching of fireproofing.

#### 1.10 WARRANTY

- A. Provide one year manufacturer's warranty.
- B. Provide one year applicator's warranty.
- C. Warranty: Fireproofing to remain free from cracking, checking, dusting, flaking, spalling, separation, and blistering. Reinstall or repair such defects or failures.

### PART 2 - PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. Albi Manufacturing, East Berlin, CT (860) 828-0571; "ALBI CLAD TF."

#### 2.02 MATERIALS

- A. Intumescent Fireproofing: Single component, water based, factory mixed, asbestos free, intumescent material blended for uniform texture; conforming to the following requirements:
  - 1. Bond Strength: ANSI/ASTM E 736, 40 psi when set and dry.
  - 2. Bond Impact: ASTM E 760, no cracking, flaking, or delamination.
  - 3. Dry Density: ASTM E 605, minimum average density of 85 lb/cu ft.
  - 4. Surface Burning Characteristics, ASTM E84:
    - a. Flame Spread: 2.
    - b. Smoke Developed: 5.
  - 5. Compressive Strength: Minimum 300 psi.
  - 6. Product :
    - a. Steel columns, beams and open-web bar joists : AlbiClad FP
    - b. Wood decking and associated wood nailers: AlbiClad TF
- B. Primer: GCP Firebond, or type recommended or approved by fireproofing manufacturer.

### PART 3 - EXECUTION

#### 3.01 INSPECTION

- A. Verify that surfaces are ready to receive work.
- B. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place before application of fireproofing.
- C. Verify ducts, piping, equipment, or other items which would interfere with application of fireproofing are not positioned until fireproofing work is complete.
- D. Verify that voids and cracks in substrate are filled, and projections are removed where fireproofing is exposed to view as a finish material.

- E. Beginning of installation means applicator accepts existing substrate.

### 3.02 PREPARATION

- A. Work in accordance with SSPC guidelines SSPC-SP-1, SSPC-SP-2, SSPC-SP-3, or SSPC-SP-6 as appropriate to prepare substrate.
- B. Clean substrate of dirt, dust, grease, oil, loose material, or other matter, which may effect bond of fireproofing.
- C. Seal all penetrations or open ended fireproofing termination by chamfering at a 45 degree angle and sealing with high heat silicone sealant.
- D. Install reinforcement over structural members as indicated on Drawings, or U.L. Fire Resistance Directory Listings.

### 3.03 PROTECTION

- A. Protect floor areas from this Work by completely covering with tarps or 4 mil polyethylene sheets.
- B. Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting.
- C. Close off and seal ductwork in areas where fireproofing is being applied.

### 3.04 APPLICATION

- A. Apply primer and fireproofing in accordance with manufacturer's instructions. Do not apply to surfaces which would inhibit proper adhesions.
- B. Apply primer according to primer manufacturer's recommendations. Provide primer "cut-back" three inches for bolted connections and 12 inches for welded connections.
- C. Apply fireproofing in sufficient thickness to achieve rating, with as many passes necessary to cover with monolithic blanket of uniform hardness, density and texture. Spray, and roll smooth the finished surface.

### 3.05 FIELD QUALITY CONTROL

- A. Field inspect and test according to manufacturer's standards.
- B. Inspections will be performed to verify compliance with requirements.
- C. Patch fireproofing, which has been cut away to facilitate work of other trades, so as to maintain complete coverage of full thickness on appropriate substrate.
- D. Correct unacceptable Work and provide further inspection to verify compliance with requirements, at no cost.

3.06 CLEANING

- A. Clean work.
- B. Remove excess material, overspray, droppings, and debris.
- C. Remove fireproofing from materials and surfaces not specifically required to be fireproofed.

PART 4 - SCHEDULE

4.01 SCHEDULE OF FIREPROOFING

- A. Stair 2 and 3 Roof Penthouse Columns
  - 1. U.L. Rating: 2 Hour
  - 2. Components:
    - a. Columns: HSS 4 x 4 x 3/8".
- B. Stair 2 and 3 Roof Penthouse Beams
  - 1. U.L. Rating: 1 Hour
  - 2. Components:
    - a. Beams: W12 x 30.
- B. Exposed Steel Connectors at Precast Concrete
  - 1. U.L. Rating: 2 Hour
  - 2. Components:

END OF SECTION 07 81 23



SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Silicone joint sealants.
2. Latex joint sealants.

- B. Related Sections:

1. Division 04 Section "Unit Masonry" for masonry control and expansion joint fillers and gaskets.
2. Division 08 Section "Glazing" for glazing sealants.
3. Division 09 Section "Gypsum Board" for sealing perimeter joints.
4. Division 09 Section "Tiling" for sealing tile joints.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.

- B. LEED Submittals:

1. Complete LEED Materials Documentation Sheet from division 01 33 00, section EQc4 Option 1: Low Emitting Materials – Adhesives and Sealants EQc4 and provide manufacturers' product data for construction adhesives and sealants, including printed statement of VOC content and MSDS Sheets.

- C. Samples for Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

- D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

- E. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- G. Warranties: Sample of special warranties.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.
- B. Product Testing: Test joint sealants using a qualified testing agency.
  - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.
- D. Preinstallation Conference: Conduct conference at Project site.

#### 1.5 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
  - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
  - 2. When joint substrates are wet.
  - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

#### 1.6 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
  1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
  2. Disintegration of joint substrates from natural causes exceeding design specifications.
  3. Mechanical damage caused by individuals, tools, or other outside agents.
  4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
  1. Architectural Sealants: 250 g/L.
  2. Sealant Primers for Nonporous Substrates: 250 g/L.
  3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

### 2.2 LEED REQUIREMENTS

- A. For field applications that are inside the weatherproofing system, use adhesives and sealants that comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168 VOC limits, corresponding to an effective date of July 1, 2005 and rule amendment date of January 7, 2005. For aerosol adhesives, comply with Greenseal Standard 36 (GS-36) VOC Limits. Aerosol adhesives should meet Green Seal Standard GS36 Green Seal Standard for Commercial adhesives in effect on October 19, 2000.

## 2.3 SILICONE JOINT SEALANTS

- A. Sealant Type 1: Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant; ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Dow Corning Corporation; 790 (VOC 43); 756 SMS (VOC 87) for cold applications.
    - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
    - c. Pecora Corporation; 890 (VOC na).
    - d. Sika Corporation, Construction Products Division; SikaSil-C990.
    - e. Tremco Incorporated; Spectrem 1 (VOC 1).
- B. Sealant Type 2: Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant; ASTM C 920, Type S, Grade NS, Class 50, for Use NT.
1. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.
  2. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 756 SMS (VOC 87).
    - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700 (VOC 27).
    - c. Pecora Corporation; 890NST (VOC 98).
- C. Sealant Type 3: Single-Component, Nonsag, Traffic-Grade, Neutral-Curing Silicone Joint Sealant; ASTM C 920, Type S, Grade NS, Class 100/50, for Use T.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Dow Corning Corporation; 790 (VOC 43).
    - b. Pecora Corporation; 301 NS (VOC 50).
    - c. Tremco Incorporated; Spectrem 800 (VOC 1).
- D. Sealant Type 4: Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant; ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Dow Corning Corporation; 786(VOC 33) (Food)
    - b. GE Advanced Materials - Silicones; Sanitary SCS1700.
    - c. Tremco Incorporated; Tremsil 200 Sanitary (VOC 1).

#### 2.4 LATEX JOINT SEALANTS

- A. Sealant Type 5: Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
- a. BASF Building Systems; Sonolac (VOC 41).
  - b. Bostik, Inc.; Chem-Calk 600.
  - c. Pecora Corporation; AC-20 (VOC 31).
  - d. Tremco Incorporated; Tremflex 834.

#### 2.5 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

#### 2.6 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
    - a. Concrete.
    - b. Masonry.
    - c. Unglazed surfaces of ceramic tile.
    - d. Exterior insulation and finish systems.
  3. Remove laitance and form-release agents from concrete.
  4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
    - a. Metal.
    - b. Glass.
    - c. Porcelain enamel.
    - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or

by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  1. Do not leave gaps between ends of sealant backings.
  2. Do not stretch, twist, puncture, or tear sealant backings.
  3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses in each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  1. Remove excess sealant from surfaces adjacent to joints.
  2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
    - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.
- G. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
  1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
  2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a

- bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

### 3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### 3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

### 3.6 JOINT-SEALANT SCHEDULE

- A. Exterior Isolation and Contraction Joints in Cast-in-place Concrete Slabs.
  1. Silicone Joint Sealant: Sealant Type 3.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Exterior Control, Expansion, and Soft Joints in Masonry and Between Masonry and Adjacent Work.
  1. Silicone Joint Sealant: Sealant Type 1.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Exterior Control, Expansion, and Soft Joints Between Masonry and Metal Door Frames, Windows, Storefronts and Curtain Walls.
  1. Silicone Joint Sealant: Sealant Type 1.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Exterior Control, Expansion, and Soft Joints in Stone Work and Between Stone and Adjacent Work.
  1. Silicone Joint Sealant: Sealant Type 2.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- E. Under Exterior Door Thresholds.
  - 1. Silicone Joint Sealant: Sealant Type 1.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- F. Exterior Joints for Which No Other Sealant Type is Indicated.
  - 1. Silicone Joint Sealant: Sealant Type 1.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- G. Interior Isolation and Contraction Joints in Cast-In-Place Concrete Slabs.
  - 1. Silicone Joint Sealant: Sealant Type 3.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- H. Concealed Interior Perimeter Joints of Exterior Openings.
  - 1. Silicone Joint Sealant: Sealant Type 1.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- I. Exposed Interior Perimeter Joints of Exterior Openings.
  - 1. Silicone Joint Sealant: Sealant Type 1.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- J. Perimeter Joints Between Interior Wall Surfaces and Frames of Interior Doors Windows and Elevator Entrances.
  - 1. Latex Joint Sealant: Sealant Type 5.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- K. Vertical Joints on Exposed Surfaces of Walls and Partitions.
  - 1. Latex Joint Sealant: Sealant Type 5.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- L. Joints between Plumbing Fixtures and Walls and Floors and Between Countertops and Walls.
  - 1. Silicone Joint Sealant: Sealant Type 4.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- M. Interior Joints for Which No Other Sealant is Indicated.
  - 1. Latex Joint Sealant: Sealant Type 5.
  - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 07 92 00



## SECTION 08 01 52

### STAINED GLASS WINDOW RESTORATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Paint removal and repriming wood windows.
  - 2. Sash removal and camming repairs.
  - 3. Window [Sash] repairs.
  - 4. Wood frame and brickmold repairs
  - 5. Epoxy patch and wood consolidation.
  - 6. Wood crack and check filling.
  - 7. Replacement of damaged muntins.
  - 8. Replacement of hardware.
  - 9. Perimeter caulking and sealant replacement at frame and trim perimeter.
- B. Related Sections include the following:
  - 1. Division 7 Section "Joint Sealants" for perimeter caulking.
  - 2. Division 9 Section "Painting" for finish painting of wood windows.

##### 1.2 SUBMITTALS

- A. Product Data: For each product specified or proposed for use. Include recommendations for application and use.
- B. Submit restoration program for the restoration process, including protection of surrounding materials on the building and Project site during operations. Describe in detail the materials, methods, equipment, and sequence of operations to be used for the restoration work.
  - 1. If alternative materials and methods to those indicated are proposed for restoration work, provide a written description, including evidence of successful use on other comparable projects.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

##### 1.3 QUALITY ASSURANCE

- A. Restorer Qualifications: Engage an experienced restorer that has completed work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

- B. Restoration Specialist: Engage an experienced window restoration firm that has completed work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
  - 1. Field Supervision: Require restoration specialist firms to maintain a supervisor on the Project site during times that window restoration work is in progress.
- C. Mockups: Prepare field sample for paint removal, restoration methods and painting procedures to demonstrate aesthetic effects and qualities of materials and execution. Use materials and methods proposed for completed Work.
  - 1. Locate sample on the building where directed by Architect.
  - 2. Obtain Architect's approval of mockup before starting the remainder of the work.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Carefully pack, handle, and ship sash and accessories removed from the site to prevent damage.
- B. Deliver other materials to Project site in manufacturer's original and unopened containers, labeled with type and name of product and manufacturer.
- C. Comply with manufacturer's written instructions for minimum and maximum temperature requirements for storage and use.

#### 1.5 PROJECT CONDITIONS

- A. Do not paint unless air temperature is between 50 and 80 deg F and will remain so for at least 48 hours after completion of Work.
- B. Cold-Weather Requirements: Comply with the following procedures for window repair and painting:
  - 1. Provide enclosure and heat to maintain temperatures above 60 deg F within the enclosure for 48 hours after repair and pointing.
- C. Hot-Weather Requirements: Protect restoration work when temperature and humidity conditions produce excessive rapid drying of paint and patching materials. Do not apply epoxy patches and paint to substrates with temperatures of 90 deg F and above.
- D. Apply consolidation treatment only when the wood is dry and protected from rain. Immediately remove consolidation treatment in contact with exposed masonry and other surfaces.
- E. Protect sills, ledges, and projections from consolidation treatment and paint.

### PART 2 - PRODUCTS

#### 2.1 APPROVED WINDOW FABRICATORS

- A. Available Fabricators: Subject to compliance with requirements, companies that may be incorporated into the Work include, but are not limited to, the following:
- B. Fabricators: Subject to compliance with requirements, engage one of the following:
  - 1. Jacobs Glass, Cushman, ME

2. Ladd Restoration, Edgecomb, ME
3. Sash + Solder Window Restoration, Portsmouth, NH

## 2.2 REPAIR MATERIALS

- A. Epoxy Consolidant: Abatron, Inc. LiquidWood; Minwax High Performance Wood Hardener; or equal from West System, Gougeon Brothers, Inc. or Roux Laboratories.
- B. Epoxy Paste Filler: Abatron, Inc. WoodEpoxy; Minwax High Performance Wood Filler; or equal from West System, Gougeon Brothers, Inc. or Roux Laboratories.
- C. Glazing Putty: DAP 33 window glazing or equal.
- D. Sealant: ASTM C920, Type S, Grade NS, Class 25; single component polyurethane.
- E. Sash Weights: Reuse existing sash weights when possible. Replacement sash weights, if necessary, shall match diameter and weight of existing. New sash cord shall match the diameter of the existing.
- F. Sash Cord: Cotton rope or metal chain of type and size to match existing.
- G. Hardware and Pulleys: Match existing for replacement; Blaine Window Hardware, Inc., Barry Supply Company, or equal.
- H. Weather Strip: Accurate Metal Weather Strip Co. or equal.

## 2.3 PAINT

- A. Primer: Exterior, alkyd wood primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.
  1. Benjamin Moore: Super Spec Alkyd Exterior Primer #176.
- B. Linseed Oil:
- C. Finish Coats: Refer to Division 9 Section "Painting" for finish painting.

## 2.4 GLAZING

- A. Glass: Stained glass to match existing, as required.

## 2.5 HARDWARE

- A. Reuse existing hardware for fixed-in-place installation.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. General: Comply with paint removal manufacturer's written instructions for protecting building surfaces against damage from exposure to their products.

### 3.2 STAINED GLASS REPAIRS

- A. The intention of the repair program shall be to restore existing stained glass to a consistent even plane. Window frames and associated brick moldings shall be repaired to the greatest extent possible. Where wood components are structurally unable to be repaired, replacement components should be carefully recreated to match existing profiles and scarfed into existing units to remain.
- B. Remove existing stained glass panels from existing frames.
- C. Restore existing cameing to securely hold the existing stained glass pieces securely. Bend existing lead cameing to plane as possible. Replace broken cameing where the existing cannot be repaired.

### 3.3 SASH REMOVAL AND RESTORATION

- A. General: Carefully remove window components taking care not to create further damage and to keep in tact. Inspect all components for wear, damage, rot, cracks, splits and deterioration and perform the appropriate repairs to bring the window back to a "like new" condition.
- B. Using the window numbering system indicated on the drawings, number each component and glass pane with the respective window number. Each component reused shall remain a part of it's original window and be returned back to the original location.
- C. Stops: When the stops have been painted in place to the trim, neatly cut the joint between the stop and trim, allowing the stop to be removed without further damage to the finish.
- D. Parting Beads: Carefully remove parting beads. Replace all existing parting beads with new of the same wood species and size as the original or as necessary to accommodate the reinstallation and operation of the sash. New bead is to fit snuggly into the frame rabbet.
- E. Sash: Remove the sash from the window frame. Inspect each sash for damage, rot, loose joints, and other deterioration. Perform the appropriate repairs as necessary to fully restore sash.
  1. Remove all paint from the wooden sash to allow for inspection and testing of unsound areas to determine the extent of the deterioration and repairs required. Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required.
  2. Remove all glazing putty. Heat putty until soft and remove, taking care not to further damage wood surfaces. Take precautions as necessary to protect glass and wood from the heating process.
  3. Cut the embedded glazing putty at the edges and face of the glass until the glass is released from the muntin, style and/or rail and can be removed. Remove the glazing points. Heat putty until soft and remove, taking care not to further damage wood surfaces. Take precautions as necessary to protect glass and wood from the heating process. After glass has been removed remove remaining putty leaving the glazing channel clean. Store glass in a secure location for reinstallation.
  4. Stiles and Rail Repair:

- a. Face wear due to use: Rabbet our worn area creating a straight, smooth and square channel. Fill channel with a strip of wood of the same species and grain parallel with the existing style.
- b. Split or cracked edges: Thoroughly clean surfaces of crack, inject epoxy resin and securely clamp until dry.
- c. Muntins:
  - 1) Minor Surface Deterioration: Harden area with application of Kyanoil or epoxy consolidant.
  - 2) Soft and Loose Wood: Consolidate area by completely saturate area with an application of epoxy resin. After saturation remove excess resin allowing to dry.
  - 3) Eroded Surfaces: Consolidate effected area and fill with epoxy paste filler. Once dry, shape filled area to match the original plan and profile.
  - 4) Large missing pieces of Wood: Repair with a wood Dutchman.
  - 5) Mortise and Tenon Joint:
    - a) Minor Deterioration: At minor stile and rail surface rot and/or end grain checks, consolidate by completely saturate areas with an application of epoxy resin. After saturation remove excess resin allowing to dry.
    - b) Sever Deterioration: Remove fasteners and disassemble stiles, rails and muntins. Stand the rotted ends of the pieces in a container of consolidant covering a minimum of 3/4 of the rotted area. Leave pieces in the consolidant long enough to achieve complete saturation of the wood grain at the rotted area. When necessary to achieve saturation, drill 1/8-inch holes in the affected area. Once saturation is achieved, remove excess consolidant and let dry.
    - c) Missing Corners, Edges and Mortise End Closure: Replace missing corners and edges at the stiles and rails and missing mortise end closures at the stiles with a dutchman repair.
    - d) Mortise Repair: Saw cut out mortise as necessary to square up mortise area. Cut and fit a Dutchman repair to fill the mortise area, glue into place. Once glue has dried, cut out a new pocket and shape to fit tenon.
    - e) Tenon Repair: Saw cut tenon off flush with the end of the rail. At the location of the old tenon, saw cut a slot into the end of the rail equal in thickness of the old tenon and to a depth equal in length of the tenon. Cut a new wood tenon insert to fit snuggly into the rail slot and the new mortise at the stile. The grain of the insert is to be parallel that to the rail. Glue and pin the insert into the rail.
5. Replace all broken, cracked and missing glass with new or salvaged of like kind and clarity. Upon completion of sash repair and one application of primer on all surfaces reinstall glass. Set glass in a bed of putty in the rabbet, install glazing points, and apply glazing compound on face of glass and rabbet at an angle that conceals both rabbet faces and is flush with the rabbet edges. Cut away excess compound leaving edges straight, true and clean.

### 3.4 SILL, FRAME AND TRIM REPAIR

- A. Dry sills and wood members. Cover loosely with polyethylene sheeting and allow to sit until low moisture level is achieved in the wood.

- B. Clean out all cracks of any dust and debris using scrapers, stiff fiber brush, oil free compressed air or vacuum.
- C. Apply treatment to clean, dry surfaces according to manufacturer's written instructions.
- D. Minor Surface Deterioration: Harden area with application of Kynanoil. Fill holes, erosion, gouges and cracks with epoxy paste filler. Fill minor unevenness with exterior grade spackle.
- E. Minor Deterioration: At minor rot, end grain checks, and surface checks, consolidate by completely saturate areas with an application of epoxy resin. After saturation remove excess resin allowing to dry. Fill erosion, holes, gouges and cracks with epoxy paste filler. Fill minor unevenness with exterior grade spackle.
- F. Sever End Deterioration: Stand the rotted ends of the disassembled pieces in a container of consolidant covering a minimum of 3/4 of the rotted area. Leave pieces in the consolidant long enough to achieve complete saturation of the wood grain at the rotted area. When necessary at flat surfaces, drill 1/8-inch holes in the affected area to achieve saturation. Once saturation is achieved, remove excess consolidant and let dry. Fill erosion, holes, gouges and cracks with epoxy paste filler. Fill minor unevenness with exterior grade spackle.
- G. Missing Corners, Edges and Sections: Replace with a dutchman repair. Fill minor unevenness with exterior grade spackle.
- H. Replacement: When it is not practical to repair the wooden element. Replace with that section with new of same wood species, milled to the same dimensions and profile as the original.

### 3.5 WINDOW [SASH] REPLACEMENT

- A. Materials: Clear ponderosa pine or another suitable fine-grained lumber; kiln-dried to a moisture content of 6 to 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch (0.8 mm) deep by 2 inches (51 mm) wide; water-repellent preservative treated.
  - 1. Sash Thickness: Match existing.
  - 2. Sash Construction: Corners slot and tenoned.
  - 3. Muntins: Match existing size and configuration.
- B. Replicate existing window sashes where indicated. Provide true divided lites in configuration indicated fabricated to match profiles of existing sash.
- C. Glass: Clear float glass. Tempered where required by code.
- D. Prime paint prior to installation.
- E. Sashes may be planed top and bottom, with a maximum 1/16 inch gap, to adjust for out-of-square conditions. Reprime and paint prior to installation.

### 3.6 WEATHERSTRIPPING

- A. Replace all weather-stripping with new. Install weather-stripping at the head, sill, upper and lower side of the frame jamb and at the sash meeting rail providing a complete system.

- B. Prepare sash as necessary to receive the new weather-stripping in accordance with the manufacturers recommendations. Where the frame and sash are worn creating excessive space between them, provide the appropriate thickness wood shims behind the weather-stripping full width of the sash pocket and full height of the frame to achieve proper clearance.

### 3.7 HARDWARE

- A. Remove paint from existing hardware and polish before reinstallation.
- B. Where hardware is missing or damaged, provide new hardware of same design and material as original hardware.
- C. Install hardware after painting operations are completed.

### 3.8 CAULKING

- A. Remove existing caulking at perimeter of window units. Thoroughly scrape and wire brush surfaces to remove all traces of old sealant to assure proper bond of new sealant. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
- B. Apply new sealant to joints, providing proper backer rods or bond breaker to provide a watertight joint. Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply. Do not feather out sealant onto adjacent surfaces.

### 3.9 PAINTING

- A. Provide "Wet Paint" signs to notify public and to protect newly painted finishes.
- B. Surfaces to be painted shall be clean and dry, with wood repair completed and all surfaces sanded. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer.
- C. Apply one coat of primer to all surfaces before reinstallation of sash. Sash shall receive one coat of primer to all surfaces of sash and muntins before reinstallation of glass. Allow primer to thoroughly dry before application of glazing putty and topcoats of paint. Allow a minimum of 48 hours for primer to cure.
- D. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

### 3.10 ADJUSTING AND CLEANING

- A. Test each unit for proper operation and make required adjustments.
- B. Clean interior and exterior surfaces of all glass upon completion of installation.

- C. Remove and dispose of all construction debris and rubbish from the work site and grounds. Remove staging, lifts and other temporary items used for the work and leave site in the same condition as it was at the start of the work.

END OF SECTION

## SECTION 08 52 14

### METAL CLAD WINDOWS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
1. Metal Clad windows.
    - a. Double-hung windows
    - b. Monumental arch-top double hung windows
    - c. Fixed and awning windows.

##### 1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  2. Review, discuss, and coordinate the interrelationship of Metal Clad windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
  3. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
  4. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

##### 1.3 REFERENCES

- A. American Society for Testing Materials (ASTM):
1. E283: Standard Test method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors
  2. E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Door by Uniform Static Air Pressure Difference
  3. E547: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential
  4. E2112: Standard Practice for Installation of Exterior Windows, Doors, and Skylights
  5. E2190: Specification for Sealed Insulated Glass Units
  6. C1036: Standard Specification for Flat Glass
  7. E2068: Standard Test Method for Determination of Operating Force of Sliding Windows and Doors
  8. E 1996: Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes  
Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
  9. F 2090-17: Standard Specifications for Windows Fall Prevention Devices with Emergency Escape (egress) Release Mechanisms
- B. American Architectural Manufacturer's Association/Window and Door Manufacturer's Association (AAMA/WDMA/CSA):

1. AAMA/WDMA/CSA 101/I.S.2/A440-08, Standard/Specification for windows, doors and skylights
  2. AAMA/WDMA/CSA 101/I.S.2/A440-11, Standard/Specification for windows, doors and skylights
  3. AAMA 450-10, Voluntary Performance Rating Method for Mulled Fenestration Assemblies
- C. WDMA I.S.4: Industry Standard for Water Repellant Preservative Treatment for Millwork
- D. Window and Door Manufacturer's Association (WDMA): 101/I.S.2 WDMA Hallmark Certification Program
- E. Sealed Insulating Glass Manufacturer's Association/Insulating Glass Certification Council (SIGMA/IGCC)
- F. American Architectural Manufacturer's Association (AAMA): 2605: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels
- G. National Fenestration Rating Council (NFRC):
  1. 101: Procedure for Determining Fenestration Product thermal Properties
  2. 200: Procedure for Determining Solar Heat Gain Coefficients at Normal Incidence
- H. Window Covering Manufacturer's Association
  1. A100.1: American National Standard for Safety of Corded Window Coverings Products

#### 1.4 ACTION SUBMITTALS

- A. Product Data: Metal Clad windows.
1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes.
  2. Product Data: Submit production data for certified options under provision of Section 01 33 00. Product performance rating information may be provided via quote, performance rating summary (NFRC Data), or certified performance grade summary (WDMA Hallmark data).
- B. Shop Drawings:
1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
- C. Mock-Up Windows:
1. Double-hung window: Provide field-installed unit in location shown for Owner's approval.
  2. Fixed/Awning window: Not required.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Metal Clad Metal Clad Sample Warranties: For Metal Clad windows.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An installer acceptable to manufacturer of Metal Clad windows for installation of units required for this Project.

## 1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace Metal Clad windows that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
    - a. Structural failures, including excessive deflection, water leakage, and air infiltration.
    - b. Faulty operation of moveable sash and hardware.
    - c. Deterioration of materials and finishes beyond normal weathering.
    - d. Failure of insulating glass units.
  2. Metal Clad Warranty Period:
    - a. Clear insulating glass with stainless steel spacers is warranted against seal failure caused by manufacturing defects and resulting in visible obstruction through the glass for twenty (20) years from the original date of purchase. Glass is warranted against stress cracks caused by manufacturing defects from ten (10) years from the original date of purchase.
    - b. Standard exterior aluminum cladding finish is warranted against manufacturing defects resulting in chalk, fade and loss of adhesion (peel) per the American Architectural Manufacturer's Association (AAMA) Specification 2605-11 Section 8.4 and 8.9 for twenty (20) years from the original date of purchase.
    - c. Factory-applied interior finish is warranted to be free from finish defects for a period of five (5) years from the original date of purchase.
    - d. Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years from the original date of purchase.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
- B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
1. Metal Clad Minimum Performance Class: LC.
  2. Minimum Performance Grade: 30.

### 2.2 METAL CLAD WINDOWS

- A. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Double hung windows: Marvin. Ultimate G2 Series
  2. Fixed and awning windows: Marvin. Modern Series
- B. Source Limitations: Obtain Metal Clad windows from single manufacturer.
- C. Operating Types:
1. Double Hung: With manufacturer's standard sight lines for bottom and top sash.
  2. Fixed.
- D. Frame Description:
1. Interior: Non Finger-Jointed Pine or finger-jointed core with non finger-jointed Pine veneer; optional non finger-jointed Douglas Fir or finger-jointed core with non finger-jointed Douglas Fir veneer; optional non finger-jointed White Oak or finger-jointed with non finger-jointed Oak veneer; non finger-jointed Cherry or finger-jointed core with Cherry veneer; non finger-jointed Mahogany or finger-jointed core with non finger-jointed Mahogany veneer; non finger-jointed Vertical Grain Douglas Fir or finger-jointed with non finger-jointed Vertical Grain Douglas Fir veneer
  2. Kiln-dried to moisture content no greater than 12 percent at the time of fabrication
  3. Water repellent, preservative treated in accordance with ANSI/WDMA I.S.4.
  4. Frame exterior aluminum clad with 0.050" (1.3mm) thick extruded aluminum
  5. Frame thickness: 11/16" (17mm) head and jambs
  6. Frame depth: Frame depth had an overall 5 21/32" jamb (144mm). 4 9/16" (116mm) jamb depth from the nailing fin plane to the interior face of the frame for new construction.
  7. Sill assembly including the sill liner: 2 7/32" (56mm)
- E. Sash Description:
1. Interior: Non Finger-Jointed Pine or finger-jointed core with non finger-jointed Pine veneer:
    - a. Kiln-dried to moisture content no greater than 12 percent at the time of fabrication
    - b. Water repellent preservative treated with accordance with WDMA I.S.4.
  2. Sash exterior aluminum clad with 0.050" (1.3mm) thick extruded aluminum
  3. Sash thickness: 1 3/4" (44mm). Corner slot and tenoned.
  4. Operable sash tilt to interior for cleaning or removal
  5. Sash Options:
    - a. Standard: Equal Sash
    - b. Custom for Double Hung Units : Include 2 3/4" H bottom rail
  6. Exterior Cope Profile: Putty
  7. Interior Sash Sticking
    - a. Standard: Ogee
- F. Exterior Finish: Aluminum clad. Fluoropolymer modified acrylic topcoat over a primer.  
Meets AAMA 2605 requirements.
1. Color : "Stone White"
- G. Interior Finish:
1. Prime: Factory-applied water-borne acrylic primer. Meets WDMA TM-11 requirements.
  2. Color: Manufacturer's Standard white

- H. Attachment: Concealed frame anchors.
- I. Insulating-Glass Units: ASTM E2190.
  - 1. Glass: ASTM C1036, Type 1, Class 1, q3.
    - a. Tint: Clear.
  - 2. Lites: As shown on Drawings
  - 3. Filling: Fill space between glass lites with argon.
  - 4. Low-E Coating: Pyrolytic or sputtered on second surface. Low E1
  - 5. Film Pattern: None.
  - 6. Glass-Spacer Color: Manufacturer's standard color.
  - 7. Dirt-Resistant Coating: Exterior coating that reduces surface friction to enhance water runoff and reduce water spots and dirt residue.
- J. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
- K. Dividers: Grilles permanently attached to exterior and interior of insulating-glass unit with spacer between lites matching color of insulating-glass spacer.
  - 1. Profile: As indicated on Drawings.
  - 2. Width: As indicated on Drawings.
  - 3. Pattern: As indicated on Drawings.
  - 4. Exterior Color: Matching window exterior.
  - 5. Interior Color: Matching window interior.
- L. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock Metal Clad windows, and sized to accommodate sash weight and dimensions.
  - 1. Exposed Hardware Color and Finish: Satin taupe enamel.
- M. Double-Hung Window Hardware:
  - 1. Counterbalancing Mechanism: Complying with AAMA 902, concealed, of size and capacity to hold sash stationary at any open position.
  - 2. Locks and Latches: Self-latching, polycarbonate with integral color that allow unobstructed movement of the operable sash across fixed sash and operated from the inside only.
    - a. Material: Polycarbonate with integral color.
  - 3. Lift: Manufacturer's standard.
- N. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
  - 1. Operating units:
    - a. Jambs: Foam-filled bulb
    - b. Header: Continuous dual leaf
    - c. Bottom rail and check rail: Hollow bulb
  - 2. Stationary units:
    - a. Jambs: Foam for picture units; foam-filled bulb for transom unit
    - b. Header and bottom rail: Hollow bulb

- O. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
  - 1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.
- P. Accessories:
  - 1. Brick Mould.
    - a. Profile as indicated on the Drawings.
    - b. Finish to match exterior.
  - 2. Exterior sill and frame extender trim.
    - a. Profile as indicated on the Drawings.
    - b. Finish to match exterior.
  - 3. Sash opening limiters.
    - a. Manufacturers standard for both top and bottom sashes
    - b. 4" max opening
    - c. Provide the Owner with (3) sets of the limiter override maintenance tools.
- Q. Mullions: Provide manufacturer's standard clad mullion system configured to be structurally sound.
- R. Insect Screens: Provide screens for each operable sash. Wickets are not permitted.
  - 1. Type and Location:
    - a. Double hung units : Half-height, outside sashes.
    - b. Awning units : Full, outside sashes
  - 2. Frames: Roll-formed or extruded-aluminum alloy complying with requirements in SMA 1201; fabricated with mitered or coped joints or corner extrusions, concealed fasteners, and removable PVC splines/anchors concealing edge of frames and securing screen material.
    - a. Finish and Color: Manufacturer's standard baked-on coating in color matching window exterior.
  - 3. Aluminum Wire Fabric: Manufacturer's standard mesh of coated aluminum wire.

### 2.3 FABRICATION OF METAL CLAD WINDOWS

- A. Fabricate Metal Clad windows in sizes indicated. Include a complete system for installing and anchoring windows.
- B. Glaze Metal Clad windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

### PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Verify rough-opening dimensions, levelness of sill plate, and operational clearance.
- C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION OF METAL CLAD WINDOWS

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.
- B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.
- C. Install sealant and related backing materials at perimeter of unit or assembly in accordance with Section 07 92 00 Joint Sealants.
- D. Install accessory items as required.
- E. Use finish nails to apply wood trim and mouldings.

### 3.3 ADJUSTING

- A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

### 3.5 CLEANING

- A. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.
  1. Keep protective films and coverings in place until final cleaning.

### 3.6 PROTECTION

- A. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately in accordance with manufacturer's written instructions.

- B. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

1. Commercial door hardware for the following:
  - a. Swinging doors.
  2. Electrified door hardware.
  3. Silencers for all door frames.

- B. Related Sections include the following:

1. Division 08 Section "Hollow Metal Doors and Frames" for door silencers provided as part of hollow-metal frames.
2. Division 08 Section "Flush Wood Doors" for integral intumescent seals provided as part of fire-rated labeled assemblies.

1.3 SUBMITTALS

- A. General: Submittals for Sections 081113, 081416 and 087100 shall be made concurrently.

- B. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

- C. Shop Drawings: Details of electrified door hardware, indicating the following:

1. Wiring Diagrams: Power, signal, and control wiring. Include the following:
  - a. System schematic.
  - b. Point-to-point wiring diagram.
  - c. Riser diagram.
  - d. Elevation of each door.
2. Details of interface of electrified door hardware and building safety and security systems.
3. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.

- D. Samples for Verification: Submit minimum 2-by-4-inch plate Samples of each type of finish required, except primed finish.

- E. Product Certificates: For electrified door hardware, signed by product manufacturer.

1. Certify that door hardware approved for use on types and sizes of labeled fire doors complies with listed fire door assemblies.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for locks, latches and closers.
- G. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.
- H. Warranty: Special warranty specified in this Section.
- I. Other Action Submittals:
  1. Door Hardware Sets: Prepared by or under the supervision of Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
    - a. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
    - b. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
    - c. Content: Include the following information:
      - 1) Identification number, location, hand, fire rating, and material of each door and frame.
      - 2) Type, style, function, size, quantity, and finish of each door hardware item. Include description and function of each lockset and exit device.
      - 3) Complete designations of every item required for each door or opening including name and manufacturer.
      - 4) Fastenings and other pertinent information.
      - 5) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
      - 6) Explanation of abbreviations, symbols, and codes contained in schedule.
      - 7) Mounting locations for door hardware.
      - 8) Door and frame sizes and materials.
      - 9) Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.
        - a) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.
      - 10) List of related door devices specified in other Sections for each door and frame.
    - d. Submittal Sequence: Submit initial draft of final schedule along with essential Product Data to facilitate the fabrication of other work that is critical in Project construction schedule. Submit the final door hardware sets after Samples, Product Data, coordination with Shop Drawings of other work, delivery schedules, and similar information has been completed and accepted.
  2. Keying Schedule: The final keying schedule shall be prepared by the Owner.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
  - 1. Electrified Door Hardware Consultant Qualifications: A qualified Architectural Hardware Consultant who is experienced in providing consulting services for electrified door hardware installations.
- C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
  - 1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.
- D. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.
  - 1. Door Hardware: Provide hardware as required by accessibility regulations and requirements of authorities having jurisdiction. These include, but are not limited to, the following:
    - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
    - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
      - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
      - 2) Sliding or Folding Doors: 5 lbf applied parallel to door at latch.
      - 3) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
    - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
  - 2. NFPA 101: Comply with the following for means of egress doors:
    - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
    - b. Delayed-Egress Locks: Lock releases within 15 seconds after applying a force not more than 15 lbf for not more than 3 seconds.
    - c. Door Closers: Not more than 30 lbf to set door in motion and not more than 15 lbf to open door to minimum required width.
    - d. Thresholds: Not more than 1/2 inch high.
  - 3. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

- E. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.
- F. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
  - 1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.
- G. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- H. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to electrified door hardware including, but not limited to, the following:
  - 1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
  - 2. Review sequence of operation for each type of electrified door hardware.
  - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review required testing, inspecting, and certifying procedures.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

## 1.6 COORDINATION

- A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to access control system.
- C. Existing Openings: Where new hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide for proper operation.

## 1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
    - a. Structural failures including excessive deflection, cracking, or breakage.
    - b. Faulty operation of operators and door hardware.
    - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
  2. Warranty Period: One year from date of Substantial Completion, except as follows:
    - a. Exit Devices: Two years from date of Substantial Completion.
    - b. Manual Closers: 10 years from date of Substantial Completion.

## 1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

# PART 2 - PRODUCTS

## 2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.
1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
  2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:
1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements.
- C. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

## 2.2 HINGES, GENERAL

- A. Quantity: Provide the following, unless otherwise indicated:
1. Two Hinges: For doors with heights up to 60 inches.
  2. Three Hinges: For doors with heights 61 to 90 inches.
  3. Four Hinges: For doors with heights 91 to 120 inches.
  4. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

- B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- C. Hinge Weight: Unless otherwise indicated, provide the following:
  - 1. Entrance Doors: Heavy-weight hinges.
  - 2. Doors with Closers: Antifriction-bearing hinges.
  - 3. Interior Doors: Antifriction-bearing hinges and standard-weight hinges as indicated.
- D. Hinge Base Metal: Unless otherwise indicated, provide the following:
  - 1. Exterior Hinges: Stainless steel, with stainless-steel pin.
  - 2. Interior Hinges: Steel, with steel pin.
  - 3. Hinges for Fire-Rated Assemblies: Steel, with steel pin.
- E. Hinge Options: Where indicated in door hardware sets or on Drawings:
  - 1. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for outswinging exterior doors and outswinging corridor doors with locks.
  - 2. Corners: Square.
- F. Electrified Functions for Hinges: Comply with the following:
  - 1. Power Transfer: Concealed PTFE-jacketed wires, secured at each leaf and continuous through hinge knuckle.
  - 2. Available Products:
    - a. Marray TEF 2+4
    - b. Hagar: ETW 4-1/2 x 4-1/2.
    - c. McKinney: TA2714-CC4.
- G. Fasteners: Comply with the following:
  - 1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
  - 2. Wood Screws: For wood doors and frames.
  - 3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
  - 4. Screws: Phillips flat-head; machine screws (drilled and tapped holes) for metal doors and wood screws for wood doors and frames. Finish screw heads to match surface of hinges.

## 2.3 HINGES

- A. Butts and Hinges: BHMA A156.1.
- B. Template Hinge Dimensions: BHMA A156.7.
- C. Available Manufacturers:
  - 1. Hager Companies (HAG).
  - 2. McKinney Products Company; an ASSA ABLOY Group company (MCK).
  - 3. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
- D. The following is a guide for hinge size and type required for this project.

	Manufacturer	Interior:	Exterior
1-3/8" Doors up to 3'-0" wide	Stanley Hager McKinney	F179-3 1/2" 1279-3 1/2" T2714-3 1/2"	
1-3/4" Doors up to 3'-0" wide	Stanley Hager McKinney	FBB179-4 1/2" BB1279-4 1/2" TA-TB2714-4 1/2"	FBB191-4 1/2" BB1191-4 1/2" TA-TB2314-4 1/2"
1-3/4" Doors over 3'-0" wide	Stanley Hager McKinney	FBB168-4 1/2" BB1168-4 1/2" T4A-T4B3786-4 1/2"	FBB199-4 1/2" BB1199-4 1/2" T4A-T4B3386-4 1/2"
2-1/4" Doors	Stanley Hager McKinney		FBB199-5" BB1199-5" T4A-T4B3386-5"

## 2.4 LOCKS AND LATCHES, GENERAL

- A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."
  - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
- B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.
- C. Electrified Locking Devices: BHMA A156.25.
- D. Lock Trim:
  - 1. Levers: Cast.
  - 2. Escutcheons (Roses): Forged.
  - 3. Dummy Trim: Match lever lock trim and escutcheons.
- E. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
  - 1. Bored Locks: Minimum 1/2-inch latchbolt throw.
  - 2. Mortise Locks: Minimum 3/4-inch latchbolt throw.
  - 3. Deadbolts: Minimum 1-inch bolt throw.
- F. Rabbeted Meeting Doors: Provide special rabbeted front and strike on locksets for rabbeted meeting stiles.
- G. Backset: 2-3/4 inches, unless otherwise indicated.

- H. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:
1. Strikes for Bored Locks and Latches: BHMA A156.2.
  2. Strikes for Mortise Locks and Latches: BHMA A156.13.
  3. Strikes for Interconnected Locks and Latches: BHMA A156.12.
  4. Strikes for Auxiliary Deadlocks: BHMA A156.5.
  5. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
  6. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
  7. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.

## 2.5 MORTISED LOCKS AND LATCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Mechanical Locks and Latches:
    - a. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
    - b. Schlage Lock Company; an Ingersoll-Rand Company (SCH).
- B. Mortise Locks: Stamped steel case with steel or brass parts; BHMA Grade 1; Series 1000.
1. Provide one of the following manufacturers and designs:
    - a. Sargent 8200 Series
    - b. Schlage L9000 Series
- C. Lock Trim: Comply with the following:
1. Lockset Designs: Provide the lockset design designated below or, if sets are provided by another manufacturer, provide designs that match those designated:
    - a. Sargent, LNL design
    - b. Schlage, 06A design
- D. Lock Functions: Lock functions as indicated in the hardware schedule shall be as follows:

FUNCTION	SARGENT	SCHLAGE
A (utility)	04	80
B (office)	05	50
C (passage)	15	10
D (classroom)	37	70
E (entrance)	16	60
F (privacy)	65	40

## 2.6 DOOR BOLTS

- A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
1. Half-Round Surface Bolts: Minimum 7/8-inch throw.
  2. Interlocking Surface Bolts: Minimum 15/16-inch throw.
  3. Fire-Rated Surface Bolts: Minimum 1-inch throw; listed and labeled for fire-rated doors.

4. Dutch-Door Bolts: Minimum 3/4-inch throw.
  5. Mortise Flush Bolts: Minimum 3/4-inch throw.
- B. Dustproof Strikes: BHMA A156.16, Grade 1.
- C. Manual Flush Bolts: BHMA A156.16, Grade 1; designed for mortising into door edge.
1. Available Manufacturers:
    - a. Door Controls International (DCI).
    - b. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
    - c. Rockwood.
  2. Available Products for Wood Doors:
    - a. Door Controls: 790.
    - b. Glynn-Johnson: FB6W.
    - c. Rockwood: 557.

## 2.7 LOCK CYLINDERS

- A. Lock Cylinders: Provide 7-Pin small format interchangeable core cylinder housings, no exceptions.
- B. Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
1. Number of Pins: Seven.
  2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
  3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
- C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cores: KABA, no exceptions.
- D. Cylinders
1. KABA, no exceptions
    - a. KABA Part Number 3850-25-1007-K1\*
    - b. Key Blanks: KABA Part Number 3800-00-003K1 System Number C95 W21\*
    - c. \* - - A letter of authorization will be provided to the hardware supplier for ordering from the following vendor: Clark Security Products, an Anixter Company.

## 2.8 KEYING

- A. All locks and cylinders without exception must use KABA cylinders compatible with the Owner's existing campus keying system.
- B. Keying System: By Owner
- C. Keys: Nickel silver.
1. KABA, no exceptions.
  2. Quantity: In addition to one extra key blank for each lock, provide the following:
    - a. Cylinder Change Keys: Three.
    - b. Master Keys: Five.

2.9 OPERATING TRIM

- A. Standard: BHMA A156.6.
- B. Materials: Fabricate from stainless steel, unless otherwise indicated.
- C. Available Manufacturers:
  1. Burns Manufacturing Incorporated (BM).
  2. Don-Jo Mfg., Inc. (DJO).
  3. Hager Companies (HAG).
  4. IVES Hardware; an Ingersoll-Rand Company (IVS).
  5. Rockwood Manufacturing Company (RM).

2.10 TRIM UNITS

- A. Size: 1-1/2 inches less than door width on push side and 1/2 inch less than door width on pull side, by height specified in door hardware sets.
- B. Fasteners: Manufacturer's standard machine or self-tapping screws.
- C. Metal Protective Trim Units: BHMA A156.6; beveled top and 2 sides; fabricated from the following material:
  1. Material: 0.050-inch- thick stainless steel.
  2. Available Manufacturers:
    - a. Burns Manufacturing Incorporated (BM).
    - b. Don-Jo Mfg., Inc. (DJO).
    - c. Hager Companies (HAG).
    - d. IVES Hardware; an Ingersoll-Rand Company (IVS).
    - e. Rockwood Manufacturing Company (RM).
- D. Fabricate protection plates as follows:
  1. Push Plates: 16" high by 8" wide.
  2. Kick Plates: 10" high by 1-1/2" less than door width for single doors and 1" less than door width for pairs of doors. Kick plates shall be applied to push side of all doors where noted.

2.11 STOPS AND HOLDERS

- A. Stops and Bumpers: BHMA A156.16, Grade 1.
  1. Provide wall stops for doors unless floor or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Where floor or wall stops are not appropriate, provide overhead holders.
  2. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening. In general, match items to the manufacturer's standard finish for the latch and lock set (or push-pull units if no latch-lock sets) for color and texture.
- B. Wall Stops: Wall type bumpers with concealed type flange shall be used where ever possible.
  1. Available Products:

- a. Ives - 407 1/2
  - b. Door Controls - 3211T
  - c. Rockwood - 409
- C. Floor Stops: Where wall type bumpers cannot be used, provide dome type, floor mounted stops of the proper height as follows:
- 1. Available Products:
    - a. Ives - 436, 438
    - b. Door Controls - 3310X, 3320X
    - c. Rockwood - 440, 442
- D. Exterior doors striking masonry and doors specified to have door stops and holders, shall have cast bronze wall or floor type door stops with hook or staple type holders to selectively hold doors in open position. The following will be acceptable:
- 1. Available Products:
    - a. Ives - 445, 446
    - b. Door Controls - 3237X, 3347X
    - c. Rockwood - 473, 477
- E. Door Catches: Provide surface-mounted roller catch where indicated. Ives No. 338 or approved substitute.
- F. Roller Bumper: Provide curved roller bumper with 2-3/4 inch projection with brushed chrome finish; No. GJRB3 by Robert Brooke and Associates, Hager 273W, or approved substitute.
- G. Silencers for Wood Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum 5/8 by 3/4 inch; fabricated for drilled-in application to frame.
- H. Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch; fabricated for drilled-in application to frame.

## 2.12 DOOR GASKETING

- A. Standard: BHMA A156.22.
- B. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
- C. Weatherstripping:
  - 1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame. Basis-of-Design Product, No. A626A by National Guard Products or approved substitute.
  - 2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed. Basis-of-Design Product, No. 600A by National Guard Products or approved substitute.
  - 3. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed. Basis-of-Design Product, No. 95WH by National Guard Products or approved substitute.

- D. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke-control ratings indicated, based on testing according to UL 1784.
  - 1. Provide smoke-labeled gasketing on fire-rated doors and on smoke-labeled doors. Basis-of-Design Product, No. 5050 by National Guard Products or approved substitute.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

#### 2.13 SILENCERS

- A. Provide rubber silencers for all interior pressed steel (hollow metal) frames. Silencers shall be pneumatic type 1/2" diameter with 1/8" projection.
- B. Provide 3 silencers for the strike jamb of metal frames for single doors and two for the head for metal frames for pairs of doors. Provide 4 silencers for the strike jamb for frames for single dutch doors.

#### 2.14 THRESHOLDS

- A. Standard: BHMA A156.21.
- B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."
  - 1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
- C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch high.
- D. Manufacturers:
  - 1. Provide No. 896 with door bottom sweep No. 95WH by National Guard Products or approved substitute.
  - 2. Thresholds shall include thermal break feature.

#### 2.15 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
  - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

- C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
  2. Steel Machine or Wood Screws: For the following fire-rated applications:
    - a. Mortise hinges to doors.
    - b. Strike plates to frames.
    - c. Closers to doors and frames.
  3. Steel Through Bolts: For the following fire-rated applications unless door blocking is provided:
    - a. Surface hinges to doors.
    - b. Closers to doors and frames.
    - c. Surface-mounted exit devices.
  4. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
  5. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."

## 2.16 FINISHES

- A. Standard: BHMA A156.18, as indicated in door hardware sets.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Provide the following finishes:
  1. Butts and Hinges: 26D
  2. Locks & Lock Trim: 26D
  3. Exit Devices: 26D
  4. Door Controls - Closers: Sprayed Aluminum Finish
  5. Door Stops: 26D
  6. Weatherstripping: Clear Anodized Aluminum
  7. Threshold: Aluminum
  8. Kickplates: 26D
  9. Pulls: 26D

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Steel Doors and Frames: Comply with DHI A115 Series.
  1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.
- B. Wood Doors: Comply with DHI A115-W Series.

### 3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
  1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
  2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
  1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
  2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- D. Strikes for Vertical Rod Exit Devices: Where vertical rod exit devices are used at interior doors, bottom strikes at floor are to be installed so that the top of the strike is flush with the adjacent flooring material.

### 3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
  - 1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
  - 2. Door Closers: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
- B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

### 3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

### 3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

### 3.7 DOOR HARDWARE SETS

- A. The hardware for each opening shall be as scheduled on the drawings. It is the bidder's responsibility to accurately furnish the proper quantities, items, sizes, weights and functions as required by the plans and specifications. If an opening has, through error, been omitted from the following hardware sets, it shall be the bidder's responsibility to supply hardware of equivalent quality and quantity, as that which is specified for a comparable opening.

END OF SECTION



## SECTION 09 22 16

### NON-STRUCTURAL METAL FRAMING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:

1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.

- B. Related Requirements:

1. Section 054000 "Cold-Formed Metal Framing" for exterior and interior load-bearing and exterior non-load-bearing wall studs; floor joists; roof rafters and ceiling joists; and roof trusses.
2. See Section 01 23 00 for alternates which affect the work of this section.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.

##### 1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For firestop tracks, from ICC-ES.

#### PART 2 - PRODUCTS

##### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency. to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

## 2.2 FRAMING SYSTEMS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
  - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
  - 2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.
- C. Studs and Runners: ASTM C 645.
  - 1. Steel Studs and Runners:
    - a. Minimum Base-Metal Thickness: 22 gage.
    - b. Depth: As indicated on Drawings.
- D. Slip-Type Head Joints: Where indicated, provide one of the following:
  - 1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
  - 2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
  - 3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
    - a. Products: Subject to compliance with requirements, provide one of the following:
      - 1) Dietrich Metal Framing; SLP-TRK Slotted Deflection Track.
      - 2) MBA Building Supplies; FlatSteel Deflection Track or Slotted Deflecto Track.
      - 3) Steel Network Inc. (The); VertiClip SLD or VertiTrack VTD Series.
      - 4) Superior Metal Trim; Superior Flex Track System (SFT).
      - 5) Telling Industries; Vertical Slip Track or Vertical Slip Track II.
- E. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
  - 1. Products: Subject to compliance with requirements, provide one of the following :
    - a. Fire Trak Corp.; Fire Trak System attached to studs with Fire Trak Posi Klip.
    - b. Metal-Lite, Inc.; The System.
- F. Flat Strap and Backing Plate: Where indicated on drawings, provide steel sheet for blocking and bracing in length and width indicated.
  - 1. Minimum Base-Metal Thickness: 18 gage.

- G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
  - 1. Minimum Base-Metal Thickness: 0.018 inch.
  - 2. Depth: 7/8 inch .
- H. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.
  - 1. Configuration: Asymmetrical.

## 2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.
- B. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.
  - 1. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch deep.
    - a. Minimum Base-Metal Thickness: 0.018 inch.
- C. Grid Suspension System for Gypsum Board Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Armstrong World Industries, Inc.; Drywall Grid Systems.
    - b. Chicago Metallic Corporation; Drywall Grid System.
    - c. USG Corporation; Drywall Suspension System.

## 2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
  - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Resilient Clip System: Where indicated on acoustic walls, provide IsoMax Resilient Sound Isolation Wall and Ceiling Clip by Kinetics Noise Control.
  - 1. Vertical Load capacity. Clips shall have sufficient capacity to support wall or ceiling weights as constructed. In a vertical load test comparable to a ceiling installation, the clip shall have a minimum design load capacity of 36 lbs. using 25 gauge furring channel. The minimum design load capacity when using 22 gauge furring channel shall be 48 lbs. Design Load capacity shall be based on a safety factor where the load to failure, defined as pullout of the channel from the clip, is a minimum 2.5 times the allowable maximum Design Load. Anchors for attachment of the clips to the substructure shall be selected to support wall and/or ceiling weights at each clip.
  - 2. The isolation clips shall consist of a rubber element into which a standard galvanized steel furring channel, 7/8 in. x minimum 25 gauge, is captured. The channel legs snap fit into the rubber element without any metal-to-metal or other rigid contact with building elements.
  - 3. The isolation clip is attached to the wall/ceiling framing or other structural substrate through galvanized steel brackets on each side of the rubber isolation element. The brackets shall be of sufficient strength to carry the wall or ceiling weight without bending

- or failure.
4. Approved Substitute Products: Genie Clip by Pliteq or The Clip by Pac International.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

### 3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

### 3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacing indicated, but not greater than spacing required by referenced installation standards for assembly types.
  - 1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.
  - 2. Multilayer Application: 16 inches o.c. unless otherwise indicated.
  - 3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
  - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
  - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
    - a. Install two, 20 gage, studs at each jamb unless otherwise indicated.
    - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
    - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
  - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
  - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
    - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
  - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

### 3.5 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacing indicated, but not greater than spacing required by referenced installation standards for assembly types.
  - 1. Hangers: 48 inches o.c.

2. Carrying Channels (Main Runners): 48 inches o.c.
  3. Furring Channels (Furring Members): 16 inches o.c.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
    - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  2. Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
    - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
  3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  5. Do not attach hangers to steel roof deck.
  6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
  7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
  8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.
- F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
- G. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 09 22 16

## SECTION 09 29 00

### GYPSUM BOARD AND INTERIOR INSULATION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes the following:

1. Interior gypsum board.
2. Foam-plastic board insulation.
3. Glass-fiber blanket insulation

- B. See Section 01 23 00 for alternates which affect the work of this section.

##### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.

##### 1.4 PERFORMANCE REQUIREMENTS

- A. Smoke Resistance Rated Assemblies: For smoke resistance rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

##### 1.5 STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

##### 1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install interior products until installation areas are enclosed and conditioned.

- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

## PART 2 - PRODUCTS

### 2.1 PANELS, GENERAL

- A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

### 2.2 INTERIOR GYPSUM BOARD

- A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. G-P Gypsum.
  - b. Lafarge North America Inc.
  - c. National Gypsum Company.
  - d. PABCO Gypsum.
  - e. USG Corporation.

- B. Regular Type:

1. Thickness: as shown
2. Long Edges: Tapered.

### 2.3 SPECIALTY GYPSUM BOARD

- A. Moisture Resistant Interior Gypsum Board: With mold/mildew/moisture resistant facers on both sides. Specifically designed for interior use.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. National Gypsum Gold Bond XP Gypsum Board.
2. Core: Thickness as shown.
3. Long Edges: Tapered.

## 2.4 FOAM-PLASTIC BOARD INSULATION

- A. Rigid Insulation: Extruded-Polystyrene Board Insulation; ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively:
1. Available Products:
    - a. Foamular 250; Owens Corning.
    - b. Styrofoam by Dow Chemical Co.
    - c. Amofoam-CM by Tenneco Building Products
  2. Type IV, 1.60 lb/cu. ft., unless otherwise indicated.
  3. Application: Partition insulation. Masonry deck insulation.

## 2.5 GLASS-FIBER BLANKET INSULATION

- A. Available Manufacturers:
1. CertainTeed Corporation. (20% recycled content)
  2. Guardian Fiberglass, Inc. (30% post consumer, 5% post industrial)
  3. Johns Manville. (18% post consumer, 7% post industrial)
  4. Knauf Fiber Glass. (recycled content NA)
  5. Owens Corning. (40% recycled content)
- B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- C. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:
1. 3-1/2 inches thick with a thermal resistance of R-11.
  2. 5-1/2 inches thick with a thermal resistance of 19 deg F x h x sq. ft./Btu at 75 deg F.

## 2.6 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
1. Material:
    - a. Galvanized or aluminum-coated steel sheet or rolled zinc.
    - b. Plastic where abutting exterior metal doors and windows.
  2. Shapes:
    - a. Cornerbead.
    - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - c. L-Bead: L-shaped; exposed long flange receives joint compound.

- d. Expansion (control) joint.

## 2.7 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
  - 1. Interior Gypsum Wallboard: Paper.
  - 2. Mold-Resistant Gypsum Wallboard: 10-by-10 glass mesh.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
  - 1. Pre-filling: At open joints and damaged surface areas, use setting-type taping compound.
  - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping or drying-type, all-purpose compound.
    - a. Use setting-type taping with mold-resistant gypsum wallboard.
  - 3. Fill Coat: For second coat, use setting-type, sandable topping or drying-type, all-purpose compound.
  - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
  - 5. Skim Coat: Not required.

## 2.8 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
  - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- C. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."
- D. Vapor Retarder: As specified in Division 07 Section "Thermal Insulation."
- E. Firestopping: As specified in Division 07 Section "Penetration Firestopping."

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 APPLYING AND FINISHING PANELS, GENERAL**

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Provide sealant bed at flanges of electrical boxes prior to application of gypsum panels.
- F. Form control and expansion joints with space between edges of adjoining gypsum panels.
- G. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
  - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
  - 2. Fit gypsum panels around ducts, pipes, and conduits.
  - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- H. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- I. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- J. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.
- K. Smoke-Rated Gypsum Board Assemblies: Provide a tight, taped joint at the top of smoke-rated assemblies and around any penetrations to assemblies at both side of the assembly. The use of acoustical sealant will be acceptable to fill gaps up to 3/8 inch wide.

### 3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
  - 1. Regular Type: As indicated on Drawings.
  - 2. Type X: Where required for fire-resistance-rated assembly.
  - 3. Moisture and Mold-Resistant Type: as shown
  - 4. Abuse Resistant Type: At all corridors.
- B. Single-Layer Application:
  - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
  - 2. On partitions/walls, apply gypsum panels as follows:
    - a. Vertically (parallel to framing) for metal framing.
    - b. Horizontally (perpendicular to framing) for wood framing.
    - c. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    - d. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
  - 3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
  - 4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

### 3.4 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations indicated on Drawings or according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
  - 1. Cornerbead: Use at outside corners, unless otherwise indicated.
  - 2. LC-Bead: Use at exposed panel edges.
  - 3. L-Bead: Use where indicated.

### 3.5 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  2. Level 2: Where indicated on Drawings.
  3. Level 3: Where indicated on Drawings.
  4. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.
    - a. Primer and its application to surfaces are specified in other Division 09 Sections.
  5. Level 5: Not required.

### 3.6 FIELD QUALITY CONTROL

- A. Above-Ceiling Observation: Before Contractor installs gypsum board ceilings, conduct an above-ceiling observation and report deficiencies in the Work observed. Do not proceed with installation of gypsum board to ceiling support framing until deficiencies have been corrected.
1. Complete the following in areas to receive gypsum board ceilings:
    - a. Installation, insulation, and leak and pressure testing of water piping systems.
    - b. Installation of air-duct systems.
    - c. Installation of air devices.
    - d. Installation of mechanical system control-air tubing.
    - e. Installation of ceiling support framing.
    - f. Installation of Penetration Firestopping.

### 3.7 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION



SECTION 09 51 13

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes acoustical panels and exposed suspension systems for ceilings.
1. Include acoustical panel soffits.
  2. Include panel ceilings for new construction
  3. Include panel ceilings for damaged materials during removal and replacement of existing panel ceilings.
    - a. Include new material for 10% of existing ceilings to be removed and replaced.

1.3 DEFINITIONS

- A. AC: Articulation Class.
- B. CAC: Ceiling Attenuation Class.
- C. LR: Light Reflectance coefficient.
- D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.

1.5 QUALITY ASSURANCE

- A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated. NVLAP-accredited laboratories must document accreditation, based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.
- B. Source Limitations:
1. Acoustical Ceiling Panel: Obtain each type through one source from a single manufacturer.
  2. Suspension System: Obtain each type through one source from a single manufacturer.

## 1.6 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:
  - 1. Fire-Resistance Characteristics: Where indicated, provide acoustical panel ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
    - a. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.
    - b. Identify materials with appropriate markings of applicable testing and inspecting agency.
  - 2. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
    - a. Smoke-Developed Index: 450 or less.
- B. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
  - 1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with IBC.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

## 1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

## 1.9 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

## 1.10 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.
2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of quantity installed.

## PART 2 - PRODUCTS

### 2.1 ACOUSTICAL PANELS, GENERAL

- A. Recycled Content: Provide acoustical panels with recycled content such that postconsumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 25 percent by weight.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
  1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.
- C. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
  1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.
- D. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Where indicated, provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

### 2.2 ACOUSTICAL PANELS ACT-1

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
  1. ACT-1: USG; Mars Healthcare Acoustical Panels.
- B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
  1. Type and Form: Type III, mineral base with painted finish; Form 1, nodular or 2, water felted.
  2. Pattern: CE (perforated, small holes and lightly textured) and I (embossed).
- C. Color: White.
- D. LR: Not less than 0.85.
- E. NRC: Not less than 0.55.
- F. CAC: Not less than 35.

- G. Edge/Joint Detail: Square edge for 15/16" grid.
- H. Thickness: 7/8 inch.
- I. Modular Size: 24 by 48 inches.
- J. Antimicrobial Treatment: Broad spectrum fungicide and bactericide based.

## 2.3 METAL SUSPENSION SYSTEMS, GENERAL

- A. Recycled Content: Provide products made from steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- B. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
- C. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
  - 1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.
- D. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- E. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
  - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
  - 2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- diameter wire.
- F. Hanger Rods or Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- G. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch- thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.

## 2.4 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Donn 15/16" Exposed Tee System; USG.
- B. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized

according to ASTM A 653/A 653M, not less than G30 coating designation, with prefinished 15/16-inch-wide metal caps on flanges.

1. Structural Classification: Intermediate-duty system.
2. End Condition of Cross Runners: Override (stepped) or butt-edge type, as standard with manufacturer.
3. Face Design: Flat, flush.
4. Cap Material: Steel cold-rolled sheet or aluminum.
5. Cap Finish: Painted white.

## 2.5 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
  1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
    - a. For open sided installation shown provide manufacturer's standard 8" high fascia molding with prefinished exposed 1" flanges.
  2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
  1. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

### 3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
  1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.
- B. Suspend ceiling hangers from building's structural members and as follows:

1. Hangers shall be single lengths of wire without splices; coordinate lengths in deep ceiling cavities.
  2. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
  3. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  4. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  5. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
  6. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
  7. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
  8. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
  9. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
  10. Do not attach hangers to steel deck tabs.
  11. Do not attach hangers to steel roof deck. Attach hangers to structural members.
  12. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
  13. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Suspension system shall be reinforced to support diffusers, light fixtures and any additional members. Install hanger wires to grid at each corner of light fixtures. Coordinate location with electrical and other trades.
1. Each individual fixture and attachment with combined weight of 56 pounds or less shall have two 12-gage wire hangers attached at diagonal corners of the fixture. These wires shall be slack. Fixtures and attachments with a combined weight of greater than 56 pounds shall be independently supported from the structure at all four corners.

- E. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
  - 1. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
  - 2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- F. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- G. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
  - 1. Arrange directionally patterned acoustical panels as follows:
    - a. As indicated on reflected ceiling plans.
    - b. Install panels with pattern running in one direction parallel to long axis of space.
  - 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
  - 3. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
  - 4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
  - 5. Install hold-down clips in areas within 10 feet of exterior doors or vestibule doors; space as recommended by panel manufacturer's written instructions, unless otherwise indicated or required.

### 3.4 FIELD QUALITY CONTROL

- A. Above-Ceiling Observation: Before Contractor installs acoustical panel ceilings, conduct an above-ceiling observation and report deficiencies in the Work observed. Do not proceed with installation of acoustical panels until deficiencies have been corrected.
  - 1. Complete the following in areas to receive gypsum board ceilings:
    - a. Installation of 80 percent of lighting fixtures, powered for operation.
    - b. Installation, insulation, and leak and pressure testing of water piping systems.
    - c. Installation of air-duct systems.
    - d. Installation of air devices.
    - e. Installation of mechanical system control-air tubing.
    - f. Installation of penetration firestopping.

### 3.5 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION



SECTION 09 65 00  
FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 SUMMARY

A. This Section includes the following:

1. Rubber tile flooring.
2. Rubber step treads and risers.
3. Vinyl base.
4. Flooring transition strips.
5. Patching of quarry tile at proposed openings.

1.3 QUALITY ASSURANCE:

A. Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.

1. Wherever possible, provide required resilient flooring and accessories produced by a single manufacturer.

B. Fire Test Performance: Unless otherwise indicated, provide resilient flooring having the following classifications or properties when tested in accordance with the standard fire tests referenced below:

1. Flame Spread: Not more than 75 as per ASTM E 84.
2. Smoke Developed: Not more than 450 as per ASTM E 84.
3. Smoke Density: Not more than 450 as per NFPA 258.

1.3 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data and installation instructions for each type of resilient flooring and accessory.

B. Samples: Submit samples of each type, color, and pattern of resilient flooring, including accessories, required, indicating full range of color and pattern variation.

C. Certification for Fire Test Performance: Submit manufacturer's certification that resilient flooring furnished for areas indicated complies with required fire test performance and has been tested and meets indicated requirements.

D. Maintenance Instructions: Submit manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

1.5 JOB CONDITIONS:

- A. Maintain minimum temperature of 65 deg. F (18 deg. C) in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 deg. F (13 deg. C) in areas where work is completed.
- B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test.

## PART 2 - PRODUCTS

### 2.1 MATERIALS:

- A. Colors and Patterns: As shown or scheduled, or as selected by Architect from manufacturer's full range of standard and custom colors and patterns.
- B. Rubber Flooring:
  1. Tile: Johnsonite 24 x 24 x 1/8 Solid rubber tile.
  2. Treads + Risers:
    - a. Product: Johnsonite VIBMTR-XXX with visually impaired rubber insert strip
    - b. Color: Color Group B
  3. Landing and Ramp Tile:
    - a. Product: Bamboo Texture
    - b. Color: Color Group B
- C. Vinyl Base:
  1. Product: Johnsonite 4" Vinyl Cove Base.
- D. Accessories:
  1. Resilient Edge Strips: 1/8" thick, homogeneous vinyl or rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard or custom colors available; not less than 1" wide.
  2. Adhesives (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.
  3. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
  4. Leveling Compound: Latex type as recommended by flooring manufacturer.
  5. Resilient Transition Strips: 1/4" x 1 1/4" vinyl or rubber composition, tapered. Color as selected Architect from manufacturer's standard or custom colors available.
  6. Vinyl Base: Johnsonite 6" Black

## PART 3 - EXECUTION

### 3.1 PREPARATION:

- A. For the removal of existing resilient flooring and reinstallation of VCT flooring, follow the recommendations of the manufacturer. In the event the manufacturer has no literature regarding this issue, follow Armstrong World Industries installation and removal recommendations, current edition.

- B. Remove existing tile adhesive as required to permit proper installation of new flooring.
- C. Broom clean or vacuum surfaces to be covered, and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.
  - 1. Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in subfloors.
  - 2. Perform bond and moisture tests on concrete slabs to determine that concrete surfaces are sufficiently cured, dried and ready to receive flooring.
  - 3. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

### 3.2 INSTALLATION:

- A. General:
  - 1. Install flooring using method indicated in strict compliance with manufacturer's recommendations. Extend flooring into toe spaces, door reveals, and into closets and similar openings.
  - 2. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
  - 3. Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.
  - 4. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll flooring at perimeter of each covered area to assure adhesion.
- B. Tile Floors:
  - 1. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.
  - 2. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
    - a. Lay tile in "checkerboard" fashion with grain reversed in adjacent tiles.
  - 3. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.
- C. Sheet Flooring:
  - 1. Lay flooring to provide minimum number of seams. Avoid cross seams, filler pieces, and strips. Match edges for color shading and pattern at seams in compliance with manufacturer's recommendations.
  - 2. Install flooring with adhesives, tools, and procedures in strict accordance with manufacturer's written instructions.

3. Adhesive Application: Apply adhesive(s) following flooring manufacturer's instructions. Observe the recommended trowel notching, spread rates, and open times.
  4. Prepare chemically bonded seams by applying extra adhesive into seams. Use tools, materials, methods, and sequence of work in conformance with the written instructions of the flooring manufacturer.
  5. Prepare heat-welded seams with special routing tool supplied for this purpose and heat weld with vinyl welding bead in seams. Use methods and sequence of work in conformance with written instructions of flooring manufacturer.
  6. Provide integral flash cove base where shown on drawings, including cove fillet support strip and top edge cap trim. Construct coved base in accordance with manufacturer's instructions.
- D. Accessories:
1. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with corners fabricated from base materials and with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
    - a. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
  2. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.3 CLEANING AND PROTECTION:

- A. Remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring with heavy Kraft paper or other covering.
- B. Finishing: After completion of project and just prior to final inspection of work, thoroughly clean floors and accessories.
- C. Do not apply any polish or wax to resilient flooring.

END OF SECTION 09 65 00

## SECTION 09 91 00

### PAINTING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Exterior high-performance paint and coatings systems.
- B. Interior painting.

##### 1.2 REFERENCES

- A. Steel Structures Painting Council (SSPC):
  - 1. SSPC-SP 1 - Solvent Cleaning.
  - 2. SSPC-SP 2 - Hand Tool Cleaning.
  - 3. SSPC-SP 3 - Power Tool Cleaning.
  - 4. SSPC-SP5/NACE No. 1, White Metal Blast Cleaning.
  - 5. SSPC-SP6/NACE No. 3, Commercial Blast Cleaning.
  - 6. SSPC-SP7/NACE No. 4, Brush-Off Blast Cleaning.
  - 7. SSPC-SP10/NACE No. 2, Near-White Blast Cleaning.
  - 8. SSPC-SP11, Power Tool Cleaning to Bare Metal.
  - 9. SSPC-SP12/NACE No. 5, Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.
  - 10. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete.
- B. Material Safety Data Sheets / Environmental Data Sheets: Per manufacturer's MSDS/EDS for specific VOCs (calculated per 40 CFR 59.406). VOCs may vary by base and sheen.
- C. California Department of Public Health (CDPH):
  - 1. CDPH v1.1-2010 and V1.2-2017

##### 1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: For each paint system indicated, including.
  - 1. Product characteristics.
  - 2. Surface preparation instructions and recommendations.
  - 3. Primer requirements and finish specification.
  - 4. Storage and handling requirements and recommendations.
  - 5. Application methods.
  - 6. Cautions for storage, handling and installation.
- C. Coating Maintenance Manual: Upon conclusion of project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams, "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and

cleaning instructions, touch-up procedures, and color samples of each color and finish used.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.
- D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  1. Finish surfaces for verification of products, colors and sheens.
  2. Finish area designated by Architect.
  3. Provide samples that designate primer and finish coats.
  4. Compatibility and Adhesion: Check after one week of drying and curing by testing in accordance with ASTM D3359; Adhesion by tape test. If coating system is incompatible, additional surface preparation up to and including complete removal may be required.
  5. Do not proceed with remaining work until the Architect approves the mock-up.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
  1. Product name, and type (description).
  2. Application and use instructions.
  3. Surface preparation.
  4. VOC content.
  5. Environmental handling.
  6. Batch date.
  7. Color number.
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

#### 1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

#### 1.7 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
- B. Furnish Owner with an additional one percent of each material and color, but not less than 1 gal (3.8 l) or 1 case, as appropriate.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Sherwin-Williams, which is located at: 101 Prospect Ave.; Cleveland, OH 44115; ASD Toll Free Tel: 800-524-5979; Tel: 216-566-2000; Fax: 440-826-1989; Email: request [infospecifications@sherwin.com](mailto:infospecifications@sherwin.com); Web: [www.swspecs.com](http://www.swspecs.com).
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

### 2.2 APPLICATIONS/SCOPE

- A. High Performance Exterior Paint and Coating Systems:
  1. Metal: Miscellaneous iron, ornamental iron, ferrous metal.
  2. Wood: Siding, trim, shutters, sash, and miscellaneous hardboard.
- B. Exterior Paint and Coating Systems:
  1. Metal: Miscellaneous iron, ornamental iron, ferrous metal.
  2. Stainless Steel: Per above with special surface preparation
  3. Prefinished Metal: Special surface preparation and electrostatic spray finish

### 2.3 PAINT MATERIALS - GENERAL

- A. Paints and Coatings:
  1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
  2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufacturer's product instructions for optimal color conformance.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.
- D. Color: Refer to Finish Schedule for paint colors, and as selected.

### 2.4 EXTERIOR PAINT AND COATING SYSTEMS

- A. Metal - (Structural Steel Columns, Joists, Trusses, Beams, Miscellaneous and Ornamental Iron, Structural Iron, Ferrous Metal, Hollow Metal Doors).
  1. HIGH PERFORMANCE: Urethane System; Waterbased: Previously Painted
    - a. Gloss Finish Single Component:

- 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series. (5.0-10.0 mils wet, 1.8-3.6 mils dry).
- 2) 2nd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Urethane Gloss, B65-120 Series.
- 3) 3rd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Urethane Gloss, B65-120 Series. (6.0-12.0 mils wet, 1.9-3.8 mils dry per coat).

B. Wood: Doors, Trim, Partitions, and Frames and CPVC Trim

1. HIGH PERFORMANCE: Urethane System; Waterbased:
  - a. Gloss Finish:
    - 1) 1st Coat: S-W PrepRite® ProBlock® Interior-Exterior Latex Primer-Sealer B51-600 Series
    - 2) 2nd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Urethane Gloss, B65-120 Series.
    - 3) 3rd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Urethane Gloss, B65-120 Series. (6.0-12.0 mils wet, 1.9-3.8 mils dry per coat).
  2. ARCHITECTURAL:
    - 1) 1st Coat: S-W PrepRite® ProBlock® Interior-Exterior Latex Primer-Sealer B51-600 Series
    - 2) 2<sup>nd</sup> Coat: Duration® Exterior Acrylic Gloss K34-Series
    - 3) 3<sup>rd</sup> Coat: Duration® Exterior Acrylic Gloss K34-Series (5.3-6.4 mils wet 2.0-2.4 mils dry)

## 2.5 INTERIOR PAINT SYSTEMS

A. METAL - (Hollow Metal Doors and Frames and Handrails).

1. Alkyd Systems (For Metal Doors and Frames - Water Based):
  - a. Semi-Gloss Finish:
    - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0-10.0 mils wet, 1.8-3.6 mils dry).
    - 2) 2nd Coat: S-W Pro Industrial Water Based Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series.
    - 3) 3rd Coat: S-W Pro Industrial Water Based Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series (4.0-5.0 mils wet, 1.4 - 1.7 mils dry per coat).

B. DRYWALL - (Wet Areas).

- 1) Epoxy-Modified Latex System:
  - a) Prime Coat: Primer sealer, latex, interior:
    - 1) S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600, at **1.0 mils (0.025 mm)** dry, per coat.
  - b) Intermediate Coat: Epoxy-modified latex, interior, matching topcoat.
  - c) Topcoat: Epoxy-modified latex, interior, eggshell:
    - 1) S-W Pro Industrial Waterbased Catalyzed Epoxy Eggshell, B73-360 Series, at **2.0 to 4.0 mils (0.051 to 0.102 mm)** dry, per coat.
  - d) Topcoat: Epoxy-modified latex, interior, gloss:
    - 1) S-W Pro Industrial Waterbased Catalyzed Epoxy Gloss, B73-300 Series, at **2.0 to 4.0 mils (0.051 to 0.102 mm)** dry, per coat

C. DRYWALL - (New and Previously Painted)

- a) Prime Coat: Primer sealer, latex, interior:

- 1) S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600, at **1.0 mils**  
**(0.025 mm)** dry, per coat.
- 2) Omit at previously painted walls
- b) Intermediate Coat: Latex eggshell, interior, matching topcoat.
- c) Topcoat: Latex eggshell

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.
- C. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.

### 3.2 SURFACE PREPARATION

- A. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
  1. Prior to attempting to remove mildew, it is recommended to test any cleaner on a small, inconspicuous area prior to use. Bleach and bleaching type cleaners may damage or discolor existing paint films. Bleach alternative cleaning solutions are advised.
  2. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply solution and scrub the mildewed area. Allow solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow surface to dry before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
  3. Remove items including but not limited to thermostats, electrical outlets, switch covers and similar items prior to painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
  4. No exterior painting should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50 degrees F (10 degrees C), unless products are designed specifically for these conditions. On large expanses of metal siding, the air, surface and material temperatures must be 50 degrees F (10 degrees F) or higher to use low temperature products.
- B. Aluminum: Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP1, Solvent Cleaning.
- C. Block (Cinder and Concrete): Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75 degrees F (24 degrees C). The pH of the surface should be between 6 and 9 unless the products are

designed to be used in high pH environments. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a cement patching compound.

- D. Concrete, SSPC-SP13 or NACE 6: This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete, and dust, and should provide a sound, uniform substrate suitable for the application of protective coating or lining systems.
- E. Cement Composition Siding/Panels: Remove all surface contamination by washing with an appropriate cleaner, rinse thoroughly and allow to dry. Existing peeled or checked paint should be scraped and sanded to a sound surface. Pressure clean, if needed, with a minimum of 2100 psi pressure to remove all dirt, dust, grease, oil, loose particles, laitance, foreign material, and peeling or defective coatings. Allow the surface to dry thoroughly. The pH of the surface should be between 6 and 9 unless the products are designed to be used in high pH environments.
- F. Copper and Stainless Steel: Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP 2, Hand Tool Cleaning.
- G. Exterior Composition Board (Hardboard): Some composition boards may exude a waxy material that must be removed with a solvent prior to coating. Whether factory primed or unprimed, exterior composition board siding (hardboard) must be cleaned thoroughly and primed with an alkyd primer.
- H. Drywall - Exterior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting. Exterior surfaces must be spackled with exterior grade compounds.
- I. Drywall - Interior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.
- J. Galvanized Metal: Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP16 is necessary to remove these treatments.
- K. Plaster: Must be allowed to dry thoroughly for at least 30 days before painting unless the products are designed to be used in high pH environments. Room must be ventilated while drying; in cold, damp weather, rooms must be heated. Damaged areas must be repaired with an appropriate patching material. Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.
- L. Steel: Structural, Plate, And Similar Items: Should be cleaned by one or more of the surface preparations described below. These methods are used throughout the world for describing methods for cleaning structural steel. Visual standards are available through the Society of Protective Coatings. A brief description of these standards together with numbers by which

they can be specified follow.

1. Solvent Cleaning, SSPC-SP1: Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.
2. Hand Tool Cleaning, SSPC-SP2: Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
3. Power Tool Cleaning, SSPC-SP3: Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
4. White Metal Blast Cleaning, SSPC-SP5 or NACE 1: A White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
5. Commercial Blast Cleaning, SSPC-SP6 or NACE 3: A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 33 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
6. Brush-Off Blast Cleaning, SSPC-SP7 or NACE 4: A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose paint. Tightly adherent mill scale, rust, and paint may remain on the surface. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP 1 or other agreed upon methods.
7. Power Tool Cleaning to Bare Metal, SSPC-SP11: Metallic surfaces that are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1, Solvent Cleaning, or other agreed upon methods.
8. Near-White Blast Cleaning, SSPC-SP10 or NACE 2: A Near White Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 5 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
9. High- and Ultra-High Pressure Water Jetting for Steel and Other Hard Materials:

SSPC-SP12 or NACE 5: This standard provides requirements for the use of high- and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only without the addition of solid particles in the stream.

10. Water Blasting, SSPC-SP12/NACE No. 5: Removal of oil grease dirt, loose rust, loose mill scale, and loose paint by water at pressures of 2,000 to 2,500 psi at a flow of 4 to 14 gallons per minute.

- M. Vinyl Siding, Architectural Plastics, EIFS and Fiberglass: Clean vinyl siding thoroughly by scrubbing with a warm, soapy water solution. Rinse thoroughly. Do not paint vinyl siding with any color darker than the original color unless the paint system features Sherwin-Williams VinylSafe technology. Painting with darker colors that are not Sherwin-Williams VinylSafe may cause siding to warp. Follow all painting guidelines of the vinyl manufacturer when painting. Only paint properly installed vinyl siding. Deviating from the manufacturer's painting guidelines may cause the warranty to be voided.
- N. Stucco: Must be clean and free of any loose stucco. If recommended procedures for applying stucco are followed, and normal drying conditions prevail, the surface may be painted in 30 days. The pH of the surface should be between 6 and 9 unless the products are designed to be used in high pH environments such as Loxon.
- O. Wood: Must be clean and dry. Prime and paint as soon as possible. Knots and pitch streaks must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

### 3.3 INSTALLATION

- A. Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.
- B. Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.
- C. Apply coatings using methods recommended by manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
- F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
- G. Inspection: The coated surface must be inspected and approved by the Architect just prior to the application of each coat.

### 3.4 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coatings after substantial completion, following manufacturer's

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recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION



SECTION 10 28 00  
TOILET ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Toilet and bath accessories.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following:

1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Features that will be included for Project.
5. Manufacturer's warranty.

- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify products using designations indicated.

- C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

- D. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.

1.5 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

#### 1.6 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
1. Warranty Period: 15 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering accessories that may be incorporated into the Work include, but are not limited to, the following:
1. Bath Accessories:
    - a. Bobrick or as shown
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, those indicated in the Toilet and Bath Accessory Schedule at the end of Part 3.

#### 2.2 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.
- C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- H. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

## 2.3 COMMON AREA TOILET ACCESSORIES

- A. Item A - Toilet Paper Dispenser- Double Roll: Stainless steel, recessed mounted, 8" x 14" x 6.75"; with key cylinder lock; ABS spindles. Units for accessible toilets shall not have controlled delivery.
  - 1. Products: #2519 by Impact.
- B. Item B – Toilet Seat Cover Dispenser: Stainless steel, surface mounted, 16.6" W x 12.35" H x 2.5"D
  - 1. Product: #09506 by Kimberly Clark.
- C. Item C - Paper Towel Dispenser: Stainless steel, surface mounted, 14.25" x 18" x 4.25", key cylinder lock. Tri-fold towels.
  - 1. Product: T1700BK San Jamar Ultrafold Dispenser.
- D. Item D - Waste Receptacle: Stainless steel, surface-mounted, with trash liner; 15-1/8" W x 23" H x 8.5" D.
  - 1. Products: B-277 by Bobrick.
- E. Item E – Not Used
- F. Item F – Napkin Receptacle – Partition Mounted Single Access: Surface mounted; removable waste container.
  - 1. Product: 6140 BY Rubbermaid.
- G. Item G - Mirror: Stainless steel welded framed, 6 mm thick tempered glass mirror; non-absorptive backing filler and galvanized sheet steel backer plate; surface mounted.
  - 1. Size: 24" W x 36" H, unless otherwise indicated.
  - 2. Products: B-290 Series by Bobrick.
- H. Item H - Soap Dispenser: Surface mounted; black plastic, 1000 mL capacity; foam soap, mount on mirror.
  - 1. Product: 975700 Foamy by Spartan.
- I. Item GB - Grab Bars: Stainless steel, nonslip grasping surface finish; minimum rated point load of 250 pound-force; 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, concealed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar. Lengths and configurations as indicated on the Drawings.
  - 1. Products: B-5806 Series by Bobrick. (1-1/4")
  - 2. Length: As shown.

## 2.4 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

### 3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10 28 00

## SECTION 21 00 00

### FIRE SPRINKLER REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

General Provisions of Contract, including General and Supplementary conditions and General Requirements (if any) apply to work specified in this Section.

##### 1.2 DEFINITIONS

- A. Reviewed equal: Shall mean that the Engineer, not the contractor, shall make final determination whether materials are an equal to that which is specified.
- B. Equal: Shall mean essentially the same as that product specified, but a model of a different manufacturer.
- C. Concealed: Shall mean in walls, in chases, above ceilings, within enclosed cabinets, otherwise enclosed.  
``
- D. Exposed: Shall mean in finished spaces, in closets, under counters, behind and/or under equipment and/or otherwise visible.
- E. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.
- F. Others: Shall mean provided by sections other than this section. If not purposely assumed by another section, shall be provided by the Contractor.
- G. Materials: Shall mean any product used in the construction, including but not limited to: fixtures, equipment, piping and supplies.
- H. Piping: Shall mean pipe, fittings, hangers and valves.
- I. Provide: Shall mean the furnishing and installing of materials.
- J. Substitution: Shall mean materials of significantly different physical, structural or electrical requirements, performance, dimensions, function, maintenance, quality or cost, than that specified.

##### 1.3 ALTERNATES

There are no alternates for this division of the project.

#### 1.4 DESCRIPTION OF WORK

##### A. Work Included

Provide all design services, construction documents, labor, transportation, equipment, permits, materials, tools, inspections, incidentals, tests and perform all operations in connection with **Renovation of the Hydraulically Designed Dry Sprinkler System in the work areas of the existing building as indicated on the Architectural Drawings.** Comply with requirements of all Authorities Having Jurisdiction. Comply with Local Sprinkler Ordinances. Include aesthetic considerations into the design. Coordinate with interfacing trades. Submit equipment and components for review. Prepare Shop and Record Drawings and Owner's Manuals. Assure quality of workmanship. Provide guarantees and warranties.

#### 1.5 SUBMITTALS

##### A. Shop Drawings:

1. Within 30 working days after the Contractor has received a fully executed contract, prepare and submit Plans / Shop Drawings in accordance with the requirements of NFPA and obtain the Engineer's approval and Owner's Insurance Underwriter approval before proceeding with the fabrication and work.
2. Drawings shall include, but not be limited to:
  - a. Name of Owner and Occupant
  - b. Name and address of Contractor.
  - c. Physical Location
  - d. Plan view of system
  - e. Full height cross section or schematic diagram including ceiling construction and spray obstructions.
  - f. Locations of all partitions, with fire partitions noted.
  - g. Occupancy class for each area and minimum density of water application.
  - h. Locations of concealed spaces
  - i. Plan showing location and size of city water main, where private main attaches, all valves, distance and elevation between main and riser.
  - j. Recent hydrant test showing both static and residual pressures, and date and time taken. List any significant known daily or seasonal pressure fluctuations and the cause.
  - k. Make, model and nominal K factor of sprinkler heads.
  - l. Control valves, check valves, drain pipes and test connections.
  - m. Fire department connections
  - n. Details showing riser piping configurations.
  - o. Pipe sizes.
  - p. Switches and supervisory devices.
  - q. Interface with Fire Control Panel.
3. To obtain an electronic copy of the building plan and sections, contact the Engineer. Specify required CAD format when requesting the files.
4. Procedure

- a. As soon as possible after award of Contract, before any material or equipment is purchased, this Contractor shall submit to the Engineer no less than six (6) copies for approval. Shop drawings shall be properly identified and shall describe in detail the material and equipment shall be provided, including all dimensional data, performance data, curves, computer selection print-outs, etc.
  - b. Corrections or comments made on the submittals do not relieve the contractor from compliance with requirements of the specification. Shop drawing review is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.
  - c. All related items shall be submitted as a package.
4. Submit data on the following items:
    - a. Piping, fittings and couplings.
    - b. Alarm check valves and trim.
    - c. Backflow preventer.
    - d. Valves and supervisory devices.
    - e. Sprinkler heads and escutcheon plates.
    - f. Supports, hangers and accessories.
    - g. Fire Department Connections.
    - h. Air Compressor and Jockey pump if needed.
    - i. Any other significant item valued over \$100.00
  5. Submit to the Owner's Insurance Underwriter sufficient copies for approval to allow one copy to be incorporated into each Owner's Manual in addition to the required As-Built Plans

## 1.6 HYDRAULIC DESIGN DATA

- A. Building Occupancy: Storage and Miscellaneous support areas.
- B. Water Density and Square Foot Requirements: Provide per NFPA.
- C. Codes and Requirements:
  1. Comply with the standards of most recent edition of the National Fire Protection Association.
  2. Comply with the BOCA International Building Code, all Maine State laws as well as local codes and ordinances.

3. Comply with the requirements of the State Fire Marshals Office, Local Fire Chief, Owners Insurance Underwriter, Local Water District and other Authorities Having Jurisdiction

#### 1.7 GUARANTEE

This Contractor shall guarantee all materials and workmanship furnished by him or his subcontractors to be free from all defects for a period of no less than one (1) year from date of final acceptance of completed system and shall make good, repair or replace any defective work which may develop within that time at his own expense and without expense to the Owner.

#### 1.8 MAINTENANCE MANUAL

On completion of this portion of the work, and as a condition of its acceptance, submit for review two copies of a manual describing the system. Prepare manuals in durable 3-ring binders approximately 8.1/2" by 11" in size with at least the following:

- A. Project name on the spine and front cover, and identification on the front cover stating the project name, general nature of the manual, and name, address and telephone number of the General and Sprinkler Contractors.
- B. Neatly typewritten index.
- C. Complete instructions regarding operation and maintenance of all equipment involved.
- D. Complete nomenclature of all frequently replaceable parts and supplies, their part numbers, and name, address and telephone number of the vendor.
- E. Copy of all guarantees and warranties issued, and dates of expiration.
- F. Shop drawings and equipment/fixtures manufacturer's catalog pages.

## PART 2 - PRODUCTS

All products shall be new and must be either Factory Mutual (FM) or Underwriters' Laboratory (U.L.) listed or both.

### 2.1 MANUFACTURERS

- A. Equipment: Grinnell, Standard, Viking, Central Sprinkler Corp., Reliable, or equal.
- B. Heads: Viking, or equal.
- C. Flow Switch and Supervisory Device: Potter Electric Signal Company or equal.
- D. Backflow preventer: Ames or equal.

### 2.2 MATERIALS

- A. Piping:
  - 1. Outside Building, Underground: Connect where the site piping ends. Match materials and methods until inside the building.
  - 2. Inside building: Shall be schedule 40 black steel, standard weight welded, threaded or Victaulic fittings for sizes 2-1/2" and under. Install flanged fitting and flanges at valves and where required. Threadable light wall pipe (schedule 10) shall be permitted only for sizes 3" and over.
- B. Sprinkler Heads:
  - 1. Temperature Classification:
    - a. Finished area shall be ordinary temperature rating.
  - 2. All shall be Quick Response bulb type head.
  - 3. Type:
    - a. Generally exposed pendant.
- C. Hangers: Provide per NFPA. Provide seismic protection unless specifically exempt by the Authority Having Jurisdiction. Hang from building structure, not piping of other trades.
- D. Sleeves:
  - 1. Pipes Through Floors: Form with Schedule 40 (galvanized) steel pipe and extend 1" above surrounding floor.
  - 2. Pipes Through Interior Fire-rated or Sound-rated Partitions: Form with steel pipe or 16 gauge galvanized steel.

3. Pipes through Exterior Building Walls, Concrete Walls or Footing: Form with Schedule 40 (galvanized) steel pipe.
  4. Size: The minimum sleeve diameter shall be either 2 pipe sizes or 2" in diameter larger than the outside diameter of the pipe.
  5. Fire caulk all penetrations through floors and fire rated partitions.
- E. Valves:
1. Riser Control Valve: OS&Y cast iron construction.
  2. Sectionalizing Valves: OS&Y cast iron body.
  3. Drain and Test Valves: Bronze body, gate type or ball type, capable of being padlocked in either open or closed position.
- F. Provide all miscellaneous items required for a complete system, such as: paint, signs, valve tags, pipe markers, chains and locks, relief valves, and water additives.

## 2.3 COMPONENTS

- A. Fire Department Connection (Verify with local Fire Department). 4" Stortz fire department connection with, caps with chains and wall plate with "Auto Sprinkler". Thread Pattern shall match that of the local Fire Department equipment; also 4" UL listed check valve with automatic ball drip piped to drain. Bronze finish.
- B. Flow Switch: Model # VSR-F vane type water flow alarm switch with an adjustable retard setting from 10 seconds to 90 seconds having two sets of DPDT contacts for reporting to the building fire alarm system. Provide one for each floor.
- C. Electric Supervisory Switch: All valves shall have a Model # OSYSU-2 electric supervisory device with 2 sets of DPDT contacts to report to the building fire alarm system.
- D. Backflow preventer: Double check, or use RPZ type if using antifreeze or other chemicals or if required by the water district. BFP shall be testable, replaceable seats.
- E. Provide all shut-off valves with tamper switches. Lock or chain open valves with break-away padlocks.
- F. Water pressure gauge: Provide one before the valve on each inspector's test connection. Range applicable to fire protection application.

## PART 3 - EXECUTION

### 3.1 PREBID EXAMINATION AND INVESTIGATION

- A. Visit the site and become acquainted with the conditions.
- B. Study all Drawings and Specifications for all related and interfacing trades. No claim will be recognized for extra compensation due to failure to become familiarized with the conditions and extent of the proposed work as indicated within.
- C. Ascertain all Authorities Having Jurisdiction, and consult where needed.

### 3.2 OBTAINING DRAWINGS AND SPECIFICATIONS

- A. Obtain a FULL set of drawings and specifications as soon as is practical.

### 3.3 SPECIFIC INSTALLATION REQUIREMENTS

- A. All SPRINKLER piping in finished areas shall be run concealed.
- B. For aesthetic reasons, locate sprinkler heads neatly and symmetrically, relative to the walls, ceiling grid, diffusers and light fixtures. Center heads in tiles in suspended ceilings.
- C. Sprinkler piping shall not be run exposed in the existing corridors and lobbies, provide side wall heads from adjacent spaces.
- D. All piping shall be run as high as practicable. Pitch piping slightly to allow the system to be drained.
- E. System drains shall be valved and piped to discharge. No valve shall be provided ahead of the electric alarm devices.
- G. All sprinkler work shall avoid proposed locations of, and installation clearances for, lighting, ducts, piping, framing and equipment.
- H. Paint all exposed sprinkler and standpipe piping, color as determined by Architect.

### 3.4 COORDINATION

- A. Coordinate work with that of other trades. Coordinate early for locations of mains. Ductwork, mechanical equipment, electrical panels and large gravity piping will be given priority over sprinkler piping, unless all effected parties agree otherwise. No compensation will be given for neglect to comply with the above and no claim will be recognized for sprinkler piping, heads and miscellaneous appurtenances which must be modified, removed and reinstalled or relocated, due to conflicts with other work which is or will be installed per the Contract Documents.

- B. Contact Electrical Contractor and assure that all requirements for power and fire alarm system have been met.

3.5 TESTS

- A. The entire installation shall be tested with water in accordance with all NFPA requirements, all requirements of the local Fire Department and local Water District; and the Owner's Insurance Underwriter; this includes the testing of all alarms.
- B. All tests shall be witnessed by the Owner's representative and local Fire Chief's representative. Submit copies of all test certificates, properly signed, to the Engineer.

END OF SECTION

## SECTION 22 00 00

### PLUMBING REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

Drawings, Addenda, General Provisions of Contract, including General and Supplementary conditions and General Requirements apply to work specified in this Section.

##### 1.02 ALTERNATES

There are no Alternates for the Division of the work.

##### 1.03 DESCRIPTION OF WORK

###### Work Included

A Furnish all labor, materials, equipment, transportation, and perform all operations required to install complete plumbing systems in the building, in accordance with these specifications and applicable drawings.

B. Provide the following:

- a. Sanitary, waste and vent systems.
- b. Domestic hot and cold water system.
- d. Pipe, valve and fittings
- e. Water specialties
- f. Drainage specialties
- h. Plumbing fixtures and accessories
- i. Installation and/or connections to fixtures/equipment provided by others.

C. Specifications and accompanying drawings do not indicate every detail of pipe, valves, fittings, hangers, fixtures and equipment necessary for complete installation; but are provided to show general arrangement and extent of work to be performed.

##### 1.04 PERMITS

This Contractor shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees (permit fees are waived for Public Buildings) and secure all permits, inspections and approvals necessary for the legal installation and operation of the systems and/or equipment furnished under this Section of the Specifications.

##### 1.05 CODES AND ORDINANCES

All work performed under this Section of the Specifications shall be done in accordance with applicable Federal Laws, Maine State Laws, Uniform Plumbing Code, Subsurface Wastewater Disposal Rules, and local plumbing codes and ordinances. The following standards are also to be followed when applicable:

#### 1.06 QUALITY ASSURANCE

- A. Use sufficient qualified workmen and competent supervisors in execution of this portion of the work to ensure proper and adequate installation of the system throughout. Work performed shall conform to manufacturers' recommendations, good standard practice and industry standards.
- B. Any work deemed unacceptable by the Engineer, Architect or Clerk of the Works shall be redone correctly, at no additional cost to the owner.

#### 1.07 MATERIALS AND SUBSTITUTIONS

All materials and equipment shall be new and of the latest design of respective manufacturers. All materials and equipment of the same classification shall be the product of the same manufacturer, unless specified otherwise.

#### 1.08 SHOP DRAWINGS & SUBMITTALS

- A. Review must be obtained on all items specified in Section 2 Products or shown on the drawing, and any significant items implied or otherwise required but not specified.
- B. Format
  - 1. Electronic Submittals encouraged.
  - 2. If due to circumstances beyond his control, the contractor is unable to include all the related items in the submitted package, he shall insert in its place a plain sheet of paper with a notation stating that the item will be submitted separately.

#### 1.09 MAINTENANCE MANUAL

On completion of this portion of the work, and as a condition of its acceptance, submit for review two copies of a manual describing the system and a PDF document

#### 1.10 GUARANTEE

This Contractor shall guarantee all materials and workmanship furnished by him or his subcontractors to be free from all defects for a period of no less than one (1) year from date of final acceptance of completed system and shall make good, repair or replace any defective work which may develop within that time at his own expense and without expense to the Owner. Any additional costs required to extend manufacturer's guarantee and warranty for the period specified, shall be included in Contractor's base bid.

#### 1.11 CHANGE ORDERS

- A. No change shall be made from the work, equipment, or materials under this section except as directed in writing by the Architect or Engineer of record
- B. All requests for change in contract price and scope shall be accompanied by a breakdown list of materials with unit and extended prices and labor hours with unit and extended price, plus markups that have been applied.

## 2.01 GENERAL

- A. Unless otherwise indicated, the materials to be furnished under this contract shall be new and the standard products of manufacturers regularly engaged in the production of such equipment, and shall be the manufacturer's latest standard design that complies with the specification requirements.
- B. All materials and equipment of the same classification shall be the product of the same manufacturer, unless specified otherwise. An entire product line may be rejected if one, or more, of the products submitted is not an equal to that specified.
- C. All products shall be manufactured within the United States, unless specified otherwise, and supplied locally (within the State) wherever possible. It is preferable to obtain materials that are manufactured within 500 miles of the work site when practical.
- D. Unspecified items shall be by the same manufacturer and level of quality and as similar items specified, whenever possible. When no similarity exists in other sections, the Contractor shall submit for review an appropriate commercial/institutional quality item, complete to perform the functions intended, using his best discretion. The Architect or a designated Consultant, not the contractor, shall make final determination whether materials are of suitable quality and perform the functions intended.

## 2.02 HANGERS AND SUPPORTS

- A. General
  - 1. All hangers and supports shall be especially manufactured for that purpose and shall be the pattern, design and capacity required for the location of use.
  - 2. Piping specified herein shall not be supported from piping of other trades.
  - 3. All steel hangers shall be factory painted.
  - 4. Hangers shall be heavy-duty steel adjustable clevis type, plain for steel, cast iron and plastic pipe, and copper plated for piping in direct contact with copper tubing (i.e. copper hot water piping) shall be equal to Carpenter & Paterson Inc., Fig. 100 (Fig. 100CT copper plated)
  - 5. Hangers shall go outside of insulation for domestic water piping. Each hanger shall be furnished with metal shield; Fig. 100 SH.
  - 6. Exposed vertical risers  $\frac{3}{4}$  inch and smaller shall be supported at 6 foot intervals between floor and ceiling with split ring type hangers; copper plated for piping in direct contact with copper tubing equal to Carpenter & Paterson Inc., Fig.81 (Fig. 81CT copper plated). ALL PIPING DROPS TO FIXTURES SHALL BE ANCHORED SOLID TO WALL WITH A STEEL SUPPORT BRACKET WITH ADJUSTABLE CLIP, ESPECIALLY PIPING TO FLUSH VALVES

7. Piping suspended from walls and partitions shall be supported by steel support bracket with adjustable clips equal to Carpenter & Paterson Inc., Fig. 69. All attachments to bar joists shall be from top chord.

B. Hanger Rods & Attachments

1. Hanger rods shall be galvanized all thread rod. Rod size shall be as follows:

Pipe Size	Rod Size
3/8" to 2"	3/8"
2. All nuts for hanger rods and hangers to be galvanized steel.
3. Provide lag points with rod couplings for fastening to wood, toggle bolts in concrete blocks and compound anchor shields and bolts in poured concrete.
4. Provide toggle bolts with rod couplings for fastening in the pre-cast concrete plank decks.
5. Provide and install angle iron supports for pipe hangers in locations as required. Iron supports shall be adequate size for span and piping or equipment.
6. Hot and cold water piping at each fixture shall be securely fastened in wall with split ring type hanger fastened to studs within wall.

2.03 INSULATION

A. All Domestic Water in Heated Spaces (New Restroom (150) and Env. Services (149)

1. Exposed Piping: Insulate exposed piping above slab/grade with Owens Corning Evolution SSL II paper free ASJ with tough, wrinkle resistant, easy to-clean jacket, or approved equal. Install will great care for appearance, turning any writing or seams toward the wall. Or reviewed equal.
  - a. Option: use standard Owens Corning fiberglass insulation with ASJ or approved equal, and carefully and neatly cover it with a white PVC plastic covering material. Covering shall be applied in no less than 4 foot lengths with shingle joints. Longitudinal joints shall be on the top or back sides so as to be out of sight and sealed with adhesive materials provided with the jacketing. Material shall be butted to finish walls or Insulation. Jacketing material shall be Zeston pre-cut, pre-curled 0.030 thickness. Or reviewed equal.
2. Concealed piping and piping in Mechanical rooms and crawl spaces: Insulate with well installed and sealed Armaflex Pipe Insulation with pressure sealing lap adhesive, or equal.
  - a. Option: use standard Owens Corning fiberglass insulation with ASJ or approved equal.

3. Thickness as follows:

- a. Hot water mains, recirculated hot water branches and recirculation returns: 1 inch thick minimum for pipe 1 ¼" and smaller 1 ½" thick for pipe 1½"
- b. Unrecirculated hot water branches: 1" thick.
- c. Cold water piping: ½" thick minimum.
- d. : and larger
- e. Pex run-outs to individual fixtures, any temperature (if any): ½ inch thick to allow bending.4. Insulate any below grade hot water piping run outs with ½" Armaflex closed cell piping insulation.

B. Fittings

1. All fittings and valves shall be covered with a one piece PVC insulated fitting cover secured.
2. The ends of insulation on exposed pipes at valves, flanges, unions, etc., shall be finished neatly with covering to match jacket and secure with mastic.
3. Valves, flanges and unions on hot water piping shall not be insulated.

C. Piping with Heat Tracing

2" Armaflex Type closed cell insulation with Aluminum Jacket to match existing heat tracing pipe.

D. All insulation work shall be executed by skilled insulation workmen regularly in the trade.

## 2.04 VALVES

A. General

1. Valves shall be provided as shown and as required to make the installation and its apparatus complete in operation; locate to permit easy operation, replacement and repair.
2. All valves must be so constructed that they may be repacked under pressure while open.

B. Types and Manufacturers

All valves shall be of one manufacturer

## 2.05 DOMESTIC WATER PIPING

A. Water Entrance and Fire Service Lines

1. Provide water and fire service lines from where the site work ends. Coordinate interface with site utilities. Match site work materials until inside building

B. Interior Exposed, High temperature and Domestic Cold Water

1. All exposed piping carrying domestic water, all piping with a temperature above 140 deg. F., all piping supporting inline equipment, and piping within 6 ft of the water heaters, shall be hard-drawn type "L" copper tube with cast or wrought fittings and made up with Silvabrite 100 lead-free solder. Care shall be taken not to over flux.

C. Interior Concealed

All concealed hot (below 141 deg) and cold water piping above finish floor (not buried) shall be one of the following:

1. Type L Copper and fittings, all sizes
2. Flowguard Gold CPVC pipe and fittings, all sizes.
3. PEX, sizes 1-1/2" and smaller
  - a. Uponor AquaPEX (PEX-a) (cross linked polyethylene tubing) piping and cold expansion fittings, specifically designed for domestic water. ASTM F 876, Fittings for PEX Tube: ASTM F 1960, insert type and matching PEX tube dimensions. Manifold (if used): Uponor multiple-outlet, corrosion-resistant assembly.
  - b. Piping shall be installed in a neat and orderly manner. No wild spaghetti installations will be tolerated. Piping shall be run straight and parallel, and level or sloped slightly to low points with no droops exceeding 1/16". Use PEX bend supports to keep turns tight and steel channel supports to keep piping supported. Any work that in the opinion of the Architect or Engineer of Record that does not meet these standards will be removed and redone at the Contractor's expense.
  - c. All PEX piping shall be insulated as indicated under Insulation. Use Armaflex insulation on piping run outs to individual fixtures to allow bending.
  - d. Provide the correct spacing of hangers (w/ saddles) for PEX; every 3' or as recommended by the Manufacturer. Do not use the spacing designated for CPVC or copper piping unless using steel u-shaped support channels under insulation. Provide a support bracket at rough-ins.
  - e. All work shall be done in accordance with the manufacturer's recommendations.
4. All buried water and trap primer piping shall be AquaPEX or type "K" soft copper tubing. No joints below slab
5. All buried hot water piping shall be insulated and sealed with 1/2" Armaflex. Do not direct bury copper hot water piping.
6. All exposed, uninsulated water piping near fixtures in finished areas shall be chromium plated I.P.S. copper or red brass pipe or tubing and fittings. Valves shall also be chrome plated brass or bronze. Any chrome trim with wrench marks shall be removed and new trim installed.

**2.06 SANITARY WASTE AND VENT PIPING**

Piping and fittings shall be PVC Schedule 40 polyvinyl chloride plastic, as per ASTM-A-2665 or latest standard. Solvent as per ASTM-D-2564.

**2.07 PIPE SLEEVES AND ESCUTCHEONS****A. Sleeves**

1. Contractor shall set sleeves for all piping penetrating walls and floors. Sleeves through masonry shall be steel pipe sleeves two sizes larger than pipe. Piping passing through walls other than masonry shall be provided with # 24 gauge galvanized steel tubes with wired or hemmed edges
2. Sleeves set in concrete floors shall finish flush with underside, but extend minimum of 1 inch above finish floor. Weld clips to sleeves for support in concrete pre-cast planks of a size that will be covered by concrete topping. Sleeves set in partitions shall finish flush with each side
3. Space between sleeves and pipes shall be sealed to make smoke and water tight with 3M Brand Fire Barrier Caulk CP25 or Putty 303
4. Masonry sleeves shall be Schedule 40 steel pipe.
5. This Contractor has the option to use the Pro-set system on lieu of the above.

**C. Exterior Sleeves**

Where piping passes through exterior walls, provide and install a complete pipe sleeve/hydrostatic wall closure system

1. Wall sleeve shall be schedule 40 steel pipe, two pipe sizes larger than carrier pipe. Sleeve shall be the same length as the thickness of the wall served.
2. The hydrostatic closure device shall consist of identical interlocking links of solid synthetic rubber compounded to resist ozone, water, chemicals and extreme temperature variations. Each link shall be connected by corrosion resistant bolts and nuts to form a belt that is to fit snugly around the pipe. Under each bolt and nut there shall be a metal pressure plate so that when each nut is tightened the rubber links will expand between the pipe and sleeve to form a continuous, air tight and water tight seal.
3. Units to be Link-Seal system Model LS wall seal by Thunderline Corp. or reviewed equal.

**D. Escutcheons**

Where piping passes through finish walls, floors, ceilings and partitions, provide and set two piece nickel plated steel floor and ceiling plates.

**2.08 PLUMBING FIXTURES****A. LV-1 Lavatory, Wall Mounted**

1. AMERICAN STANDARD 955.01EC Murro Universal Design wall hung lavatory, for concealed arm support, center hole, vitreous china, rear overflow, rear drain, self-draining deck, color "white", 1-1/4" trap. 0059.020 Shroud/Knee Contact Guard, vitreous china. Or reviewed equal. Mount with rim at 34"
  2. Moen model 8419F05, commercial brass lavatory faucet, single hole mount, 2-1/2" lever handle, No pop-up metal drain assembly, chrome, meets ADA, 0.5 gpm aerator. Or reviewed equal.
  3. Chrome plated angle supplies, wheel handle stops. Or reviewed equal.
  4. Provide extra blocking and install using wall hanger with extra-long fasteners.
- B. MB-1 Mop Basin
1. The mop basin shall be Fiat MSB-2424, molded stone or reviewed equal. The molding shall be done in matched metal dies under heat and pressure resulting in a one-piece homogeneous product. Size of unit shall be 24"x24"x10" high. The drain body shall be cast brass, chrome plated, complete with cast brass lock nut and gaskets. A combination dome strainer and lint basket made from #302, 16 gauge stainless steel attached with tamper proof screws shall be included. The drain body shall provide for a lead caulked joint to be 3" I.P.S.  
Provide the following accessories:
    - a. Stainless steel wall guard, MSG-2424
    - b. Service faucet with vacuum breaker; integral stops and wall brace plate #830-AA.
    - c. 30" Hose with 3/4" coupling at one end; Plate #832-AA.
    - d. Mop Hanger, stainless steel, 24" long with (3) holders, Plate #889-CC.
    - e. Silicone sealant #833-AA.
    - f. Vinyl bumper guard #-77-AA
- C. SS-1 Service Sink
1. Fiat Floor-Mounted Heavy Duty Laundry Sink SF-1F or reviewed equal.
  2. The single compartment Tuf-Tub™ laundry tubs from Fiat Products, is manufactured from a molded, fine celled, structural plastic polymer. The basic model number is SF-1 and has an integrally molded drain. Plastic stopper and tail piece nut with washer are supplied with all models. Water capacity is twenty (20) gallons. Outside, front to back dimensions are equal to laundry room appliances (washer and dryer). Overall outside dimensions measured at the top of the tub, are 20" x 23 7/8" x 14 3/8" and inside, compartment dimensions, measured at the drain opening, are 19 1/4" x 19 1/2" x 13".
  3. A 4" ledge, integrally molded at back of the unit, includes two (2) soap dish locations and two 1" diam molded holes. Holes are used to accept an, 4" on centers deck faucet'
  4. furnished, white baked enamel steel angle legs that fit into the molded retainers

5. With • Deck type faucet (4" centerset)
- D. WC-1 Water Closet, Floor, Pressure Assisted– Right Hand Flush Lever -ADA
1. AMERICAN STANDARD Cadet FloWise Right Height 16-1/2", Elongated Pressure Assisted Toilet, vitreous china, 1.1 GPF, Everclean surface, flushometer tank, pressure assist siphon jet action, left handed front mounted Right Hnnd trip lever, close coupled flushometer tank, bolt caps, fully glazed trapway, color "white", 3517A.101 bowl with 4188A.154 tank with Aquaguard liner. Or Reviewed equal, if any.
  2. Church 7850TJDG white, elongated, extra heavy duty, solid plastic open front seat with cover, STA-TITE fastening system, antimicrobial, stainless steel posts and hardware. Or reviewed equal.
  3. McGuire chrome water closet supply with wheel handle stop. Or reviewed equal.
  5. Install water closet solidly to floor; any wobbly water closets will be redone and all costs, direct and incidental, paid for by this contractor

#### .2.09 HEAT TRACING FOR DOMESTIC COLD WATER PIPING

- A. Basis-of-Design Product: Subject to compliance with requirements, provide RAYCHEM, a brand of nVent; XL-Trace Edge Pipe Freeze/Flow Maintenance or comparable product by one of the following: Source Limitations: Obtain heat-tracing components and controllers from single manufacturer. To ensure system integrity and meet warranty requirements, only components and controllers supplied by cable manufacturer are to be used.

Heating cable and connection kit shall be included in a c-UL-us Listed system.

Heating Element: Pair of parallel No. 16 AWG, nickel-coated, stranded copper bus wires embedded in crosslinked conductive polymer core, which varies heat output in response to temperature along its length. Terminate with waterproof, factory-assembled, nonheating leads with connectors at one end, and seal the opposite end with a watertight end seal. Cable shall be capable of crossing over itself without overheating.

Electrical Insulating Jacket: Flame-retardant modified polyolefin.

Ground Braid: Tinned-copper braid. Minimum 70 percent for ground path and mechanical ruggedness.

- B. Single Circuit Local Digital Controller for Freeze Protection and Flow Maintenance.

Basis-of Design Product: RAYCHEM; C910-485.

Control self-regulating heating cable via an energy-saving, programmable single-circuit controller to provide adjustable maintained temperatures in the range of -40 to 140 deg F. Provide one controller for each heat-tracing circuit[, as indicated on heat tracing schedule]. Controller to include self-test function to verify heat-tracing integrity at least once every 24 hours. Controller Capabilities:

Supply Voltage: 100 to 277 V ac.

Enclosure: NEMA 4X FRP.  
Operating Temperature Range: - 40 to 140 deg F  
Display: Six-character, alphanumeric LED.  
Control: DP mechanical relay type.

## 2.12 PLUMBING SPECIALTIES, WATER

### A Thermometer (T)

Units to be dial type, 4.1/2" with 30° to 180° range; Trerice Universal angle or reviewed equal.

### B Pressure Gauge (P.G.)

Furnish and install pressure gauges with gauge cocks on piping where shown on drawings. The dial range shall be such that the normal pressure shall be approximately mid-way of dial. Gauges shall be Trerice No. 600 or equivalent by Weiss or Nurnburg, 4.1/2" dial size, cast aluminum case, with brass "T" handle cocks and No. 872 bronze pressure snubbers on water units.

### C. Vacuum Relief Valve

Watts Model N36 or reviewed equal.

### D. Mixing Valves (MV-1)

Type "1" Master Mixer

Leonard model TM-26-LF ¾" connections, 10 GPM @ 10 psi differential pressure for exposed piping, rough bronze, check stops, 1.0 GPM min flow, set at 120°F. Or reviewed equal.

### E. Braided Stainless Steel Water Connectors

EPDM tubing jacketed by type 304 stainless steel braid, stainless ferrule, brass nuts. By Zurn or reviewed equal.

### F. Dielectric Unions

Series 3000 as manufactured by Watts or reviewed equal

## 2.13 WH-1 ELECTRIC WATER HEATER

### A. Water heater shall be a Model TRONIC ES8

Installation shall consist of Model TRONIC ES8 electric minitank water heaters as distributed by Bosch Thermotechnology Corp. and 98% thermal efficiency. Supply voltage shall be 110 - 120VAC with a heating capacity of 1440 Watts.

### B. Water heater shall be electrically powered with compact minitank

design for point-of-use operation and an efficiency rating of 98%. Tank shall be glass-lined and insulated for thermal retention. Unit shall be protected by a tough plastic housing. Tank shall be rated for maximum working pressure not less than 150 psig. Water heater shall be equipped with a pressure relief Valve and a magnesium anode rod for protection against tank corrosion. Water connections for inlet and outlet shall be  $\frac{3}{4}$ " NPT male for ES8. The controls shall be a wired thermostat with temperature selector and a high temperature safety cut-out. A red light shall indicate when the unit is powering the heating element.

## 2.14 ACCESS DOORS AND PANELS

Furnish General Contractor with access doors/ panels for all locations where service access is required behind walls, above sheetrock and masonry ceilings, and below floors for equipment, piping, valves, and specialties furnished under this Division.

## PART 3 - EXECUTION

### 3.01 SURFACE CONDITIONS

#### A. Inspection

1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

2. Verify that plumbing may be installed in strict accordance with all pertinent codes and regulations and the reviewed Shop Drawings.

B. Discrepancies  
C.

1. In the event of discrepancy, immediately notify the Architect. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

### 3.02 COORDINATION WITH OTHER TRADES

- A. Before installation, participate in a coordination meeting with the Clerk of the Works, Construction Manager, Mechanical/HVAC, Fire Protection and Electrical trades. Establish and resolve areas of conflict and congestion, especially those indicated on the drawings. Priority to be given to HVAC equipment and large ductwork, then gravity piping, then small ductwork, then piping based on descending order of size. Special consideration given to allow access to valves, dampers etc.
- B. Failure to coordinate will result in this contractor removing and relocating his piping at no additional expense to the owner.

### 3.03 INSTALLATION OF PIPING AND EQUIPMENT

- A. General
  1. Install all piping promptly, making pipe generally level and plumb, free from traps, and in a manner to conserve space for other work.
  2. Provide uniform pitch of at least  $\frac{1}{4}$  inch per foot for all horizontal waste and soil piping 3" or less. For piping 4" and above, slope at  $\frac{1}{8}$ " minimum per foot
  3. Inspect each piece of pipe, tubing, fittings, and equipment for defects and obstructions; promptly remove all defective material from the jobs site.
  4. Install pipes to clear all beams and obstructions. Do not cut into or reduce the size of load carrying members without the approval of the Architect.
  5. Allow room between all piping and other obstructions to allow for the installation of the specified pipe insulation.
  6. Plumbing vents
    - a. Back vent all plumbing fixtures.
    - b. Pitch all vents at  $\frac{1}{64}$ " per foot minimum toward waste lines for proper drainage to prevent unintended traps.
    - c. Install vent piping with each bend 45 degrees minimum from the horizontal, wherever structural conditions will permit.
    - d. Group plumbing vents and take through roof as shown.
    - e. Increase vents 3" and smaller one size before going thru roof. Make size transition a minimum of 12" below the surface of flat roofs and 72" (or as structure permits) below sloped roofs.
    - f. Terminate 18" to 24" above roof.
    - g. If installing in locations other than as shown on the drawings, line up with other plumbing vents for a neat appearance.
    - h. Do not install plumbing vents within 10 feet of an operable window or door or within 25 feet of a ventilation air intake.
  7. Pipe hangers shall be placed on center as follows:

MATERIAL	HORIZONTAL	VERTICAL
Copper 1-1/4" & less	6'	6'

1-1/2"	6'	10'
2" & up	10'	10'
PVC, DWV	4'	4'
Steel	10'	10'

8. Arrange all piping to maintain required grade and pitch to lines to prevent vibration. Expansion loops to anchors shall be provided where shown on drawings
9. All piping and drain openings left unattended will be capped, plugged or securely covered to prevent accidental entry of foreign matter. Roof drains in use will be provided with domes.

B. Joints and Connections

1. Smoothly ream all cut pipe; cut all threads straight and true; apply best quality Teflon tape to all male pipe threads but not to inside the fittings; use graphite on all clean out plugs. DO NOT use Teflon tape on gas piping.
2. Smoothly ream all cut P.V.C. pipe. Clean and use solvent for fitting connection and in strict accordance with the manufacturer's recommendations.
3. Make all joints in copper water tube with solder applied in strict accordance with the manufacturer's recommendations. Retain one of four subparagraphs below.

3.04 STERILIZATION AND FLUSHING OF PIPES

- A. After preliminary purging of the system, chlorinate the new potable water system in accordance with the current recommendations of the American Water Works Association, and in accordance with all pertinent codes and regulations. Chlorinate only when the building is unoccupied.
- B. Upon completion of the sterilization, thoroughly flush the entire potable water system.

3.05 CLOSING IN UNINSPECTED WORK

Do not cover up or enclose work until it has been properly and completely inspected and approved. Should any of the work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required and after it has been completely inspected and approved, make all repairs and replacements with such materials as are necessary to the approval of the Architect and at no additional cost to the Owner.

3.06 TESTING OF PIPING

Tests shall be applied to the plumbing installation as required by codes and where as directed by the Architect, and in all cases before work is covered by earth fill or pipe covering.

- A. Sanitary piping shall be tested when all underground work is complete (before covering) and again, after all piping is installed, but before it is further closed in. Sanitary systems shall be securely stopped, except at the highest point, and the entire system filled with water to the point of overflow for 24 hours. All leaks shall be repaired. Cracked pipes and fitting shall be removed and replaced. No doping of soil pipe or fittings will be allowed. Plan testing around expected weather and temperature conditions or provide protection so that pipes do not freeze
- B. New domestic water piping shall be filled and subjected to a hydrostatic pressure test of 150 psi for 8 hours with no leaks. If leaks are detected they shall be repaired and the test

repeated until work is tight. NOTE: Testing with compressed air only is NOT ACCEPTABLE.

C. Testing of Fuel Gas piping shall conform to NFPA 54.

3.07 CLEANING

Prior to acceptance of the buildings, thoroughly clean all exposed portions of the this installation, removing all labels and all traces of foreign substance, using only a cleaning solution approved by the manufacturer of the plumbing item, being careful to avoid all damage to finished surfaces. Additional attention may be required to thoroughly clean any used, re-used or owner provided fixtures. Clean out all strainers and aerators and adjust or replace washers, cartridges, etc

3.08 INSTRUCTIONS

On completion of the job, this Contractor shall provide a competent technician to thoroughly instruct the Owner's Representative in the care and operation of the system. The time of instruction shall be arranged with the Owner.

END OF SECTION

SECTION 23 00 00

MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

General Provisions of Contract, including General and Supplementary conditions and General Requirements (if any) apply to work specified in this Section.

1.02 ALTERNATES

There are no alternates that apply to this section of the project.

1.03 DEFINITIONS

ATC Automatic Temperature Control  
EC Electrical Contractor (Division 26)  
GC General Contractor  
HC Heating (mechanical) Contractor  
PC Plumbing Contractor (Div. 22)  
TAB Testing and Balancing

1.04 DESCRIPTION OF WORK

A. Work Included

1. Furnish all labor, materials, equipment, transportation and perform all operations required to install a complete heating, ventilating, energy recovery and heat pump systems in the building, in accordance with these specifications and applicable drawings.
2. All temperatures are expressed in degrees Fahrenheit.
3. Perform demolition, relocation and removal as required.
4. Work to be performed shall include, but is not limited to, the following:
  - a. Provide and install Restroom (150) heating and ventilation.
  - b. Provide and install Env Services (149) heating and ventilation
  - c. Move existing Cabinet Unit Heater in the East Entrance.
  - d. Insulation
  - e. Sheetmetal
  - f. Piping
  - g. Automatic Temperature Control (ATC)
  - h. Tests and balance
5. Specifications and accompanying drawings do not indicate every detail of pipe,

valves, fittings, hangers, ductwork and equipment necessary for complete installation; but are provided to show general arrangement and extent of work to be performed.

6. Before submitting proposal, Mechanical Contractor shall be familiar with all conditions. Failure to do so does not relieve Mechanical Contractor of responsibility regarding satisfactory installation of the system.
7. Mechanical contractor shall be responsible for rigging to hoist his own (and his sub-contractors') materials and equipment into place.
8. Mechanical contractor and his sub-contractors shall be responsible for start-up of all equipment provided and installed under this section.
9. Mechanical contractor and his sub-contractors shall be responsible for adjustment of all systems provided and installed under this section to meet specified operating parameters.

B. Related Work Described Elsewhere

1. Excavation and backfill
2. Cutting and patching
3. Firestopping between building construction and pipe sleeves.
4. Electrical conduit and wiring, except as noted below
5. Roofing, setting of curbs and framing of openings.
6. Setting of sleeves in masonry work (sleeves provided by Mechanical Contractor)
7. Door louvers
8. All finish work

1.05 PERMITS

- A. This Contractor shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees and secure all permits, inspections and approvals necessary for the legal installation and operation of the systems and/or equipment furnished under this Section of the Specifications.
- B. The Contractor shall frame under glass/ clear plastic all permits, secured by him, adjacent to the respective system and/or equipment and required to be displayed by Code, law or ordinance. Those permits secured but not required to be displayed shall be laminated in plastic and included in the Owner's maintenance manual.

1.06 CODES, ORDINANCES AND PERMITS

- A. All work performed under this Section of the Specifications shall be done in accordance with applicable National, State and local Codes, Laws and Ordinances. The following abbreviations are used for reference to standards which are to be followed:

AABC	Associated Air Balance Council
ADA	Americans With Disabilities Act
AMCA	Air Movement & Control Association
ANSI	American National Standards Institute
ARI	Air Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
IBC	International Building Code
NEC	National Electrical Code
NFPA	National Fire Protection Association
NEMA	National Electrical Manufacturer's Association
OSHA	Occupational Safety and Health Act
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
UL	Underwriter's Laboratories

- B. The latest issue of each Code in effect at the time of bidding shall be used. Code requirement are the minimum quality and/or performance acceptable. Where the Specifications and/or Drawings indicate more stringent requirements, these requirements shall govern.

## 1.07 QUALITY ASSURANCE

- A. Mechanical Contractor shall have prior experience with at least two projects of this nature, size and scope and be capable of producing references indicating as such.
- B. Use sufficient qualified workpersons and competent supervisors in execution of this portion of the work to ensure proper and adequate installation of systems throughout. Technical training and certification of workpersons installing the systems specified, by the systems manufacturer, shall be mandatory prior to commencement of work. Documentation of such certification shall be made available to the Architect upon request within 5 business days.
- C. Work performed shall conform with all Local and State Rules and Regulations, as well as those of the International Building Code and National Fire Protection Association (N.F.P.A.).
- D. Piping design shall conform to ANSI, ASME B31.9 and AWS D10.9 codes.
- E. Ductwork construction shall conform to SMACNA HVAC Duct Construction Standards for Metal and Flexible Duct unless otherwise shown on drawings. Methods of fabrication and installation shall be in strict accordance with guidelines set forth in the latest SMACNA Guide and Data Book for Low and Medium Pressure Duct Construction.

## 1.08 PLANS AND SPECIFICATIONS

Mechanical Contractor shall provide his sub-contractors with a copy of the entire portion of Part 1 of this specification, portions of this specification and copies of drawings which pertain to the equipment to be supplied at no cost to the sub-contractor. Provide ATC Contractor with entire set of Electrical plans and specifications. Provide Testing and Balancing sub-contractor with copies of shop drawings indicating coil GPM's, air handling unit air volumes, etc. Failure to do so may result in the Architect providing the required materials at the Contractor's expense.

Sketches pertaining to changes and amendments during construction (ASI's, RFI's and RFP's for example) shall be contract form documents issued by the Architect and/or Engineer for use during construction and it shall be the Architect's and/or Engineer's discretion to provide sketches or full size drawings. Requests for documentation other than what is provided (full size revised drawings for instance) and deemed suitable for the particular situation shall be paid for by the contractor making the request. The cost(s) shall include, but not limited to, drafting time and reproduction costs.

## 1.09 MATERIALS AND SUBSTITUTIONS

All materials and equipment shall be new and of the latest design of respective manufacturers. All materials and equipment of the same classification shall be the product of the same manufacturer, unless specified otherwise.

- A. Any proposal for substitution of Mechanical equipment, materials or vendors not mentioned in this specification shall be made in writing via letter or e-mail to the Architect and/or Engineer up to four working days prior to opening of bids to permit sufficient time to notify all bidders via addenda. Any requests made after the final addenda prior to bid opening will not be considered. Contractor must certify within his submittals that any equipment or materials requested to be considered as an "approved equal" meets or exceeds the requirements of this specification in all aspects and will physically fit within the space provided while providing adequate clearances for servicing of equipment as required by the manufacturers and will not interfere with other trades. Architect will not be responsible to provide drawings for substituted materials unless the substitution is agreed upon prior to opening of bids.
- B. The phrase "or approved equal" shall be defined to mean the Architect shall make final determination whether or not substitute materials are an equal to that which is specified. Materials and equipment determined as an "approved equal" and/or substitutions must meet the same construction standards, capacities, code compliances, etc. as the equipment (i.e. Manufacturer, model, etc.) specified.
- C. Approval by Architect for such substitution shall not relieve Mechanical Contractor from responsibility for a satisfactory installation and shall not affect his guarantee covering all parts of work. Architect's decision on acceptability of substitute materials shall be final. Architect's decision on acceptability of substitute materials shall be final.
- D. All materials not specified otherwise shall be manufactured within the United States and supplied locally (within the State of Maine) when available. It is preferable to obtain materials that are manufactured within 500 miles of the work site when practical.

- E. Costs associated with substitutions not previously approved and circulated by addenda prior to bidding shall be borne by the Div. 23 contractor. Those costs shall include, but not be limited to, electrical, structural, piping, insulation, cutting and patching, etc.
- F. It shall be the responsibility of the General Contractor to ensure all affected sub-contractors are provided with information specific to their trades regarding substitutions for coordination and pricing (where applicable).
- G. Substitutions or deviations from the plans or specification not authorized by the Architect are done so at full risk of the Contractor and shall void all warranties or implied warranties relating to the intent or design of the systems effected.

#### 1.10 SHOP DRAWINGS & SUBMITTALS

- A. As soon as possible after award of contract (*but not longer than 21 calendar days*), before any material or equipment is purchased, Mechanical Contractor shall submit shop drawings electronically for review. Unless prior arrangements are made with the Architect all shop drawings must be submitted to the General Contractor who in turn will forward them to the Architect. If shop drawings are rejected or returned for re-submittal, Mechanical Contractor shall provide said re-submittals within 14 calendar days of receipt of original submittals with review comments. If original or re-submitted shop drawings are not submitted within the allotted time frames indicated all substitutions included in the late shop drawings will, at the Architect's discretion, be invalid and the equipment primarily specified must be provided at no expense to the Owner. Any costs resulting from delays in the project schedule due to failure to submit shop drawings related to this section in a timely manner shall be the responsibility of the Mechanical Contractor. Mechanical Contractor's and vendor's name, address, telephone number and e-mail addresses shall be provided with every shop drawing submission. Unless noted otherwise, capacities indicated on drawings are minimums. Equipment submitted with capacities below specified parameters will be refused.
- B. Shop drawings shall be properly identified and shall describe in detail the material and equipment to be provided, including all dimensional data, performance data clearly indicated, fan curves, pump curves, computer selection print-outs, etc. Capacities indicated are minimums. Equipment submitted with capacities below specified parameters will be refused.
- C. Corrections or comments made on the shop drawings do not relieve the contractor from compliance with requirements of the drawings and specifications. Shop drawing review is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.
- D. Should any materials or products be purchased and/or installed without prior review and comment the contractor shall be required to remove or replace those products and/or materials, if directed by the Architect, at his expense. If the materials are not removed (or replaced) or if the project is delayed as a result of the contractor's actions, the Architect

reserves the right to order the withholding of payment until the situation is resolved in a manner satisfactory to the Architect.

- E. Shop drawings for Divisions 21, 22 and 23 shall be submitted under separate cover. Submittals shall be identified by job title, specification section and paragraph number. Items under each paragraph may be combined into one submittal but do not combine items from multiple paragraphs. For instance, do not combine items specified under par 2.01 with items specified under par. 2.02. Non-compliant submittals will be returned for resubmission.
- F. Shop drawings are required to be submitted electronically (paper copies will not be accepted). Resolution on files in .pdf format shall be a minimum of 300 dpi and a maximum of 600 dpi. Electronic files must be accessible and in an open format, meaning files must not be locked and comments may be added without altering the original content, or have interactive fields intended specifically for commenting. Locked files will not be reviewed. Exception: Color samples, where required, must be provided to the Architect in the form of original paper copies. Electronic color samples are not acceptable due to differences in monitor color rendition. Faxed copies of color samples will be refused.
- G. Review must be obtained on the following items:
  - 1. Ductwork and Accessories
    - a. Roof Cap and Roof Curb
    - b. Louvers
  - 2. Mechanical Equipment (sound data must be provided with all interior motorized equipment).
  - 3. Piping and Accessories
    - No accessories expected
  - 4. Insulation
    - No insulation expected

## 1.11 PRODUCT HANDLING

- A. Protection
  - Use all means necessary to protect heating, ventilating and air conditioning materials before, during and after installation and to protect the installed work and materials of all other trades.
- B. Replacements
  - In the event of damage, immediately make all repairs and replacements necessary to the

approval of the Architect at no additional cost to the Owner.

#### 1.12 OBJECTIONABLE NOISE AND VIBRATION

Mechanical equipment shall operate without objectionable noise and vibration. Should objectionable noise or vibration be transmitted to any occupied part of the building by apparatus, piping or ducts, as determined by the Architect, the necessary changes eliminating the noise or vibration shall be made by this Mechanical Contractor at no extra cost to the Owner.

#### 1.13 WARRANTY

This Contractor shall warrant all products and materials furnished by him or his sub-contractors to be free from all defects for a period of no less than one (1) year from date of final acceptance of completed system and shall make good, repair or replace any defective work which may develop within that time at his own expense and without expense to the Owner. Any additional costs required to extend manufacturer's guarantee and warranty for the period specified, shall be included in Contractor's base bid.

#### 1.14 DEVIATIONS AND DISCREPANCIES

- A. The drawings are intended to indicate only diagrammatically the extent, general character and approximate locations of mechanical work. Work indicated, but having minor details obviously omitted, shall be furnished complete to perform the functions intended without additional cost to the Owner. Follow the architectural, structural, plumbing and electrical drawings so that work under this section is properly installed and coordinated with other Sections.
- B. The drawings and specifications are complimentary to each other and what is called for in one, shall be as binding as if called for by both. In the event of conflicting information on Div. 23 drawings, or between Div. 23 drawings and this specification notify the Architect immediately so a clarification may be issued by addenda.
- C. Questions to the Architect and/or Engineers are encouraged, however any answers and/or advice is non-binding unless incorporated into the contract documents in the form of addenda, change order, etc. Inquiries requiring an answer prior to opening of bids should be made at least 4 days prior to when bids are due to allow time for a clarifying addendum to be issued.
- D. Any conflicts arising from duplication of equipment specified in different portions of the specifications shall be brought to the attention of the Architect prior to submitting bids. Failure to do so does not relieve the Contractor from responsibility of providing said materials and equipment and a credit will be taken for the duplicated item(s).
- E. Should unforeseen job conditions require re-arrangement of piping and/or ductwork resulting in deviation from the intent of the contract documents or potentially compromising the integrity of the mechanical systems, the Architect shall be notified immediately prior to commencement of work. Failure to do so will result in the contractor being responsible to correct any work installed that is contrary to the contract documents at his own expense.

#### 1.15 CHANGE ORDERS

- A. No change shall be made from the work, equipment, or materials under this section except as directed in writing by Architect.
- B. All requests for change in contract price and scope shall be accompanied by a breakdown list of materials with unit and extended prices and labor hours with unit and extended price, plus markups that have been applied.

#### 1.16 COORDINATION

THIS PROJECT WILL BE DONE WHILE THE EXISTING BUILDING REMAINS OPEN AND FULLY FUNCTIONAL – ALLOWABLE WORK AREAS WILL NEED TO BE COORDINATED WITH THE G.C. AND THE OWNER.

- A. Contractor shall be responsible to coordinate his work with that of other trades to adjust to field conditions prior to commencing work. It is also this contractor's responsibility to coordinate locations of his own piping and ductwork to ensure the two do not conflict. If a reasonable solution cannot be achieved without compromising the integrity of the intended design or would result in additional cost the Architect must be notified immediately prior to commencement of work. Failure to do so does not relieve the Contractor from providing and installing the systems to the satisfaction of the Architect at no additional cost.
- B. Contractor shall be responsible to review job conditions and identify conflicts and/or obstructions to ductwork and piping prior to fabrication. If conflicts and/or obstructions are noted the Architect must be notified immediately prior to commencement of work. The cost of any fabrication work performed without confirmation and notification of conflicts and/or obstructions shall be the responsibility of the contractor.

#### 1.17 REQUESTS FOR INFORMATION

Requests for Information (RFI) or other correspondences which are submitted electronically must be in an open format, meaning files must not be locked and comments may be added without altering the original content, or have interactive fields intended specifically for commenting. No software other than Microsoft Word, Microsoft Excel and Adobe Acrobat Standard shall be required to open files or make comments.

#### 1.18 WORKPLACE SAFETY

Mechanical contractor shall be responsible for the safety of his workpeople.

## PART 2 - PRODUCTS

### 2.01 PIPING

#### A. General

Provide and erect in accordance with best practice of trade all hot water supply and return, refrigerant, drain and vent piping shown on the plans and as required to complete intended installation. Contractor shall make offsets as shown or required to place all piping in proper position to avoid other work, and to allow application of insulation and finish painting.

#### B. Pipe Materials:

- |   |   |
|---|---|
| 1. Hot water (above grade)                                    | Schedule 40 standard weight black steel, ASTM 53 or Type "L" Copper |
| 2. Cold water, drains from relief valves and automatic vents. | Type "L" hard drawn copper tubing                                   |

#### C. Pipe Fittings:

- |                             |  |
|-----------------------------|--|
| 1. Screwed                  | 125# cast iron screwed pattern ASTM A126, ASA B16.1                    |
| 2. Unions                   | 250 malleable iron, brass to iron seats                                |
| 3. Flanges                  | 150# forged steel slip-on ASTM A234                                    |
| 4. Sweat                    | Cast bronze or wrought copper made up with 95-5 solder                 |
| 5. Connections to equipment | 2inches and smaller - screwed unions<br>2½ inches and larger – flanged |

### 2.02 FIRE SEALING

#### A. Material

Sealant material shall be 3M brand fire barrier caulk CP25 or putty 303, Ciba-Geigy CS240 Firestop Sealant, or approved equal and shall be U.L. listed.

#### B. Piping

Spaces between interior sleeves and pipes, spaces between non-sleeved pipes and floors and between non-sleeved pipes and fire rated walls in frame construction shall be sealed fire and smoke tight by this contractor. Spaces between pipe sleeves and walls/floors shall be sealed by the General Contractor.

C. Ductwork

Voids between ductwork and walls/floors shall be sealed fire and smoke tight by this contractor.

2.03 SHEETMETAL

A. General

The work under this section includes all the required sheetmetal and duct work, extensions for grilles, manual dampers, automatic counterbalanced (backdraft) dampers, deflectors, duct lining, setting of control dampers, grilles, registers, diffusers, fire dampers, and louvers, as shown on the drawings or required to make the installation complete in accordance with the intent of the drawings and specifications.

B. Ducts

1. The size of ducts marked on the drawings will be adhered to as closely as possible. The right is reserved to vary duct sizes to accommodate structural conditions during the progress of the work without additional cost to the Owners. The duct layout is schematic to indicate size and general arrangement only. All ducts shall be arranged to adjust to "field conditions". The Sheet Metal Contractor shall coordinate his work with Division 26 and other trades.
2. Medium and low pressure ducts shall be constructed of galvanized steel in accordance with the following table of duct sizes OR the latest SMACNA HVAC Duct Construction Standards for Metal and Flexible Duct unless otherwise shown on drawings.

Low pressure ducts:

<u>Dimensions of Longest Side (inches)</u>	<u>Minimum Sheet Metal Gauge</u>
Up thru 12	26
13 --> 30	24

3. Methods of fabrication and installation shall be in strict accordance with guidelines set forth in the latest SMACNA Guide and Data Book for Low and Medium Pressure Duct Construction unless otherwise shown on drawings. Cross break all ducts with largest dimension being 18 inches and larger. Beaded ducts are not acceptable except for ductwork less than 18 inches in either direction.
4. All dampers and deflectors shall be a minimum of #22 gauge and stiffened as required. Splitter dampers shall not be acceptable.
5. All joints in ducts shall be made air tight, and all branches and turns shall be made with long radius elbows and fittings wherever possible. Long radius elbows are

defined as having a centerline radius of 1½ times the width of the duct.

If long radius elbows in square or rectangular ducts are not possible then short radius (1R) are acceptable in ducts with velocities less than 500 FPM. Otherwise consult the Engineer of Record prior to continuing. Upon approve to use square elbows, elbows 18 inches wide and larger shall be provided with fixed double wall airfoil turning vanes designed to reduce the resistance of the elbow to the equivalent of a long radius elbow with a throat radius of not less than duct width. Square elbows less than 18 inches wide shall be provided with single wall turning vanes. Square elbows with outside corners cut at 45° or rounded are not acceptable.

6. All ducts shall be installed with necessary offsets, changes in cross sections, risers, and drops which may be required. They shall be constructed with approved joints and be supported in an approved manner.
7. Unless specifically indicated not to, round ductwork may be substituted for rectangular if desired. The internal cross sectional area shall be not less than 95% of the cross sectional area of the rectangular duct it is replacing. Round ductwork shall be constructed in accordance with the latest SMACNA HVAC Duct Construction Standards for round and oval duct construction. Ductwork larger than 8 inches in diameter shall employ spiral seams. All turns in all sizes shall be made with smooth (not segmented), long radius elbows and fittings. All seams shall be type RL-5, grooved seam pipe lock or better. *Lap seams are not permissible.* Gauge thicknesses shall be as outlined in SMACNA for galvanized steel round duct gauge selections for maximum 2 inches w.g. static pressure. Ductwork shall be supported with full wrap-around band and single hanger strap as indicated in Figure 4-4 of the 1985 edition of the SMACNA HVAC Duct Construction Standards handbook.
8. Furnish and install flexible connections on ERV-1. Connections shall be made from Ventglas neoprene coated glass fabric as furnished by Ventfabrics, Inc., or approved equal.
9. Every precaution shall be taken to keep interior of duct system free from dirt and rubbish and to protect all ducts and equipment during construction. At completion, this Mechanical Contractor shall thoroughly clean all equipment to the satisfaction of the Architect.
10. Spaces between ducts and wall or floor construction shall be caulked to make smoke and water tight by this section. Sealant material shall be 3M brand fire barrier caulk CP25 or putty 303, Ciba-Geigy CS240 Firestop Sealant or approved equal.
11. Testing, Balancing and Leak Testing... See Part 3, EXECUTION
12. Requirements set forth in applicable codes (see part one) shall supersede SMACNA standards.

C. Louvers

1. All exterior louvers shall be extruded aluminum construction with interior bird screens and AAMA 2605 Custom Color. Color to be selected by Architect. Provide not less than 2 color chip cards with submittals for review (*electronic and photocopies not acceptable*). Frames and blades shall have not less than 55% minimum free area and no less than 0.081 inches thick. The following list is based on model numbers of Ruskin to establish a standard of quality; approved equal units by Price Industries.
2. All louvers shall be stationary blade type . Units to be 6 inches deep with certified rating of zero water penetration at free area velocity of 900 FPM based on tests in accordance with AMCA Standard 500. Units shall have drainable blades, Model ELF6375DX.
3. Frames of all louvers to be box type for mounting in masonry. Provide factory mounting flanges on head and side jambs with extended sill for units mounted in frame walls.
4. Louvers in doors shall be provided as a part of the door by the General Contractor.

D. Roof Caps and Roof Curbs

Provide Buckley GRS Curb Cap and Buckley Roof Curb

E. Sealing of Ducts

All ductwork shall be sealed with low VOC water based duct mastic, either "MP" (Multi-Purpose), Carlisle Hardcast "Iron-grip 601", Polymer Adhesive "Airseal #11", or United Duct Seal (United McGill Corp.) water base, latex or acrylic type sealant. All transverse joints to be continuously sealed. Note that, except as noted, oil or solvent based sealants are specifically prohibited for use on this project.

Clothes dryer exhaust ductwork shall be sealed with Carlisle Hardcast Versa-Grip 181 or Flex-Grip 1402. Maximum operating temperature to be 180°F. Use pop rivets in lieu of screws to fasten dryer duct fittings together.

An approved alternative to mastic is VentureTape 1580 Mastiktape. This shall apply to clothes dryer ducts as well. Material shall be a printed 2.0 mil annealed aluminum foil coated with a heavy application of mastik adhesive. Material shall be UL181B-FX listed foil tape. Material shall span joints by not less than 1 inch on each side of the joint. It is acceptable to overlap by not less than  $\frac{1}{2}$  inch if wider applications are necessary. Ensure ductwork is clean of debris and dust prior to applying the tape. Duct tape in any other form or material is strictly prohibited.

Use one of the following for exterior applications:

1. United McGill Corp. "Uni-Weather" neoprene based sealant applied with a brush.
2. VentureTape 1580, UL 181B-FX listed.
3. No other sealants may be used.

All ductwork connected to louvers in exterior walls shall be internally lined with self adhesive ice and water shield as is used on roofing. Liner shall extend across the bottom and half-way up each side of the duct. Liner shall extend 24 inches into the building. Seal all connections between louvers / brick vents and ductwork with waterproof caulking.

**2.04 COVE HEATERS CH-1&2**

- A. Furnish and install Electric Cove Heaters where specified. The heaters shall be constructed of .096" thick Aluminum. The heater surface shall be concave in contour and saw-tooth in profile. The finish shall be of powder coat white finish. The heating element shall be of Nichrome wire, embedded in Magnesium Oxide powder, enclosed and sealed in Aluminum metal tubing. The heater shall be listed by ETL and the elements shall be supplied with a one year limited warranty
- B. Markel Model CV or equal – Provide with Line-Voltage wall thermostats

**2.05 FANS EF-1&2**

- A. Ceiling Ventilator shall be Broan Model QTXE110 or equivalent.
- B. Ceiling Ventilator shall have corrosion resistant galvanized steel housing with four-point mounting capability. It shall be ducted to a roof or wall cap using 6" round ductwork.

Blower assembly shall be removable, have a centrifugal-type blower wheel and a permanently lubricated motor designed for continuous operation and mounted with resilient anti-vibration mounts.

Non-metallic damper/duct connector shall be included.

Ceiling ventilator shall be Energy Star® qualified and have an energy efficient permanent split capacitor motor.

**2.06 INSULATION AND CONDENSATE PROTECTION**

- A. General
  1. Insulation shall be provided for all hot water supply and return piping, all refrigerant piping, outside air intakes, exhaust ducts and other insulation where shown on drawings.
  2. All insulation products shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less per ASTM E 84, UL 723 and NFPA 255.
- B. Hot Water Supply & Return Piping
  1. All metallic hot water supply and return piping shall be insulated with heavy density fiberglass pipe insulation with 850°F. temperature rating and factory applied self sealing ASJ jacket. Cut insulation to include pipe hangers. Maximum "k" factor of 0.23 at 75°F. mean temperature difference per ASTM C 518. Owens Corning SSL II, Johns Manville Micro-Lok HP or approved equal.

Insulation thickness for hot water shall be as follows:

<u>Pipe Size</u>	<u>Insulation Thickness</u>
$\frac{1}{2}'' - 1\frac{1}{2}''$	$1\frac{1}{2}''$

Insulation thickness for hot water run-outs in partitions shall be as follows:

<u>Pipe Size</u>	<u>Insulation Thickness</u>
$\frac{1}{2}'' - 1''$	$\frac{1}{2}''$

2. All fittings shall be wrapped with fiberglass insulation and covered with a one piece PVC insulated fitting cover secured with flare type stainless steel staples.

D. Duct and Equipment Insulation

1. Insulate the following ducts with 3 inches installed thickness fiberglass duct wrap:

Plenums added to New Louvers

2. Material to carry U. L. label. All laps to be sealed and held in place with adhesive and flare staples. All lap joints to be folded under before stapling so no raw insulation will be showing. On the bottom of ducts 24 inches or wider, mechanical fasteners shall be provided approximately 12 inches O.C.

E. Condensate Protection

Solder or weld bottom and sides of ducts connected to outdoors to prevent water leaks from rain and snow. Seal duct wrap and liner to minimize condensation.

F. Installation

All insulation work shall be executed by skilled insulation workmen regularly employed in the trade.

2.07 AUTOMATIC TEMPERATURE CONTROL (ATC)

Provide Line Voltage Thermostats for Cove Heaters CH1&2  
Wiring by Division 260000

### PART 3 – EXECUTION

#### 3.01 SURFACE CONDITIONS

##### A. Inspection

1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all work is complete to the point where this installation may properly commence.
2. Verify that Mechanical systems may be installed in strict accordance with all pertinent codes and regulations and the approved shop drawings.

##### B. Discrepancies

1. In the event of discrepancy, immediately notify Architect.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

#### 3.02 INSTALLATION OF PIPING AND EQUIPMENT

##### A. General

1. All piping shall be installed within building insulation.
2. Size and general arrangements as well as methods of connecting all piping, valves, and equipment shall be as indicated, or to meet requirements for complete installation.
3. All pumps shall be supported independently of the piping system.
4. All piping shall be erected to provide for easy and noiseless passage of water under all working conditions.
5. All water mains shall be run level or pitch slightly upward so that no air pockets are formed in piping. Mains shall be set at elevations so runouts feeding heating equipment shall have no pockets where air can collect or automatic vents shall be provided.
6. Where preset balancing valves are used, it is critical that there not be two valves installed in series anywhere throughout the piping system.
7. All drain piping shall be graded downward in the direction of flow a minimum of 1 inch in 10 feet of run.
8. Provide drains with hose threads and metal caps at all low points in the water piping system.

9. Runouts to hot water radiation shall be size indicated on plans and shall come off the main downward (downfeed units) or off the side (upfeed units) with no less than three (3) 90 degree elbows provided on runout from main to drop or rise to radiation to absorb movement.
10. Install approved di-electric fittings at all points of dissimilar piping connections.
11. Install a sufficient number of unions or flanges to facilitate assembly and disassembly of piping and removal of equipment.
12. Install all piping promptly, capping or plugging all open ends and making pipe generally level and plumb, free from traps, and in a manner to conserve space for other work.
13. Inspect each piece of pipe, tubing, fittings, and equipment for defects and obstructions; promptly remove all defective materials from the job site.
14. Install pipes to clear all beams and obstructions; do not cut into or reduce the size of load carrying members without the approval of the Architect.
15. All low points in water piping shall be provided with an accessible plug tee or drain valve.
16. All high points in water piping shall be provided with an accessible automatic vent.
17. Maximum spacing of hangers for steel piping shall be as follows:

<u>Pipe Size</u>	<u>Spacing</u>
½", ¾" & 1"	6'-0"
1¼" & 1½"	8'-0"
2" & 3"	10'-0"

18. Maximum spacing of hangers for copper piping shall be as follows:

<u>Pipe Size</u>	<u>Spacing</u>
½", ¾" & 1"	6'-0"
1¼" & 1½"	6'-0"
2" & 3"	10'-0"

19. Maximum spacing of hangers for above ground PEX tubing shall be as required by the manufacturer.
20. Whenever possible valves shall be installed with the operating stems in the upright position, however when conditions dictate it is acceptable to position valves 90° to either side of vertical. Valves shall not be installed with the stems in the downward position.

B. Joints and Connections

1. Smoothly ream all cut pipe; cut all threads straight and true; apply best quality Teflon tape to all male pipe threads but not to inside of fittings; use graphite on all plugs.
  2. Make all joints in copper tube (water and drains) with 95-5 tin-antimony solder applied in strict accordance with the manufacturer's recommendations.
  3. All joints in refrigerant tubing shall be brazed.
- C. Fire Safety

When soldering and welding within 10 feet of combustible materials, fire extinguishing equipment shall be kept within 25 feet of work areas and clearly visible at all times. Contractor shall take additional measures when soldering and welding close to wood structures to protect from ignition. Do not leave the work area unattended until materials being soldered or welded have sufficiently cooled.

D. Thermometers

Install thermometers where indicated on drawings.

E. PEX tubing

1. Install PEX tubing where indicated on drawings.
2. Tubing shall be supported from building structure only, not from other piping or equipment.
3. Do not support other piping or equipment from PEX tubing.
4. Do not use fittings on PEX tubing except to make connections to metallic piping or heating devices. Tubing shall be run as joint-free as possible with sweeping bends.
5. PEX tubing 1 inch and smaller may be threaded through structure with the structure acting as support so long as support is not provided in lengths greater than 32 inches on center. Use protective sleeves or bushings where tubing passes through metal studs. Tubing shall not have sags or low points that would prevent thorough drainage of the system. Maximum horizontal spacing for pipe supports other than running through structure shall be 24 inches.
6. Support devices for PEX tubing 1 inch and smaller shall be a product of the PEX manufacturer. Support devices shall be screwed, not nailed, into wood. Do not attach to the underside of floor decks. It is acceptable to support PEX tubing to the side of steel bar joists with "zip" strip draw bands at 24 inch centers (maximum). Leave adequate provision for pipe insulation (where used).

### 3.03 PIPING TEST AND ADJUST

- A. During the installation, all hot water supply and return piping shall be tested with air to a

pressure of not more than 125 psi and held for a period of not less than four (4) hours. Isolate boiler and any other piping or devices not designed for this pressure. Do not use compressed air on PEX tubing systems. Any leaks shall be repaired and another test applied to the piping. All piping shall be tested before it is insulated or otherwise concealed. Contractor shall be required to certify in writing that piping has been tested and conforms to these requirements.

- B. Before operating the hydronic systems they shall be flushed and cleaned to remove contaminants.
- C. After the installation is complete and ready for operation, the heating system shall be ``under normal operating conditions in the presence of the Architect and demonstrated that the system functions as designed.
- D. It shall be demonstrated that all parts of hydronic systems have a free and noiseless circulation of steam and water and that all parts are tight. It shall also be demonstrated that all units are functioning properly and that control system operates correctly.
- E. Should any defects in operation develop during the test periods, the Mechanical Contractor will proceed to correct defects immediately. Additional tests will be conducted after correction.

### 3.04 INSTALLATION OF DUCTWORK AND EQUIPMENT

- A. General
  - 1. Size and general arrangements as well as methods of connecting all diffusers, registers, grilles, duct coils and equipment shall be as indicated, or to meet requirements for complete installation.
  - 2. Construction standards and sheet metal gauges shall be as outlined in the latest edition of the SMACNA HVAC Duct Construction Standards handbook for metal and flexible ducts unless specifically indicated otherwise.
  - 3. Do not use segmented elbows or screws to connect fittings on clothes dryer ducts. Use smooth, long radius elbows and pop rivets instead.
  - 4. Do not use square elbows for offsets that are show utilizing radius elbows (or partial radius elbows) without permission from the Architect.
- B. Protection and Cleaning
  - 1. All open ends of ductwork which is to be unattended for 4 hours or more shall be temporarily protected with plastic sheeting and duct tape (or similar method) to reduce the collection of construction dust and debris.
  - 2. Prior to testing and balancing and at the end of the construction, clean the interiors of all supply and return air ductwork before changing filters in air handling equipment. Careful coordination must be maintained between the time of testing

and balancing and final delivery to avoid re-accumulation of dust and debris within the duct systems which will require additional cleaning by the Mechanical Contractor.

### 3.05 TESTING, ADJUSTING AND BALANCING (TAB)

#### A. General

1. The Mechanical Contractor can provide the TAB work without hiring a separate Control Contractor

#### B. Work Included

1. Test, adjust and balance all air and water systems, including components to conform to air and water flow rates shown on drawings.

### 3.08 CLEANING

Prior to acceptance of the buildings, thoroughly clean all exposed portions of the Heating, Ventilating and Air Conditioning installation, including the removal all labels and all traces of foreign substance. Prior to testing and balancing vacuum and clean inside of all convectors, finned radiators (spackle droppings), unit ventilators, air handling units, VAV units, fans and cabinet unit heaters. Clean the interiors of ductwork as outlined in 3.04, "INSTALLATION OF DUCTWORK AND EQUIPMENT"; paragraph "B", "Protection and Cleaning".

### 3.09 INSTRUCTIONS AND TRAINING

On completion of the job, the Mechanical Contractor shall provide a competent technician to thoroughly instruct the Owner's Representative in the care and operation of the entire mechanical system. The total period of instruction shall not exceed one (1) hours. ATC system instruction shall be in addition to this instruction period. The time of instruction shall be arranged with the Owner.

### 3.10 RECYCLING

Discarded materials, both new and removed, shall be recycled whenever practical through metal salvage dealers (ductwork, piping, etc.), paper salvage (cardboard shipping containers, etc.), wood & plastic products, etc. The Mechanical Contractor shall retain the salvage value of discarded materials and may use this value to offset his project bid price if so desired. Toxic materials such as adhesives, coolants, refrigerants, etc. SHALL be disposed of in a manner acceptable to the State of Maine Department of Environmental Protection.

### 3.11 HAZARDOUS MATERIALS

Mercury, asbestos or any other material deemed hazardous by the Federal Environmental Protection Agency or the State of Maine Department of Environmental Protection, shall not be used in any components of the mechanical systems.

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END OF SECTION

## SECTION 26 00 00

### GENERAL ELECTRICAL REQUIREMENTS

#### 1. GENERAL

1.01 **GENERAL CONDITIONS** The General Conditions, Supplementary General Conditions and all Sections of Division 1 shall apply to each and every contract and contractor, person or persons supplying material, labor or entering into the work directly or indirectly.

#### 1.02 SCOPE

- A. The work described herein shall be interpreted as work to be done by the Electrical Subcontractor. Work to be performed by other trades will be specifically referenced to a particular Contractor or Subcontractor.
- B. This section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and/or herein specified, including but not limited to the following:

1. Wiring devices, boxes and plates
2. Lighting fixtures
3. Equipment power connections
4. Fire alarm system renovations
5. Wiremold raceways and boxes for power and data

C. The following work shall be provided under separate contract by the Owner:

1. Data wiring and terminations

#### 1.03 GENERAL:

- A. This Contractor is hereby advised to visit the proposed building site to acquaint himself with general conditions of the terrain. No concession will be made in favor of the Contractor for difficulties incurred as a result of failure to visit the site.
- B. This Contractor shall coordinate his work with the progress of the building and other trades such that he shall complete his work as soon as conditions permit and so that interruptions of building functions will be at a minimum. Any overtime hours worked or additional costs incurred due to lack of or improper coordination with other trades or the Owners by this Contractor shall be assumed by this Contractor without any additional cost to the Owner.
- C. Waste material shall be removed promptly from the premises. All material and equipment stored on the premises shall be kept in a neat and orderly fashion. No material shall be stored where exposed to adverse weather conditions.

- D. This Contractor shall erect and maintain at all times necessary safeguards for the protection of life and property of Owners, workmen, staff, and public.
- E. The Contractor shall guarantee in writing all workmanship, materials and equipment to be free from defects for period of one year from date of acceptance of the project, and shall make good any and all defects within that period without cost to the Owner.
- F. No change shall be made from the work, equipment or materials as called for by the Specification and the accompanying drawings, except on a written order of the Owner. When such changes reduce the Contractor's materials, labor, equipment or expense, the saving thus affected shall be used in full to reduce the contract price. No charge for extra work will be allowed unless such extra work has been authorized by a written order of the Owner, stating the change to be made for such work.

1.04 CODES AND STANDARDS

- A. Unless otherwise indicated in writing by the Architect or Engineer, the materials furnished under this specification shall be the standard products of manufacturers regularly engaged in the production of such equipment and shall be the manufacturer's latest standard design and shall also conform to such standards as to their quality and fabrication as have been established by the following:
  1. National Electrical Code (current edition)
  2. State Department of Public Safety
  3. Standards of the Underwriter's Laboratories (UL)
  4. National Electric Safety Code, American National Standards Institute
  5. Institute of Electrical and Electronic Engineers (IEEE)
  6. National Electrical Manufacturer's Association (NEMA)
  7. American Society for Testing and Materials (ASTM)
  8. Local Codes
- B. Where the contract documents indicate more stringent requirements than the above codes and ordinances, the contract documents shall take precedence.
- C. The installation shall comply with all local laws applying to the electrical installation in effect with regulations or any other governmental body or agency having jurisdiction, and with the regulations of the National Electrical Code where such regulations do not conflict with those laws.
- D. This Contractor shall obtain and pay for all permits required by local ordinances. After completion of the work, this Contractor shall furnish to the Architect, for the Owner, a certificate of final inspection and approval from the Inspection Bureau having jurisdiction.

1.05 DRAWINGS

- A. The Contract drawings indicate the extent and schematic arrangement of the conduit and wiring systems. If any departure from the drawings are deemed necessary by the Contractor, details of such departures shall be submitted as soon as practical and within

30 days after award of contract, to the Architect for approval. No such departures shall be made without the prior written approval of the Architect.

- B. These specifications are accompanied by floor plans of the building showing the location of outlets, switch controls devices, panels, service and feeder distribution, telephone outlets, power apparatus, and equipment. The drawings, except the structure, are intended to indicate only diagrammatically the extent, general character and approximate locations of the work included. Work indicated but having minor details obviously omitted, shall be furnished complete to perform the function intended without additional costs to the Owners.
- C. The Architectural, Structural, and Mechanical Drawings should be followed and this section of the work fitted thereto. If any departures from the contract drawings are deemed necessary by this Contractor, details of such departures and the reasons therefore shall be submitted, as soon as practical and within 30 days after award of the contract, to the Architect for approval. No departures shall be made without the prior written approval of the Architect or his authorized agent.
- D. The drawings and these specifications are complementary each to the other and any items specified but not shown or vice versa shall be referred to the Architect for clarification and shall consequently be furnished and installed as if both shown and specified.
- E. Record drawings of all changes to the contract plans shall be kept during construction, and one clean set of prints neatly marked in red ink shall be turned over to the Architect upon completion of the project, for the Owner's use.

## 2. PRODUCTS

### 2.01 MATERIALS AND WORKMANSHIP

- A. The materials and workmanship shall be the best of their kinds and in full accord with the most modern electrical construction. All materials shall be new.
- B. Defective equipment or equipment damaged in the course of installation or test shall be replaced or repaired in a manner meeting the approval of the Architect.
- C. In cases where equipment and materials are specifically specified, equal substitute material will be permitted only upon specific approval in writing by the Architect before the installation is made or material ordered.
- D. This Contractor shall submit detailed shop drawings (cuts, brochures, drawings including custom schematics of systems, etc.) in sextuplets (6) within 30 days after award of Contract to the Architect for review. Submittals to include but not be limited to the following:
  - 1. Wiring devices including switches and receptacles
  - 2. Wires and cables
  - 3. Fire alarm system
  - 4. Light fixtures

## 2.02 WIRING DEVICES

- A. This Contractor shall furnish and install receptacles and switches equal to the following:
  - 1. Devices: Gray, heavy duty.
  - 2. Device Plates: Stainless steel, heavy duty with brushed finish.
  - 3. Provide blank covers where needed.
  - 4. Light Switches: Hubbell "H-Moss" Sensors with Adaptive Technology, No exceptions.
- B. All switches and receptacles shall be flush mounted in all areas.
- C. All receptacles shall be labeled with panel ID and circuit number with Label Maker.

## 2.03 ALARM AND DETECTION

- A. This Contractor shall furnish and install devices as shown to extend the existing system to the proposed room configuration.

## 3. EXECUTION

### 3.01 RACEWAYS AND FITTING

- A. Outlets shall be installed in the locations shown on the drawings. The Contractor shall study the general building plans in relation to the spaces surrounding each outlet in order that his work may fit the other work required by these specifications.
- B. The Contractor shall relocate outlets so that, when fixtures or other fittings are installed they will be symmetrically located according to room layout and will not interfere with other work or equipment. Cast metal or cadmium plated sheet steel boxes, of a class to satisfy the conditions for each outlet, shall be used. Boxes shall be installed in a rigid and satisfactory manner, either by wood screws on wood work, (wall mounted boxes in wood construction may be nailed) expansion shields on masonry, or machine screws on steel work. Fixture outlet boxes at ceilings shall be of the 4" octagonal concrete type. Fire alarm and telephone outlet boxes shall be not less than 4" square fitted with appropriate covers where necessary, to set flush mounted. One piece gang boxes not less than 2" deep shall be utilized where necessary.
- C. Pull boxes shall be constructed of code gauge galvanized sheet metal of not less than the minimum size recommended by the National Electrical Code. Boxes shall be furnished through a common pull box, they shall be tagged to indicate clearly their electrical characteristics, circuit number, and panel designation.
- D. Conduit systems shall be installed in accordance with the applicable provisions of the National Electrical Code. Rigid steel conduit shall be zinc coated. Electric metallic tubing shall be installed in accordance with provisions of the National Electrical Code.
- E. Conduits shall be kept at least 8 inches from parallel runs of flues, steam pipes or hot water pipes. Exposed runs of conduit shall have supports spaced not more than 6 feet

apart and shall be installed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceilings, with right angle turns consisting of cast metal fittings of symmetrical bonds. Bends and offsets shall be avoided where possible, but where necessary, shall be made with an approved hickey or conduit bending machine. The use of a pipe tee or vise for bending conduit will not be permitted. Conduit which has been crushed or deformed in any way shall not be installed. Expansion fittings or other approved devices shall be used to provide for expansion and contraction where conduit crosses expansion joints.

- F. Wooden plugs inserted in masonry or concrete shall not be used as a base to fasten conduit supports. Conduits shall be supported on approved types of galvanized wall brackets, ceiling trapeze, strap hangers, or pipe straps, secured by means of toggle bolts on hollow masonry units or expansion bolts in concrete or brick and machine screws on metal surfaces. Nails shall not be used as means of fastening boxes or conduits.
- G. Conduit shall be installed in such manner as to insure against trouble from the collection of trapped condensation, and all runs of conduit shall be arranged so as to be devoid of traps wherever possible. The Contractor shall exercise the necessary precautions to prevent the lodgement of dirt, plaster, or trash in conduit, fittings, and boxes during the course of installation. A run of conduit which has become clogged shall be entirely freed of these accumulations, or shall be replaced.
- H. Conduit shall be securely fastened to all cast or sheet metal outlet, junction and pull boxes with galvanized locknuts and bushings, care being observed to see that the full number of threads project through to permit the bushing to pull tight against the end of conduit, after which the locknut shall be made up sufficiently tight to draw the bushing onto firm electrical contact with the box. Wiring shall be installed in telephone system conduits unless otherwise specified.
- I. Exposed surface wiring in finished areas shall not be allowed.

### 3.02 CONDUCTORS

- A. Home runs may be combined in one conduit, provided all connections are in accordance with National Electrical Code requirements, and the maximum unbalanced current in the neutral does not exceed the capacity of the conductor. Conductors shall be continuous from outlet to outlet, and no splices shall be made except within outlet or junction boxes. Junction boxes may be utilized wherever required or as shown on the drawings.
- B. Wire connectors, insulating material or solderless pressure connectors, properly taped, shall be utilized for all splices in wiring.
- C. Use Type THHN/THWN or XHHW. Wire shall not be smaller than 12 AWG for power and lighting circuits, or 18 AWG for control circuits

### 3.03 CIRCUIT IDENTIFICATION

- A. Neatly maintain a set of drawings showing circuits for existing and proposed devices. Turn copies over to the Owner and Architect at substantial completion. Provide a revised list of areas served at the breaker panel(s) serving the work area.

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END OF SECTION

## SECTION 28 10 00

### DOOR ACCESS CONTROL AND INTRUSION DETECTION

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. The Access Control system shall be an extension of the existing *Honeywell Enterprise Building Integrator System* with host computer located in the Cross Office Building. Provide system compatible card readers, door sensors and request to exit devices.
- B. *Honeywell* shall be the only acceptable supplier for this project, and shall provide installation supervision and instruction of State of Maine representatives on maintenance and operation of BMS, and system warranty.
- C. Work included under Division 28 shall include:
  - 1. Control wiring for all door access devices.
  - 2. Card readers, door position switches, and request-to-exit devices.
  - 3. System programming, data entry, testing, and start-up.
  - 4. Modifications as required to the existing door control panel.
  - 5. Motion detectors.
  - 6. Duress alarm push buttons.
  - 7. As-built documentation.

##### 1.2 COORDINATION OF WORK PROVIDED UNDER OTHER DIVISIONS

- A. Work provided under other divisions shall include:
  - 1. Door-locking hardware will be provided under Division 8.
  - 2. 120VAC power circuit wiring, raceways, and electrical boxes for door locking hardware wiring will be provided under Division 26.
  - 3. Control wiring for door locking hardware shall be provided under Division 28.
  - 4. Card readers, door position switches, and request-to-exit devices shall be provided under Division 28.

##### 1.3 QUALITY ASSURANCE

- A. Codes and Approvals:
  - 1. The complete Access Control installation shall be in strict accordance to the national and local electrical codes and the electrical section of these specifications. All devices designed for or used in line voltage applications shall be UL Listed.
  - 2. Access Control equipment shall be listed under the appropriate following UL standards:
    - a. UL294 (Access Control System)
    - b. UL1076 (Proprietary Alarm Monitoring System)
    - c. CE Mark

#### 1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Division 1.
- B. Shop Drawings and Product Data:
  - 1. Submit complete and at one time. Provide manufacturer's catalog information showing dimensions, colors, and configurations. Isolated items will not be considered for approval, except by prior authorization.
  - 2. A technical data sheet from the manufacturer should be included with the response for each product proposed. This data sheet shall include the physical specifications as well as the electrical characteristic.
  - 3. The following is required for approval, prior to fabrication and installation:
    - a. Catalog Data Sheets of all manufactured items, including manufacturer and model number.
    - b. Wiring diagrams indicating proposed connections of all equipment and indicating equipment types and mode numbers.

### PART 2 - PRODUCTS

#### 2.1 BMS CENTRAL HARDWARE

- A. General: The central BMS facility shall be the existing Enterprise Building Integrator workstation located in the Cross Office Building.

#### 2.2 EXISTING LOGICAL PROCESSING CONTROLLER

- A. Provide necessary programming to accommodate new devices being installed under this contract.

#### 2.3 CARD READERS – *HID ProxPro® Access Control Reader*

- A. The card reader shall be a *ProxPro* proximity card reader, Model Number 5355, and shall be manufactured by *HID Corporation*.
- B. The card reader shall read encoded data from the access card and/or transponder and transmit the data back to the host panel, giving an audible and visual indication of a properly read card.
- C. The card reader shall be no larger than 5.0" x 5.0" x 1.0"
- D. The card reader shall have a typical read range of 5.5" to 8"
- E. The card reader shall be provided with an internal tamper switch that will indicate an alarm condition if an unauthorized attempt is made to disassemble the unit.
- F. The card reader shall be a single unit with a three-piece housing, and with properly sized mounting holes that allow it to be attached directly to a US single gang electrical box.

- G. The card reader shall be sealed to a NEMA rating of 4X, and all internal electronics will have conformal coating to provide a high degree of environmental protection.
- H. The card reader shall be listed under UL 294 as an access control system accessory, and shall have the following certifications: Canada/UL 294, Canada/UL 1604 (Hazardous Location Model only) FCC, Canada Radio, EU and CB Scheme Electrical Safety, EU – R&TTE Directive, CE Mark, Australia C-Tick, New Zealand, Taiwan.
- I. The card reader shall have separate terminal control points for the green LED, the red LED, and the audible indicator.
- J. The card reader shall have a hold line that will buffer a card read until the panel has asserted that the information can be sent up line.
- K. The card reader shall have a re-present mode in which the card must be taken from the reader field for one second before being read again. This feature is required to prevent multiple reads from a single card presentation.
- L. The card reader shall be fully weatherized, and shall have an operating temperature of -22 to 150 degrees Fahrenheit (-30 to 65 degrees Celsius), and shall have an operating humidity of 5-95% noncondensing.
- M. The reader shall have a lifetime warranty.
- N. The card reader shall be made from polycarbonate material, and shall be charcoal gray.
- O. The card reader shall transmit at a 125 kHz frequency.
- P. The cable requirements of the card reader shall be a minimum five (5) conductor, 22 AWG, stranded cable with overall shield (for a Wiegand protocol interface). A six (6)-conductor cable is required when controlling the red and green LED individually. A seven (7)-conductor cable is required when the Host controls both the red and green LED's. A 22 AWG twisted pair, shielded, stranded cable is required for use of the tamper switch.
- Q. The card reader shall have the following reader configuration options which are user selectable by dip switch settings:
  1. Reader beeps and flashes green on a card read, LED normally red, single line control of LED.
  2. Reader flashes green on a card read, LED normally red, single line control of LED.
  3. Reader beeps on a card read, LED normally red, single line control of LED.
  4. Beeper and LED are controlled by host only, LED normally red, single line control of LED.
  5. Reader beeps and flashes green on a card read, LED normally off, red and green LED's controlled individually.
  6. Reader flashes green on a card read, LED normally off, red and green LED's controlled individually.
- R. Reader beeps on a card read, LED normally off, red and green LED's controlled individually.
- S. Beeper and LED are controlled by host only, LED normally off, red and green LED

- controlled individually.
- T. The card reader shall communicate in a Wiegand protocol interface, and be compatible with all standard access control systems.
  - U. The card reader shall also be available in optional Clock and Data, RS232 and RS422 serial interfaces.
  - V. The voltage requirements of the card reader shall be 10-28.5 VDC.

## 2.4 DEVICES

- A. Request-to-Exit Devices
  - 1. Provide DS150i and DS151i Passive Infrared (PIR) detectors specifically designed for Request-to-Exit (REX) applications. They detect motion in their coverage area and signal an access control system or door control device. Relay latch time adjustable to 60 seconds. Programmable retrigger or non-retrigger mode. Programmable Fail Safe or Fail Secure modes. Externally visible activation LED.
- B. Supervisory Switches
  - 1. *Sentrol* 1078C Series Concealed Mount - The contact shall contain a hermetically sealed magnetic reed switch. The reed shall be potted in the contact housing with a polyurethane based compound. Contact and magnet housing shall snap-lock into a 3/4" or 1" dia. hole. Housings shall be molded of flame retardant ABS plastic. Color of housings shall be off-white, grey or mahogany brown. The magnet shall be made of Alnico V. Rare Earth Magnet shall be made of neodymium iron boron.

## 2.5 INTRUSION DETECTION

- A. Motion Detectors
  - 1. Provide Owner Standard units.
    - a. Manufacturer: Bosch "TriTech Motion Detector."
    - b. Model: 1SC-PL1-W18G
  - 2. Power Supply: Connect to existing unit nearest the proposed installation.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The supplier shall perform system testing to ensure it is operable to the manufacturer's specifications. The test report shall be submitted to the customer for approval and signoff.

### 3.2 INSTALLATION

- A. Control signal, communications, and data transmission lines grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation. Provide mounting hardware as required.

- B. All low voltage wiring outside the control console, cabinets, boxes and similar enclosures, shall be plenum rated where required by code. Cable not pulled through conduits or placed in raceways, outlet boxes, junction boxes, or similar fittings with other building wiring.
- C. Provide all necessary wiring and connections between power operated doors and door card access system. Include wiring between a control relay, the entry actuator button, and the door operator. Also provide wiring between the door operator and the SI point on the *Honeywell* IQ panel. Also provide wiring between the door lock and the control relay.
  - 1. Provide a control relay as recommended by the door operator supplier/installer. The control relay coil voltage shall match the electric lock voltage .

### 3.3 MANUALS

- A. The following manuals shall be provided:
  - 1. A manual including revised As Built documents of all materials required under the paragraph "SUBMITTALS" on this specification.
  - 2. Two Operators Manuals, two Programmers, and two As Built Manuals shall be provided to the owner.

### 3.4 WARRANTY

- A. The new access control system components and wiring shall be warranted for a period of one (1) year from the date of acceptance.

END OF SECTION

