

S P E C I F I C A T I O N S

Blaine House – Site and Security Upgrades

Bureau of General Services

Augusta, Maine

BGS Project Number: 3656

Prepared For:

State of Maine

Bureau of General Services

Division of Planning, Design & Construction

77 State House Station

Augusta, Maine 04333

October 11, 2024

Prepared By:



OAK POINT
A S S O C I A T E S

architecture
engineering
planning

TABLE OF CONTENTS

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

00 11 13	Notice to Contractors for Email Bid
00 21 13	Instructions to Bidders
00 41 13	Contractor Bid Form
00 43 13	Contractor Bid Bond
00 52 13	Contract Agreement
00 61 13.13	Contractor Performance Bond
00 61 13.16	Contractor Payment Bond
00 63 46	BGS Construction Change Directive
00 63 63	BGS Change Order
00 72 13	General Conditions
00 73 46	Wage Determination Schedule

DIVISION 01 - GENERAL REQUIREMENTS

011000	Summary
012500	Substitution Procedures
012600	Contract Modification Procedures
012900	Payment Procedures
013100	Project Management and Coordination
013200	Construction Progress Documentation
013300	Submittal Procedures
014000	Quality Requirements
014200	References
015000	Temporary Facilities and Controls
015639	Temporary Tree and Plant Protection
016000	Product Requirements
017300	Execution
017419	Construction Waste Management and Disposal
017700	Closeout Procedures
017823	Operation and Maintenance Data
017839	Project Record Documents

DIVISION 02 – EXISTING CONDITIONS

024116	Structure Demolition
	Attachment: Hazardous Materials Report
024119	Selective Demolition

DIVISION 03 - CONCRETE

031000	Concrete Forming and Accessories
032000	Concrete Reinforcing
033000	Cast-in-Place Concrete

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

DIVISION 04 – MASONRY

044313.13 Anchored Stone Masonry Veneer

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

064013 Exterior Architectural Woodwork

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

074624 Wood Shingle and Shake Siding

079200 Joint Sealants

DIVISION 08 – OPENINGS

081433 Stile and Rail Wood Doors

087111 Door Hardware (Descriptive Specification)

DIVISION 09 – FINISHES

096340 Stone Flooring

099113 Exterior Painting

DIVISION 26 - ELECTRICAL

260010 Supplemental Requirements for Electrical

260519 Low-Voltage Electrical Power Conductors and Cables

260523 Control-Voltage Electrical Power Cables

260526 Grounding and Bonding for Electrical Systems

260529 Hanger and Supports for Electrical Systems

260533.13 Conduits for Electrical Systems

260533.16 Boxes and Covers for Electrical Systems

260543 Underground Ducts and Raceways for Electrical Systems

260553 Identification for Electrical Systems

260923 Lighting Control Devices

260943.23 Relay-Based Lighting Controls

262416 Panelboards

265000 Lighting

DIVISION 27 – COMMUNICATIONS

271513 Communications Copper Horizontal Cabling

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

281400 Access Control System Hardware

281500 Integrated Access Control Hardware Devices

281523 Intercom Entry Systems

282000 Video Surveillance

283100 Intrusion Detection

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

DIVISION 31 - EARTHWORK

311000	Site Clearing
312000	Earth Moving (with Geotechnical Report)

DIVISION 32 - EXTERIOR IMPROVEMENTS

321216	Asphalt Paving
321313	Concrete Paving
321373	Concrete Paving Joint Sealants
323119	Decorative Metal Fences and Gates
323300	Site Furnishings
329115	Soil Preparation (Performance Specification)
329200	Turf and Grasses
329300	Plants

END OF TABLE OF CONTENTS

00 11 13
Notice to Contractors

Blaine House Site & Security Upgrades

BGS Project No. 3656

Demolition of the existing perimeter wood fence and portions of existing PVC fence, existing gates, and construction of new masonry wall and decorative metal fence and gates; exterior lighting and security cameras; landscaping; demolition of existing Staff House;

The cost of the work is approximately \$. The contract shall designate the Substantial Completion Date on or before *1 November 2025*, and the Contract Final Completion Date on or before *15 December 2025*.

1. Submit bids on a completed Contractor Bid Form (section 00 41 13), provided in the Bid Documents, include bid security when required, and scan each item as an attachment to an email addressed to: BGS.Architect@Maine.gov, so as to be received no later than **2:00:00 p.m. on 13 November 2024**. The email subject line shall be marked "**Bid for Blaine House Site & Security Upgrades**".

Bid submissions will be opened and read aloud at the time and 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.

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.
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 *7 November 2024*.

*Oak Point Associates
Allison Towne DiMatteo
atowne@oakpoint.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.
23 October 2024, 2:00 pm
Blaine House
Chamberlain Street Driveway Entrance

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 *15 October 2024* and may be obtained *at a cost* from:
Xpress Copy
17 Westfield Street
Portland, Maine 04102
1-207-775-2444 (www.xcopy.com)
10. Bid Documents may be examined at:
AGC Maine
188 Whitten Road, Augusta, ME 04330
207-622-4741

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

00 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

Blaine House Site & Security Upgrades

BGS Project No. 3656

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

Bid Administrator:

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

BGS.Architect@Maine.gov

Bidder:

Signature: _____

Printed name and
title: _____

Company name: _____

Mailing address: _____

City, state, zip code: _____

Phone number: _____

Email address: _____

State of
incorporation,
if a corporation: _____

List of all partners,
if a partnership: _____

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

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

00 41 13
Contractor Bid Form

1. The Bidder, having carefully examined the *Blaine House Site & Security Upgrades* Project Manual dated insert date of documents, prepared by Oak Point Associates, as well as Specifications, Drawings, and any Addenda, the form of contract, and the premises and conditions relating to the work, proposes to furnish all labor, equipment and materials necessary for and reasonably incidental to the construction and completion of this project for the **Base Bid** amount of:

\$ _____ .00

2. Allowances *<Bid Administrator to select...>* on this project.

<Bid Administrator to select...>

insert brief name of Allowance

\$ 0.00

3. Alternate Bids *<Bid Administrator to select...>* on this project.

<Bid Administrator to select...>

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

1 Governor's Garden Improvements

\$ _____ .00

2 insert title of Alternate or "not used"

\$ _____ .00

3 insert title of Alternate or "not used"

\$ _____ .00

4 insert title of Alternate or "not used"

\$ _____ .00

4. 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.

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

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

00 43 13
Contractor Bid Bond

Bond No.: insert bond number

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

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

Now therefore:

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

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

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

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

00 43 13
Contractor Bid Bond

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

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

Contractor

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

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

State of Maine CONSTRUCTION CONTRACT

Large Construction Project

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

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

BGS Project No.: number assigned by BGS

Other Project No.: _____

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

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

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

ARTICLE 1 COMPENSATION AND PAYMENTS

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

Base Bid	<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>
Total Contract Amount	<u>\$0.00</u>

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

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

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

ARTICLE 2 COMMENCEMENT AND COMPLETION DATES

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

2.2 The Substantial Completion Date shall be _____.

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

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

ARTICLE 3 INELIGIBLE BIDDER

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

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

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

ARTICLE 4 CONTRACTOR'S RESPONSIBILITIES

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

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

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

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

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

ARTICLE 5 OWNER'S RESPONSIBILITIES

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

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

ARTICLE 6 INSTRUMENTS OF SERVICE

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

ARTICLE 7 MISCELLANEOUS PROVISIONS

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

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

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

ARTICLE 8 CONTRACT DOCUMENTS

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

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

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

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

BGS Project No.: _____

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

OWNER**CONTRACTOR**

Signature *Date*
name and title
name of contracting entity
address
telephone
email address

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

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

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

00 61 13.13
Contractor Performance Bond

Bond No.: insert bond number

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

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

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

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

00 61 13.13
Contractor Performance Bond

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

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

Contractor

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

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

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
Construction Change Directive

Blaine House - Site and Security Upgrades
 Bureau of General Services, Augusta, Maine

C. C. D. Number:
 CP (Change Proposal) Number
 Issue Date of this Document:

BGS Project No.:
 Other Project No.:

CCD Item			
Description of Work			
Reason or Necessity of Work			
Method of Compensation		Projected Total Cost	
Supporting Documentation		Projected Calendar Days*	

* Calendar Days refers to Contract Final Completion Date only.

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

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

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

Consultant
 (Architect or Engineer) **Oak Point Associates**
Allison Towne DiMatteo, Project Manager

 signature

 date

Contractor

 signature

 date

Owner
State of Maine
Augusta, Maine

 signature

 date

Owner's Rep
Bureau of General Services
Deane Rykerson

 signature

 date

Bureau of
General Services **Division of Planning, Design & Construction**
Deanne Rykerson

 signature

 date

State of Maine
CONSTRUCTION CONTRACT
Change Order

Blaine House - Site and Security Upgrades
 Bureau of General Services, Augusta, Maine

Change Order Number:

Issue Date of this Document:

BGS Project No.:

Other Project No.:

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

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

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

	Add	Deduct	Total
Net Calendar Days Adjusted by this Change Order			
Net Calendar Days Adjusted by Previous Change Orders			
Net of Change Orders to Date	0	0	0
Original Contract Final Completion Date			
Revised Contract Final Completion Date*			0-Jan-1900

Consultant (Architect or Engineer)

Oak Point Associates

Allison Towne DiMatteo, Project Manager

signature-----
date**Contractor**-----
signature-----
date**Owner**

State of Maine

Augusta, Maine

signature-----
date**Owner's Rep**

Bureau of General Services

Deane Rykerson

signature-----
date**Bureau of General Services**

Division of Planning, Design & Construction

Deanne Rykerson

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.

0-Jan-1900

List of Change Order Items

Project name

C. O. Number: 1

Contractor Company name

CO Item No.	CP No.	Item Name	Reason Code	Calendar Days*	Cost
1	1	Type brief name of Change Order Item here		0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
Totals				0	\$0

Reason Codes

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

* Calendar Days shows Contract Final
 Completion Date impact only.

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

Details of Change Order Item

Project name
location / school / campus

Change Order Item 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**

Change Order Item	Type name of Change Order Item here			
Description of Work	Type brief description here of work scope here.			
Reason or Necessity of Work	Type brief justification for change here.			
Cost Breakdown	Work by Subcontractor only	Work by Sub and Contractor	Work by Contractor only	
Subcontractor base cost	\$0	\$0		
Subcontractor markup	\$0	\$0		
Contractor base cost		\$0	\$0	
Contractor markup	\$0	\$0	\$0	
Subtotal	\$0	\$0	\$0	
Compensation	lump sum		Total Cost	\$0
Initiated by	Consultant		Calendar Days*	0
Reason Code	CC	Supporting Documentation		is attached

EO
Error or omission
of Consultant

UC
Unforeseen job site
condition

OC
Owner-
generated change

RC
Regulatory authority-
generated change

CC
Contractor-
generated change

* Calendar Days shows Contract Final Completion Date impact only.

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

signature date

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

signature date

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

signature date

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

signature date

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

signature date

00 72 13
General Conditions

Table of Contents of this General Conditions Section

1. Preconstruction Conference	2
2. Intent and Correlation of Contract Documents.....	2
3. Additional Drawings and Specifications	3
4. Ownership of Contract Documents	3
5. Permits, Laws, and Regulations	3
6. Taxes	4
7. Labor and Wages.....	4
8. Indemnification	5
9. Insurance Requirements	5
10. Contract Bonds.....	6
11. Patents and Royalties	7
12. Surveys, Layout of Work	7
13. Record of Documents.....	7
14. Allowances	8
15. Shop Drawings.....	8
16. Samples	8
17. Substitutions	8
18. Assignment of Contract.....	9
19. Separate Contracts.....	9
20. Subcontracts	10
21. Contractor-Subcontractor Relationship	10
22. Supervision of the Work.....	11
23. Observation of the Work	11
24. Consultant's Status.....	12
25. Management of the Premises	12
26. Safety and Security of the Premises	13
27. Changes in the Work	14
28. Correction of the Work.....	15
29. Owner's Right to do Work.....	16
30. Termination of Contract and Stop Work Action	16
31. Delays and Extension of Time	17
32. Payments to the Contractor	18
33. Payments Withheld	19
34. Liens	19
35. Workmanship	19
36. Close-out of the Work	20
37. Date of Completion and Liquidated Damages	21
38. Dispute Resolution	21

00 72 13
General Conditions

1. Preconstruction Conference

- 1.1 The Contractor shall, upon acceptance of a contract and prior to commencing work, schedule a preconstruction conference with the Owner and Consultant. The purpose of this conference is as follows.
 - 1.1.1 Introduce all parties who have a significant role in the Project, including:
 - Owner (State agency or other contracting entity)
 - Owner's Representative
 - Consultant (Architect or Engineer)
 - Subconsultants
 - Clerk-of-the-works
 - Contractor (GC)
 - Superintendent
 - Subcontractors
 - Other State agencies
 - Construction testing company
 - Commissioning agent
 - Special Inspections agent
 - Bureau of 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 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.

00 72 13
General Conditions

3. Additional Drawings and Specifications

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

4. Ownership of Contract Documents

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

5. Permits, Laws, and Regulations

- 5.1 The Owner is responsible for obtaining any zoning approvals or other similar local project approvals necessary to complete the Work, unless otherwise specified in the Contract Documents.
- 5.2 The Owner is responsible for obtaining Maine Department of Environmental Protection, Maine Department of Transportation, or other similar state government project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.
- 5.3 The Owner is responsible for obtaining any federal agency project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.
- 5.4 The Owner is responsible for obtaining all easements for permanent structures or permanent changes in existing facilities.
- 5.5 The Contractor is responsible for obtaining and paying for all permits and licenses necessary for the implementation of the Work. The Contractor shall notify the Owner of any delays, variance or restrictions that may result from the issuing of permits and licenses.
- 5.6 The Contractor shall comply with all ordinances, laws, rules and regulations and make all required notices bearing on the implementation of the Work. In the event the Contractor observes disagreement between the Drawings and Specifications and any ordinances, laws, rules and regulations, the Contractor shall promptly notify the Consultant in writing. Any necessary changes shall be made as provided in the contract for changes in the work. The Contractor shall not perform any work knowing it to be contrary to such ordinances, laws, rules and regulations.
- 5.7 The Contractor shall comply with local, state and federal regulations regarding construction safety and all other aspects of the Work.
- 5.8 The Contractor shall comply with the Maine Code of Fair Practices and Affirmative Action, 5 M.R.S. §784 (2).

00 72 13
General Conditions

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.
- 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

00 72 13
General Conditions

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.
- 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

00 72 13
General Conditions

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

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

00 72 13
General Conditions

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

00 72 13
General Conditions

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

00 72 13
General Conditions

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.
- 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.

00 72 13
General Conditions

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.
- 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.

00 72 13
General Conditions

- 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.

00 72 13
General Conditions

- 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.
- 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.

00 72 13
General Conditions

- 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 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.

00 72 13
General Conditions

- 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.
- 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

00 72 13
General Conditions

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 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.

00 72 13
General Conditions

- 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 Contractor. At that time the Owner may take possession of the premises and of all materials,

00 72 13
General Conditions

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

00 72 13
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.

00 72 13
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.

00 72 13
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.

2024 Fair Minimum Wage Rates -- Highway & Earth Kennebec County

Occupational Title	Minimum Wage	Minimum Benefit	Total
Brickmasons And Blockmasons	\$32.25	\$4.33	\$36.58
Bulldozer Operator	\$28.00	\$4.56	\$32.56
Carpenter	\$28.56	\$7.04	\$35.60
Cement Masons And Concrete Finisher	\$22.67	\$2.21	\$24.88
Commercial Divers	\$30.00	\$4.62	\$34.62
Construction And Maintenance Painters	\$26.00	\$3.81	\$29.81
Construction Laborer	\$24.00	\$3.00	\$27.00
Crane And Tower Operators	\$33.93	\$9.47	\$43.40
Crushing Grinding And Polishing Machine Operators	\$23.38	\$5.33	\$28.71
Drywall And Ceiling Tile Installers	\$26.20	\$10.62	\$36.82
Earth Drillers - Except Oil And Gas	\$21.29	\$2.53	\$23.82
Electrical Power - Line Installer And Repairers	\$38.93	\$8.91	\$47.84
Electricians	\$38.64	\$18.07	\$56.71
Elevator Installers And Repairers	\$68.38	\$45.29	\$113.67
Excavating And Loading Machine And Dragline Operators	\$26.50	\$3.60	\$30.10
Excavator Operator	\$32.00	\$6.39	\$38.39
Fence Erectors	\$20.00	\$0.00	\$20.00
Flaggers	\$20.00	\$0.38	\$20.38
Floor Layers - Except Carpet/Wood/Hard Tiles	\$27.00	\$6.21	\$33.21
Glaziers	\$37.00	\$6.60	\$43.60
Grader/Scraper Operator	\$22.61	\$12.50	\$35.11
Hazardous Materials Removal Workers	\$21.50	\$1.54	\$23.04
Heating And Air Conditioning And Refrigeration Mechanics And Installers	\$32.00	\$5.46	\$37.46
Heavy And Tractor - Trailer Truck Drivers	\$24.00	\$4.33	\$28.33
Highway Maintenance Workers	\$20.00	\$0.00	\$20.00
Industrial Machinery Mechanics	\$31.25	\$1.01	\$32.26
Industrial Truck And Tractor Operators	\$29.25	\$4.06	\$33.31
Insulation Worker - Mechanical	\$24.05	\$3.59	\$27.64
Ironworker - Ornamental	\$27.75	\$4.50	\$32.25
Light Truck Or Delivery Services Drivers	\$19.00	\$0.33	\$19.33
Millwrights	\$33.75	\$6.78	\$40.53
Mobile Heavy Equipment Mechanics - Except Engines	\$29.00	\$4.89	\$33.89
Operating Engineers And Other Equipment Operators	\$31.50	\$3.93	\$35.43
Paver Operator	\$22.61	\$12.50	\$35.11
Pile-Driver Operators	\$32.75	\$1.96	\$34.70
Pipelayers	\$28.50	\$4.89	\$33.39
Plumbers Pipe Fitters And Steamfitters	\$30.00	\$5.87	\$35.87
Pump Operators - Except Wellhead Pumps	\$31.49	\$32.08	\$63.57
Radio Cellular And Tower Equipment Installers	\$26.00	\$3.77	\$29.77
Reclaimer Operator	\$22.61	\$12.50	\$35.11
Reinforcing Iron And Rebar Workers	\$22.67	\$25.11	\$47.78
Riggers	\$31.25	\$7.68	\$38.93
Roofers	\$24.00	\$3.35	\$27.35
Screed/Wheelman	\$29.65	\$4.83	\$34.48
Sheet Metal Workers	\$25.25	\$5.68	\$30.93
Structural Iron And Steel Workers	\$30.04	\$7.22	\$37.26
Tapers	\$28.00	\$1.71	\$29.71
Telecommunications Equipment Installers And Repairers - Except Line Installers	\$28.33	\$6.08	\$34.41
Telecommunications Line Installers And Repairers	\$26.00	\$4.83	\$30.83
Tile And Marble Setters	\$27.75	\$6.73	\$34.48

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

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

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

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

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

A true copy

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

Expiration Date: 12-31-2024
Revision Date: 1-3-2024

00 73 46
Wage Determination Schedule

End of Section 00 73 46

SECTION 011000 - SUMMARY

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. Section Includes:

- 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Phased construction.
 - 4. Contractor's use of site and premises.
 - 5. Coordination with occupants.
 - 6. Work restrictions.
 - 7. Specification and Drawing conventions.
 - 8. Miscellaneous provisions.

- B. Related Requirements:

- 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
 - 2. Section 017300 "Execution" for coordination of Owner-installed products.

1.3 DEFINITIONS

- A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

- A. Project Identification: Blaine House Site & Security Improvements, BGS Project Number 3656.

- 1. Project Location: 192 State Street, Augusta, Maine 04330.

- B. Owner: State of Maine.

- 1. Owner's Representative: Deane Rykerson, Bureau of General Services, 111 Sewall Street, Cross State Office Building, 77 State House Station, Augusta, Maine 04333-0077.

- C. Architect: Oak Point Associates, 231 Main Street, Biddeford, Maine 04005.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Architect's Representative: Allison Towne DiMatteo, Project Manager, atowne@oakpoint.com.
- D. Web-Based Project Software: Project software will be used for purposes of managing communication and documents during the construction stage.
 1. See Section 013100 "Project Management and Coordination." for requirements for using web-based Project software.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
 1. Demolition of the existing perimeter wood fence and portions of existing PVC fence, existing gates, and construction of new masonry wall and decorative metal fence and gates; exterior lighting and security cameras; landscaping; demolition of existing Staff House; and other Work indicated in the Contract Documents.
- B. Type of Contract:
 1. Project will be constructed under a single prime contract.

1.6 PHASED CONSTRUCTION

- A. Construct the Work in phases, with each phase substantially complete as indicated on Drawings.
 1. Phase One: Staff House demolition and temporary stabilization of the site.
 - a. Commencement of Construction:
 - 1) Notice to Proceed: Work of this phase shall commence within 14 days after the Notice to Proceed.
 - b. Substantial Completion:
 - 1) Within 60 days after commencement of construction of this phase.
 2. Phase Two: Perform the remaining Work. The intent is to process submittals and begin the ordering and manufacturing of long-lead items over the winter months and resume on-site construction when the weather allows in early spring 2025. The remaining Work shall be substantially complete at time of Substantial Completion of the Work.
- B. Before commencing Work of each phase, submit an updated copy of Contractor's construction schedule, showing the sequence, commencement and completion dates for all phases of the Work.

1.7 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Limits on Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Driveways, Walkways and Entrances: Keep at least one driveway, loading areas, and all building 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 for storage of materials, except as indicated on Drawings.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.8 COORDINATION WITH OCCUPANTS

- A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. 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. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 2. Provide not less than 96 hours' notice to Owner of activities that will affect Owner's operations.
- B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited 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 prior to Owner acceptance of the completed Work.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.9 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to between 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.
 - 1. Weekend Hours: With at least 3 days advance permission by Owner.
 - 2. Early Morning Hours: With at least 3 days advance permission by Owner. City of Augusta does not permit construction-related noise prior to 7:00am.
 - 3. Work in Existing Building: With at least 3 days advance permission by Owner.
 - 4. Hours for Utility Shutdowns: Only with advance permission by Owner.
- C. 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 for temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than three days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than three days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Owner's property is not permitted.
- F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- G. Employee Screening: Comply with Owner's requirements for background screening of Contractor personnel working on Project site.
 - 1. Maintain list of approved screened personnel with Owner's representative.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

- A. 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. Imperative mood and streamlined language are generally used in the Specifications. 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.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012500 - SUBSTITUTION PROCEDURES

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. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for products selected under an allowance.
 - 2. Section 012300 "Alternates" for products selected under an alternate.
 - 3. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use form acceptable to Architect.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- b. Substitution request is fully documented and properly submitted.
- c. Requested substitution will not adversely affect Contractor's construction schedule.
- d. Requested substitution has received necessary approvals of authorities having jurisdiction.
- e. Requested substitution is compatible with other portions of the Work.
- f. Requested substitution has been coordinated with other portions of the Work.
- g. Requested substitution provides specified warranty.
- h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- b. Requested substitution does not require extensive revisions to the Contract Documents.
- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution has received necessary approvals of authorities having jurisdiction.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- g. Requested substitution is compatible with other portions of the Work.
- h. Requested substitution has been coordinated with other portions of the Work.
- i. Requested substitution provides specified warranty.
- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

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. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
 - 2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on Architect's standard form.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 7. Proposal Request Form: Use form acceptable to Architect.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Architect and Contractor on form included in Project Manual.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on form included in Project Manual. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012900 - PAYMENT PROCEDURES

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. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- b. Owner's name.
 - c. Owner's Project number.
 - d. Name of Architect.
 - e. Contractor's name and address.
 - f. Date of submittal.
2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
7. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
8. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
9. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Payment Application Times: Submit Application for Payment to Architect by the 15th day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
1. Other Application for Payment forms proposed by the Contractor may be acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Certification of completion of final punch list items.
 3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 4. Updated final statement, accounting for final changes to the Contract Sum.
 5. AIA Document G706.
 6. AIA Document G706A.
 7. AIA Document G707.
 8. Evidence that claims have been settled.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013100 - 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. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Web-based Project management software package.
 - 6. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. 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:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Name, address, telephone number, and email address 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.
- C. 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, 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 temporary field office and in web-based Project software directory. 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 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.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, and electrical systems.
 - d. Indicate required installation sequences.
 - e. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans: Show architectural and structural elements, and electrical Work. Supplement plan drawings with section drawings where required to adequately represent the Work.
 2. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 3. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, curbs and housekeeping pads, and similar items.
 4. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
 - b. Light fixture and security camera locations.
 - c. Location of pull boxes and junction boxes, dimensioned from column center lines.
 5. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
 6. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."
- C. Coordination Drawing Process: Prepare coordination drawings in the following manner:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Schedule submittal and review of Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
 2. Contractor shall perform the final coordination review. As each coordination drawings I completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.
- D. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Preparation Format:
 - a. Same digital data software program, version, and operating system as original Drawings.
 2. File Submittal Format: Submit or post coordination drawing files using PDF format.
 3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in AutoCAD 2022.
 - c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.

1.7 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Owner name.
 3. Owner's Project number.
 4. Name of Architect.
 5. Architect's Project number.
 6. Date.
 7. Name of Contractor.
 8. RFI number, numbered sequentially.
 9. RFI subject.
 10. Specification Section number and title and related paragraphs, as appropriate.
 11. Drawing number and detail references, as appropriate.
 12. Field dimensions and conditions, as appropriate.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 14. Contractor's signature.
 15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.
1. Attachments shall be electronic files in PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
 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 Section 012600 "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 5 days of receipt of the RFI response.
- E. 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.
 4. RFI number, including RFIs that were returned without action or withdrawn.
 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.

- 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.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Architect's Data Files Not Available: Architect will not provide Architect's CAD drawing digital data files for Contractor's use during construction.
- B. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings will be provided by Architect for Contractor's use during construction.
 - 1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
 - 2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 - 3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD 2022.
 - 4. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.
- C. Web-Based Project Management Software Package: Provide, administer, and use web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.
 - 1. Web-based Project management software includes, at a minimum, the following features:
 - a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
 - b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
 - c. Document workflow planning, allowing customization of workflow between project entities.
 - d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
 - e. Track status of each Project communication in real time, and log time and date when responses are provided.
 - f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
 - g. Processing and tracking of payment applications.
 - h. Processing and tracking of contract modifications.
 - i. Creating and distributing meeting minutes.
 - j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
 - k. Management of construction progress photographs.
 - l. Mobile device compatibility, including smartphones and tablets.
 - 2. Provide up to seven Project management software user licenses for use of Owner, Architect, and Architect's consultants.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.
- D. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 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 a minimum of seven days prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct 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.
1. Attendees: Authorized representatives of Owner and Architect; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. 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. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Preparation of Record Documents.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- o. Use of the premises.
 - p. Work restrictions.
 - q. Working hours.
 - r. Owner's occupancy requirements.
 - s. Responsibility for temporary facilities and controls.
 - 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: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for 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. 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 requirements.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - 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.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 - 3. 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 other parties requiring information.
 - 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. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 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 and Architect; 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. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for preparing operations and maintenance data.
 - f. Preparation of Contractor's punch list.
 - g. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - h. Submittal procedures.
 - i. Owner's partial occupancy requirements.
 - j. Responsibility for removing temporary facilities and controls.
 - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at regular intervals.
- 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of Owner 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 meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. 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.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 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) Status of submittals.
 - 3) Deliveries.
 - 4) Off-site fabrication.
 - 5) Access.
 - 6) Site use.
 - 7) Temporary facilities and controls.
 - 8) Progress cleaning.
 - 9) Quality and work standards.
 - 10) Status of correction of deficient items.
 - 11) Field observations.
 - 12) Status of RFIs.
 - 13) Status of Proposal Requests.
 - 14) Pending changes.
 - 15) Status of Change Orders.
 - 16) Pending claims and disputes.
 - 17) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's Construction Schedule.
 - 2. Construction schedule updating reports.
 - 3. Site condition reports.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.
 - 2. Section 014000 "Quality Requirements" for schedule of tests and inspections.

1.2 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 Activity: An activity on the critical path that 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. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

1.3 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Format for Submittals: Submit required submittals in the following format:
1. Working electronic copy of schedule file.
 2. PDF file.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.
- D. Construction Schedule Updating Reports: Submit with Applications for Payment.
- E. Site Condition Reports: Submit at monthly intervals.

1.4 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, payment requests, and other required schedules and reports.
1. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Computer Scheduling Software: Prepare schedules using current version of a program that is capable of managing construction schedules.
1. Use Microsoft Project or scheduling component of Project management software package specified in Section 013100 "Project Management and Coordination,"
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 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. Phasing: Arrange list of activities on schedule by phase.
 - 2. 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. Use-of-premises restrictions.
 - e. Seasonal variations.
 - 3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Submittals.
 - b. Mockups.
 - c. Fabrication.
 - d. Installation.
 - e. Tests and inspections.
 - f. Adjusting.
 - g. Curing.
- 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. Contractor's Construction Schedule Updating: Update schedule to reflect actual construction progress and activities. Issue schedule 2 days 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.

1.6 CPM SCHEDULE REQUIREMENTS

- A. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.
 - 1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract must not excuse Contractor from completing all work within applicable completion dates.
 - 2. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.
- B. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities.
2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates to be consistent with Contract milestone dates.

1.7 REPORTS

- A. 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
5. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
6. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
7. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Submittal purpose and description.
10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.
16. Signature of transmitter.

- B. Options: Identify options requiring selection by Architect.
- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.
- E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.4 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 3. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 7 days for review of each resubmittal.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.5 SUBMITTAL REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. Submit Product Data before Shop Drawings, and before or concurrently with Samples.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
 - 1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
 - 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 - 3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
 - 4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
 - 5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 - 6. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 - 7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
- E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- G. Certificates:
 1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
 5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.
- H. Test and Research Reports:
 1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.6 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp or indication in web-based Project management software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.7 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.
 1. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Actions taken by indication on Project management software website have the following meanings:
 - 1) Final Unrestricted Release: When the Architect marks a submittal "Reviewed," the work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents. Final payment depends on that compliance.
 - 2) Final-But-Restricted Release: When the Architect marks a submittal "Furnish as Corrected," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
 - 3) Return for Resubmittal: When the Architect marks a submittal "Rejected" or "Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will return without review submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
	012500	SUBSTITUTION PROCEDURES																
		Substitution Requests																
	013100	PROJECT MANAGEMENT AND COORDINATION																
		Subcontract List																
		Key Personnel Names																
	013200	CONSTRUCTION PROGRESS DOCUMENTATION																
		Contractor's Construction Schedule																
		Construction Schedule Updating Reports																
		Site Condition Reports																
	013300	SUBMITTAL PROCEDURES																
		Product Data																
		Shop Drawings																
		Samples																
		Samples for Initial Selection																
		Samples for Verification																
		Qualification Statements																
		Welding Certificates																
		Material Test Reports																
		Product Test Reports																
		Preconstruction Test Reports																
		Compatibility Test Reports																
		Design Data																
		Field Test Reports																
		Installer Certificates																
		Manufacturer Certificates																
	014000	QUALITY REQUIREMENTS																
		Mockup Shop Drawings																
		Contractor's Quality Control Plan																
		Qualification Data																
		Testing Agency Qualifications																
		Schedule of Tests and Inspections																
		Reports																
		Permits, Licenses, and Certificates																

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
	015000	TEMPORARY FACILITIES AND CONTROLS																
		Site Utilization Plan																
		Implementation and Termination Schedule																
		Project Identification and Temporary Signs																
		Moisture- and Mold-Protection Plan																
		Noise and Vibration Control Plan																
	015639	TEMPORARY TREE AND PLANT PROTECTION																
		Product Data																
		Shop Drawings																
		Samples																
		Tree-Pruning Schedule																
		Maintenance Recommendations																
		Mitigation Requirements																
		Qualification Data																
		Certification																
		Existing Conditions																
		Quality-Control Program																
	017300	EXECUTION																
		Qualification Data																
		Certified Surveys																
		Certificates																
		Landfill Receipts																
		Final Property Survey																
	017700	CLOSEOUT PROCEDURES																
		Product Data																
		Contractor's List of Incomplete Items																
		Certified List of Incomplete Items																
		Certificates of Release																
		Certificate of Insurance																
		Schedule of Maintenance Material Items																
	017832	OPERATION AND MAINTENANCE DATA																
		Operation and Maintenance Manuals																
	017839	PROJECT RECORD DOCUMENTS																
		Record Drawings																

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
		Record Specifications																
		Record Product Data																
	024116	STRUCTURE DEMOLITION																
		Proposed Protection Measures																
		Schedule of Building Demolition Activities																
		Inventory																
	024119	SELECTIVE DEMOLITION																
		Proposed Protection Measures																
		Schedule of Selective Demolition																
		Inventory																
	031000	CONCRETE FORMING AND ACCESSORIES																
		Product Data																
		Qualification Data																
		Field Quality-Control Reports																
		Minutes of Preinstallation Conference																
	032000	CONCRETE REINFORCING																
		Product Data																
		Design Mixtures																
		Shop Drawings																
		Construction Joint Layout																
		Qualification Statements																
		Material Certificates																
		Material Test Reports																
		Field Quality-Control Reports																
		Minutes of Preinstallation Conference																
	033000	CAST-IN-PLACE CONCRETE																
		Product Data																
		Design Mixtures																
		Shop Drawings																
		Concrete Schedule																
		Qualification Data																
		Material Certificates																
		Material Test Reports																
		Preconstruction Test Reports																
		Field Quality-Control Reports																
		Minutes of Preinstallation Conference																

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
	044313.13	ANCHORED STONE MASONRY VENEER																
		Product Data																
		Samples for Initial Selection																
		Samples for Verification																
		Qualification Data																
		List of Materials Used in Constructing Mockups																
		Material Test Reports																
	064013	EXTERIOR ARCHITECTURAL WOODWORK																
		Product Data																
		Wood-Preservative Treatment																
		Fire Retardant Treatment																
		Waterborne Treatments																
		Shop Drawings																
		Samples																
		Qualification Data																
	074624	WOOD SHINGLE AND SHAKE SIDING																
		Product Data																
		Samples for Initial Selection																
		Samples for Verification																
		Qualification Statements																
		Sample Warranties																
		Maintenance Data																
		Extra Stock Material (Wood-Shingle-Clad Wall Panels)																
	079200	JOINT SEALANTS																
		Product Data																
		Samples for Initial Selection																
		Preconstruction Laboratory Test Schedule																
		Preconstruction Field-Adhesion Test Reports																
		Field Quality-Control Reports																
		Sample Warranties																
		Manufacturer's Special Warranties																
		Installer's Special Warranties																
	081433	STILE AND RAIL WOOD DOORS																
		Product Data																
		Shop Drawings																

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																			
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:														
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION					DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.	CONTRACTOR		OWNER	FIELD	FILE	
		Samples for Initial Selection																	
		Special Warranties																	
	087111	DOOR HARDWARE (DESCRIPTIVE SPECIFICATION)																	
		Product Data																	
		Samples																	
		Door Hardware Schedule																	
		Keying Schedule																	
		Qualification Data																	
		Product Test Reports																	
		Sample Warranty																	
		Maintenance Data																	
		Schedules																	
	096340	STONE FLOORING																	
		Product Data																	
		Shop Drawings																	
		Samples for Initial Selection																	
		Samples for Verification																	
		Qualification Data																	
		Material Test Reports																	
	099113	EXTERIOR PAINTING																	
		Product Data																	
		Samples																	
		Samples for Initial Selection																	
		Product Schedule																	
		Extra Materials (Paint Products)																	
	260010	SUPPLEMENTAL REQUIREMENTS FOR ELECTRICAL																	
		Electrical Installation Schedule																	
		Installation Schedule for Security, Fire-Alarm, and Other Life-Safety Systems																	
		Operation and Maintenance Data																	
		Software and Firmware Operational Documentation																	
	260519	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES																	

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
		Product Data																
		Product Schedule																
	260523	Field Quality-Control Reports CONTROL-VOLTAGE ELECTRICAL POWER CABLES																
		Product Data																
		Source Quality-Control Reports																
		Field Quality-Control Reports																
	260526	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS																
		Product Data																
		Field Quality-Control Reports																
	260529	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS																
		Product Data																
	260533.13	CONDUITS FOR ELECTRICAL SYSTEMS																
		Product Data																
		Field Quality-Control Reports																
		Manufacturer's Published Instructions																
	260533.16	BOXES AND COVERS FOR ELECTRICAL SYSTEMS																
		Product Data																
		Manufacturer's Published Instructions																
	260543	UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS																
		Product Data																
		Shop Drawings																
		Sustainable Design SUBmittals																
		Manufacturer's Published Instructions																
		Field Reports																
	260553	IDENTIFICATION FOR ELECTRICAL SYSTEMS																
		Product Data																
		Identification Schedule																
	260923	LIGHTING CONTROL DEVICES																
		Product Data																

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
		Field Quality-Control Reports																
		Manufacturer's Published Instructions																
		Field Reports																
		Warranty Documentation																
		Software and Firmware Service Agreement																
	260943.23	RELAY-BASED LIGHTING CONTROLS																
		Product Data																
		Shop Drawings																
		Field Quality-Control Reports																
		Sample Warranties																
	262416	PANELBOARDS																
		Product Data																
		Field Quality-Control Reports																
		Manufacturer's Published Instructions																
		Field Reports																
		Warranty Documentation																
	265000	LIGHTING																
		Product Data																
		Shop Drawings																
		Sustainable Design Submittals																
		Field Quality-Control Reports																
		Manufacturer's Published Instructions																
		Field Reports																
		Warranty Documentation																
		Spare Parts																
		Extra Stock Material																
	271513	COMMUNICATIONS COPPER HORIZONTAL CABLING																
		Product Data																
		Shop Drawings																
		Twisted Pair Cable Testing Plan																
		Sustainable Design Submittals																
		Field Quality-Control Reports																
		Qualification Data																
		Product Certificates																
		Source Quality-Control Reports																

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE					BGS PROJECT NO: 3656													
OWNER: BUREAU OF GENERAL SERVICES					CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
		Maintenance Data																
	281400	ACCESS CONTROL SYSTEM HARDWARE																
		Product Data																
		Shop Drawings																
		Field Quality-Control Reports																
		Manufacturer's Published Instructions																
		Sample Warranties																
		Warranty Documentation																
	281500	INTEGRATED ACCESS CONTROL HARDWARE DEVICES																
		Product Data																
		Shop Drawings																
		Field Quality-Control Reports																
		Manufacturer's Published Instructions																
		Sample Warranties																
		Maintenance Contracts																
		Warranty Documentation																
	281523	INTERCOM ENTRY SYSTEMS																
		Product Data																
		Shop Drawings																
		Field Quality-Control Reports																
		Manufacturer's Published Instructions																
		Sample Warranties																
		Maintenance Contractors																
		Warranty Documentation																
	282000	VIDEO SURVEILLANCE																
		Product Data																
		Shop Drawings																
		Design Data																
		Field Quality-Control Reports																
		Product Warranty																
		Operation and Maintenance Data																
	283100	INTRUSION DETECTION																
		Product Data																
		Shop Drawings																
		Design Data																

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
		Samples for Initial Selection																
		Samples for Verification																
		Qualification Data																
		Field Quality-Control Reports																
		Product Warranty																
		Field Test Reports																
		Evaluation Reports																
		Operation and Maintenance Data																
	311000	SITE CLEARING																
		Existing Conditions																
		Topsoil Stripping and Stockpiling Program																
		Record Drawings																
		Burning																
	312000	EARTH MOVING																
		Product Data																
		Qualification Data																
		Material Test Reports																
	321216	ASPHALT PAVING																
		Product Data																
		Hot-Mix Asphalt Designs																
		Qualification Data																
		Material Certificates																
		Field Quality-Control Reports																
	321313	CONCRETE PAVING																
		Product Data																
		Qualification Data																
		Material Certificates																
		Material Test Reports																
		Field Quality-Control Reports																
	321373	CONCRETE PAVING JOINT SEALANTS																
		Product Data																
		Samples for Initial Selection																
		Samples for Verification																
		Paving-Joint-Sealant Schedule																
	323119	DECORATIVE METAL FENCES AND GATES																
		Product Data																

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

MASTERWORKS SUBMITTAL LOG																		
PROJECT: BLAINE HOUSE – SITE AND SECURITY UPGRADES, AUGUSTA, MAINE OWNER: BUREAU OF GENERAL SERVICES					BGS PROJECT NO: 3656 CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
		Shop Drawings																
		Samples for Verification																
		Qualification Data																
		Product Test Reports																
		Field Quality-Control Reports																
		Maintenance Data																
	323300	SITE FURNISHINGS																
		Product Data																
		Samples																
		Maintenance Data																
	329115	SOIL PREPARATION (PERFORMANCE SPECIFICATION)																
		Product Data																
		Qualification Data																
		Preconstruction Test Reports																
		Field Quality-Control Reports																
	329200	TURF AND GRASSES																
		Qualification Data																
		Certification of Grass Seed																
		Product Certificates																
		Pesticides and Herbicides																
		Maintenance Data																
	329300	PLANTS																
		Product Data																
		Samples for Verification																
		Qualification Statements																
		Product Certificates																
		Pesticides and Herbicides																
		Sample Warranty																
		Maintenance Data																

END

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection 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 quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. 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, assembly, and similar operations.
 - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.
 - 1. Mockups are used for one or more of the following:
 - a. Verify selections made under Sample submittals.
 - b. Demonstrate aesthetic effects.
 - c. Demonstrate the qualities of products and workmanship.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- d. Demonstrate successful installation of interfaces between components and systems.
 - e. Perform preconstruction testing to determine system performance.
 - 2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
 - 3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.
- F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."
- I. 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.
- J. 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. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is 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.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Mockup Shop Drawings:
 - 1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
 - 2. Indicate manufacturer and model number of individual components.
 - 3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- C. Qualification Data: For Contractor's quality-control personnel.
- 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. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- F. Reports: Prepare and submit certified written reports and documents as specified.
- G. Permits, Licenses, and Certificates: For Owner's record, 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.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of 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

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

- B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
- 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: In quality-control plan, include 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. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
- 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 the 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, telephone number, and email address 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 inspection.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

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, telephone number, and email address 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 of 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, telephone number, and email address 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 of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.8 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. 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. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. 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.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, 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.
- E. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

- F. 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.
- G. 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's Responsibilities:
 - 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. When testing is complete, remove test specimens and test assemblies, and 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.
- H. 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 of size indicated.
 - 2. Build mockups in location indicated or, if not indicated, as directed by Architect.
 - 3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 - 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 5. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 - 6. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
 - 7. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 8. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

9. Demolish and remove mockups when directed unless otherwise indicated.

1.9 QUALITY CONTROL

- A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
 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. Engage a qualified testing agency to perform quality-control services.
 - a. Contractor will 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 inspection 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 inspection 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.
- B. 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.
- C. 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 locations 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 duties of Contractor.
- D. 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 Section 013300 "Submittal Procedures."
- E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

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.

- F. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives 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 inspection. 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 inspection equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. 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 and submit with each Application for Payment.
 - 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. Test and Inspection Log: 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 revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, 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 or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- 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

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms, including "requested," "authorized," "selected," "required," and "permitted," have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms, including "shown," "noted," "scheduled," and "specified," have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
 - 1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations, List: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Abbreviations and acronyms not included in this list are to mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States." The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; (see FGIA).
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; www.concrete.org.
9. ACP - American Clean Power; (Formerly: American Wind Energy Association); www.cleanpower.org.
10. ACPA - American Concrete Pipe Association; www.concretepipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.
20. AITC - American Institute of Timber Construction; (see PLIB).
21. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
22. AMPP - Association for Materials Protection and Performance; www.ampp.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA/SCST - Association of Official Seed Analysts (The)/Society of Commercial Seed Technologists (The); www.analyzeseeds.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASA - Acoustical Society of America; www.acousticalsociety.org.
30. ASCE - American Society of Civil Engineers; www.asce.org.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

31. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (see ASCE).
32. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
33. ASME - ASME International; American Society of Mechanical Engineers (The); www.asme.org.
34. ASSE - ASSE International; (American Society of Sanitary Engineering); www.asse-plumbing.org.
35. ASSP - American Society of Safety Professionals; www.assp.org.
36. ASTM - ASTM International; www.astm.org.
37. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
38. AVIXA - Audiovisual and Integrated Experience Association; www.avixa.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - Business and Institutional Furniture Manufacturer's Association; www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; www.bwfbadminton.com.
50. CARB - California Air Resources Board; www.arb.ca.gov.
51. CDA - Copper Development Association Inc.; www.copper.org.
52. CE - Conformite Europeenne (European Commission); www.ec.europa.eu/growth/single-market/ce-marking.
53. CEA - Canadian Electricity Association; www.electricity.ca.
54. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
55. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
56. CGA - Compressed Gas Association; www.cganet.com.
57. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
58. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
59. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
60. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
61. CPA - Composite Panel Association; www.compositepanel.org.
62. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
63. CRRC - Cool Roof Rating Council; www.coolroofs.org.
64. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
65. CSA - CSA Group; www.csagroup.org.
66. CSI - Cast Stone Institute; www.caststone.org.
67. CSI - Construction Specifications Institute (The); www.csiresources.org.
68. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
69. CTA - Consumer Technology Association; www.cta.tech.
70. CTI - Cooling Technology Institute; www.coolingtechnology.org.
71. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
72. DHA - Decorative Hardwoods Association; www.decorativehardwoods.org.
73. DHI - Door and Hardware Institute; www.dhi.org.
74. ECIA - Electronic Components Industry Association; www.ecianow.org.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

75. EIMA - EIFS Industry Members Association; www.eima.com.
76. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
77. EOS/ESD - EOS/ESD Association, Inc.; Electrostatic Discharge Association; www.esda.org.
78. ESTA - Entertainment Services and Technology Association; www.esta.org.
79. EVO - Efficiency Valuation Organization; www.evo-world.org.
80. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
81. FGIA - Fenestration and Glazing Industry Alliance; <https://fgiaonline.org>.
82. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
83. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
84. FM Approvals - FM Approvals LLC; www.fmapprovals.com.
85. FM Global - FM Global; www.fmglobal.com.
86. FRSA - Florida Roofing and Sheet Metal Contractors Association, Inc.; www.floridarooft.com.
87. FSA - Fluid Sealing Association; www.fluidsealing.com.
88. FSC - Forest Stewardship Council U.S.; www.fscus.org.
89. GA - Gypsum Association; www.gypsum.org.
90. GS - Green Seal; www.greenseal.org.
91. HI - Hydraulic Institute; www.pumps.org.
92. HMMA - Hollow Metal Manufacturers Association; (see NAAMM).
93. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
94. IAS - International Accreditation Service; www.iasonline.org.
95. ICC - International Code Council; www.iccsafe.org.
96. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
97. ICPA - International Cast Polymer Association (The); www.theicpa.com.
98. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
99. IEC - International Electrotechnical Commission; www.iec.ch.
100. IEEE SA - IEEE Standards Association; <https://standards.ieee.org>.
101. IES - Illuminating Engineering Society; www.ies.org.
102. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
103. IGMA - Insulating Glass Manufacturers Alliance; (see FGIA).
104. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
105. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
106. Intertek - Intertek Group; www.intertek.com.
107. ISA - International Society of Automation (The); www.isa.org.
108. ISFA - International Surface Fabricators Association; www.isfanow.org.
109. ISO - International Organization for Standardization; www.iso.org.
110. ITU - International Telecommunication Union; www.itu.int.
111. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
112. LPI - Lightning Protection Institute; www.lightning.org.
113. MBMA - Metal Building Manufacturers Association; www.mbma.com.
114. MCA - Metal Construction Association; www.metalconstruction.org.
115. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
116. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
117. MHI - Material Handling Industry; www.mhi.org.
118. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
119. MPI - Master Painters Institute; www.paintinfo.com.
120. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry, Inc.; www.msshq.org.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

121. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
122. NACE - NACE International; (National Association of Corrosion Engineers International); (see AMPP).
123. NADCA - National Air Duct Cleaners Association; www.nadca.com.
124. NAIMA - North American Insulation Manufacturers Association; www.insulationinstitute.org.
125. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
126. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
127. NBI - New Buildings Institute; www.newbuildings.org.
128. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
129. NCMA - National Concrete Masonry Association; www.ncma.org.
130. NEBB - National Environmental Balancing Bureau; www.nebb.org.
131. NECA - National Electrical Contractors Association; www.necanet.org.
132. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
133. NEMA - National Electrical Manufacturers Association; www.nema.org.
134. NETA - InterNational Electrical Testing Association; www.netaworld.org.
135. NFHS - National Federation of State High School Associations; www.nfhs.org.
136. NFPA - National Fire Protection Association; www.nfpa.org.
137. NFPA - NFPA International; (see NFPA).
138. NFRC - National Fenestration Rating Council; www.nfrc.org.
139. NGA - National Glass Association; www.glass.org.
140. NHLA - National Hardwood Lumber Association; www.nhla.com.
141. NLGA - National Lumber Grades Authority; www.nlga.org.
142. NOFMA - National Oak Flooring Manufacturers Association; (see NWFA).
143. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
144. NRCA - National Roofing Contractors Association; www.nrca.net.
145. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
146. NSF - NSF International; www.nsf.org.
147. NSI - Natural Stone Institute; www.naturalstoneinstitute.org.
148. NSPE - National Society of Professional Engineers; www.nspe.org.
149. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
150. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
151. NWFA - National Wood Flooring Association; www.nwfa.org.
152. NWRA - National Waste & Recycling Association; www.wasterecycling.org.
153. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
154. PDI - Plumbing & Drainage Institute; www.pdionline.org.
155. PLASA - PLASA; www.plasa.org.
156. PLIB - Pacific Lumber Inspection Bureau; www.plib.org.
157. PVCPA - Uni-Bell PVC Pipe Association; www.uni-bell.org.
158. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
159. RFCI - Resilient Floor Covering Institute; www.rfci.com.
160. RIS - Redwood Inspection Service; (see WWPFA).
161. SAE - SAE International; www.sae.org.
162. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
163. SDI - Steel Deck Institute; www.sdi.org.
164. SDI - Steel Door Institute; www.steeldoor.org.
165. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
166. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (see ASCE).

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

167. SIA - Security Industry Association; www.securityindustry.org.
168. SJI - Steel Joist Institute; www.steeljoist.org.
169. SMA - Screen Manufacturers Association; www.smainfo.org.
170. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
171. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
172. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
173. SPIB - Southern Pine Inspection Bureau; www.spib.org.
174. SPRI - Single Ply Roofing Industry; www.spri.org.
175. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
176. SSINA - Specialty Steel Industry of North America; www.ssina.com.
177. SSPC - SSPC: The Society for Protective Coatings; (see AMPP).
178. STI/SPFA - Steel Tank Institute/Steel Plate Fabricators Association; www.steel-tank.com.
179. SWI - Steel Window Institute; www.steelwindows.com.
180. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
181. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
182. TCNA - Tile Council of North America, Inc.; www.tcnatile.com.
183. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.kbcdco.tema.org.
184. TIA - Telecommunications Industry Association (The); www.tiaonline.org.
185. TMS - The Masonry Society; www.masonrysociety.org.
186. TPI - Truss Plate Institute; www.tpinst.org.
187. TPI - Turfgrass Producers International; www.turfgrasssod.org.
188. TRI - Tile Roofing Industry Alliance; www.tilerroofing.org.
189. ULSE - UL Standards & Engagement Inc.; www.ulse.org.
190. UL - UL Solutions Inc.; www.ul.com.
191. USAV - USA Volleyball; www.usavolleyball.org.
192. USGBC - U.S. Green Building Council; www.usgbc.org.
193. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
194. WA - Wallcoverings Association; www.wallcoverings.org.
195. WCLIB - West Coast Lumber Inspection Bureau; (see PLIB).
196. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
197. WDMA - Window & Door Manufacturers Association; www.wdma.com.
198. WI - Woodwork Institute; www.woodworkinstitute.com.
199. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
200. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. CPSC - U.S. Consumer Product Safety Commission; www.cpsc.gov.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. DOC - U.S. Department of Commerce; www.commerce.gov.
3. DOD - U.S. Department of Defense; www.defense.gov.
4. DOE - U.S. Department of Energy; www.energy.gov.
5. DOJ - U.S. Department of Justice; www.ojp.usdoj.gov
6. DOS - U.S. Department of State; www.state.gov.
7. EPA - United States Environmental Protection Agency; www.epa.gov.
8. FAA - Federal Aviation Administration; www.faa.gov.
9. GPO - U.S. Government Publishing Office; www.gpo.gov.
10. GSA - U.S. General Services Administration; www.gsa.gov.
11. HUD - U.S. Department of Housing and Urban Development; www.hud.gov.
12. LBNL - Lawrence Berkeley National Laboratory; Energy Technologies Area; www.lbl.gov/.
13. NIST - National Institute of Standards and Technology; www.nist.gov.
14. OSHA - Occupational Safety & Health Administration; www.osha.gov.
15. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
16. USACE - U.S. Army Corps of Engineers; www.usace.army.mil.
17. USDA - U.S. Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
18. USDA - U.S. Department of Agriculture; Rural Utilities Service; www.usda.gov.
19. USP - U.S. Pharmacopeial Convention; www.usp.org.
20. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from U.S. Government Publishing Office; www.govinfo.gov.
2. DOD - U.S. Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
3. DSCC - Defense Supply Center Columbus; (see FS).
4. FED-STD - Federal Standard; (see FS).
5. FS - Federal Specification; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from U.S. General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
6. MILSPEC - Military Specifications and Standards; (see DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (see USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. BEARHFTI; California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; (see BHGS).
2. BHGS; State of California Bureau of Household Goods and Services; (Formerly: California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation); www.bhgs.dca.ca.gov.
3. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.oal.ca.gov/publications/ccr/.
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Page.aspx.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; <https://tfsweb.tamu.edu/>.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
 - 2. Section 012100 "Allowances" for allowance for metered use of temporary utilities.

1.2 USE CHARGES

- A. Installation, removal, and use charges for temporary facilities to be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- C. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.
- D. Water Service from Existing System: Water from Owner's existing water system (existing hose bibbs) is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- E. Electric Power Service from Existing System: Limited electric power from Owner's existing system (electrical receptacles at existing Garage) is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.3 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- D. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
 - 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
 - 3. Indicate methods to be used to avoid trapping water in finished work.
- F. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by Owner. Include the following:
 - 1. Methods used to meet the goals and requirements of Owner.
 - 2. Concrete cutting method(s) to be used.
 - 3. Location of construction devices on the site.
 - 4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
 - 5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with Owner.
- G. Traffic Control Plan.

1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the DOJ's "2010 ADA Standards for Accessible Design".

1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top rails.
- B. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain-link fence, sized to height of fence, in color selected by Architect from manufacturer's standard colors.
- C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.
- D. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.
- E. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Field Offices:
 - 1. Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

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

3.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

3.3 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service:
 1. Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted.
- D. Electric Power Service:
 1. Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- F. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install WiFi cell phone access equipment.
 - 1. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Owner's office.
 - g. Principal subcontractors' field and home offices.
- G. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by Architect.

3.4 SUPPORT FACILITIES INSTALLATION

- A. Comply with the following:
 - 1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
 - 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
 - 1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 - 2. Prepare subgrade and install subbase and base for temporary roads and paved areas in accordance with Section 312000 "Earth Moving."
 - 3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
 - 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course in accordance with Section 321216 "Asphalt Paving."
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction. Provide temporary traffic control according to the Manual on Uniform Traffic Control Devices (MUTCD) latest edition. Traffic control plan must be submitted and approved by the City of Augusta Public Works Department and the Maine DOT.
 - 1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- E. Storage and Staging: Use designated areas of Project site for storage and staging needs.
- F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 - 2. Remove snow and ice as required to minimize accumulations.
- G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - 1. Identification Signs: Provide Project identification signs as approved by Owner.
 - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 - 3. Maintain and touch up signs, so they are legible at all times.
- H. Waste Disposal Facilities:
 - 1. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
 - 2. Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- I. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- J. Existing Stair Usage: Use of Owner's existing exterior stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas, so no evidence remains of correction work.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Temporary Erosion and Sedimentation Control:
 - 1. Comply with requirements specified in Section 311000 "Site Clearing."
 - 2. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, in accordance with erosion- and sedimentation-control Drawings.
 - a. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
 - b. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - c. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 - d. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection:
 - 1. Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."
- F. Site Enclosure Fence: In the course of construction, as existing buildings and fences that form the secure perimeter of the site are removed and a permanent secure perimeter has not yet been constructed, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- H. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.
- I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- J. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.6 MOISTURE AND MOLD CONTROL

- A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.
- B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
 - 1. Protect porous materials from water damage.
 - 2. Protect stored and installed material from flowing or standing water.
 - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 4. Remove standing water from decks.
 - 5. Keep deck openings covered or dammed.

3.7 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. The Work of this Section Includes: General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Requirements:
 - 1. Section 015000 "Temporary Facilities and Controls" for temporary controls, utilities, support facilities, temporary site fencing, and, if applicable, temporary erosion and sedimentation controls if not specified in Section 311000 "Site Clearing".
 - 2. Section 311000 "Site Clearing" for removing existing trees and shrubs and for temporary erosion- and sedimentation-control measures if not specified in Section 015000 "Temporary Facilities and Controls".

1.2 DEFINITIONS

- A. Caliper: Diameter of a trunk measured by a diameter tape at a height 6 inches above the ground for trees up to and including 4-inch size at this height and as measured at a height of 12 inches above the ground for trees larger than 4-inch size.
- B. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape at a height 54 inches above the ground line for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the ground.
- C. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.
- E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
 - a. Tree-service firm's personnel and equipment needed to make progress and avoid delays.
 - b. Arborist's responsibilities.
 - c. Quality-control program.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- d. Coordination of Work and equipment movement with the locations of protection zones.
- e. Trenching by hand or with air spade within protection zones.
- f. Field quality control.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data:
 - 1. General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction
- C. Shop Drawings:
 - 1. Include plans, elevations, and sections showing trees and plants to be protected, locations of protection-zone fencing and signage, and the relationship between equipment-movement routes and material storage locations with protection zones.
- D. Samples: For each type of the following:
 - 1. Organic Mulch: 1-pint volume of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.
 - 2. Protection-Zone Fencing: Assembled Samples of manufacturer's standard size made from full-size components.
- E. Tree-Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
 - 1. Species and size of tree.
 - 2. Location on site plan. Include unique identifier for each.
 - 3. Reason for pruning.
 - 4. Description of pruning to be performed.
 - 5. Description of maintenance following pruning.
- F. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
- G. Mitigation Requirements: As required by jurisdiction or as developed by arborist, for mitigation of damage to trees and other plantings.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Statements: For arborist and tree service firm.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Certification: From arborist, certifying that trees indicated to remain have been protected during construction in accordance with recognized standards and that trees were promptly and properly treated and repaired when damaged.
- D. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
- E. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
 - 1. Use sufficiently detailed photographs or video recordings.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
- F. Quality-control program.

1.6 QUALITY ASSURANCE

- A. Arborist Qualifications: Certified Arborist as certified by ISA and Licensed arborist in jurisdiction where Project is located.
- B. Tree-Service Firm Qualifications: An experienced tree-service firm that has successfully completed temporary tree- and plant-protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.
- C. Quality-Control Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work without damaging trees and plantings. Include dimensioned diagrams for placement of protection-zone fencing and signage, the arborist's and tree-service firm's responsibilities, instructions given to workers on the use and care of protection zones, and enforcement of requirements for protection zones.

1.7 FIELD CONDITIONS

- A. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Moving or parking vehicles or equipment.
 - 3. Erection of sheds or structures.
 - 4. Impoundment of water.
 - 5. Excavation or other digging unless otherwise indicated.
 - 6. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Take precautions to protect plants from airborne contaminants, such as paint or fireproofing overspray.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Backfill Soil: Stockpiled soil mixed with planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
 - 1. Mixture: Well-blended mix of 2 parts stockpiled soil to 1 part planting soil.
 - 2. Planting Soil: Planting soil as specified in Section 329115 "Soil Preparation (Performance Specification)."
- B. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
 - 1. Type: Ground or shredded bark.
 - 2. Size Range: 3 inches maximum, 1/2 inch minimum.
 - 3. Color: Natural.
- C. Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements: Previously used materials may be used when approved by Architect.
 - 1. Wood Protection-Zone Fencing: Constructed of two 2-by-4-inch horizontal rails, with 4-by-4-inch preservative-treated wood posts spaced not more than 96 inches apart, and lower rail set halfway between top rail and ground.
 - a. Height: 48 inches.
 - 2. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches apart.
 - a. Height: 48 inches.
 - b. Color: High-visibility orange, nonfading.
 - 3. Gates: Single-swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones; leaf width 36 inches.
- D. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:
 - 1. Size and Text: 12" x 8" sign reading "Tree Protection Zone KEEP OUT."

2. Lettering: 2-inch high minimum, black and red characters on white background.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Flag each tree trunk at 54 inches above the ground.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE PROTECTION

- A. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.
 1. Apply 2-inch uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within 6 inches of tree trunks.

3.4 PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
 1. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Architect.
 2. Access Gates: Install; adjust to operate smoothly, easily, and quietly; free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction throughout entire operational range. Confirm that latches engage accurately and securely without forcing or binding.
 3. Plastic Fencing: Stretch fabric taut and secure to posts without bows or sags.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect. Install one sign spaced approximately every 35 ft. on protection-zone fencing, but no fewer than three signs with each facing a different direction.
- C. Maintain protection zones free of weeds and trash.
- D. Maintain hydration of plants to assure plant survival.
- E. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.
 - 1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
 - 2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.5 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones in accordance with requirements in Section 312000 "Earth Moving" unless otherwise indicated.
- B. Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots.

3.6 ROOT PRUNING

- A. Prune tree roots that are affected by temporary and permanent construction. Prune roots as follows:
 - 1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
 - 2. Cut Ends: Do not paint cut root ends.
 - 3. Temporarily support and protect roots from damage until they are permanently covered with soil.
 - 4. Cover exposed roots with burlap and water regularly.
 - 5. Backfill as soon as possible in accordance with requirements in Section 312000 "Earth Moving."
- B. Root Pruning at Edge of Protection Zone: Prune tree roots flush with the edge of the protection zone by cleanly cutting all roots to the depth of the required excavation.
- C. Root Pruning within Protection Zone: Clear and excavate by hand or with air spade to the depth of the required excavation to minimize damage to tree root systems. If excavating by hand, use

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

narrow-tine spading forks to comb soil to expose roots. Cleanly cut roots as close to excavation as possible.

3.7 CROWN PRUNING

- A. Prune branches that are affected by temporary and permanent construction. Prune branches as directed by arborist.
 - 1. Prune to remove only broken, dying, or dead branches unless otherwise indicated. Do not prune for shape unless otherwise indicated.
 - 2. Do not remove or reduce living branches to compensate for root loss caused by damaging or cutting root system.
 - 3. Pruning Standards: Prune trees in accordance with ANSI A300 (Part 1).
 - a. Type of Pruning: Cleaning and raising where indicated and where required to eliminate conflicts between existing tree limbs and new fencing.
- B. Unless otherwise directed by arborist and acceptable to Architect, do not cut tree leaders.
- C. Cut branches with sharp pruning instruments; do not break or chop.
- D. Do not paint or apply sealants to wounds.
- E. Provide subsequent maintenance pruning during Contract period as recommended by arborist.
- F. Chip removed branches and dispose of off-site.
- G. Obtain written permission from Owner of adjacent property prior to pruning trees on that property.

3.8 REGRADING

- A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.
 - 1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.
- C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- D. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with backfill soil. Place backfill soil in a single uncompacted layer and hand grade to required finish elevations.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.9 FIELD QUALITY CONTROL

- A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.10 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Architect.
 - 1. Submit details of proposed pruning and repairs.
 - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours in accordance with arborist's written instructions.
 - 3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.
- B. Trees: Remove and replace trees indicated to remain that are more than 50 percent dead or in an unhealthy condition or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.
 - 1. Small Trees: Provide new trees of same size and species as those being replaced for each tree that measures 6 inches or smaller in caliper size.
 - 2. Large Trees: Provide one new tree of 6-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.
 - a. Species: As selected by Architect.
 - 3. Plant and maintain new trees as specified in Section 329300 "Plants."
- C. Soil Aeration: Where directed by Architect, aerate surface soil compacted during construction. Aerate 10 ft. beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch-diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and sand.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. The Work of This Section Includes: Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
 - 2. Section 012300 "Alternates" for products selected under an alternate.
 - 3. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 4. Section 014200 "References" for applicable industry standards for products specified.
 - 5. Section 017700 "Closeout Procedures" for submitting warranties.

1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products unless otherwise indicated.
 - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.
 - 1. Evaluating Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the

specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.

- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
- D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 - 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 - 2. Data indicating compliance with the requirements specified in "Comparable Products" Article.
- E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
- F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.3 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 - 1. Resolution of Compatibility Disputes between Multiple Contractors:
 - a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Architect will determine which products will be used.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is inconspicuous.
 - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.
3. See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification requirements.

1.4 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.
- C. Storage:
 1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
 2. Store products to allow for inspection and measurement of quantity or counting of units.
 3. Store materials in a manner that will not endanger Project structure.
 4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
 5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 7. Protect stored products from damage and liquids from freezing.
 8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections are to be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of Owner or endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of Owner or endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 - 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Descriptive, performance, and reference standard requirements in Specifications establish salient characteristics of products.
 - 6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by Architect, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."
2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
 - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
 - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
 - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."
6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
 - a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
 1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.
- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

for a comparable product. Architect will notify Contractor of approval or rejection of proposed comparable product within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

1. Architect's Approval of Submittal: Marked with approval notation from Architect's action stamp. See Section 013300 "Submittal Procedures."
 2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- C. Submittal Requirements, Single-Step Process: When acceptable to Architect, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by Architect of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering.
 - 3. Installation.
 - 4. Cutting and patching.
 - 5. Coordination of Owner's portion of the Work.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.
 - 9. Correction of the Work.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting surveys.
 - 2. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
 - 3. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.

1.2 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For land surveyor.
- C. Certified Surveys: Submit two copies signed by land surveyor.
- D. Certificates: Submit certificate signed by land surveyor, certifying that location and elevation of improvements comply with requirements.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.4 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Final Property Survey: Submit 2 copies showing the Work performed and record survey data.

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. 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.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or 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.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction 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.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. 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 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, 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.
 1. Examine roughing-in for electrical systems to verify actual locations of connections before equipment and fixture installation.
 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to 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. 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.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. 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 in accordance with requirements in Section 013100 "Project Management and Coordination."

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 and existing conditions. If discrepancies are discovered, notify Architect promptly.
- B. Engage a land surveyor or professional engineer experienced in laying out the Work, using the following 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 limits on use of Project site.
 - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 4. Inform installers of lines and levels to which they must comply.
 - 5. Check the location, level and plumb, of every major element as the Work progresses.
 - 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 - 7. 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 rim and invert elevations.

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

- A. 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.
- 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 satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. 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 of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. 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.
- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

3.6 CUTTING AND PATCHING

- 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 in-place 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. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place 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.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. Cutting: Cut in-place 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 neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. 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 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.
- H. 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 practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical 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.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 - 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 in-place 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, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

4. Ceilings: Patch, repair, or rehang in-place 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 and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. 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 waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, in accordance with regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- 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 in accordance with 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. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls" and Section 017419 "Construction Waste Management and Disposal."

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- H. 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.
- I. 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.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- 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: Comply with qualification requirements in Section 014000 "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. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Restore permanent facilities used during construction to their specified condition.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
 - 1. Section 044313.13 "Anchored Stone Masonry Veneer" for disposal requirements for excess stone and stone waste.
 - 2. Section 311000 "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- D. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- E. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

- 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.
- B. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.
- B. Waste Management in Historic Zones or Areas: Transportation equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by 12 inches or more.

3.2 SALVAGING DEMOLITION WASTE

- A. Comply with requirements in Section 024116 "Structure Demolition" and Section 024119 "Selective Demolition" for salvaging demolition waste.
- B. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area on-site.
 5. Protect items from damage during transport and storage.
- D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- F. Plumbing Fixtures: Separate by type and size.
- G. Lighting Fixtures: Separate lamps by type and protect from breakage.
- H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner's property.
- C. Burning: Do not burn waste materials.

END OF SECTION

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final Completion procedures.
 - 3. List of incomplete items.
 - 4. Submittal of Project warranties.
 - 5. Final cleaning.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
 - 2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.2 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of cleaning agent.
- C. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- D. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Certificates of Release: From authorities having jurisdiction.
- C. Certificate of Insurance: For continuing coverage.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 2. Complete final cleaning requirements.
 - 3. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. 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.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. 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.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. 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. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS

- A. Organization 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. Organize list of spaces in sequential order.
 2. Organize items applying to each space by major element.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 4. Submit list of incomplete items in the following format:
 - a. PDF Electronic File: Architect will return annotated file.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- 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 Project Manual.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

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: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers for final cleaning. Clean each surface or unit to condition expected in an average commercial site 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 designated portion of Project:
 - a. Clean Project site 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 not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 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. Clean flooring, removing debris, dirt, and staining; clean in accordance with manufacturer's instructions.
 - i. Vacuum and mop concrete.
 - j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean in accordance with manufacturer's instructions if visible soil or stains remain.
 - k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - l. Remove labels that are not permanent.
 - m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls" and Section 017419 "Construction Waste Management and Disposal."

3.2 CORRECTION OF THE WORK

- A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Systems and equipment operation manuals.
 - 3. Systems and equipment maintenance manuals.
 - 4. Product maintenance manuals.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.2 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- C. Format: Submit operation and maintenance manuals in the following format:
 - 1. Submit by email to Architect. Enable reviewer comments on draft submittals.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion. Architect will return copy with comments.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.
- E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.4 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.5 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual to contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation in accordance with ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.6 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Precautions against improper use.
 9. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
 1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
 1. Startup procedures.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

1.7 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of maintenance manuals.
- 1.8 PRODUCT MAINTENANCE MANUALS
- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Product Information: Include the following, as applicable:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 017839 - PROJECT RECORD DOCUMENTS

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. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 017300 "Execution" for final property survey.
 - 2. Section 017700 "Closeout Procedures" for general closeout procedures.
 - 3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set of marked-up record prints.
 - 2. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit one paper-copy set of marked-up record prints.
 - 2) Submit PDF electronic files of scanned record prints and one set of file prints.
 - 3) Submit Record Digital Data Files and one set of plots.
 - 4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 1) Submit three paper-copy set(s) of marked-up record prints.
 - 2) Submit PDF electronic files of scanned Record Prints and three set(s) of file prints.
 - 3) Print each drawing, whether or not changes and additional information were recorded.
- C. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.
- D. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1.4 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Locations of concealed internal utilities.
 - i. Changes made by Change Order or Construction Change Directive.
 - j. Changes made following Architect's written orders.
 - k. Details not on the original Contract Drawings.
 - l. Field records for variable and concealed conditions.
 - m. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file with comment function enabled.
 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Architect for resolution.
 4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 013100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
 - b. Architect will provide data file layer information. Record markups in separate layers.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file with comment function enabled.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders and Record Drawings where applicable.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Format: Submit record specifications as annotated PDF electronic file.

1.6 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders and Record Drawings where applicable.
- C. Format: Submit Record Product Data as annotated PDF electronic file.
 - 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.7 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 024116 - STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARYs

A. The Work of this Section Includes:

1. Demolition and removal of buildings or structures.
2. Demolition and removal of site improvements.
3. Abandoning in-place below-grade construction.
4. Removing below-grade construction.
5. Disconnecting, capping or sealing, and abandoning in-place site utilities.
6. Disconnecting, capping or sealing, and removing site utilities.
7. Salvaging items for reuse by Owner.

B. Related Requirements:

1. Section 011000 "Summary" for use of the premises and phasing requirements.
2. Section 013200 "Construction Progress Documentation" for preconstruction photographs taken before building demolition.
3. Section 024119 "Selective Demolition" for partial demolition of buildings, structures, and site improvements.
4. Section 311000 "Site Clearing" for site clearing and removal of above- and below-grade site improvements that are not part of building demolition.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner as indicated. Include fasteners or brackets needed for reattachment elsewhere.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.4 COORDINATION

- A. Arrange demolition schedule so as not to interfere with operations of adjacent occupied buildings.

1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be demolished.
 - 2. Review structural load limitations of existing structures.
 - 3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review and finalize protection requirements.
 - 5. Review procedures for noise control and dust control.
 - 6. Review procedures for protection of adjacent buildings.
 - 7. Review storage, protection, and accounting for items to be salvaged and returned to Owner.

1.6 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control, and for noise control. Indicate proposed locations and construction of barriers.
 - 1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings.
- C. Schedule of Building Demolition Activities: Indicate the following:
 - 1. Detailed sequence of demolition work, with starting and ending dates for each activity.
 - 2. Temporary interruption of utility services. Indicate how long services will be interrupted.
 - 3. Coordination for shutoff and capping or re-routing of utility services.

1.7 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Inventory: Submit a list of items that have been removed and salvaged.

1.8 FIELD CONDITIONS

- A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.
 - 1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
 - 2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
 - a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.
- C. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before building demolition, Owner will remove the following items:
 - a. **<Insert items to be removed by Owner>.**
- D. Hazardous Materials:
 - 1. Hazardous materials are present in buildings and structures to be demolished. A report on the presence of hazardous materials is attached and the end of this specification section for review and use. Examine report to become aware of locations where hazardous materials are present.
 - a. Hazardous material remediation is specified in the Hazardous Materials Report attached to the end of this specification section.
 - b. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified in the Hazardous Materials Report.
- E. On-site sale of removed items or materials is not permitted.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

2.2 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Section 312000 "Earth Moving."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
 - 1. Inventory and record the condition of items to be removed and salvaged. Photograph or video conditions that might be misconstrued as damage caused by removal.
 - 2. Photograph or video existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by demolition operations or removal of items for salvage.

3.2 PREPARATION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of demolition.
- C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 015000 "Temporary Facilities and Controls."
 - 1. Protect adjacent buildings and facilities from damage due to demolition activities.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
 - 4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
 7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
- D. Existing Utilities to Remain: Maintain utility services to remain and protect against damage during demolition operations.
1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
 - a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.
- E. Existing Utilities to Be Disconnected: Locate, identify, disconnect, and seal or cap off utilities serving buildings and structures to be demolished.
1. Arrange to shut off utilities with utility companies.
 2. If disconnection of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
 3. Cut off pipe or conduit a minimum of 24 inches below grade at or outside the building or structure to be demolished and cap, valve, or plug and seal remaining portion of pipe or conduit in accordance with requirements of authorities having jurisdiction.
 4. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing by authorities having jurisdiction.
- F. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment in accordance with 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 SALVAGE

- A. Items to be removed and salvaged are indicated on Drawings.
- B. Comply with the following for salvaged items:
1. Clean salvaged items of dirt and demolition debris.
 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to storage area designated by Owner.
 5. Protect items from damage during transport and storage.

3.4 DEMOLITION, GENERAL

- A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
 2. Maintain fire watch during and for at least one (1) hour after flame-cutting operations.
 3. Maintain adequate ventilation when using cutting torches.
 4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed trafficways if required by authorities having jurisdiction.
 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- C. Explosives: Use of explosives is not permitted.

3.5 DEMOLITION BY MECHANICAL MEANS

- A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.
- B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.
- C. Below-Grade Construction:
1. Demolish foundation systems and other below-grade construction.
 - a. Remove below-grade construction, including basements, foundation systems, and footings, completely.
- D. Existing Utilities:
1. Demolish and remove existing utilities and below-grade utility structures and cap and abandon lines where indicated.

3.6 SITE RESTORATION

- A. Below-Grade Areas:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials in accordance with backfill requirements in Section 312000 "Earth Moving."

- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.7 REPAIRS

- A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and recycle or dispose of them in accordance with Section 017419 "Construction Waste Management and Disposal."

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.

- B. Do not burn demolished materials.

3.9 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

1. Clean roadways of debris caused by debris transport.

- Indoor Environmental Testing and Consulting
- Industrial Hygiene Consulting
- OSHA Compliance
- Expert Witness
- Training

**HAZARDOUS MATERIALS ASSESSMENT
ASBESTOS, LEAD-BASED PAINT, PCBS, AND
UNIVERSAL WASTE
“STAFF BUILDING”
152 CHAMBERLAIN STREET
AUGUSTA, MAINE**

Prepared for

**MS. ALLISON TOWNE DIMATTEO
PRINCIPAL/PROJECT MANAGER
OAK POINT ASSOCIATES
231 Main Street
Biddeford, ME 04005**

December 2023



John M. Boilard, RIHT, CMC
Senior Industrial Hygiene &
Safety Specialist

4 Blanchard Road
P.O. Box 85A
Cumberland, Maine 04021
Phone: 207.854.2711 sme-esh.com

SME
SEVEE & MAHER
ENGINEERS

ESHA
ENVIRONMENTAL SAFETY
& HYGIENE ASSOCIATES
A Sevee & Maher Engineers company

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

TABLE OF CONTENTS

Section No.	Title	Page No.
1.0 EXECUTIVE SUMMARY		1
2.0 INSPECTION METHODOLOGY		2
2.1	Asbestos Sampling	2
2.2	Lead-Based Paint Testing	3
2.3	Polychlorinated Biphenyls (PCBs)	3
2.4	Universal Waste	4
3.0 SUMMARY/RECOMMENDATIONS		4
3.1	Asbestos Sampling	4
3.2	Lead-Based Paint Testing	8
3.3	Polychlorinated Biphenyls (PCBs)	10
3.4	Universal Waste	11
4.0 LIMITING CONDITIONS		13

LIST OF APPENDICES

APPENDIX A	CERTIFICATIONS AND LICENSES
APPENDIX B	ASBESTOS ANALYTICAL SUMMARY TABLE AND LABORATORY DATA
APPENDIX C	ASBESTOS SURVEY DRAWINGS
APPENDIX D	LEAD-BASED PAINT TESTING DATA AND EQUIPMENT CALIBRATION
APPENDIX E	LEAD-BASED PAINT TESTING DRAWINGS
APPENDIX F	PCB ANALYTICAL SUMMARY TABLE AND LABORATORY DATA
APPENDIX G	PCB DRAWING
APPENDIX H	UNIVERSAL WASTE DRAWINGS

**HAZARDOUS MATERIALS ASSESSMENT
ASBESTOS, LEAD-BASED PAINT, PCBs, AND UNIVERSAL WASTE
STAFF BUILDING, AUGUSTA, MAINE**

1.0 EXECUTIVE SUMMARY

Sevee & Maher Engineers, Inc./Environmental Safety & Hygiene Associates, LLC (SME/ESHA) was retained by Oak Point Associates to conduct a Hazardous Materials Assessment for Asbestos, Lead-Based Paint, Polychlorinated Biphenyls (PCBs), and Universal Waste Items for demolition considerations for the Staff House situated at 152 Chamberlain Street in Augusta, Maine.

The assessment actions were conducted to determine whether any building materials existed for the structure for United States Environmental Protection Agency (U.S.EPA), National Emission Standards for Hazardous Air Pollutants (NESHAP), Maine Department of Environmental Protection (MEDEP), or Occupational Safety and Health Administration (OSHA) compliance issues requiring remedial actions before renovation/demolition activities.

The inspection and assessment actions for asbestos, PCBs, and universal waste were conducted by Mr. John M. Boilard and Mr. Kivvy Spears on November 28, 2023 and lead-based paint testing by XRF was performed by Mr. John M. Boilard on November 29, 2023.

Based on the asbestos inspection, Regulated Asbestos-Containing Materials (RACMs) or Asbestos-Containing Building Materials (ACBMs) were identified in the form of first floor plaster white coat, first floor porch window glazing, second floor joint compounds, and second floor sheeting.

Of note is that several materials were identified as having asbestos content less than 1 percent (<1%), and though not regulated as an Asbestos-Containing Material (ACM) nor as an asbestos abatement class activity by OSHA, they nevertheless have published guidelines that should be followed for the impact of these materials. Further explanation is provided in Section 3.1 of this report.

XRF testing indicated that all of the interior painted wood components comprised of handrails, balusters, panel doors, window trim work, door trim work, baseboard trim, first floor tin ceilings, second floor porch ceiling, built-in cabinetry, and basement windows have lead values greater than 1.0 mg/cm². In addition, the older sinks and toilets contain lead glazing with levels greater than 1.0 mg/cm².

Screening samples of exterior window glazing and window caulking were collected to determine if the structure had the potential of having PCB-containing glazing and caulking. PCBs less than 50 parts per million (ppm) but greater than 1.0 ppm were detected in samples PCB-1 and PCB-4 ranging from 1.16 to 24.8 ppm for basement window glazing and caulking for drywall panels joints in the basement. Other collected samples had no detected PCBs.

Universal waste items encountered in the building were primarily comprised of fluorescent light bulbs, potential lighting ballasts containing PCBs or Di(2-ethylhexyl) phthalate (DEHP), smoke detectors which may contain americium-241 (Am-241), nickel-63 (Ni-63), or Radium-226 (radium sulfate), and mercury thermostats.

Of note is two (2) 275-gallon fuel oil tanks in the basement which appear to be empty but may still have sludge in the bottom.

2.0 INSPECTION METHODOLOGY

The following summary outlines the methods and standards associated with the collection of physical samples and/or direct surface testing conducted as part of this assessment.

2.1 Asbestos Sampling

The collection of suspect ACBMs was performed in accordance with the MEDEP's Asbestos Management Regulations, Chapter 425, Section 6, Inspection Requirements.

MEDEP's Asbestos Management Regulations, Chapter 425, effective date April 3, 2011, requires analysis of collected samples as follows:

- Surfacing materials, thermal system insulation, and cementitious materials shall be analyzed using the PLM–EPA 600/R-93/116 Visual Estimation Method (1993); and
- Non-friable Organically Bound Materials (NOBs) including, but not limited to, floor tiles, asphalt shingles, caulking, glazing, mastics, coatings, sealants, adhesives, and glues shall be analyzed using PLM NOB–EPA 600/R-93/116 with Gravimetric Preparation Method.

Point counting of any samples with asbestos content less than 10 percent (<10%) was automatically performed.

Sampling was comprised of the collection of homogenous materials as follows:

Surfacing Materials

- At least three bulk samples from each homogenous area and/or material that is 1,000 square feet or less;
- At least five bulk samples from each homogenous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet; and
- At least seven bulk samples from each homogenous area that is greater than 5,000 square feet.

Thermal System Insulation

- Three bulk samples from each homogenous area;
- One bulk sample from each homogenous area of patched thermal system insulation if the patched section is less than 6 linear or square feet; and
- Samples sufficient to determine whether the material is ACM from each insulated mechanical system where cement is utilized on tees, elbows, or valves.

Miscellaneous Materials

- Three samples from each miscellaneous material; and
- One sample if the amount of miscellaneous material is less than 6 square or linear feet.

2.2 Lead-Based Paint Testing

Lead-Based Paint (LBP) determination was performed to identify if interior and exterior general painted building surfaces contain lead-based paint for renovation/demolition impact considerations.

The lead-based paint assessment was comprised of testing painted surfaces by direct contact analysis utilizing a portable X-Ray Fluorescence Lead Paint Analyzer (Olympus Vanta C-Series™, Serial # 820237).

The instrument satisfactorily underwent pre- and post-calibration utilizing the manufacturer's reference standard.

The information compiled during this testing is not intended to be substituted for a comprehensive lead-based paint survey, or to be used to express potential exposure to airborne lead for OSHA compliance. The testing provides the client with information on the lead-based paint content in the materials tested.

2.3 Polychlorinated Biphenyls (PCBs)

The PCB assessment was comprised of the collection of bulk samples for interior and exterior caulking and for window glazing representative of the various types of materials present.

Laboratory analysis review indicates that none of the five (5) samples collected contain any PCBs.

A summary table of analysis, associated laboratory chain-of-custody, and analysis data can be found in Appendix F to this document.

A drawing indicating sampling locations can be found in Appendix G of this document.

2.4 Universal Waste

This assessment action was performed to identify components and materials containing mercury such as light bulbs and thermostats, PCBs/DEHP as in lighting system ballast components, as well as other general universal waste materials such as refrigerators, portable air conditioners, rechargeable batteries TVs, computers, and computer monitors, etc.

This assessment was performed to provide information to contractors who may generate waste relating to renovation/demolition activities for compliance with the requirements of MEDEP Chapter 850, Universal Waste Rules.

3.0 SUMMARY/RECOMMENDATIONS

3.1 Asbestos Sampling

Bulk samples of suspect materials that were collected during this sampling event consisted of the following:

- Sheetrock;
- Joint Compound;
- Plasters (walls & ceilings);
- Thermal systems Insulation (air-o-cell);
- Mudded Pipe Fittings;
- Sheet Flooring;
- Flooring Underlayment;
- Fire Brick – fireplace;
- Wall Panel Adhesive;
- Construction Adhesive;
- Drywall Caulking;
- Window Glazing;
- Window Caulking;
- Roofing Underlayment Paper; and
- Roofing Shingles.

A total of forty-one (41) homogeneous sample groups were collected, totaling one hundred twenty-three (123) samples. Fifty-five (55) samples were analyzed by PLM-Visual Method, mostly due to layering of plaster samples with two (2) samples assessed by 400 Point Count Method, sixty-eight (68) samples were analyzed by PLM-NOB Gravimetric Method with five (5) NOB samples further analyzed by Point Count Method for results less than 10 percent, and four (4) NOB samples were prepped but not fully analyzed due to a positive result in a homogeneous group.

Asbestos-containing materials identified by the accredited laboratory can be found in the Summary Table and Laboratory Data information in Appendix B.

ACBMs identified by the above analysis can be found as marked on the drawings found in Appendix C.

Recommendations for identified Asbestos materials are as follows:

Asbestos Materials >1%:

The ACBMs found at the site containing equal to or greater than one percent ($\geq 1\%$) asbestos content consists of non-friable and potentially friable U.S.EPA Regulated Asbestos-Containing Materials (RACM) and U.S.EPA Category II Non-Friable materials in their present states.

Friable materials can be crumbled by hand pressure and readily release asbestos fibers when impacted. Comparatively, non-friable materials do not crumble under hand pressure and do not readily release asbestos fibers to the surrounding atmosphere.

Materials containing equal to or greater than 1 percent ($\geq 1\%$) of asbestos are regulated under the requirements of OSHA 29 CFR 1910.1001 and 29 CFR 1926.1101, U.S.EPA, and MEDEP.

All work operations which would impact ACBMs would need to be in compliance with the asbestos regulations as set forth in OSHA 29 CFR Part 1926.1101; U.S.EPA Title 40 - CFR, Part 61 NESHA, Subparts A and M (General Provisions and Asbestos Standards, respectively); and MEDEP Regulations, Chapter 425, effective April 3, 2011.

Any removal and/or cleanup of the identified ACBMs would need to be performed by properly trained and/or licensed companies and workers.

The asbestos-containing top coat for the first floor plasters, second floor bathroom sheet flooring, and air-o-cell pipe insulation identified are friable materials.

Friable materials can be crumbled by hand pressure and readily release asbestos fibers when impacted. Comparatively, non-friable materials do not crumble under hand pressure and do not readily release asbestos fibers to the surrounding atmosphere.

Materials containing equal to or greater than 1 percent of asbestos are regulated under the requirements of OSHA 29 CFR 1910.1001 and 29 CFR 1926.1101, U.S.EPA, and MEDEP.

All work operations which would impact friable ACBMs would need to be in compliance with the asbestos regulations as set forth in OSHA 29 CFR Part 1926.1101; U.S.EPA Title 40 - CFR, Part 61 NESHAP, Subparts A and M (General Provisions and Asbestos Standards, respectively); and MEDEP Regulations, Chapter 425, effective 4-3-2011.

Any removal and/or cleanup of the identified ACBMs would need to be performed by properly trained and/or licensed companies and workers prior to any building renovation/demolition actions that would cause disturbance.

A MEDEP Asbestos Abatement Design Plan, Asbestos Abatement Project Notification permitting and fees to the MEDEP and Independent Visual Inspections and Air Clearance Sampling for release of established work areas will be required.

The **asbestos containing window glazing** for the side porch area is a non-friable Category II material and is unique as actual impact methods determine how the MEDEP and NESHAP regulations would apply for abatement requirement prior to demolition or during renovation impact actions. In any case, this ACBM is always subject to OSHA regulations for direct impact/handling by personnel. Waste regulations for both U.S.EPA and MEDEP statutes would depend on the disposition of the materials.

The **asbestos-containing joint compounds** on the second floor are only used as “nail and seam” filler and can remain in-place during large equipment demolition and the generated waste can go to any State of Maine landfill licensed for municipal or construction debris. Any hand demolition of these surfaces is subject to OSHA regulations for direct impact/handling by personnel.

Asbestos Materials <1%:

Materials identified at the site containing less than 1 percent (<1%) asbestos content are comprised of **asbestos-containing construction adhesive (red)** that is a non-friable Category II materials and are unique as actual impact methods determine how the MEDEP and NESHAP regulations would apply for abatement requirement prior to demolition or during renovation impact actions. In any case, this ACBM is always subject to OSHA regulations for direct impact/handling by personnel. Waste regulations for both U.S.EPA and MEDEP statutes would depend on the disposition of the materials.

Category II Non-Friable materials that, if removed without rendering the materials into a friable condition, are not regulated by NESHAPS or MEDEP CMR 425. If removed whole and intact, these materials can be removed by properly trained personnel as an OSHA Class II Asbestos Activity and no MEDEP Asbestos Abatement Design Plan or Asbestos Abatement Project Notification permitting and fees would be

required. Proper disposal as an asbestos-containing material may apply and would be determinant on the accepting landfill operating rules.

In any case, this ACBM is always subject to OSHA regulations for direct impact/handling by personnel. Waste regulations for both U.S.EPA and MEDEP statutes would depend on the disposition of the materials. Category I or Category II Non-Friable ACBM that is not subject to the requirements of 40 CFR Part 61.150(a)(3) would still have to be disposed of in a landfill that accepts building debris, in a landfill that operates in accordance with 40 CFR Part 61.154, or at a facility that operates in accordance with 40 CFR Part 61.155. These renovation/demolition waste materials are not allowed to go to any facility that would sand, grind, cut or abrade the non-RACM waste or otherwise turn it into RACM waste (such as cement recycling facilities).

The OSHA Construction Asbestos Standard, 29 CFR 1926.1101, has outlined requirements that would apply even if neither the OSHA asbestos permissible exposure limit (PEL) of 0.1 fiber per cubic centimeter (f/cc) or the OSHA excursion limit (EL) of 1.0 f/cc are exceeded in a letter on interpretation (November 24, 2003). In this interpretation, OSHA outlines that the asbestos standard contains numerous work practice requirements and prohibitions which apply, regardless of the exposure levels to employees. However, only two of the requirements and three of the prohibitions must be observed in the case of work activities involving installed construction materials that do not contain greater than 1 percent (>1%) asbestos. Those work practice requirements and prohibitions that must be observed regardless of the exposure levels and of the percentage of asbestos in the installed construction materials are:

- 29 CFR 1926.1101(g)(1)(ii), which requires: **wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to, for example, the creation of electrical hazards, equipment malfunction, and, in roofing, except as provided in paragraph (g)(8)(ii)² of this section;**
- 29 CFR 1926.1101(g)(1)(iii), which requires: **prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers except in roofing operations, where the procedures specified in paragraph (g)(8)(ii)³ of this section apply;**
- 29 CFR 1926.1101(g)(3)(i), which prohibits: **high-speed abrasive disc saws that are not equipped with point-of-cut ventilator or enclosures with HEPA filtered exhaust air;**
- 29 CFR 1926.1101(g)(3)(ii), which prohibits: **compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air; and**
- 29 CFR 1926.1101(g)(3)(iv), which prohibits: **employee rotation as a means of reducing employee exposure to asbestos.**

There are also some other provisions that apply to work activities involving installed construction materials even where the material does not contain greater than 1 percent (>1%) asbestos. However, if neither the asbestos PEL or EL limits are exceeded, then only the following few provisions apply:

- 29 CFR 1926.1101(f)(2)(i), the provision for establishing that neither asbestos PEL is exceeded: **Each employer who has a workplace or work operation covered by this standard shall ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of the operation to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with requirements which are triggered by exposure data or the lack of a "negative exposure assessment," and to provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly;**
- 29 CFR 1926.1101(f)(6)(i), a provision covering the observation of monitoring: **The employer shall provide affected employees and their designated representatives an opportunity to observe any monitoring of employee exposure to asbestos conducted in accordance with this section;**
- 29 CFR 1926.1101(f)(5)(i), a provision covering employee notification of monitoring results: **The employer shall notify affected employees of the monitoring results that represent that employee's exposure as soon as possible following receipt of monitoring results;**
- 29 CFR 1926.1101(f)(5)(ii), another provision covering employee notification of monitoring results: **The employer shall notify affected employees of the results of monitoring representing the employee's exposure in writing either individually or by posting at a centrally located place that is accessible to affected employees; and**
- 29 CFR 1926.1101(n)(2)(i)-(iii), a set of provisions covering recordkeeping for measurements of exposures to airborne asbestos.

3.2 Lead-Based Paint Testing

An environmental lead hazard is defined as any paint or surface coating that contains lead in levels equal to or greater than 1.0 milligram per square centimeter and is in poor condition.

Lead-Based Paint Screening by XRF was conducted with all testing, whether positive or negative, documented on the attached analysis sheets. Analysis results are indicated in milligrams per square centimeter (mg/cm²).

Of note is that the upper detection limit for the XRF unit utilized is 5.0 mg/cm², meaning that surfaces with testing results as 5.0 mg/cm² could have lead values greater than those listed.

Samples which contain lead-based paint are highlighted on the attached analysis sheets in Orange.

A total of one hundred thirty-one (131) surface types were tested by XRF with a total of one hundred forty-seven (147) individual test sites analyzed. Several painted surface types were found to be lead-containing with results greater than 1.0 mg/cm² and were comprised of interior painted wood components such as handrails, balusters, panel doors, window trim work, door trim work, baseboard trim, first floor tin ceilings, built-in cabinetry, and exterior for the second floor porch ceiling and basement windows window sashes and associated painted trim work.

Other lead-containing items identified were comprised of the original sinks and toilets on the third and second floor areas of the building with lead-containing glazing greater than 1.0 mg/cm².

Refer to the attached analytical results data sheets for XRF testing values (Appendix D) and the marked drawings indicating sampling locations (Appendix E).

Recommendations for Lead in Paints

Disturbance of painted surfaces representatively sampled at the site can create an increased risk for lead exposure to persons performing activities that would abrade or otherwise breakdown the paint and create a potential airborne hazard.

The method of impact for painted surfaces may or may not exceed the OSHA Permissible Exposure Level of 50 µg/m³ or the Action Level of 30 µg/m³ by any renovation/demolition actions.

Removed painted architectural materials with well adhered paints can be disposed of in normal construction and demolition debris waste streams. However, these materials should not go off-site as general fill, to a facility that would recycle the materials, or to a facility where the materials would be intentionally burned.

If free paint chips/debris is generated, then the collected material needs to be either disposed of as lead special waste or be tested for lead content to determine the hazard characteristic as a leachate for proper disposal consideration.

The objective of this inspection was to determine the presence of lead-based paint for potential overall renovation/demolition impact and not every surface associated with the structure. The information compiled during this testing is not intended to be substituted for a comprehensive lead-based paint survey, or to be used to express potential occupational exposure to airborne lead for the purposes of OSHA regulatory compliance. All scraping, sanding, cutting, welding, grinding, or demolition of any painted surface should not be performed under dry conditions in which airborne dust can be generated.

Similarly, demolition activities that may impact lead-containing components are a concern with respect to the generation of airborne lead dust; therefore, safety measures such as the use of engineering controls are essential in order to protect human health and the environment.

Contractors performing demolition activities in which excessive amounts of lead dust may potentially be generated shall be trained in the hazards of lead-containing materials and the subsequent control of the impacted environment, removal, cleaning, packaging, and handling of these materials as well as the wearing of NIOSH approved respirators, use of disposable clothing, and other requirements of the standard. All work operations shall be performed in accordance with the following:

- OSHA 29 CFR Part 1926.62, Lead Standard;
- MEDEP Chapter 424, Lead Management Regulations; and
- U.S.EPA Renovation, Repair, & Repainting Rule (RRP), effective April 22, 2010.

3.3 Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs) are a class of organic compounds with 1 to 10 chlorine atoms attached to biphenyl, which is a molecule composed of two benzene rings.

There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

Samples collected were evaluated for Aroclor levels. Aroclor PCB mixtures were produced from approximately 1930 to 1979 and it is the most commonly known trade name.

The specific Aroclor levels screened for in the collected samples were Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, and 1268.

The first two digits generally refer to the number of carbon atoms in the phenyl rings and the last two digits in the name indicate the percentage of chlorine present in the material. For example, Aroclor 1016 means that the product contains 10 carbon atoms and approximately 16 percent chlorine by weight.

Laboratory analysis review indicates the following:

PCB-1	Basement Caulking (white) for sheetrock panels	Aroclor-1254	24.8 ppm
PCB-2	Exterior – Window Glazing (off-white) side porch	None Detected	

PCB-3	Exterior – Window Caulking (off-white) vinyl windows	None Detected	
PCB-4	Exterior – Basement Window Glazing (gray/white)	Aroclor-1254	1.16 ppm

U.S.EPA regulatory guidelines classify materials with levels equal to or greater than 50 ppm (≥ 50 ppm) of PCB content to be a controlled hazardous waste material under the Toxic Substance Control Act (TSCA).

The disposal of PCB Bulk Product Waste (caulking/glazing) is still regulated under 40 CFR § 761.62 of TSCA. Under this provision, PCB Bulk Product Waste must be disposed of in one of two ways: 1) disposal in a permitted solid waste landfill, or 2) via risk-based disposal approval process.

The State of Maine only regulates PCBs as hazardous waste if the concentration is greater than 50 ppm. For materials that are less than 50 ppm, the State of Maine considers the materials to be “Special Waste.” This PCB-containing caulking/glazing can be disposed of in Maine licensed landfills that will accept the material.

The PCB-containing Bulk Product Waste (caulking/glazing) should be removed before general large equipment demolition to reduce the quantity of disposal debris that can be classified as “Special Waste.”

A summary table of analysis, associated laboratory chain-of-custody, and analysis data can be found in Appendix F to this document.

Drawings indicating sampling locations can be found in Appendix G of this document.

3.4 Universal Waste

General comments regarding universal waste items:

Mercury

Effective as of July 15, 2002, businesses and agencies can no longer dispose of mercury-added products in solid waste facilities (landfills or incinerators).

Thermostats

Mercury thermostats may be recycled under the Thermostat Recycling Program. This program utilizes the existing wholesaler network by providing a collection container at participating locations. Return any out-of-service mercury thermostats to any participating HVAC wholesaler. Any name-brand mercury switch thermostat will be accepted.

Fluorescent Lamps

No fluorescent lamps are mercury-free.

This includes the new compact type light bulbs (CFLs) and lamps marketed as “low mercury” containing (green ends).

U.S.EPA recommends that any mercury containing light bulb be recycled or properly handled and disposed properly, whether it is an older type bulb or a newer “low” mercury type bulb.

State of Maine law requires businesses and consumers to recycle all mercury added lamps, including “low” mercury type bulbs (green ends) under the MEDEP Chapter 850, Universal Waste Rules.

PCB Ballasts

Non-leaking PCB ballasts are classified as a special hazardous waste and may be managed under the reduced requirements.

Waste from leaking ballasts is regulated by the Toxic Substances Control Act (TSCA). Regulations require the use of DOT-approved 55-gallon drums for disposal of PCB capacitors once they are removed. Drums should contain absorbent material (speedy-dry or kitty litter) at the bottom in case some of the capacitors are damaged or leaking. There should be a PCB M_L label placed on each drum that contains PCB capacitors. Drums should be sealed and stored in a secure area that would minimize inadvertent damage or vandalism. Two drums are recommended, one to contain intact capacitors and one to contain any capacitors found to be leaking. This is beneficial because leaking capacitors must be disposed of within 30 days, however, intact capacitors can be stored until the drum is full.

NOTE: If one pound or more of PCBs (the amount in 12 to 16 ballasts) is released within 24 hours, notify the National Response Center.

Leaking Ballasts

TSCA Hotline (202) 554-1404

Releases of one pound or more

National Response Center (800) 424-8802

Non-PCB Ballasts

Cannot be disposed of in conventional waste streams. Beginning in 1979 manufacturers began using **di (2-ethylhexyl) phthalate (DEHP)** as a replacement to PCBs. DEHP is listed as a hazardous substance under the U.S.EPA's Superfund regulations. Generators discarding light ballasts should take the same precautions with their DEHP ballasts as they do with their PCB ballasts to avoid any future liabilities.

Smoke Detectors

Smoke detectors which may contain americium-241 (Am-241), nickel-63 (Ni-63), or Radium-226 (radium sulfate) need to be properly recycled. Recycling is the preferred option for disposal of all fire alarm components. Typically, if a smoke detector contains radioactive material, it is required by law to have a warning label on the body of the smoke detector.

Refer to the attached Universal Waste Drawings for locations, quantities, and types of items identified at the time of this assessment in Appendix H.

4.0 LIMITING CONDITIONS

The observations, conclusions, and recommendations described in this inspection report were made under the conditions stated herein and were arrived at and in accordance with generally accepted standards related to assessment and sampling for hazardous materials. The conclusions presented in the report were based solely upon the services described herein, and not on scientific tasks or procedures beyond the scope of described services.

It is possible that hidden materials in the structure were not representatively sampled, particularly for materials within enclosed walls or ceilings. Some limited explorations for determining conditions under carpeting and if multiple flooring layers were present were conducted until the presumed substrate was reached.

Contractors performing renovation/demolition actions should stop work if materials not representatively sampled as part of this inspection are uncovered, and have the materials properly assessed before further impact.

Hidden or exposed materials during renovations/demolition that may result in possible inaccuracies of information supplied to SME/ESHA by others might have a material bearing on the findings, conclusions, and recommendations. SME/ESHA reserves the right to amend its opinion(s) if additional information becomes available, but SME/ESHA assumes no obligation to do so.

No warranty or guarantee, expressed or implied, is made regarding the findings, conclusions, or recommendations contained in this report. The limitations presented above supersede the requirements or provisions of all other contracts or scopes of work, implied or otherwise, except as expressly stated or acknowledged herein. SME/ESHA is not responsible for the actions of other parties that may be involved in this project.

It is expressly agreed that SME/ESHA will have no liability to any party for reliance upon any of the findings or recommendations contained in this report. To the extent that this provision is found unenforceable by any court, any liability SME/ESHA may have arising out of its agreement with the contracting party is expressly agreed to be limited to the amount paid to SME/ESHA.

APPENDIX A

CERTIFICATIONS AND LICENSES





JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



MELANIE LOYZIM
COMMISSIONER

September 27, 2023

Environmental Safety & Hygiene Associates
4 Blanchard Road
Cumberland, Maine 04021

Dear Licensee:

Asbestos application(s) for individual certification of the **two** employee(s) listed below have been received and **approved**. Individual certification numbers are listed below and wallet card(s) are enclosed. Card(s) are property of the individual to whom each is issued. Your responsibility as a licensee is to ensure delivery of the cards to persons in your employment. This letter should be retained for your company files as record of certification. **Please attach 1 updated passport size photo with every application.**

Remember, in Maine all **certified employees** working on an asbestos abatement project, whether conducting removal/repair, air monitoring, design, inspection, or analysis functions, **must work for a State of Maine licensed asbestos firm** and carry his/her wallet card(s) on the job site.

As a reminder, prior to renewing your asbestos certification, the State of Maine **requires** an annual refresher course to be taken before submitting a renewal application. A certificate shall expire one year from the last day of the month from the date of issuance, **or on the last day of the month that the training certificate expires**, whichever is sooner.

All our asbestos forms can be found at <https://www.maine.gov/dep/waste/asbestos/forms.html>
Thank you for your cooperation and your completed application(s).

<u>Name</u>	<u>Category</u>	<u>Certification #</u>	<u>Exp. Date</u>
John M. Boilard	Air Monitor	AM-0037	09/30/2024
John M. Boilard	Inspector	AI-0154	09/30/2024

Sincerely,

Sandra J. Moody, Environmental Specialist
Division of Remediation
Bureau of Remediation and Waste Management

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-1688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 4
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
512 CANOCO ROAD
PORTLAND, MAINE 04101
(207) 822-6386 FAX: (207) 822-6365

PRESCOTT ISLAND
1295 CENTRAL DRIVE, SKYWAY PARK
PRESCOTT ISLAND, MAINE 04760
(207) 744-0477 FAX: (207) 766-5143

State of Maine
Asbestos Abatement Program
John M. Boilard
Inspector
Cert 1: AI-0154
Trn. Exp. Date 09/22/2024
Air Monitor
Cert 2: AM-0037
Trn. Exp. Date 09/22/2024
Expiration Date 09/30/2024
This is not a legal form of official identification





JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



MELANIE LOYZIM
COMMISSIONER

September 28, 2023

Environmental Safety & Hygiene Associates
4 Blanchard Road
Cumberland, Maine 04021

Dear Licensee:

Asbestos application(s) for individual certification of the **one** employee(s) listed below have been received and **approved**. Individual certification numbers are listed below and wallet card(s) are enclosed. Card(s) are property of the individual to whom each is issued. Your responsibility as a licensee is to ensure delivery of the cards to persons in your employment. This letter should be **retained for your company files as record of certification.** **Please attach 1 updated passport size photo with every application.**

Remember, in Maine all **certified employees** working on an asbestos abatement project, whether conducting removal/repair, air monitoring, design, inspection, or analysis functions, **must work for a State of Maine licensed asbestos firm** and carry his/her wallet card(s) on the job site.

As a reminder, prior to renewing your asbestos certification, the State of Maine **requires** an annual refresher course to be taken before submitting a renewal application. A certificate shall expire one year from the last day of the month from the date of issuance, **or on the last day of the month that the training certificate expires**, whichever is sooner.

All our asbestos forms can be found at <https://www.maine.gov/dep/waste/asbestos/forms.html>
Thank you for your cooperation and your completed application(s).

<u>Name</u>	<u>Category</u>	<u>Certification #</u>	<u>Exp. Date</u>
Kivvy A. Spears	Inspector	AI-0748	08/31/2024

Sincerely,

Sandra J. Moody, Environmental Specialist
Division of Remediation
Bureau of Remediation and Waste Management



AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7600 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4370 FAX: (207) 941-4504

PORTLAND
312 CANNON ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESTON ISLAND
1255 CENTRAL DRIVE, SKYWAY PARK
PRESTON ISLAND, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

APPENDIX B

ASBESTOS ANALYTICAL SUMMARY TABLES AND LABORATORY DATA

ASBESTOS BULK SAMPLING ANALYTICAL SUMMARY

CLIENT:

Oak Point Associates
231 Main Street
Biddeford, ME 04005

TESTING LOCATION:

Staff House (Blaine House)
152 Chamberlain Street
Augusta, ME 04330

SAMPLING DATE:

November 28, 2023

PROJECT NUMBER:

231619.00

LAB ID:

062322657

SAMPLE ID:	TESTING AREA/LOCATION	SAMPLE DESCRIPTION	ANALYTICAL METHOD	SAMPLE RESULTS
1A	First Floor Connector	Sheetrock – Gray	EPA PLM Visual Estimation Method	None Detected
1B	First Floor Kitchen			
1C	First Floor Entry			
2A	First Floor Connector	Joint Compound – White	EPA PLM Visual Estimation Method	None Detected
2B	First Floor Kitchen			
2C	First Floor Entry			
3A – Skim Coat	First Floor Stairwell	Wall Plaster – White Top and Gray Base	EPA PLM Visual Estimation Method 400 Point Count	PC 1.75% Chrysotile
3A – Base Coat			EPA PLM Visual Estimation Method	None Detected
3B – Skim Coat	First Floor Living Room			Positive Stop (not analyzed)
3B – Base Coat				None Detected
3C – Skim Coat	First Floor Front Parlor			Positive Stop (not analyzed)
3C – Base Coat				None Detected
4A – Skim Coat	First Floor Dining Room		EPA PLM Visual Estimation Method	None Detected
4A – Base Coat				
4B – Skim Coat	First Floor Hallway			
4B – Base Coat				
4C – Skim Coat	First Floor Front Entry			
4C – Base Coat				
5A – 5B	First Floor Stairwell	TSI – White Block	EPA PLM Visual Estimation Method	None Detected
5C	First Floor Dining Room			
6A	First Floor Kitchen	Faux Brick Linoleum – Blue and Gray	EPA PLM NOB Gravimetric Reduction	None Detected
6B	First Floor Entry			
6C	First Floor Bathroom			
7A – 7C	First Floor Living Room	Fire Brick – Tan	EPA PLM Visual Estimation Method	None Detected
8A – 8C	First Floor Under Stairs	Jute Backed Linoleum – Tan and Brown with Green Swirls	EPA PLM NOB Gravimetric Reduction	None Detected
9A – 9C	Second Floor	Sheetrock – Gray	EPA PLM Visual Estimation Method	None Detected

SAMPLE ID:	TESTING AREA/LOCATION	SAMPLE DESCRIPTION	ANALYTICAL METHOD	SAMPLE RESULTS
10A	Second Floor	Joint Compound – White	EPA PLM Visual Estimation Method 400 Point Count	PC 1.50% Chrysotile
10B - 10C			EPA PLM Visual Estimation Method	Positive Stop (Not Analyzed)
11A – 11C	Second Floor	Plaster Base Coat Only	EPA PLM Visual Estimation Method	None Detected
12A – Skim Coat	Second Floor	Plaster - White Top and Gray Base	EPA PLM Visual Estimation Method	None Detected
12A – Base Coat				
12B – Skim Coat				
12B – Base Coat				
12C – Skim Coat				
12C – Base Coat				
13A – Base Coat	Second Floor	Plaster Ceiling – White Top and Gray Base	EPA PLM Visual Estimation Method	None Detected
13B – Skim Coat				
13B – Base Coat				
13C – Skim Coat				
13C – Base Coat				
14A	Second Floor Bathroom	Linoleum – Tan Pebble Pattern	EPA PLM NOB Gravimetric Reduction 400 Point Count	PC 1.4% Chrysotile
14B - 14C				Positive Stop (Not Analyzed)
15A – 15C	Second Floor Bathroom	Wall Panel Adhesive - Brown	EPA PLM NOB Gravimetric Reduction	None Detected
16A – 16C	Third Floor Closet	Base Coat – Gray	EPA PLM Visual Estimation Method	None Detected
17A – 17C	Third Floor Closet	Linoleum – 2” Faux Tile – Off-White	EPA PLM NOB Visual Estimation Method	None Detected
18A – 18C	First Floor Bathroom	Wall Panel Adhesive – Tan	EPA PLM NOB Gravimetric Reduction	None Detected
19A – 19C	Basement	4” Mudded Fitting	EPA PLM Visual Estimation Method	None Detected
20A – 20C	Basement	Sheetrock Joint Caulk – Off-White	EPA PLM NOB Gravimetric Reduction	None Detected
21A	Basement	Construction Adhesive – Red	EPA PLM NOB Gravimetric Reduction 400 Point Count	PC 0.8% Chrysotile
21B – 21C				Positive Stop (Not Analyzed)
22A – 22C	Basement	Sheetrock – Gray	EPA PLM Visual Estimation Method	None Detected
23A	Basement	3” Air-O-Cell TSI	EPA PLM Visual Estimation Method	18% Chrysotile
23B – 23C				Positive Stop (not analyzed)
24A	Exterior Porch	Window Glazing – Off-White	EPA PLM NOB Gravimetric Reduction 400 Point Count	PC <0.25% Anthophyllite
24B				PC <0.25% Anthophyllite
24C				PC 1.2% Anthophyllite



SAMPLE ID:	TESTING AREA/LOCATION	SAMPLE DESCRIPTION	ANALYTICAL METHOD	SAMPLE RESULTS
25A – 25C	Exterior	Vinyl Window Caulk – White	EPA PLM NOB Gravimetric Reduction	None Detected
26A – 26C	Exterior Basement	Window Glazing – White and Gray	EPA PLM NOB Gravimetric Reduction	None Detected
27A – 27C	First Floor	Underlayment – Black	EPA PLM NOB Gravimetric Reduction	None Detected
28A	First Floor Dining Room	Hardwood Underlayment Paper – Tan and Red	EPA PLM NOB Gravimetric Reduction	None Detected
28B – 28C	First Floor Living Room			
29A – 29C	Front Parlor	Hardwood Underlayment – Black	EPA PLM NOB Gravimetric Reduction	None Detected
30A – 30C	Second Floor Bedroom	Linoleum – Faux 9” x 9” Tile with Orange and Black Swirls	EPA PLM NOB Gravimetric Reduction	None Detected
31A – 31C	Second Floor Bedroom	Underlayment Wood – Gray	EPA PLM NOB Gravimetric Reduction	None Detected
32A – 32C	Second Floor Bedroom Closet	Jute Backed Linoleum – Tan (With Black Underlayment)	EPA PLM NOB Gravimetric Reduction	None Detected
33A – 33C	Second Floor	Linoleum – Faux Wood	EPA PLM NOB Gravimetric Reduction	None Detected
34A – 34C	Second Floor	Underlayment – Black	EPA PLM NOB Gravimetric Reduction	None Detected
35A – 35C	Second Floor Closet	Jute Backed Linoleum – Green	EPA PLM NOB Gravimetric Reduction	None Detected
36A – 36C	Second Floor Closet	Linoleum – Faux Ceramic Pattern – Tan	EPA PLM NOB Gravimetric Reduction	None Detected
37A – 37C	Second Floor Hallway Pass Through	Jute Backed Linoleum – Brown	EPA PLM NOB Gravimetric Reduction	None Detected
38A – 38C	Second Floor Rear Room	Jute Backed Linoleum – Cream	EPA PLM NOB Gravimetric Reduction	None Detected
39A – 39C	Second Floor Rear Room	Underlayment – Black	EPA PLM NOB Gravimetric Reduction	None Detected
40A – 40C	Exterior	Roof Underlayment – Black	EPA PLM NOB Gravimetric Reduction	None Detected
41A – 41C	Exterior	3 Tab Shingles - Gray	EPA PLM NOB Gravimetric Reduction	None Detected



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657
Customer ID: ESHA42
Customer PO: 231619.00
Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016
Fax: (207) 829-5692
Received Date: 12/05/2023 10:55 AM
Analysis Date: 12/06/2023
Collected Date: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Non-Friable Organic Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
6A 062322657-0016	Linoleum, Blue-Gray, Faux Brick	Blue/Beige Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
6B 062322657-0017	Linoleum, Blue-Gray, Faux Brick	Blue/Beige Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
6C 062322657-0018	Linoleum, Blue-Gray, Faux Brick	Brown/Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
8A 062322657-0022	Linoleum, Tan/Brown/Green Swirls	Brown/Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
8B 062322657-0023	Linoleum, Tan/Brown/Green Swirls	Brown/Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
8C 062322657-0024	Linoleum, Tan/Brown/Green Swirls	Brown/Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
14B 062322657-0041	Resilient Floor Sheeting, Tan/Pebbled				
Positive Stop (Not Analyzed)					
14C 062322657-0042	Resilient Floor Sheeting, Tan/Pebbled				
Positive Stop (Not Analyzed)					
15A 062322657-0043	Wall Panel Adhesive, Brown	Brown Non-Fibrous Heterogeneous	99.2 Other	0.79 Glass	No Asbestos Detected
15B 062322657-0044	Wall Panel Adhesive, Brown	Brown Non-Fibrous Heterogeneous	99.6 Other	0.37 Glass	No Asbestos Detected
15C 062322657-0045	Wall Panel Adhesive, Brown	Brown Non-Fibrous Heterogeneous	98.8 Other	1.2 Glass	No Asbestos Detected

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and method specifications unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. EMSL suggests that samples reported as < 1% or none detected undergo additional analysis via TEM. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657
Customer ID: ESHA42
Customer PO: 231619.00
Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016
Fax: (207) 829-5692
Received Date: 12/05/2023 10:55 AM
Analysis Date: 12/06/2023
Collected Date: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Non-Friable Organic Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
17A 062322657-0049	Resilient Floor Sheeting, Off-White 2" Squares	Beige Non-Fibrous Homogeneous	98.6 Other	1.4 Glass	No Asbestos Detected
17B 062322657-0050	Resilient Floor Sheeting, Off-White 2" Squares	Beige Non-Fibrous Homogeneous	98.7 Other	1.3 Glass	No Asbestos Detected
17C 062322657-0051	Resilient Floor Sheeting, Off-White 2" Squares	Beige Non-Fibrous Homogeneous	98.6 Other	1.4 Glass	No Asbestos Detected
18A 062322657-0052	Wall Panel Adhesive, Tan	Gray Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
18B 062322657-0053	Wall Panel Adhesive, Tan	Gray Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
18C 062322657-0054	Wall Panel Adhesive, Tan	Gray Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
20A 062322657-0058	Joint Caulking, Off-White	Beige Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
20B 062322657-0059	Joint Caulking, Off-White	Beige Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
20C 062322657-0060	Joint Caulking, Off-White	Beige Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
21B 062322657-0062	Construction Adhesive, Red				
Positive Stop (Not Analyzed)					
21C 062322657-0063	Construction Adhesive, Red				
Positive Stop (Not Analyzed)					

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. EMSL suggests that samples reported as < 1% or none detected undergo additional analysis via TEM. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657
Customer ID: ESHA42
Customer PO: 231619.00
Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016
Fax: (207) 829-5692
Received Date: 12/05/2023 10:55 AM
Analysis Date: 12/06/2023
Collected Date: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Non-Friable Organic Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
25A 062322657-0073	Window Caulk, White	White Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
25B 062322657-0074	Window Caulk, White	White Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
25C 062322657-0075	Window Caulk, White	White/Beige Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
26A 062322657-0076	Window Glazing, White/Gray	Gray Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
26B 062322657-0077	Window Glazing, White/Gray	Gray Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
26C 062322657-0078	Window Glazing, White/Gray	Gray/Black Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
27A 062322657-0079	Underlayment, Black	Brown/Tan Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
27B 062322657-0080	Underlayment, Black	Brown/Beige Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
27C 062322657-0081	Underlayment, Black	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
28A 062322657-0082	Underlayment, Tan/Red	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
28B 062322657-0083	Underlayment, Tan/Red	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
28C 062322657-0084	Underlayment, Tan/Red	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. EMSL suggests that samples reported as < 1% or none detected undergo additional analysis via TEM. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657
Customer ID: ESHA42
Customer PO: 231619.00
Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016
Fax: (207) 829-5692
Received Date: 12/05/2023 10:55 AM
Analysis Date: 12/06/2023
Collected Date: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Non-Friable Organic Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
29A 062322657-0085	Underlayment, Black	Black Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
29B 062322657-0086	Underlayment, Black	Black Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
29C 062322657-0087	Underlayment, Black	Black Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
30A 062322657-0088	Linoleum, Faux 9"x9", Orange w./ Black Swirls	Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
30B 062322657-0089	Linoleum, Faux 9"x9", Orange w./ Black Swirls	Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
30C 062322657-0090	Linoleum, Faux 9"x9", Orange w./ Black Swirls	Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
31A 062322657-0091	Underlayment, Wood-Gray	Gray Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
31B 062322657-0092	Underlayment, Wood-Gray	Gray Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
31C 062322657-0093	Underlayment, Wood-Gray	Gray Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
32A 062322657-0094	Linoleum, Tan	Tan/Red Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
32B 062322657-0095	Linoleum, Tan	Tan/Red Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
32C 062322657-0096	Linoleum, Tan	Tan/Red Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. EMSL suggests that samples reported as < 1% or none detected undergo additional analysis via TEM. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657
Customer ID: ESHA42
Customer PO: 231619.00
Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016
Fax: (207) 829-5692
Received Date: 12/05/2023 10:55 AM
Analysis Date: 12/06/2023
Collected Date: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Non-Friable Organic Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
33A 062322657-0097	Linoleum, Faux Wood, Tan	Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
33B 062322657-0098	Linoleum, Faux Wood, Tan	Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
33C 062322657-0099	Linoleum, Faux Wood, Tan	Tan Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
34A 062322657-0100	Underlayment, Black	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
34B 062322657-0101	Underlayment, Black	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
34C 062322657-0102	Underlayment, Black	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
35A 062322657-0103	Linoleum, Green	Red/Green Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
35B 062322657-0104	Linoleum, Green	Brown/Green Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
35C 062322657-0105	Linoleum, Green	Red/Green Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
36A 062322657-0106	Linoleum, Faux Ceramic Tile, Patterned	Brown/Green Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
36B 062322657-0107	Linoleum, Faux Ceramic Tile, Patterned	Brown/Green Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
36C 062322657-0108	Linoleum, Faux Ceramic Tile, Patterned	Brown/Green Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. EMSL suggests that samples reported as < 1% or none detected undergo additional analysis via TEM. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657
Customer ID: ESHA42
Customer PO: 231619.00
Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016
Fax: (207) 829-5692
Received Date: 12/05/2023 10:55 AM
Analysis Date: 12/06/2023
Collected Date: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Non-Friable Organic Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
37A 062322657-0109	Linoleum, Brown	Tan Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
37B 062322657-0110	Linoleum, Brown	Tan Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
37C 062322657-0111	Linoleum, Brown	Tan Non-Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
38A 062322657-0112	Linoleum, Cream	Tan Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
38B 062322657-0113	Linoleum, Cream	Tan Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
38C 062322657-0114	Linoleum, Cream	Tan/Black Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
39A 062322657-0115	Underlayment, Black	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
39B 062322657-0116	Underlayment, Black	Brown Non-Fibrous Homogeneous	100 Other	None	No Asbestos Detected
39C 062322657-0117	Underlayment, Black	Brown Fibrous Heterogeneous	100 Other	None	No Asbestos Detected
40A 062322657-0118	Roof Underlayment, Black	Black Fibrous Heterogeneous	100 Other	<0.25 Glass	No Asbestos Detected
40B 062322657-0119	Roof Underlayment, Black	Brown Fibrous Heterogeneous	100 Other	<0.25 Glass	No Asbestos Detected
40C 062322657-0120	Roof Underlayment, Black	Brown Fibrous Heterogeneous	100 Other	<0.25 Glass	No Asbestos Detected

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. EMSL suggests that samples reported as < 1% or none detected undergo additional analysis via TEM. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657

Customer ID: ESHA42

Customer PO: 231619.00

Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016

Fax: (207) 829-5692

Received Date: 12/05/2023 10:55 AM

Analysis Date: 12/06/2023

Collected Date: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
1A 062322657-0001	Sheetrock, Gray	Brown/Gray Fibrous Heterogeneous	2% Cellulose	15% Ca Carbonate 77% Gypsum 6% Non-fibrous (Other)	None Detected
1B 062322657-0002	Sheetrock, Gray	Brown/Gray Fibrous Heterogeneous	2% Cellulose	13% Ca Carbonate 70% Gypsum 15% Non-fibrous (Other)	None Detected
1C 062322657-0003	Sheetrock, Gray	Brown/Gray Fibrous Heterogeneous	2% Cellulose	13% Ca Carbonate 70% Gypsum 15% Non-fibrous (Other)	None Detected
2A 062322657-0004	Joint Compound, White	White Non-Fibrous Homogeneous		92% Ca Carbonate 4% Mica 4% Non-fibrous (Other)	None Detected
2B 062322657-0005	Joint Compound, White	White Non-Fibrous Homogeneous		91% Ca Carbonate 3% Mica 6% Non-fibrous (Other)	None Detected
2C 062322657-0006	Joint Compound, White	White Non-Fibrous Homogeneous		87% Ca Carbonate 5% Mica 8% Non-fibrous (Other)	None Detected
3A-Base Coat 062322657-0007A	Wall Plaster, White Top Coat / Gray Base Coat	Brown/Gray Non-Fibrous Homogeneous		43% Quartz 34% Ca Carbonate 23% Non-fibrous (Other)	None Detected
3B-Skim Coat 062322657-0008	Wall Plaster, White Top Coat / Gray Base Coat				Positive Stop (Not Analyzed)
3B-Base Coat 062322657-0008A	Wall Plaster, White Top Coat / Gray Base Coat	Brown/Gray Non-Fibrous Homogeneous		77% Quartz 18% Ca Carbonate 5% Non-fibrous (Other)	None Detected
3C 062322657-0009	Wall Plaster, White Top Coat / Gray Base Coat	Gray Non-Fibrous Homogeneous	2% Cellulose	15% Ca Carbonate 70% Gypsum 13% Non-fibrous (Other)	None Detected
4A-Skim Coat 062322657-0010	Ceiling Plaster, White Top Coat / Gray Base Coat	White Non-Fibrous Homogeneous		65% Ca Carbonate 23% Gypsum 12% Non-fibrous (Other)	None Detected
4A-Base Coat 062322657-0010A	Ceiling Plaster, White Top Coat/Gray Base Coat	Gray Non-Fibrous Homogeneous		45% Quartz 33% Ca Carbonate 22% Non-fibrous (Other)	None Detected
4B-Skim Coat 062322657-0011	Ceiling Plaster, White Top Coat / Gray Base Coat	White Non-Fibrous Homogeneous		66% Ca Carbonate 23% Gypsum 11% Non-fibrous (Other)	None Detected
4B-Base Coat 062322657-0011A	Ceiling Plaster, White Top Coat / Gray Base Coat	Brown/Gray Non-Fibrous Homogeneous		61% Quartz 30% Ca Carbonate 9% Non-fibrous (Other)	None Detected
4C-Skim Coat 062322657-0012	Ceiling Plaster, White Top Coat / Gray Base Coat	White Non-Fibrous Homogeneous		75% Ca Carbonate 15% Gypsum 10% Non-fibrous (Other)	None Detected
4C-Base Coat 062322657-0012A	Ceiling Plaster, White Top Coat / Gray Base Coat	Brown/Gray Non-Fibrous Homogeneous		59% Quartz 22% Ca Carbonate 19% Non-fibrous (Other)	None Detected

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657

Customer ID: ESHA42

Customer PO: 231619.00

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
5A 062322657-0013	TSI - White Block	White Non-Fibrous Homogeneous	2% Cellulose <1% Glass	80% Ca Carbonate 18% Non-fibrous (Other)	None Detected
5B 062322657-0014	TSI - White Block	White Non-Fibrous Homogeneous	2% Cellulose <1% Glass	75% Ca Carbonate 23% Non-fibrous (Other)	None Detected
5C 062322657-0015	TSI - White Block	White Non-Fibrous Homogeneous	2% Cellulose 2% Glass	78% Ca Carbonate 18% Non-fibrous (Other)	None Detected
7A 062322657-0019	Fire Brick, Tan	Tan Non-Fibrous Homogeneous		51% Quartz 49% Non-fibrous (Other)	None Detected
7B 062322657-0020	Fire Brick, Tan	Tan Non-Fibrous Homogeneous		44% Quartz 56% Non-fibrous (Other)	None Detected
7C 062322657-0021	Fire Brick, Tan	Tan Non-Fibrous Homogeneous		41% Quartz 59% Non-fibrous (Other)	None Detected
9A 062322657-0025	Sheetrock, Gray	Brown/Gray Fibrous Heterogeneous	3% Cellulose	6% Ca Carbonate 82% Gypsum 9% Non-fibrous (Other)	None Detected
9B 062322657-0026	Sheetrock, Gray	Brown/Gray Fibrous Heterogeneous	4% Cellulose	10% Ca Carbonate 80% Gypsum 6% Non-fibrous (Other)	None Detected
9C 062322657-0027	Sheetrock, Gray	Brown/Gray Fibrous Heterogeneous	5% Cellulose	13% Ca Carbonate 75% Gypsum 7% Non-fibrous (Other)	None Detected
10B 062322657-0029	Joint Compound, White				Positive Stop (Not Analyzed)
10C 062322657-0030	Joint Compound, White				Positive Stop (Not Analyzed)
11A 062322657-0031	Wall Plaster, Gray Coat	Brown/Gray Non-Fibrous Homogeneous		50% Quartz 35% Ca Carbonate 15% Non-fibrous (Other)	None Detected
11B 062322657-0032	Wall Plaster, Gray Coat	Brown/Gray Non-Fibrous Homogeneous		50% Quartz 26% Ca Carbonate 24% Non-fibrous (Other)	None Detected
11C 062322657-0033	Wall Plaster, Gray Coat	Gray Non-Fibrous Homogeneous	2% Cellulose	15% Ca Carbonate 77% Gypsum 6% Non-fibrous (Other)	None Detected
12A-Skim Coat 062322657-0034	Wall Plaster, White Top Coat / Gray Base Coat	White Non-Fibrous Homogeneous		90% Ca Carbonate 10% Non-fibrous (Other)	None Detected
12A-Base Coat 062322657-0034A	Wall Plaster, White Top Coat / Gray Base Coat	Gray Non-Fibrous Homogeneous		51% Quartz 33% Ca Carbonate 16% Non-fibrous (Other)	None Detected
12B-Skim Coat 062322657-0035	Wall Plaster, White Top Coat / Gray Base Coat	White Non-Fibrous Homogeneous		85% Ca Carbonate 15% Non-fibrous (Other)	None Detected
12B-Base Coat 062322657-0035A	Wall Plaster, White Top Coat / Gray Base Coat	Gray Non-Fibrous Homogeneous		48% Quartz 33% Ca Carbonate 19% Non-fibrous (Other)	None Detected
12C-Skim Coat 062322657-0036	Wall Plaster, White Top Coat / Gray Base Coat	White Non-Fibrous Homogeneous		87% Ca Carbonate 13% Non-fibrous (Other)	None Detected

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657

Customer ID: ESHA42

Customer PO: 231619.00

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
12C-Base Coat 062322657-0036A	Wall Plaster, White Top Coat / Gray Base Coat	Gray Non-Fibrous Homogeneous		60% Quartz 22% Ca Carbonate 18% Non-fibrous (Other)	None Detected
13A 062322657-0037	Ceiling Plaster, White Top Coat / Gray Base Coat	Tan Non-Fibrous Homogeneous	3% Cellulose	45% Quartz 15% Ca Carbonate 22% Gypsum 15% Non-fibrous (Other)	None Detected
The sample bag only includes base coat plaster.					
13B-Skim Coat 062322657-0038	Ceiling Plaster, White Top Coat / Gray Base Coat	Tan/White Non-Fibrous Homogeneous	<1% Fibrous (Other)	12% Quartz 30% Ca Carbonate 35% Gypsum 23% Non-fibrous (Other)	None Detected
13B-Base Coat 062322657-0038A	Ceiling Plaster, White Top Coat / Gray Base Coat	Tan/White Non-Fibrous Homogeneous	2% Hair	45% Quartz 13% Ca Carbonate 20% Gypsum 4% Mica 16% Non-fibrous (Other)	None Detected
13C-Skim Coat 062322657-0039	Ceiling Plaster, White Top Coat / Gray Base Coat	Tan/White Non-Fibrous Homogeneous	3% Cellulose <1% Fibrous (Other)	30% Ca Carbonate 50% Gypsum 17% Non-fibrous (Other)	None Detected
13C-Base Coat 062322657-0039A	Ceiling Plaster, White Top Coat / Gray Base Coat	Tan Non-Fibrous Homogeneous	4% Hair	45% Quartz 15% Ca Carbonate 20% Gypsum 16% Non-fibrous (Other)	None Detected
16A 062322657-0046	Wall Plaster, Gray Coat	Tan/White Non-Fibrous Homogeneous	5% Hair	40% Quartz 20% Ca Carbonate 20% Gypsum 4% Mica 11% Non-fibrous (Other)	None Detected
16B 062322657-0047	Wall Plaster, Gray Coat	White Non-Fibrous Homogeneous	3% Hair	45% Quartz 15% Ca Carbonate 20% Gypsum 17% Non-fibrous (Other)	None Detected
16C 062322657-0048	Wall Plaster, Gray Coat	Tan/White Non-Fibrous Homogeneous	5% Hair	50% Quartz 12% Ca Carbonate 20% Gypsum 13% Non-fibrous (Other)	None Detected
19A 062322657-0055	TSI - Mudded Fittings	Tan Non-Fibrous Homogeneous	3% Cellulose 24% Min. Wool	5% Quartz 38% Ca Carbonate 30% Non-fibrous (Other)	None Detected
19B 062322657-0056	TSI - Mudded Fittings	Tan Non-Fibrous Homogeneous	4% Cellulose 21% Min. Wool	8% Quartz 40% Ca Carbonate 27% Non-fibrous (Other)	None Detected
19C 062322657-0057	TSI - Mudded Fittings	Tan Non-Fibrous Homogeneous	20% Min. Wool	9% Quartz 38% Ca Carbonate 4% Mica 29% Non-fibrous (Other)	None Detected
22A 062322657-0064	Sheetrock, Gray	Brown/Tan Non-Fibrous Homogeneous	8% Cellulose	12% Ca Carbonate 70% Gypsum 10% Non-fibrous (Other)	None Detected
22B 062322657-0065	Sheetrock, Gray	Brown/Tan Non-Fibrous Homogeneous	8% Cellulose	12% Ca Carbonate 70% Gypsum 10% Non-fibrous (Other)	None Detected
22C 062322657-0066	Sheetrock, Gray	Brown/Tan Non-Fibrous Homogeneous	8% Cellulose	12% Ca Carbonate 70% Gypsum 10% Non-fibrous (Other)	None Detected

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657

Customer ID: ESHA42

Customer PO: 231619.00

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
23A	TSI, Air-o-Cell	Tan/White Fibrous Homogeneous	15% Cellulose	22% Ca Carbonate 45% Non-fibrous (Other)	18% Chrysotile
062322657-0067					
23B	TSI, Air-o-Cell				Positive Stop (Not Analyzed)
062322657-0068					
23C	TSI, Air-o-Cell				Positive Stop (Not Analyzed)
062322657-0069					

Analyst(s)

Erick Rosa (33)

Jimmy Encalada (15)

Daniel Clarke, Asbestos Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10, CA ELAP 2339

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657
Customer ID: ESHA42
Customer PO: 231619.00
Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016
Fax: (207) 829-5692
Received Date: 12/05/2023 10:55 AM
Analysis Date: 12/06/2023
Collected Date: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Non-Friable Organic Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
41A 062322657-0121	3-Tab Shingles, Gray	Brown/Pink Fibrous Heterogeneous	98.2 Other	1.8 Glass	No Asbestos Detected
41B 062322657-0122	3-Tab Shingles, Gray	Gray/Black/Pink Fibrous Heterogeneous	97.9 Other	2.1 Glass	No Asbestos Detected
41C 062322657-0123	3-Tab Shingles, Gray	Gray/Black/Pink Fibrous Heterogeneous	98.2 Other	1.8 Glass	No Asbestos Detected

Analyst(s)

Erick Rosa (69)

Daniel Clarke, Asbestos Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. EMSL suggests that samples reported as < 1% or none detected undergo additional analysis via TEM. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10

Report amended: 12/07/2023 16:20:36 Replaces amended report from: 12/07/2023 16:16:00 Reason Code: Client-Samples Removed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Phone/Fax: (516) 997-7251 / (516) 997-7528

<http://www.EMSL.com> / carleplacelab@emsl.com

EMSL Order: 062322657

Customer ID: ESHA42

Customer PO: 231619.00

Project ID:

Attention: John Boilard
ESHA
PO Box 85A
Cumberland, ME 04021

Phone: (207) 829-5016
Fax: (207) 829-5692
Received: 12/05/2023 10:55 AM
Analysis Date: 12/07/2023
Collected: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
3A-Skim Coat 062322657-0007	Wall Plaster, White Top Coat / Gray Base Coat	Tan Non-Fibrous Homogeneous		20% Ca Carbonate 66% Gypsum 12.3% Non-fibrous (Other)	1.75% Chrysotile
10A 062322657-0028	Joint Compound, White	Tan/White Non-Fibrous Homogeneous		86% Ca Carbonate 5% Mica 7.5% Non-fibrous (Other)	1.50% Chrysotile

Analyst(s)

Erick Rosa (2)

Daniel Clarke, Asbestos Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10, CA ELAP 2339

Initial report from: 12/07/2023 16:11:31

**EMSL Analytical, Inc.**

528 Mineola Avenue, Carle Place, NY 11514

Phone/Fax: (516) 997-7251 / (516) 997-7528

<http://www.EMSL.com>carleplacelab@emsl.com

EMSL Order: 062322657

CustomerID: ESHA42

CustomerPO: 231619.00

ProjectID:

Attn: **John Boilard**
ESHA
PO Box 85A
Cumberland, ME 04021

Phone:
Fax: (207) 829-5692
Received: 12/5/2023 10:55 AM
Analysis Date: 12/7/2023
Collected: 11/28/2023

Project: 231619 / Staff House

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763
Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light
Microscopy with Gravimetric Reduction. Quantitation using 400 Point Count Procedure.

SAMPLE ID	DESCRIPTION	APPEARANCE	(%) Matrix Organic Acid		NON- ASBESTOS % Fibrous	NON- ASBESTOS % NON-FIBROUS	ASBESTOS % TYPES
14A 062322657-0040	Resilient Floor Sheeting, Tan/Pebbled	Beige Non-Fibrous Homogeneous	59.3	16.6		22.7 Non-fibrous (other)	1.4 Chrysotile
21A 062322657-0061	Construction Adhesive, Red	Tan/Red Non-Fibrous Heterogeneous	51.5	40.2		7.5 Non-fibrous (other)	0.8 Chrysotile
24A 062322657-0070	Window Glazing, Off- White	Gray/White Non-Fibrous Heterogeneous	17.6	81.3		1.1 Non-fibrous (other)	<0.25 Anthophyllite
24B 062322657-0071	Window Glazing, Off- White	Gray/White Non-Fibrous Heterogeneous	13.1	85.6		1.3 Non-fibrous (other)	<0.25 Anthophyllite
24C 062322657-0072	Window Glazing, Off- White	Gray/White Non-Fibrous Heterogeneous	7.5	48.8		42.5 Non-fibrous (other)	1.2 Anthophyllite

Analyst(s)

Erick Rosa (5)

Daniel Clarke, Asbestos Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. EMSL suggests that samples reported as <0.25% or none detected undergo additional analysis via TEM. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NVLAP Lab Code 101048-10, CA ELAP 2339

Initial report from 12/07/2023 16:11:31



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Asbestos Chain of Custody

EMSL Order Number (lab use only):

062322657

EMSL Analytical, Inc.

200 Route 130 North

Cinnaminson, NJ 08077

PHONE: 1-800-220-3675

FAX: (856) 786-5974

Company Name: ESHA (Sevee & Maher Engineers)		EMSL Customer ID: ESHA 42	
Street: PO Box 85A		City: Cumberland	State or Province: ME
Zip/Postal Code: 04021	Country: US	Telephone #: 207-829-5016	Fax #: 207-829-5692
Report To (Name): John Boillard		Please Provide Results via: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email	
email Address: analytical.eshdata@sme-engineers.com		Purchase Order Number: 231619.00	
Client Project ID: 231619 STAFF HOUSE		EMSL Project ID (internal use only):	
State or Province Collected: ME		CT only <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt <input type="checkbox"/>	
EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different - If bill to is different note instructions in comment. Third party billing requires written authorization from third party			
Turnaround Time (TAT) Options Please Check			
<input type="checkbox"/> 3 Hr ¹	<input type="checkbox"/> 4-4.5 Hr ¹ <small>AHERA Only</small>	<input type="checkbox"/> 6 Hr ¹	<input type="checkbox"/> 24 Hr
<input type="checkbox"/> 32 Hr ²	<input type="checkbox"/> 48 Hr	<input type="checkbox"/> 72 Hr	<input type="checkbox"/> 96 Hr
<input checked="" type="checkbox"/> 1 Week	<input type="checkbox"/> 2 Week		
<small>¹Premium Service Charge applies for 3 Hour TEM AHERA or EPA Level II TAT - you will be asked to sign an authorization form TEM Air 3-6 Hour, please call ahead to schedule ²32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.</small>			
PCM - Air <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> w/ OSHA 8hr. TWA PLM - Bulk (reporting limit) <input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input checked="" type="checkbox"/> PLM EPA NOB (<1%) Point Count <input checked="" type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric <input checked="" type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NYS 198.1 (friable - NY) <input type="checkbox"/> NYS 198.6 NOB (non-friable-NY) <input type="checkbox"/> NYS 198.8 SOF-V <input type="checkbox"/> NIOSH 9002 (<1%)		TEM - Air¹ <input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II <input type="checkbox"/> ISO 10312 TEM - Bulk <input type="checkbox"/> TEM EPA NOB <input type="checkbox"/> NYS NOB 198.4 (non-friable-NY) <input type="checkbox"/> TEM EPA 600/R-93/116 with milling prep (<0.1%) TEM - Water: EPA 100.2 Fibers >10µm <input type="checkbox"/> Waste <input type="checkbox"/> Drinking All Fiber Sizes <input type="checkbox"/> Waste <input type="checkbox"/> Drinking	
TEM - Settled Dust <input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 <input type="checkbox"/> Carpet Sonication (EPA 600/R-93/167)		Soil - Rock - Vermiculite (reporting limit) <input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.25%) <input type="checkbox"/> TEM EPA 600/R-93/116 with milling prep (<0.1%) <input type="checkbox"/> TEM Qualitative via Filtration Prep <input type="checkbox"/> TEM Qualitative via Drop Mount Prep <input type="checkbox"/> Cincinnati Method EPA 600/R-04/004 - PLM/TEM <small>*Lower reporting limits available on request</small>	
Other test (please specify):			
<input checked="" type="checkbox"/> Stop At First Positive (clearly identify homogenous areas below)		Filter Pore Size (Air Samples): <input type="checkbox"/> 0.8µm <input type="checkbox"/> 0.45µm	
Sampler's Name: <u>JOHN BOILLARD</u>		Sampler's Signature: <u>[Signature]</u>	
Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
1 A, B, C	SHEETROCK, CLAY		11-28-2023
2 A, B, C	JOINT COMPOUND, WHITE		
3 A, B, C	WALL PLASTER, WHITE TOP COAT / GRAY BASE COAT		
4 A, B, C	CEILING PLASTER, WHITE TOP COAT / GRAY BASE COAT		
5 A, B, C	TSE - WHITE BLOCK		11-28/2023
Client Sample # (s): <u>1 A, B, C</u> - <u>41 A, B, C</u>		Total # of Samples: <u>124</u>	
Relinquished by (Client): <u>[Signature]</u>		Date: <u>11-29-2023</u>	Time: <u>1:45</u>
Received by (Lab): <u>[Signature]</u>		Date: <u>11/29/23</u>	Time: <u>3:00 PM</u>
Comments/Special Instructions: <u>Rec'd 12/5/23 10:55 AM</u>			
Send Invoices To: accountspayable@smemaine.com			

RECEIVED

NOV 29 2023

BY: [Signature]

Controlled Document - COC-05 Asbestos - R12.1 - 11/01/2019

EMSL Analytical, Inc.'s (DBA: LA Testing) Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to EMSL Analytical Inc. constitutes acceptance and acknowledgment of all terms and conditions.

Page 1 of 3 pages

REDEX

EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Asbestos Chain of Custody

Project Number 231619.00

EMSL Order Number (Lab Use Only):

062322657PHONE:
FAX:

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
6 A, B, C	LINOLEUM, BLUE-GRAY, DARK BRICK		11-28-2023
7	FIRE BRICK, TAN		
8	LINOLEUM, TAN / BROWN / GREEN SWIRLS		
9	SHEET ROCK, GRAY		
10	JOINT COMPOUND, WHITE		
11	WALL PASTER 2, GRAY COAT		
12	WALL PASTER, WHITE TOP COAT / GRAY BASE COAT		
13	CEILING PASTER, WHITE TOP COAT / GRAY BASE COAT		
14	RESILIENT FLOOR SHEETING, TAN / REDDISH		
15	WALL PANEL ADHESIVE, BROWN		
16	WALL PASTER, GRAY COAT		
17	RESILIENT FLOOR SHEETING, OFF-WHITE LINOLEUM, 2" SQUARES		
18	WALL PANEL ADHESIVE, TAN		
19	TSF - MILDRED FITTINGS		
20	JOINT CAULKING, OFF-WHITE		
21	CONSTRUCTION ADHESIVE, RED		
22	SHEET ROCK, GRAY		
23	TSF + AIR-O-CELL		
24	WINDOW GLAZING, OFF-WHITE / GRAY		
25	WINDOW CAULK, WHITE		
26	WINDOW GLAZING, WHITE / GRAY		
27	UNDERLAYMENT, BLACK		
28 A, B, C	UNDERLAYMENT, TAN / RED		11-28-2023

*Comments/Special Instructions:

RECEIVED

NOV 29 2023

BY: LSPage 2 of 3 pages

12/6/23

12/6/23

062302657

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
29 A, B, C	UNDERLAYMENT, BLACK		11-28-2023
30	LINOLEUM, FAUX 9X9 - ORANGE W/ BLACK SWIRLS		
31	UNDERLAYMENT, WOOD - GRAY		
32	LINOLEUM, TAN		
33	LINOLEUM, FAUX WOOD - TAN		
34	UNDERLAYMENT, BLACK		
35	LINOLEUM, GREEN		
36	LINOLEUM, FAUX CERAMIC TILE PATTERNED		
37	LINOLEUM, BROWN		
38	LINOLEUM, CREAM		
39	UNDERLAYMENT, BLACK		
40	ROOF UNDERLAYMENT, BLACK		
41 A, B, C	3-TAB SHINGLES, GRAY		11-28-2023

RECEIVED
EHS ANALYTICAL, INC.
CARLE PLACE, NY
2023 DEC - 5 A 10:56

***Comments/Special Instructions:**

RECEIVED

Nov 29 1963

BY:

12/6/23

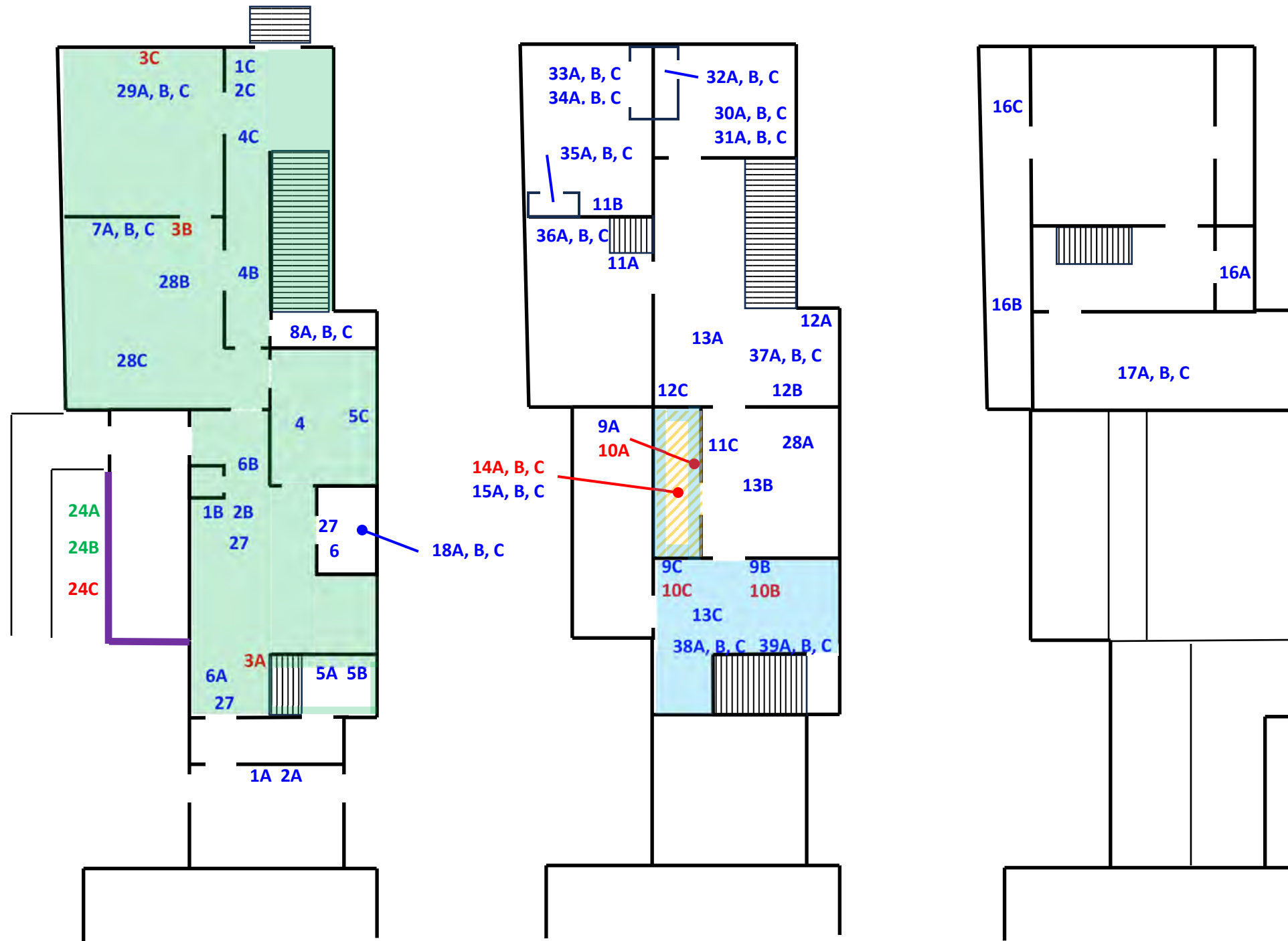
APPENDIX C

ASBESTOS SURVEY DRAWINGS

BUILDING MATERIAL ASSESSMENT for ASBESTOS

STAFF BUILDING – BLAINE HOUSE COMPLEX

152 Chamberlain Street, Augusta, Maine



KEY:



ASBESTOS RESILIENT FLOOR SHEETING
(Approx. 55 sq. ft.)



ASBESTOS WINDOW GLAZING (7 Window Sashes)
(< 160 sq. ft.)



ASBESTOS PLASTER – WHITE COAT ($\geq 1\%$ Asbestos)



ASBESTOS JOINT COMPOUND used as "Nail & Seam" filler only ($\geq 1\%$ Asbestos)

1A

BULK SAMPLE POSITIVE for ASBESTOS \geq 1%

1A

BULK SAMPLE with ASBESTOS detected <1%

1A

BULK SAMPLE NEGATIVE for ASBESTOS (NONE DETECTED)

FIRST FLOOR

SECOND FLOOR

THIRD FLOOR



SME/ESHA JOB #

231619

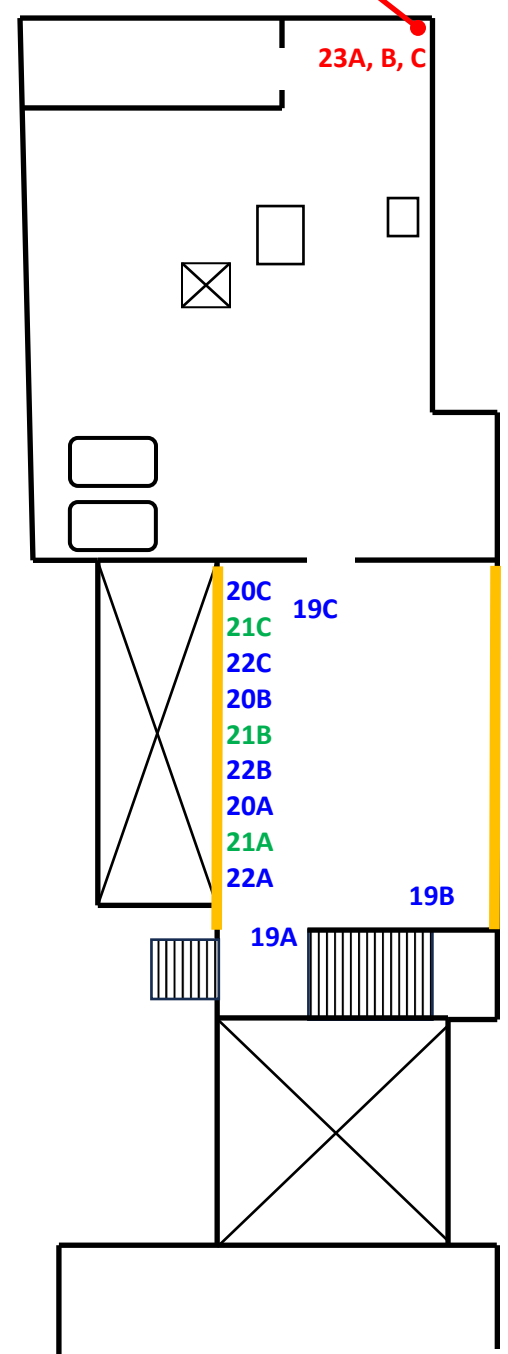
SAMPLING DATE:

11-28-2023

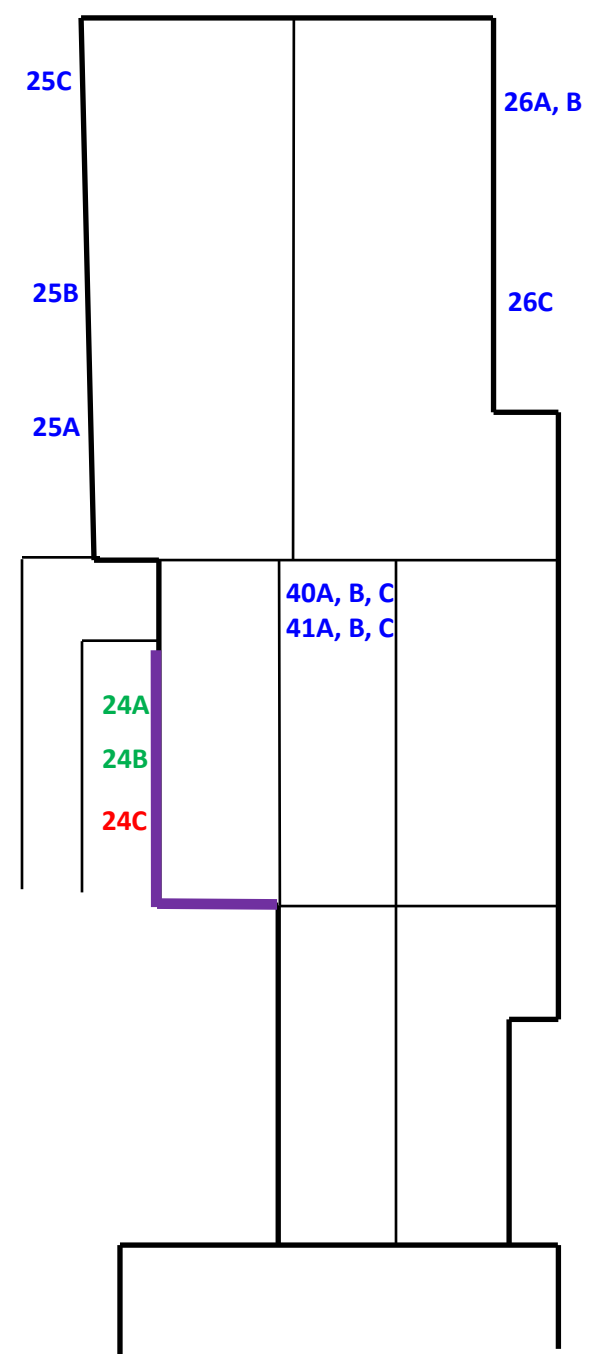
BUILDING MATERIAL ASSESSMENT for ASBESTOS

STAFF BUILDING – BLAINE HOUSE COMPLEX
152 Chamberlain Street, Augusta, Maine

6 LINEAR FEET
ASBESTOS AIR-O-CELL PIPE
INSULATION & DEBRIS



BASEMENT



EXTERIOR/ROOFS



KEY:

- ASBESTOS WINDOW GLAZING (7 Window Sashes) (< 160 sq. ft.)
- ASBESTOS CONSTRUCTION ADHESIVE – RED (<1%)
- 1A** BULK SAMPLE POSITIVE for ASBESTOS \geq 1%
- 1A** BULK SAMPLE with ASBESTOS detected <1%
- 1A** BULK SAMPLE NEGATIVE for ASBESTOS (None Detected)

APPENDIX D

LEAD-BASED PAINT TESTING DATA AND EQUIPMENT CALIBRATION

XRF ANALYSIS SUMMARY

(FOR LEAD BASED PAINT)

CLIENT:

Oak Point Associates
231 Main Street
Biddeford, ME 04005

TESTING LOCATION:

Staff House (Blaine House)
152 Chamberlain Street
Augusta, ME 04330

SAMPLING DATE:

November 29, 2023

PROJECT NUMBER:

231619.00

XRF UNIT: Olympus Vanta C-Series

SERIAL #: 820237

SAMPLE ID:	TESTING AREA/LOCATION DESCRIPTION	COLOR	CONDITION (GOOD/FAIR/POOR)	NUMBER OF READINGS	RESULTS (mg/cm ²)
L-1	Third Floor Stairwell Handrail and Balusters	Off-White	Good	3	5.0
L-2	Third Floor Stairwell Base Board	Off-White	Good	2	5.0
L-3	Third Floor Stairwell Trim Work	Off-White	Good	2	5.0
L-4	Third Floor Closet Panel Door	White	Good	2	5.0
L-5	Third Floor Stair Treads and Landing	Gray	Fair	2	5.0
L-6	Third Floor Stairwell Walls	White	Fair	2	< 0.3
L-7	Third Floor Bedroom Walls	White	Good	2	< 0.3
L-8	Third Floor Bedroom Closet Door	Off-White	Good	2	4.39
L-9	Third Floor Bedroom Base Board	Off-White	Good	2	4.63
L-10	Third Floor Window Trim	Off-White	Good	2	5.0
L-11	Second Floor Bathroom Toilet	Off-White	Good	1	5.0
L-12	Second Floor Bathroom Window Trim	Off-White	Good	1	5.0
L-13	Second Floor Bathroom Drawers (Built-In)	Off-White	Good	1	5.0
L-14	Second Floor Bathroom Door	Off-White	Good	1	5.0
L-15	Second Floor Bathroom Walls	White	Good	3	< 0.3
L-16	Third Floor Bathroom Sink	White	Good	1	0.8
L-17	Third Floor Bathroom Tub	White	Good	1	0.5
L-18	Second Floor East Stairwell Window Trim	Off-White	Good	1	5.0
L-19	Second Floor East Stairwell Landing and Stair Treads	Brown	Fair	2	< 0.3
L-20	Second Floor East Stairwell Panel Door	Off-White	Good	1	5.0
L-21	Second Floor East Stairwell Base Board Trim	Off-White	Good	1	5.0
L-22	Second Floor East Stairwell Walls and Ceiling	White	Poor	3	< 0.3
L-23	Second Floor East Bedroom Walls	White	Fair	2	< 0.3

Pre-Use Calibration Reading: 1.074 mg/cm²

Post-Use Calibration Reading: 1.052 mg/cm²

≥ 1.0 mg/cm²

- Lead Containing Material

SAMPLE ID:	TESTING AREA/LOCATION DESCRIPTION	COLOR	CONDITION (GOOD/FAIR/POOR)	NUMBER OF READINGS	RESULTS (mg/cm ²)
L-24	Second Floor East Bedroom Crown Molding	White	Good	2	< 0.3
L-25	Second Floor East Bedroom Base Board Trim	Off-White	Good	1	5.0
L-26	Second Floor East Bedroom Panel Door	Off-White	Good	1	5.0
L-27	Second Floor East Bedroom Door Trim	Off-White	Good	1	5.0
L-28	Second Floor East Bedroom Radiator	Silver	Good	1	< 0.3
L-29	Second Floor East Bedroom Window Trim	Off-White	Good	1	5.0
L-30	Second Floor East Bedroom Walls	White	Good	1	<0.3
L-31	Second Floor Covered Deck Decking	Gray	Poor	2	< 0.3
L-32	Second Floor Covered Deck Railings	White	Poor	2	< 0.3
L-33	Second Floor Covered Deck Siding	White	Good	2	< 0.3
L-34	Second Floor Covered Deck Beadboard Ceiling	White	Poor	2	4.39
L-35	Second Floor North Sitting Room Radiator	Silver	Good	1	< 0.3
L-36	Second Floor North Sitting Room Base Board	Off-White	Good	1	5.0
L-37	Second Floor Sitting Room Solid Door	Off-White	Good	1	< 0.3
L-38	Second Floor North Sitting Room Window Trim	Off-White	Good	1	5.0
L-39	Second Floor Bathroom Window Trim	Off-White	Good	2	< 0.3
L-40	Second Floor Bathroom Toilet	White	Good	1	< 0.3
L-41	Second Floor Bathroom Sink	White	Good	1	4.23
L-42	Second Floor Bathroom Tub	White	Good	1	5.0
L-43	Second Floor Bathroom Walls	White	Good	2	< 0.3
L-44	Second Floor Landing Railing and Balusters	Varnish	Good	3	< 0.3
L-45	Second Floor Landing Window Trim	Off-White	Good	2	5.0
L-46	Second Floor Landing Base Board	Off-White	Good	1	5.0
L-47	Second Floor Landing Ceiling	White	Good	1	< 0.3
L-48	Second Floor Landing Wall	White	Good	1	< 0.3
L-49	Second Floor Landing Panel Door	Off-White	Good	1	5.0
L-50	Second Floor landing Door Trim	Off-White	Good	1	5.0
L-51	Second Floor Southwest Bedroom Radiator	Silver	Good	1	< 0.3
L-52	Second Floor Southwest Bedroom Window Trim	Off-White	Good	1	5.0
L-53	Second Floor Southwest Bedroom Ceiling	White	Good	1	< 0.3
L-54	Second Floor Southwest Bedroom Walls	White	Good	2	< 0.3
L-55	Second Floor Southwest Bedroom Crown Molding	White	Good	2	< 0.3
L-56	Second Floor Southwest Bedroom Base Board Trim	Off-White	Good	1	5.0
L-57	Second Floor Southwest Bedroom Panel Door	Off-White	Good	1	5.0

Pre-Use Calibration Reading: 1.074 mg/cm²Post-Use Calibration Reading: 1.052 mg/cm²≥ 1.0 mg/cm²

- Lead Containing Material

SAMPLE ID:	TESTING AREA/LOCATION DESCRIPTION	COLOR	CONDITION (GOOD/FAIR/POOR)	NUMBER OF READINGS	RESULTS (mg/cm ²)
L-58	Second Floor Northwest Bedroom Solid Door	Off-White	Good	1	< 0.3
L-59	Second Floor Northwest Bedroom Window Trim	Off-White	Good	1	5.0
L-60	Second Floor Northwest Bedroom Base Board Trim	Off-White	Good	1	5.0
L-61	Second Floor Northwest Bedroom Walls	Wallpaper Over White/Green	Fair	2	< 0.3
L-62	First Floor Front Entry Radiator	Silver	Good	1	< 0.3
L-63	First Floor Front Entry Ceiling	White	Good	1	< 0.3
L-64	First Floor Front Entry Walls	White	Good	1	< 0.3
L-65	First Floor Front Entry Crown Molding	White	Good	1	< 0.3
L-66	First Floor Front Entry Door	White	Good	1	5.0
L-67	First Floor Front Entry Door Trim	White	Good	1	5.0
L-68	First Floor Front Entry Base Board	Off-White	Good	1	5.0
L-69	First Floor parlor Radiator	Silver	Good	1	< 0.3
L-70	First Floor Parlor Ceiling	White	Poor	2	4.2 – 5.0
L-71	First Floor Parlor Window Trim	Off-White	Good	1	5.0
L-72	First Floor Parlor Base Board Trim	Off-White	Good	1	5.0
L-73	First Floor Living Room Walls	Wallpaper	Good	2	< 0.3
L-74	First Floor Living Room Built-in Cabinets	Off-White	Good	2	< 0.3
L-75	First Floor Living Room Fireplace Mantle	Off-White	Good	1	5.0
L-76	First Floor Living Room Window Trim	Off-White	Good	1	5.0
L-77	First Floor Living Room Baseboard Trim	Off-White	Good	1	5.0
L-78	First Floor Dining Room Window Trim	Off-White	Good	1	5.0
L-79	First Floor Dining Room Panel Door	Off-White	Good	1.	5.0
L-80	First Floor Dining Room Ceiling	White	Good	1	< 0.3
L-81	First Floor Dining Room Crown Molding	White	Good	1	< 0.3
L-82	First Floor Dining Room Upper Walls	Wallpaper	Good	1	< 0.3
L-83	First Floor Dining Rooms Lower Walls	Off-White	Good	1	< 0.3
L-84	First Floor Dining Room Chair Rail	Off-White	Good	1	< 0.3
L-85	First Floor Dining Room Built-In Hutch	Off-White	Good	1	5.0
L-86	First Floor Dining Room Panel Door	Off-White	Good	1	5.0
L-87	First Floor Dining Room Door Trim	Off-White	Good	1	5.0
L-88	First Floor Porch Entry Door Trim	Off-White	Good	1	5.0

Pre-Use Calibration Reading: 1.074 mg/cm²Post-Use Calibration Reading: 1.052 mg/cm²≥ 1.0 mg/cm²

- Lead Containing Material

SAMPLE ID:	TESTING AREA/LOCATION DESCRIPTION	COLOR	CONDITION (GOOD/FAIR/POOR)	NUMBER OF READINGS	RESULTS (mg/cm ²)
L-89	First Floor Porch Entry Ceiling	White	Poor	1	5.0
L-90	First Floor Porch Entry Base Board Trim	Off-White	Good	1	5.0
L-91	First Floor Bathroom Window Trim	Off-White	Good	2	< 0.3
L-92	First Floor Bathroom Door Trim	Off-White	Good	1	< 0.3
L-93	First Floor Bathroom Solid Door	Off-White	Good	1	< 0.3
L-94	First Floor Bathroom Upper and Lower Walls	Wallpaper / Off-White	Good	2	< 0.3
L-95	First Floor Bathroom Toilet	White	Good	1	< 0.3
L-96	First Floor Kitchen Ceiling	White	Poor	1	5.0
L-97	First Floor Kitchen Window Trim	Off-White	Good	1	5.0
L-98	First Floor Kitchen Base Board Trim	Off-White	Good	1	5.0
L-99	First Floor Kitchen Chair Rail	Off-White	Good	1	5.0
L-100	First Floor Kitchen Window Trim	Blue	Good	1	< 0.3
L-101	First Floor Kitchen Cabinets	Blue	Good	2	< 0.3
L-102	First Floor Kitchen Panel Door	Off-White	Good	1	5.0
L-103	First Floor Kitchen Door Frame	Off-White	Good	1	5.0
L-104	First Floor Basement Hallway Floor	Brown / Gray	Fair	2	5.0
L-105	First Floor Basement Hallway Walls	White	Good	1	< 0.3
L-106	First Floor Basement Hallway Siding	White	Good	1	5.0
L-107	First Floor Basement Hallway Beadboard Ceiling	White	Good	1	5.0
L-108	First Floor Connector Floor	Brown	Fair	1	5.0
L-109	First Floor Connector Beadboard Ceiling	White	Good	1	5.0
L-110	First Floor Connector Beadboard Wall	White	Good	1	5.0
L-111	First Floor Connector Panel Door	Green	Good	1	< 0.3
L-112	Basement Stair Landing Wall	Gray	Poor	1	5.0
L-113	Basement Stairwell Trim	Gray	Poor	2	< 0.3
L-114	Side Porch Beadboard	White	Poor	2	< 0.3
L-115	Side Porch Window Trim	White	Poor	2	< 0.3
L-116	Side Porch Window Sashes	White	Poor	2	< 0.3
L-117	Side Porch Panel Door	Green	Fair	1	< 0.3
L-118	Exterior Handicap Ramp Rails	White	Poor	2	< 0.3
L-119	Exterior Handicap Ramp Side Slats	White	Poor	2	< 0.3
L-120	Exterior Front Entry Door	Green	Poor	2	< 0.3

Pre-Use Calibration Reading: 1.074 mg/cm²Post-Use Calibration Reading: 1.052 mg/cm²≥ 1.0 mg/cm²

- Lead Containing Material

SAMPLE ID:	TESTING AREA/LOCATION DESCRIPTION	COLOR	CONDITION (GOOD/FAIR/POOR)	NUMBER OF READINGS	RESULTS (mg/cm ²)
L-121	Exterior Front Entry Trim	White	Poor	3	< 0.3
L-122	Exterior Shutters	Green	Fair	1	< 0.3
L-123	Exterior Window Trim	White	Poor	1	< 0.3
L-124	Exterior Siding	White	Good	3	< 0.3
L-125	Exterior Window Trim and Sash	White	Good	3	< 0.3
L-126	Exterior Siding	White	Good	2	< 0.3
L-127	Exterior Window Trim and Sash	White	Poor	2	< 0.3
L-128	Exterior Siding	White	Good	2	< 0.3
L-129	Exterior Window Trim and Sashes	White	Fair	2	< 0.3
L-130	Exterior Basement Windows	Black	Poor	2	5.0
L-131	Exterior Basement Window Trim	White	Poor	2	5.0

Pre-Use Calibration Reading: 1.074 mg/cm²Post-Use Calibration Reading: 1.052 mg/cm²

$\geq 1.0 \text{ mg/cm}^2$

- Lead Containing Material



INSTRUMENT CALIBRATION REPORT



Pine Environmental Services LLC

29 Washington Avenue, Unit A
Scarborough, ME 04074
Toll-free: (888) 779-PINE (7463)

Pine Environmental Services, Inc.

Instrument ID 46959
Description OLYMPUS VANTA C-SERIES
Calibrated 11/17/2023 8:43:20AM

Manufacturer Olympus
Model Number VANTA C SERIES
Serial Number/ Lot 820237
Number
Location Maine
Department

State Certified
Status Pass
Temp °C 21
Humidity % 31

Calibration Specifications

Group # 1
Group Name System Check
Stated Accy

Range Acc % 0.0000
Reading Acc % 0.0000
Plus/Minus 0.00

<u>Nom In Val / In Val</u>	<u>In Type</u>	<u>Out Val</u>	<u>Out Type</u>	<u>Fnd As</u>	<u>Lft As</u>	<u>Dev%</u>	<u>Pass/Fail</u>
----------------------------	----------------	----------------	-----------------	---------------	---------------	-------------	------------------

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

<u>Test Standard ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number / Lot Number</u>	<u>Next Cal Date / Last Cal Date/ Expiration Date Opened Date</u>
-------------------------	--------------------	---------------------	---------------------	---------------------------------------	---

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Matthew Rocchio

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance



National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material® 2573

Lead Paint Film

For Portable X-Ray Fluorescence Analyzers – Nominal 1.0 mg/cm^2
(Color Code: Red)

This Standard Reference Material (SRM) is intended for checking the calibration of portable, hand-held, x-ray fluorescence analyzers when testing for lead in paint coatings on interior and exterior building surfaces. A unit of SRM 2573 consists of a white polyester sheet, approximately 7.6 cm wide, 10.2 cm long, and 0.2 mm thick, coated with a single, red-colored paint layer, approximately 0.04 mm thick. A blank, SRM 2570, is also provided. The blank is coated with a lead-free, lacquer layer on a white polyester sheet of the same thickness as the lead paint samples. All sheets are over-coated with a clear, thin, plastic laminate to protect the surface from abrasion. SRM 2573 and SRM 2570 are two of a set of six paint films (SRM 2570 to SRM 2575) available as SRM 2579a.

The certified values for lead for this SRM and the blank, SRM 2570, are reported in Table 1 in units of mg/cm^2 . These values are based on measurements by isotope dilution inductively-coupled plasma mass spectrometry.

Table 1. Certified Lead Values

Level	Color Code	Lead Concentration, in mg/cm^2
SRM 2570	White (Blank)	<0.001
SRM 2573	Red	1.040 ± 0.064

The uncertainty of each certified value is expressed as an expanded uncertainty, U , at the 95 % level of confidence and is calculated according to the method described in the ISO Guide [1,2]. Because of variability in the paint film between different sheets of each SRM, the uncertainties are 95 % prediction intervals. The expanded uncertainty is calculated as $U = ku_c$, where u_c is intended to represent, at the level of one standard deviation, the combined uncertainty due to material variability and measurement uncertainty. The coverage factor, k , is determined from the Student's t -distribution corresponding to the calculated effective degrees of freedom and 95 % level of confidence.

Expiration of Certification: The certification of SRM 2573 is valid, within the measurement uncertainties specified, until **01 July 2020**, provided the SRM is handled and stored in accordance with the instructions given in this certificate (see "Instructions for Use"). The certification is nullified if the SRM is damaged, contaminated, or otherwise modified.

Maintenance of SRM Certification: NIST will monitor this SRM over the period of its certification. If substantive technical changes occur that affect the certification before the expiration of this certificate, NIST will notify the purchaser. Registration (see attached sheet) will facilitate notification.

The overall direction and coordination of the analytical measurements leading to certification were performed by G.C. Turk and J.D. Fassett of the NIST Analytical Chemistry Division. Analytical measurements were performed by K.E. Murphy, J.R. Sieber, A.F. Marlow, L.J. Wood, P.R. Seo, and M. Lankosz of the NIST Analytical Chemistry Division. The SRM was fabricated under the direction of J.R. Sieber of the NIST Analytical Chemistry Division.

Stephen A. Wise, Chief
Analytical Chemistry Division

Robert L. Watters, Jr., Chief
Measurement Services Division

Gaithersburg, MD 20899
Certificate Issue Date: 24 March 2009
See Certificate Revision History on Last Page

Statistical consultation for this SRM was provided by E.S. Lagergren and N.F. Zhang of the NIST Statistical Engineering Division.

Support aspects involved in the issuance of this SRM were coordinated through the NIST Measurement Services Division.

NOTICE AND WARNING TO USERS

NOTE: This SRM contains lead, as a lead chromate pigment, which is toxic and a suspected carcinogen to the lung and kidney. The SRM must be handled with care and disposed of according to the U.S. Environmental Protection Agency (EPA) practices and procedures.

INSTRUCTIONS FOR USE

The SRM sheet must first be removed from the plastic sleeve in which it is stored and then positioned so that the side labeled with the NIST logo and SRM number faces the x-ray source. For best results, the size of the x-ray beam from the field unit should irradiate an area of the SRM that is at least 2.5 cm in diameter and is centered on the sheet. Care must be exercised not to compromise the protective plastic laminate which prevents scratching or chipping of the painted surface and the potential release of dust containing lead. Upon completion of the measurement, the SRM must be re-stored in the plastic sleeve provided. It is also recommended that this SRM be stored indoors at ambient room temperature and away from direct sunlight when not in use.

Stability: This SRM is considered to be stable during the period of certification. NIST will monitor the SRM and will report any significant changes in certification to the purchaser. Return of the attached registration card will facilitate notification.

PREPARATION

SRM Preparation: The paint-coated, polyester sheets were prepared by an automated coating process at a commercial facility under contract to NIST. Known concentrations of a lead chromate pigment were dispersed in a commercial paint vehicle to prepare the lead paints. A lead-free, organic tint was added to each paint mixture to give the desired color. A thin, protective overlay of plastic laminate was applied to each paint film. The attenuation of lead $L_{3-M_{4,5}}$ ($L\alpha_{1,2}$) X-rays due to the protective overlay does not exceed 2 % relative, while that of $K-L_{2,3}$ ($K\alpha_{1,2}$) x-rays commonly used for field measurement is negligible.

REFERENCES

- [1] ISO; *Guide to the Expression of Uncertainty in Measurement*; ISBN 92-67-10188-9, 1st ed., International Organization for Standardization: Geneva, Switzerland (1993); see also Taylor, B.N.; Kuyatt, C.E.; *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*; NIST Technical Note 1297, U.S. Government Printing Office: Washington, DC (1994); available at <http://physics.nist.gov/Pubs/>.
- [2] Hahn, G.J.; Meeker, W.Q.; *Statistical Intervals: A Guide for Practitioners*; John Wiley & Sons, Inc., New York, NY (1991).

Certificate Revision History: 24 March 2009 (Extension of certification period); 29 November 1999 (Original certificate date).

Users of this SRM should ensure that the certificate in their possession is current. This can be accomplished by contacting the SRM Program at: telephone (301) 975-2200; fax (301) 926-4751; e-mail srminfo@nist.gov; or via the Internet at <http://www.nist.gov/srm>.



Certificate of Analysis

Standard Reference Material[®] 2570

Lead Paint Film For Portable X-Ray Fluorescence Analyzers – Blank (Color Code: White)

This Standard Reference Material (SRM) is intended as a blank for SRM 2571 to SRM 2576, which are used for checking the calibration of portable, hand-held, x-ray fluorescence analyzers when testing for lead in paint coatings on interior and exterior building surfaces. A unit of SRM 2570 consists of a white polyester sheet, approximately 7.6 cm wide, 10.2 cm long, and 0.2 mm thick, coated with a single, lacquer layer, approximately 0.04 mm thick. Each unit is over-coated with a clear, thin, plastic laminate to protect the surface from abrasion. SRM 2570 is one of a set of six paint films (SRM 2570 to SRM 2575) available as SRM 2579a.

The certified values for lead for this SRM are reported in Table 1 in units of mg/cm². These values are based on measurements by isotope dilution inductively-coupled plasma mass spectrometry.

Table 1. Certified Lead Values

Level	Color Code	Lead Concentration, in mg/cm ²
SRM 2570	White (Blank)	<0.001

The uncertainty of each certified value is expressed as an expanded uncertainty, U , at the 95 % level of confidence and is calculated according to the method described in the ISO Guide [1,2]. Because of variability in the paint film between different sheets of each SRM, the uncertainties are 95 % prediction intervals. The expanded uncertainty is calculated as $U = ku_c$, where u_c is intended to represent, at the level of one standard deviation, the combined uncertainty due to material variability and measurement uncertainty. The coverage factor, k , is determined from the Student's t -distribution corresponding to the calculated effective degrees of freedom and 95 % level of confidence.

Expiration of Certification: The certification of SRM 2570 is valid, within the measurement uncertainties specified, until **01 July 2020**, provided the SRM is handled and stored in accordance with the instructions given in this certificate (see "Instructions for Use"). The certification is nullified if the SRM is damaged, contaminated, or otherwise modified.

Maintenance of SRM Certification: NIST will monitor this SRM over the period of its certification. If substantive technical changes occur that affect the certification before the expiration of this certificate, NIST will notify the purchaser. Registration (see attached sheet) will facilitate notification.

The overall direction and coordination of the analytical measurements leading to certification were performed by G.C. Turk and J.D. Fassett of the NIST Analytical Chemistry Division. Analytical measurements were performed by K.E. Murphy, J.R. Sieber, A.F. Marlow, L.J. Wood, P.R. Seo, and M. Lankosz of the NIST Analytical Chemistry Division. The SRM was fabricated under the direction of J.R. Sieber of the NIST Analytical Chemistry Division.

Stephen A. Wise, Chief
Analytical Chemistry Division

Robert L. Watters, Jr., Chief
Measurement Services Division

Gaithersburg, MD 20899
Certificate Issue Date: 24 March 2009
See Certificate Revision History on Last Page

Statistical consultation for this SRM was provided by E.S. Lagergren and N.F. Zhang of the NIST Statistical Engineering Division.

Support aspects involved in the issuance of this SRM were coordinated through the NIST Measurement Services Division.

NOTICE AND WARNING TO USERS

NOTE: While SRM 2570 does not contain any detectable lead, others in this series do contain lead, as a lead chromate pigment, which is toxic and a suspected carcinogen to the lung and kidney. The SRM must be handled with care and disposed of according to the U.S. Environmental Protection Agency (EPA) practices and procedures.

INSTRUCTIONS FOR USE

The SRM sheet must first be removed from the plastic sleeve in which it is stored and then positioned so that the side labeled with the NIST logo and SRM number faces the x-ray source. For best results, the size of the x-ray beam from the field unit should irradiate an area of the SRM that is at least 2.5 cm in diameter and is centered on the sheet. Care must be exercised not to compromise the protective plastic laminate which prevents scratching or chipping of the painted surface and the potential release of dust containing lead. Upon completion of the measurement, the SRM must be re-stored in the plastic sleeve provided. It is also recommended that this SRM be stored indoors at ambient room temperature and away from direct sunlight when not in use.

PREPARATION

SRM Preparation: The paint-coated, polyester sheets were prepared by an automated coating process at a commercial facility under contract to NIST. The blank level sheets were coated with a clear, lead-free lacquer layer. A thin, protective overlay of plastic laminate was applied to each paint film. The attenuation of lead $L_{3-M_{4,5}}$ ($L\alpha_{1,2}$) x-rays due to the protective overlay does not exceed 2 % relative, while that of K- $L_{2,3}$ ($K\alpha_{1,2}$) x-rays commonly used for field measurement is negligible.

REFERENCES

- [1] ISO; *Guide to the Expression of Uncertainty in Measurement*; ISBN 92-67-10188-9, 1st ed., International Organization for Standardization: Geneva, Switzerland (1993); see also Taylor, B.N.; Kuyatt, C.E.; *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*; NIST Technical Note 1297, U.S. Government Printing Office: Washington, DC (1994); available at <http://physics.nist.gov/Pubs/>.
- [2] Hahn, G.J.; Meeker, W.Q.; *Statistical Intervals: A Guide for Practitioners*; John Wiley & Sons, Inc., New York, NY (1991).

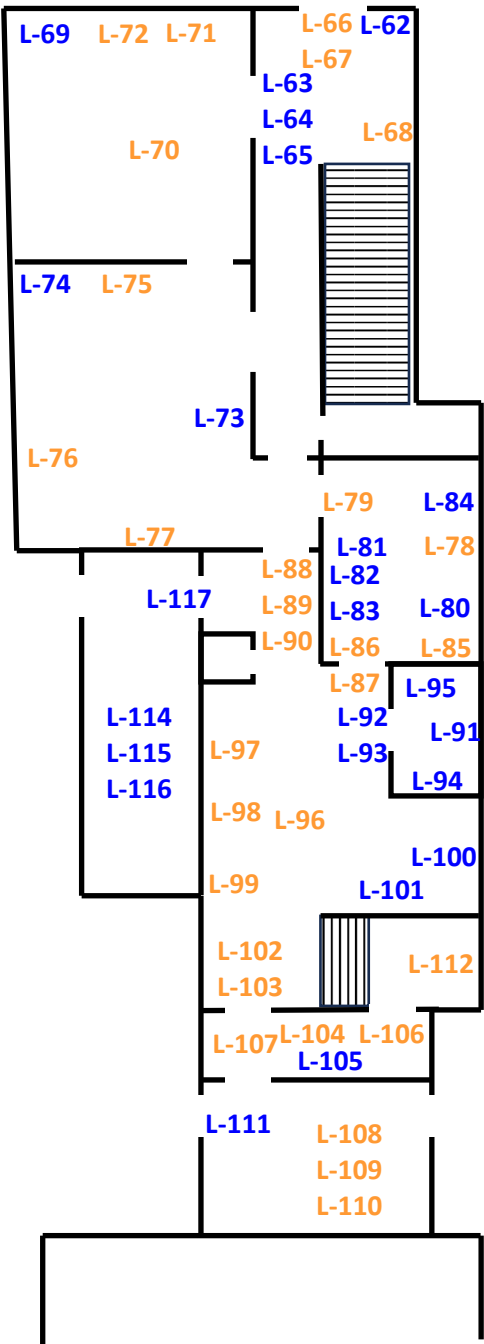
Certificate Revision History: 24 March 2009 (Extension of certification period); 29 November 1999 (Original certificate date).

Users of this SRM should ensure that the certificate in their possession is current. This can be accomplished by contacting the SRM Program at: telephone (301) 975-2200; fax (301) 926-4751; e-mail srminfo@nist.gov; or via the Internet at <http://www.nist.gov/srm>.

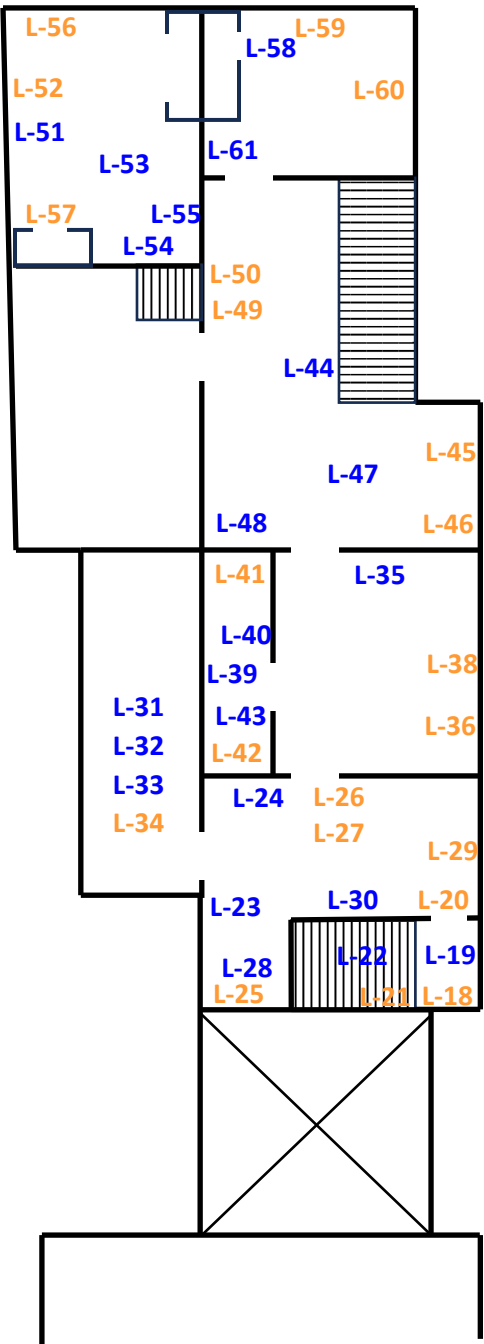
APPENDIX E

LEAD-BASED PAINT TESTING DRAWINGS

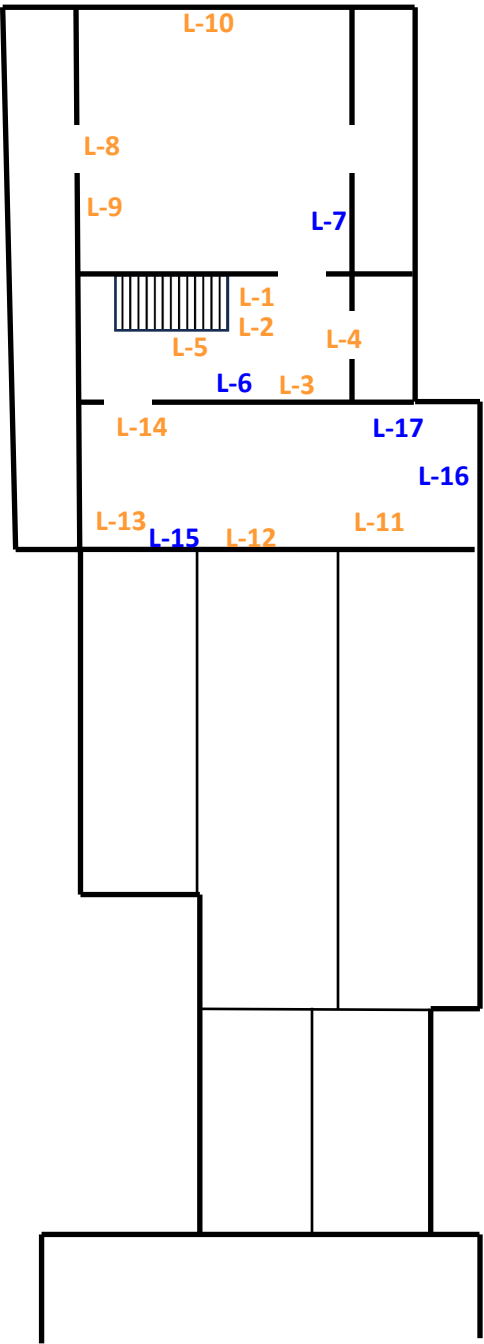
LEAD-BASED PAINT DETERMINATION by XRF
STAFF BUILDING – BLAINE HOUSE COMPLEX
152 Chamberlain Street, Augusta, Maine



FIRST FLOOR



SECOND FLOOR



THIRD FLOOR



KEY:

L-#

PAINT TESTING LOCATION with LEAD < 1.0 mg/cm² by XRF INDICATING NO PRESENCE of LEAD

L-#

PAINT TESTING LOCATION with LEAD > 1.0 mg/cm² by XRF INDICATING PRESENCE of LEAD

SME

SEVEE & MAHER
ENGINEERS

ESHA

ENVIRONMENTAL SAFETY
& HYGIENE ASSOCIATES
A Sevee & Maher Engineers company

SME/ESHA JOB #

231619

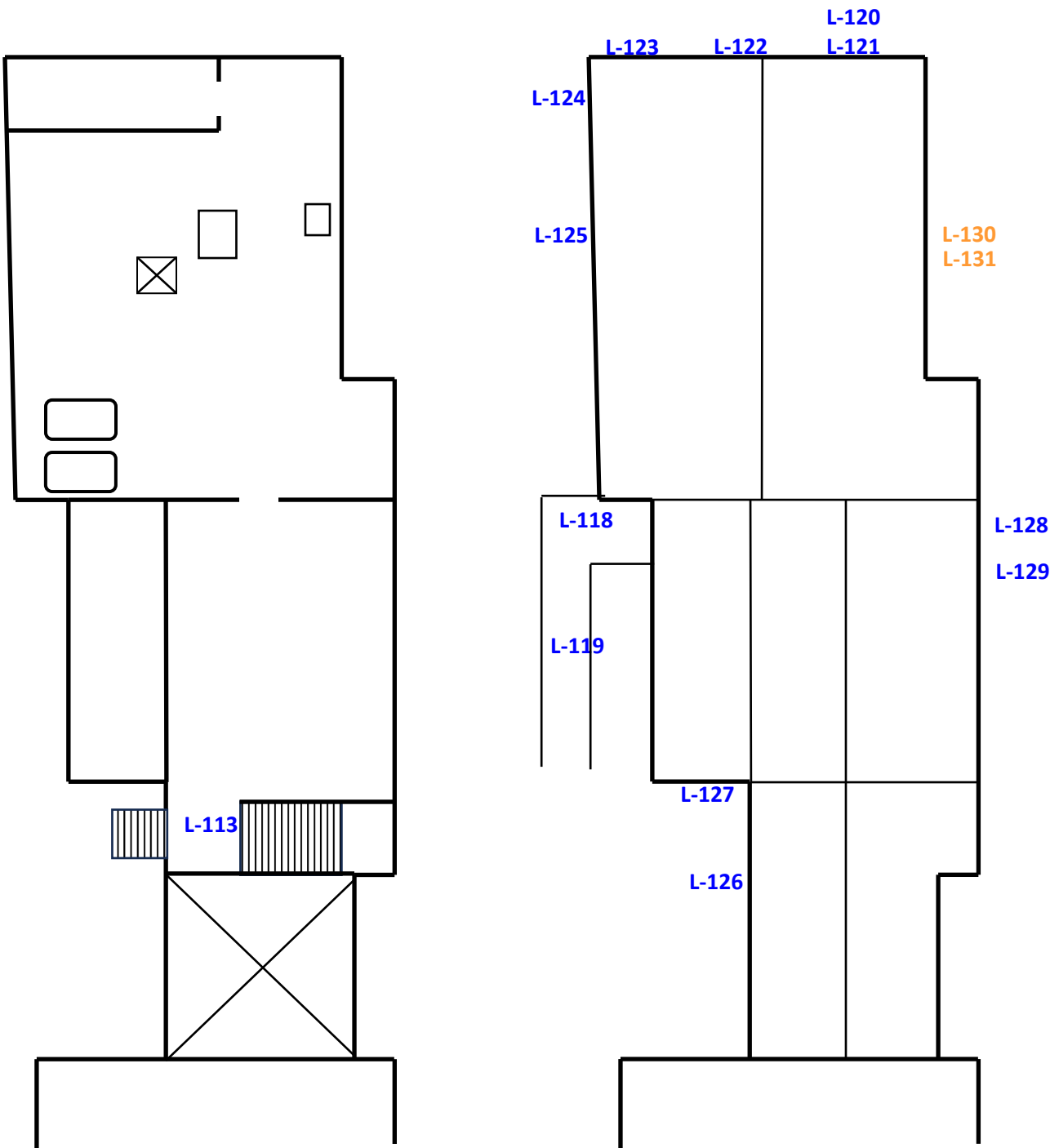
SAMPLING DATE:

11-29-2023

LEAD-BASED PAINT DETERMINATION by XRF

STAFF BUILDING – BLAINE HOUSE COMPLEX

152 Chamberlain Street, Augusta, Maine



BASEMENT

EXTERIOR



KEY:

- L-#** PAINT TESTING LOCATION with LEAD < 1.0 mg/cm² by XRF INDICATING NO PRESENCE of LEAD
- L-#** PAINT TESTING LOCATION with LEAD > 1.0 mg/cm² by XRF INDICATING PRESENCE of LEAD



SME/ESHA JOB # 231619

SAMPLING DATE: 11-29-2023

APPENDIX F

PCB ANALYTICAL SUMMARY TABLES AND LABORATORY DATA

ANALYSIS OF PCBs
EPA SW-846 8082A/3540C

CLIENT:

Oak Point Associates
 231 Main Street
 Biddeford, ME 04005

TESTING LOCATION:

Staff House (Blaine House)
 152 Chamberlain Street
 Augusta, ME 04330

TESTING DATE:

November 28, 2023

PROJECT NUMBER:

231619.00

LAB ID:

L2370581

SAMPLE ID:	LOCATION/DESCRIPTION	PARAMETER	RESULT PPM (mg/kg)
PCB-1	Basement Caulking on Sheetrock Panels – White	Aroclor-1016	None Detected
		Aroclor-1221	None Detected
		Aroclor-1232	None Detected
		Aroclor-1242	None Detected
		Aroclor-1248	None Detected
		Aroclor-1254	24.8
		Aroclor-1260	None Detected
		Aroclor-1262	None Detected
		Aroclor-1268	None Detected

SAMPLE ID:	LOCATION/DESCRIPTION	PARAMETER	RESULT PPM (mg/kg)
PCB-2	Exterior Window Glazing – Off-White	Aroclor-1016	None Detected
		Aroclor-1221	None Detected
		Aroclor-1232	None Detected
		Aroclor-1242	None Detected
		Aroclor-1248	None Detected
		Aroclor-1254	None Detected
		Aroclor-1260	None Detected
		Aroclor-1262	None Detected
		Aroclor-1268	None Detected

*Regulatory Limit for PCBs: ≥ 50 ppm

SAMPLE ID:	LOCATION/DESCRIPTION	PARAMETER	RESULT PPM (mg/kg)
PCB-3	Exterior Vinyl Window Caulk – Off-White	Aroclor-1016	None Detected
		Aroclor-1221	None Detected
		Aroclor-1232	None Detected
		Aroclor-1242	None Detected
		Aroclor-1248	None Detected
		Aroclor-1254	None Detected
		Aroclor-1260	None Detected
		Aroclor-1262	None Detected
		Aroclor-1268	None Detected

SAMPLE ID:	LOCATION/DESCRIPTION	PARAMETER	RESULT PPM (mg/kg)
PCB-4	Exterior Basement Window Glazing – Gray and White	Aroclor-1016	None Detected
		Aroclor-1221	None Detected
		Aroclor-1232	None Detected
		Aroclor-1242	None Detected
		Aroclor-1248	None Detected
		Aroclor-1254	1.16
		Aroclor-1260	None Detected
		Aroclor-1262	None Detected
		Aroclor-1268	None Detected

*Regulatory Limit for PCBs: ≥ 50 ppm



ANALYTICAL REPORT

Lab Number:	L2370581
Client:	Sevee & Maher Engineers, Inc. 4 Blanchard Road P.O. Box 85A Cumberland Center, ME 04021
ATTN:	John Boilard
Phone:	(207) 854-2711
Project Name:	STAFF HOUSE, AUGUSTA
Project Number:	231619.00
Report Date:	12/07/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2370581-01	PCB-1 CAULKING	CAULK	AUGUSTA, ME	11/28/23 14:00	11/30/23
L2370581-02	PCB-2 GLAZING	CAULK	AUGUSTA, ME	11/28/23 15:00	11/30/23
L2370581-03	PCB-3 CAULKING	CAULK	AUGUSTA, ME	11/28/23 15:15	11/30/23
L2370581-04	PCB-4 GLAZING	CAULK	AUGUSTA, ME	11/28/23 15:30	11/30/23

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

Case Narrative (continued)

PCBs

L2370581-01 and -03: The sample has elevated detection limits due to limited sample volume available for analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Kelly O'Neill

Title: Technical Director/Representative

Date: 12/07/23

QC OUTLIER SUMMARY REPORT

Project Name: STAFF HOUSE, AUGUSTA

Lab Number: L2370581

Project Number: 231619.00

Report Date: 12/07/23

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
--------	-----------------------	--------	-----------	---------	------------------	---------------	--------------------	-------------------------

There are no QC Outliers associated with this report.

ORGANICS

PCBS

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

SAMPLE RESULTS

Lab ID: L2370581-01
Client ID: PCB-1 CAULKING
Sample Location: AUGUSTA, ME

Date Collected: 11/28/23 14:00
Date Received: 11/30/23
Field Prep: Not Specified

Sample Depth:

Matrix: Caulk
Analytical Method: 1,8082A
Analytical Date: 12/04/23 10:41
Analyst: MEO
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
Extraction Date: 12/02/23 13:40
Cleanup Method: EPA 3630
Cleanup Date: 12/04/23
Cleanup Method: EPA 3665A
Cleanup Date: 12/04/23
Cleanup Method: EPA 3660B
Cleanup Date: 12/04/23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	1400	--	1	A
Aroclor 1221	ND		ug/kg	1400	--	1	A
Aroclor 1232	ND		ug/kg	1400	--	1	A
Aroclor 1242	ND		ug/kg	699	--	1	A
Aroclor 1248	ND		ug/kg	1400	--	1	A
Aroclor 1254	24800		ug/kg	1400	--	1	A
Aroclor 1260	ND		ug/kg	1400	--	1	A
Aroclor 1262	ND		ug/kg	1400	--	1	A
Aroclor 1268	ND		ug/kg	699	--	1	B
PCBs, Total	24800		ug/kg	699	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	70		30-150	B
Decachlorobiphenyl	68		30-150	B

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

SAMPLE RESULTS

Lab ID: L2370581-02
Client ID: PCB-2 GLAZING
Sample Location: AUGUSTA, ME

Date Collected: 11/28/23 15:00
Date Received: 11/30/23
Field Prep: Not Specified

Sample Depth:

Matrix: Caulk
Analytical Method: 1,8082A
Analytical Date: 12/04/23 10:49
Analyst: MEO
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
Extraction Date: 12/02/23 13:40
Cleanup Method: EPA 3630
Cleanup Date: 12/04/23
Cleanup Method: EPA 3665A
Cleanup Date: 12/04/23
Cleanup Method: EPA 3660B
Cleanup Date: 12/04/23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	565	--	1	A
Aroclor 1221	ND		ug/kg	565	--	1	A
Aroclor 1232	ND		ug/kg	565	--	1	A
Aroclor 1242	ND		ug/kg	282	--	1	A
Aroclor 1248	ND		ug/kg	565	--	1	A
Aroclor 1254	ND		ug/kg	565	--	1	A
Aroclor 1260	ND		ug/kg	565	--	1	A
Aroclor 1262	ND		ug/kg	565	--	1	A
Aroclor 1268	ND		ug/kg	282	--	1	A
PCBs, Total	ND		ug/kg	282	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	83		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	78		30-150	B

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

SAMPLE RESULTS

Lab ID: L2370581-03
Client ID: PCB-3 CAULKING
Sample Location: AUGUSTA, ME

Date Collected: 11/28/23 15:15
Date Received: 11/30/23
Field Prep: Not Specified

Sample Depth:

Matrix: Caulk
Analytical Method: 1,8082A
Analytical Date: 12/04/23 10:57
Analyst: MEO
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
Extraction Date: 12/02/23 13:40
Cleanup Method: EPA 3630
Cleanup Date: 12/04/23
Cleanup Method: EPA 3665A
Cleanup Date: 12/04/23
Cleanup Method: EPA 3660B
Cleanup Date: 12/04/23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	1710	--	1	A
Aroclor 1221	ND		ug/kg	1710	--	1	A
Aroclor 1232	ND		ug/kg	1710	--	1	A
Aroclor 1242	ND		ug/kg	855	--	1	A
Aroclor 1248	ND		ug/kg	1710	--	1	A
Aroclor 1254	ND		ug/kg	1710	--	1	A
Aroclor 1260	ND		ug/kg	1710	--	1	A
Aroclor 1262	ND		ug/kg	1710	--	1	A
Aroclor 1268	ND		ug/kg	855	--	1	A
PCBs, Total	ND		ug/kg	855	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	82		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	79		30-150	B

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

SAMPLE RESULTS

Lab ID: L2370581-04
Client ID: PCB-4 GLAZING
Sample Location: AUGUSTA, ME

Date Collected: 11/28/23 15:30
Date Received: 11/30/23
Field Prep: Not Specified

Sample Depth:

Matrix: Caulk
Analytical Method: 1,8082A
Analytical Date: 12/04/23 11:05
Analyst: MEO
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
Extraction Date: 12/02/23 13:40
Cleanup Method: EPA 3630
Cleanup Date: 12/04/23
Cleanup Method: EPA 3665A
Cleanup Date: 12/04/23
Cleanup Method: EPA 3660B
Cleanup Date: 12/04/23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	641	--	1	A
Aroclor 1221	ND		ug/kg	641	--	1	A
Aroclor 1232	ND		ug/kg	641	--	1	A
Aroclor 1242	ND		ug/kg	320	--	1	A
Aroclor 1248	ND		ug/kg	641	--	1	A
Aroclor 1254	1160		ug/kg	641	--	1	B
Aroclor 1260	ND		ug/kg	641	--	1	A
Aroclor 1262	ND		ug/kg	641	--	1	A
Aroclor 1268	ND		ug/kg	320	--	1	A
PCBs, Total	1160		ug/kg	320	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	85		30-150	A
Decachlorobiphenyl	90		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	87		30-150	B

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
 Analytical Date: 12/04/23 10:09
 Analyst: ER

Extraction Method: EPA 3540C
 Extraction Date: 12/02/23 12:35
 Cleanup Method: EPA 3630
 Cleanup Date: 12/04/23
 Cleanup Method: EPA 3665A
 Cleanup Date: 12/04/23
 Cleanup Method: EPA 3660B
 Cleanup Date: 12/04/23

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-04 Batch: WG1858990-1						
Aroclor 1016	ND		ug/kg	656	--	A
Aroclor 1221	ND		ug/kg	656	--	A
Aroclor 1232	ND		ug/kg	656	--	A
Aroclor 1242	ND		ug/kg	328	--	A
Aroclor 1248	ND		ug/kg	656	--	A
Aroclor 1254	ND		ug/kg	656	--	A
Aroclor 1260	ND		ug/kg	656	--	A
Aroclor 1262	ND		ug/kg	656	--	A
Aroclor 1268	ND		ug/kg	328	--	A
PCBs, Total	ND		ug/kg	328	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		30-150	A
Decachlorobiphenyl	57		30-150	A
2,4,5,6-Tetrachloro-m-xylene	61		30-150	B
Decachlorobiphenyl	53		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: STAFF HOUSE, AUGUSTA

Project Number: 231619.00

Lab Number: L2370581

Report Date: 12/07/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-04 Batch: WG1858990-2 WG1858990-3									
Aroclor 1016	82		81		40-140	1		50	A
Aroclor 1260	79		81		40-140	3		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		66		30-150	A
Decachlorobiphenyl	65		66		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		64		30-150	B
Decachlorobiphenyl	58		65		30-150	B

Project Name: STAFF HOUSE, AUGUSTA**Lab Number:** L2370581**Project Number:** 231619.00**Report Date:** 12/07/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2370581-01A	Vial unpreserved	A	NA		3.1	Y	Absent		PCB-8082-CAULK(365)
L2370581-02A	Vial unpreserved	A	NA		3.1	Y	Absent		PCB-8082-CAULK(365)
L2370581-03A	Vial unpreserved	A	NA		3.1	Y	Absent		PCB-8082-CAULK(365)
L2370581-04A	Vial unpreserved	A	NA		3.1	Y	Absent		PCB-8082-CAULK(365)

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: STAFF HOUSE, AUGUSTA
Project Number: 231619.00

Lab Number: L2370581
Report Date: 12/07/23

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE OF

Westborough, MA Mansfield, MA
TEL: 508-898-9220 TEL: 508-822-9300
FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: SEVERE/MAHER/ESHA
Address: 4 BLANCHARD ROAD
CUMBERLAND, MA
Phone: 207-829-5016

Fax: analytical.eshdata@
Email: fine-engineers.com

☐ These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Project Information

Project Name: STAFF HOUSE, AUGUSTA
Project Location: AUGUSTA, ME
Project #: 231619.00
Project Manager: JOHN BOILLARD
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab:

11/30/23

ALPHA Job #:

L2370581

Report Information Data Deliverables

☐ FAX☒ EMAIL☐ ADEx☐ Add'l Deliverables

Billing Information

☒ Same as Client InfoPO #: 231619.00

Regulatory Requirements/Report Limits

State/Fed Program

ME/FED

Criteria

PCB-TSCA

ANALYSIS

SAMPLE HANDLING

Filtration

☐ Done
☐ Not Needed
☐ Lab to do

Preservation
☐ Lab to do
(Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

207-829-5016-8082A/3540
PCB + SOXHELET EXTRACTION

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials																	
		Date	Time																			
0581-01	PCB-1 CAULKING	11-28-23	1400	X1	JUB																	
02	PCB-2 GLAZING		1500		JUB																	
03	PCB-3 CAULKING		1515		JUB																	
04	PCB-4 GLAZING	11-28-23	1530	X1	JUB																	

Container Type

G

Preservative

A

Relinquished By:

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

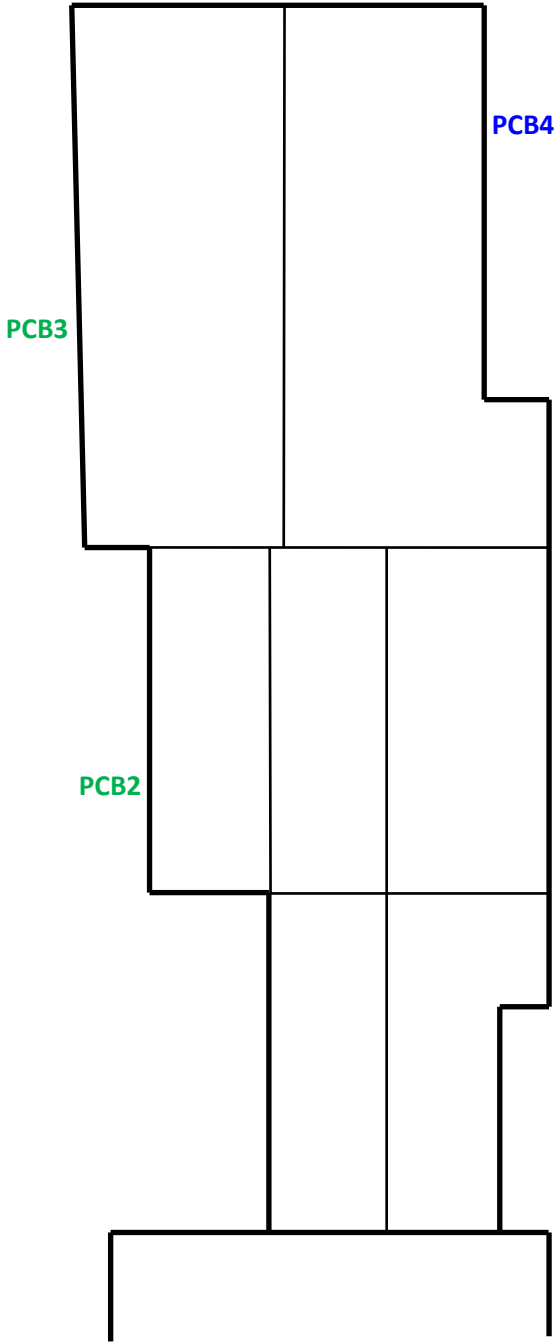
APPENDIX G

PCB TESTING DRAWINGS

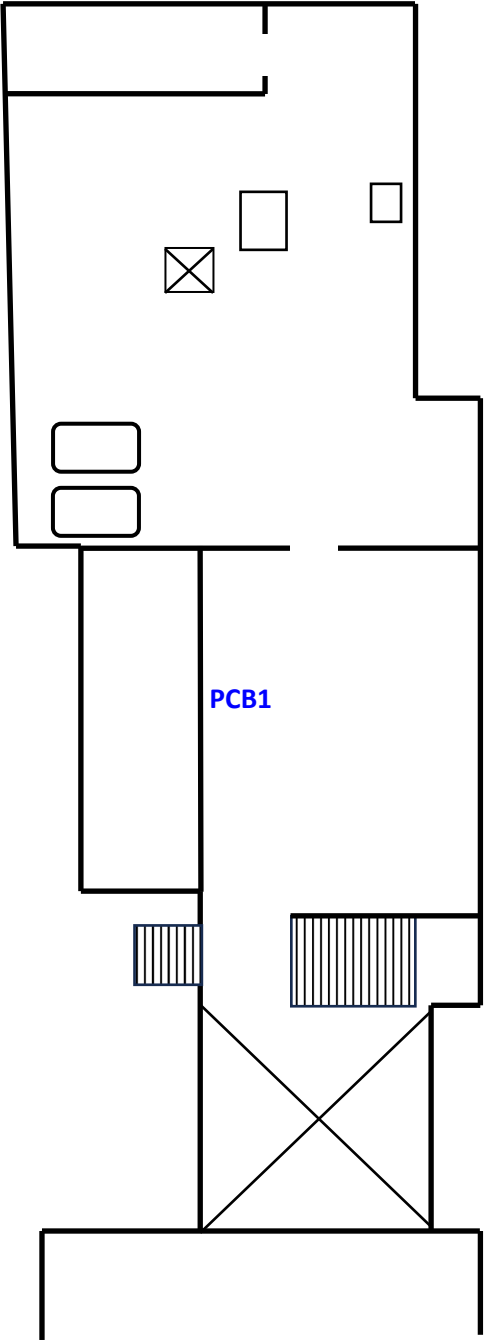
BUILDING MATERIAL ASSESSMENT for PCBS in CAULKING/GLAZING

STAFF BUILDING – BLAINE HOUSE COMPLEX

152 Chamberlain Street, Augusta, Maine



EXTERIOR



KEY:

- PCB1** BULK SAMPLE <1 ppm for PCBs
- PCB1** BULK SAMPLE >1% - <50 ppm for PCBs
- PCB1** BULK SAMPLE ≥50 ppm for PCBs



SME/ESHA JOB # 231619

SAMPLING DATE: 11-28-2023

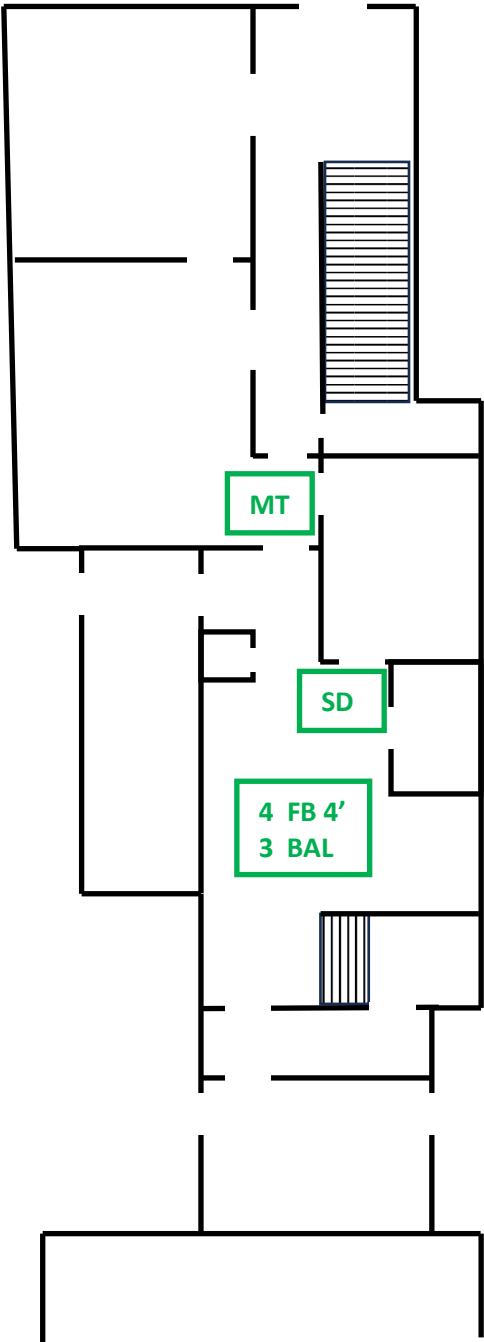
APPENDIX H

UNIVERSAL WASTE DRAWINGS

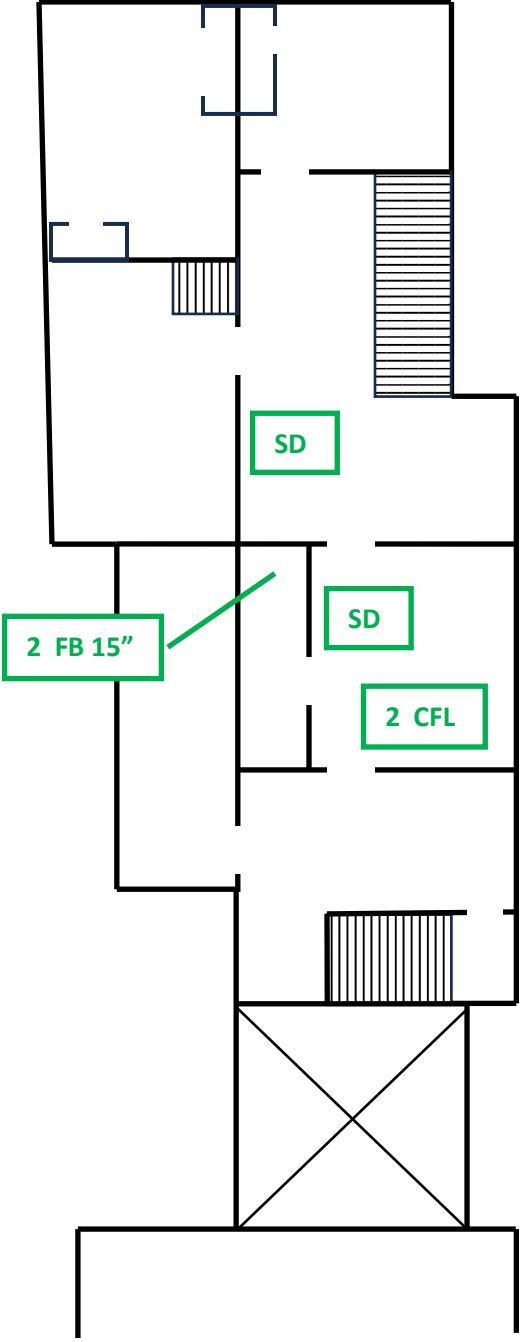
UNIVERSAL WASTE DETERMINATION

STAFF BUILDING – BLAINE HOUSE COMPLEX

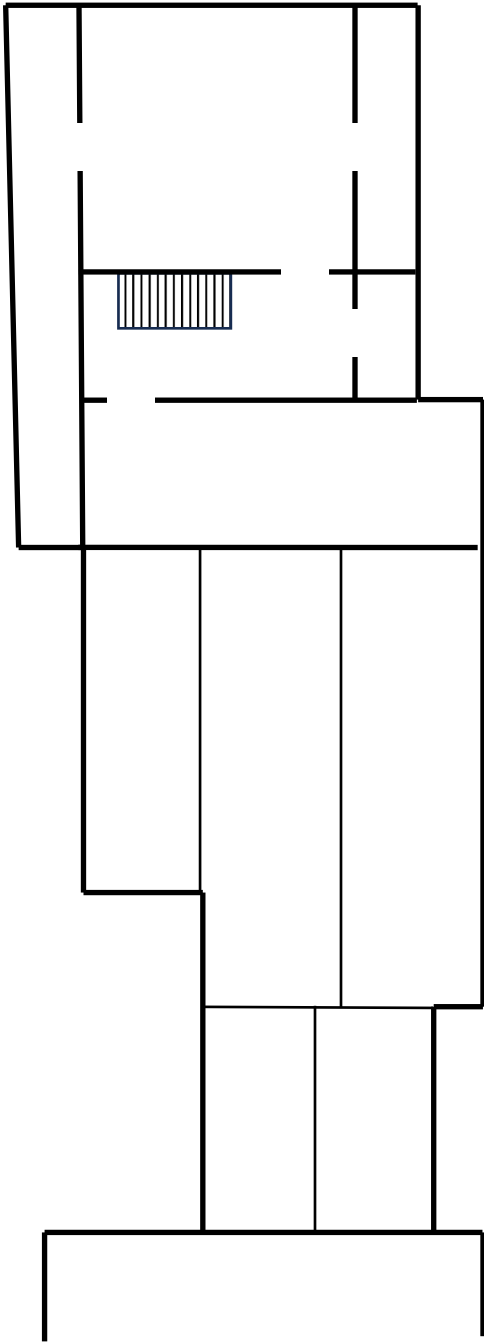
152 Chamberlain Street, Augusta, Maine



FIRST FLOOR



SECOND FLOOR



THIRD FLOOR



KEY:

- MT** Mercury Thermostat
- SD** Smoke Detector
- FB** Fluorescent Bulb
- CFL** Compact Fluorescent Bulb
- BAL** Ballast



SME/ESHA JOB #

231619

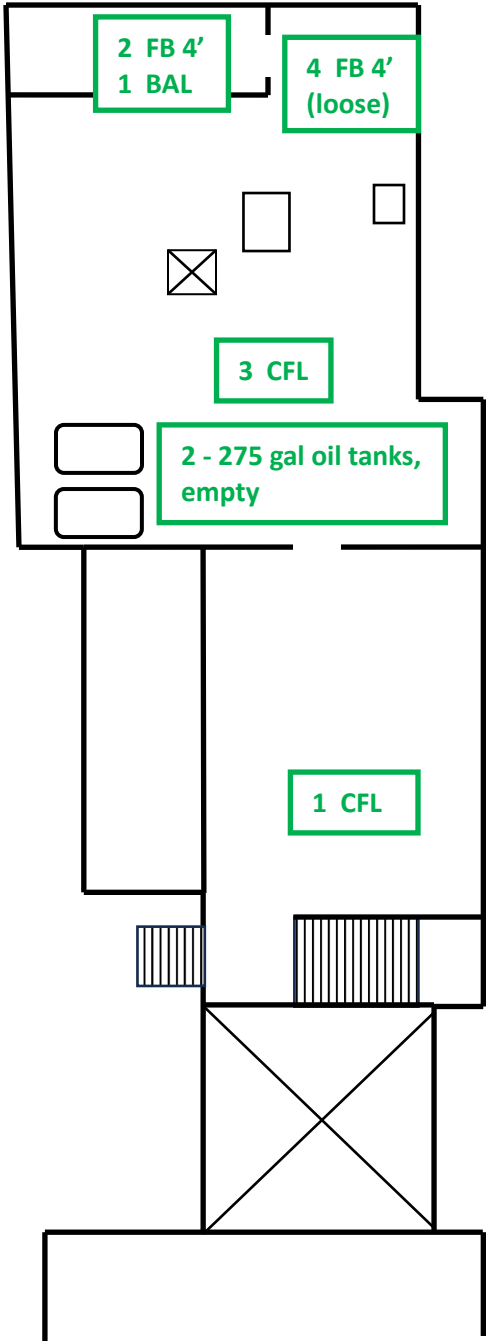
SAMPLING DATE:

11-28-2023

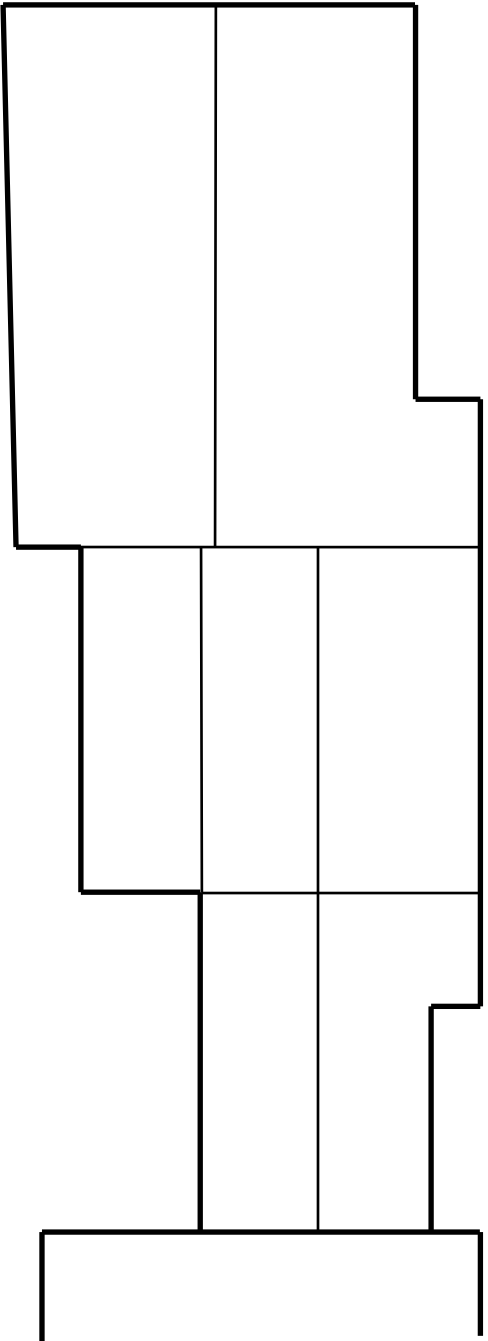
UNIVERSAL WASTE DETERMINATION

STAFF BUILDING – BLAINE HOUSE COMPLEX

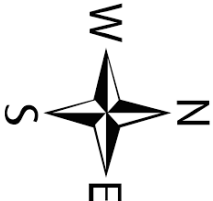
152 Chamberlain Street, Augusta, Maine



BASEMENT



EXTERIOR



KEY:

- MT** Mercury Thermostat
- SD** Smoke Detector
- FB** Fluorescent Bulb
- CFL** Compact Fluorescent Bulb
- BAL** Ballast



SME/ESHA JOB #

231619

SAMPLING DATE:

11-28-2023

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of this Section Includes:

1. Demolition and removal of selected portions of exterior or interior of building or structure and site elements.
2. Removal and salvage of existing items for delivery to Owner and removal of existing items for reinstallation.

B. Related Requirements:

1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 015639 "Temporary Tree and Plant Protection" for temporary protection of existing trees and plants that are affected by selective demolition.
3. Section 017300 "Execution" for cutting and patching procedures.
4. Section 311000 "Site Clearing" for site clearing and removal of above- and below-grade improvements not part of selective demolition.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner as indicated.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage; prepare for reuse; and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.4 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection , for dust control and , for noise control. Indicate proposed locations and construction of barriers.
- 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. Ensure Owner's on-site operations are uninterrupted.
 - 2. Temporary interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

1.6 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Inventory: Submit a list of items that have been removed and salvaged.

1.7 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials:
 - 1. Hazardous Materials are present in building and structure to be selectively demolished. A report on the presence of hazardous materials is attached to the specification section 024116 "Structure Demolition" for review and use. Examine report to become aware of locations where hazardous materials are present.
 - a. Hazardous materials remediation is specified in the hazardous material report. Do not disturb hazardous materials or items suspected of containing hazardous material except under procedures specified in the hazardous material report.
- E. On-site sale of removed items or materials is not permitted.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 PREPARATION

- A. Temporary Shoring: Design, 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.
- B. Temporary Protection: 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.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

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 Section 015000 "Temporary Facilities and Controls."
- C. 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 and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.3 UTILITY SERVICES AND BUILDING SYSTEMS

- A. Existing Services/Systems to Remain: Maintain utilities and building systems and equipment to remain and protect against damage during selective demolition operations.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utilities and building 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 utilities with utility companies.
 3. If disconnection of utilities and building systems will affect adjacent occupied parts of the building, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to those parts of the building.

3.4 SALVAGE/REINSTALL

- A. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level.
 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. Use hand tools 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.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

4. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. 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. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed trafficways if required by authorities having jurisdiction.
 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and recycle or dispose of them in accordance with Section 017419 "Construction Waste Management and Disposal."
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.
 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 031000 - CONCRETE FORMING AND 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. Form-facing material for cast-in-place concrete.
- B. Related Requirements:
 - 1. Section 321313 "Concrete Paving" for formwork related to concrete pavement and walks.

1.3 DEFINITIONS

- A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.
- B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review the following:
 - a. Inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction, movement, contraction, and isolation joints
 - c. Forms and form-removal limitations.
 - d. Anchor rod and anchorage device installation tolerances.

1.5 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each of the following:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Concealed surface form-facing material.
2. Form ties.
3. Form-release agent.

1.6 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For testing and inspection agency.
- C. Field quality-control reports.
- D. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

- A. Testing and Inspection Agency Qualifications: An independent agency, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
- B. Mockups: Formed surfaces to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.
 1. Build panel approximately 120 inches long and full height in the location indicated or, if not indicated, as directed by Architect.
 2. Subject to compliance with requirements, approved mockups may become part of the completed Work.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Concrete Formwork: Design, engineer, erect, shore, brace, and maintain formwork, shores, and reshores in accordance with ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.
 1. Design wood panel forms in accordance with APA's "Concrete Forming Design/Construction Guide."
 2. Design formwork to limit deflection of form-facing material to 1/240 of center-to-center spacing of supports.

2.2 FORM-FACING MATERIALS

- A. As-Cast Surface Form-Facing Material:
 1. Provide continuous, true, and smooth concrete surfaces.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Furnish in largest practicable sizes to minimize number of joints.
3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete, and as follows:
 - a. Plywood, metal, or other approved panel materials.
 - b. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - 1) APA Structural 1 Plyform, B-B or better; mill oiled and edge sealed.
 - 2) APA Plyform Class I, B-B or better; mill oiled and edge sealed.

- B. Concealed Surface Form-Facing Material: Lumber, plywood, metal, plastic, or another approved material.

1. Provide lumber dressed on at least two edges and one side for tight fit.

2.3 RELATED MATERIALS

- A. Reglets: Fabricate reglets of not less than 0.022-inch-thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- B. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.
- C. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.
1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
 2. Form release agent for form liners shall be acceptable to form liner manufacturer.
- D. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
 3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

PART 3 - EXECUTION

3.1 INSTALLATION OF FORMWORK

- A. Comply with ACI 301.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 and to comply with the Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes.
- C. Limit concrete surface irregularities as follows:
 - 1. Surface Finish-2.0: ACI 117 Class B, 1/4 inch.
- D. Construct forms tight enough to prevent loss of concrete mortar.
 - 1. Minimize joints.
- E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.
 - 1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
 - 2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 3. Install keyways, reglets, recesses, and other accessories, for easy removal.
- F. Do not use rust-stained, steel, form-facing material.
- G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.
 - 1. Provide and secure units to support screed strips
 - 2. Use strike-off templates or compacting-type screeds.
- H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.
 - 1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.
 - 2. Locate temporary openings in forms at inconspicuous locations.
- I. Do not chamfer exterior corners and edges of permanently exposed concrete.
- J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.
- K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.
 - 1. Determine sizes and locations from trades providing such items.
 - 2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.
- L. Construction and Movement Joints:
 - 1. Construct joints true to line with faces perpendicular to surface plane of concrete.
 - 2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 3. Place joints perpendicular to main reinforcement.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- M. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- N. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- O. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.
 - 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
 - 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.
 - 5. Clean embedded items immediately prior to concrete placement.

3.3 REMOVING AND REUSING FORMS

- A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
 - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
- B. Clean and repair surfaces of forms to be reused in the Work.
 - 1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.
 - 2. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.
 - 1. Align and secure joints to avoid offsets.
 - 2. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Contractor will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Agency: Contractor will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
 - 1. Inspect formwork for shape, location, and dimensions of the concrete member being formed.
 - 2. Inspect insulating concrete forms for shape, location, and dimensions of the concrete member being formed.

END OF SECTION

SECTION 032000 - CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.

B. Related Requirements:

1. Section 321313 "Concrete Paving" for reinforcing related to concrete pavement and walks.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review the following:
 - a. Special inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction contraction and isolation joints.
 - c. Steel-reinforcement installation.

1.3 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data: For the following:

1. Each type of steel reinforcement.
2. Epoxy repair coating.
3. Bar supports.

C. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
3. For structural thermal break insulated connection system, indicate general configuration, insulation dimensions, tension bars, compression pads, shear bars, and dimensions.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Construction Joint Layout: Indicate proposed construction joints required to build the structure.
 - 1. Location of construction joints is subject to approval of Architect.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Statements: For testing and inspection agency.
- C. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Epoxy-Coated Reinforcement: CRSI's "Epoxy Coating Plant Certification."
- D. Material Test Reports: For the following, from a qualified testing agency:
 - 1. Steel Reinforcement:
 - a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.
- E. Field quality-control reports.
- F. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
- B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.
- C. Mockups: Reinforcing for cast-concrete formed surfaces, to demonstrate tolerances and standard of workmanship.
 - 1. Build panel approximately 120 inches long and full height in the location indicated on Drawings or, if not indicated, as directed by Architect.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage and to avoid damaging coatings on steel reinforcement.
 - 1. Store reinforcement to avoid contact with earth.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Do not allow epoxy-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
3. Do not allow dual-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
4. Do not allow stainless steel reinforcement to come into contact with uncoated reinforcement.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Epoxy-Coated Reinforcing Bars:

1. Steel Bars: ASTM A615/A615M, Grade 60, deformed bars.
2. Epoxy Coating: ASTM A775/A775M with less than 2 percent damaged coating in each 12-inch bar length.

2.2 REINFORCEMENT ACCESSORIES

A. Epoxy-Coated Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, ASTM A775/A775M epoxy coated.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - a. For epoxy-coated reinforcement, use CRSI Class 1A epoxy-coated or other dielectric-polymer-coated wire bar supports.

C. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: ASTM A884/A884M, Class A, Type 1, epoxy coated, with less than 2 percent damaged coating in each 12-inch wire length.

D. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A775/A775M.

2.3 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.2 INSTALLATION OF STEEL REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.
- B. Accurately position, support, and secure reinforcement against displacement.
 - 1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
 - 2. Do not tack weld crossing reinforcing bars.
- C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.
- D. Provide concrete coverage in accordance with ACI 318.
- E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- F. Splices: Lap splices as indicated on Drawings.
 - 1. Bars indicated to be continuous, and all vertical bars to be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.
 - 2. Stagger splices in accordance with ACI 318.
- G. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating in accordance with ASTM D3963/D3963M.

3.3 JOINTS

- A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement.
 - 2. Continue reinforcement across construction joints unless otherwise indicated.
 - 3. Do not continue reinforcement through sides of strip placements of floors and slabs.
- B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.4 INSTALLATION TOLERANCES

- A. Comply with ACI 117.

3.5 FIELD QUALITY CONTROL

- A. Special Inspections: Contractor will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Agency: Contractor will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
 - 1. Steel-reinforcement placement.
- D. Manufacturer's Inspections: Engage manufacturer of structural thermal break insulated connection system to inspect completed installations prior to placement of concrete, and to provide written report that installation complies with manufacturer's written instructions.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 031000 "Concrete Forming and Accessories" for form-facing materials, form liners, insulating concrete forms, and waterstops.
2. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.

1.2 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

- B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Concrete Subcontractor.
2. Review the following:
 - a. Inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction joints and isolation joints.
 - c. Anchorage device installation tolerances.
 - d. Cold and hot weather concreting procedures.
 - e. Concrete finishes and finishing.
 - f. Curing procedures.
 - g. Forms and form-removal limitations.
 - h. Concrete protection.
 - i. Initial curing and field curing of field cylinders (ASTM C31/C31M).

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- j. Protection of field cured field test cylinders.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each of the following.
 - 1. Portland cement.
 - 2. Fly ash.
 - 3. Slag cement.
 - 4. Blended hydraulic cement.
 - 5. Silica fume.
 - 6. Performance-based hydraulic cement
 - 7. Aggregates.
 - 8. Admixtures:
 - a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
 - 9. Curing materials.
 - a. Include documentation from color pigment manufacturer, indicating that proposed methods of curing are recommended by color pigment manufacturer.
- C. Design Mixtures: For each concrete mixture, include the following:
 - 1. Mixture identification.
 - 2. Minimum 28-day compressive strength.
 - 3. Durability exposure class.
 - 4. Maximum w/cm.
 - 5. Calculated equilibrium unit weight, for lightweight concrete.
 - 6. Slump limit.
 - 7. Air content.
 - 8. Nominal maximum aggregate size.
 - 9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
 - 10. Intended placement method.
 - 11. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- D. Shop Drawings:
 - 1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - a. Location of construction joints is subject to approval of the Architect.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Concrete Schedule: For each location of each Class of concrete indicated in "Concrete Mixtures" Article, including the following:
 - 1. Concrete Class designation.
 - 2. Location within Project.
 - 3. Exposure Class designation.
 - 4. Formed Surface Finish designation and final finish.
 - 5. Curing process.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For the following:
 - 1. Installer: Include copies of applicable ACI certificates.
 - 2. Ready-mixed concrete manufacturer.
 - 3. Testing agency: Include copies of applicable ACI certificates.
- C. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Curing compounds.
 - 4. Bonding agents.
 - 5. Adhesives.
 - 6. Repair materials.
- D. Material Test Reports: For the following, from a qualified testing agency:
 - 1. Portland cement.
 - 2. Fly ash.
 - 3. Slag cement.
 - 4. Blended hydraulic cement.
 - 5. Silica fume.
 - 6. Performance-based hydraulic cement.
 - 7. Aggregates.
 - 8. Admixtures.
- E. Preconstruction Test Reports: For each mix design.
- F. Field quality-control reports.
- G. Minutes of preinstallation conference.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician .
- B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 - 1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.
 - 1. Personnel performing laboratory tests to be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor to be an ACI-certified Concrete Laboratory Testing Technician, Grade II.
- D. Field Quality-Control Testing Agency Qualifications: An independent agency, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests to be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with ASTM C94/C94M and ACI 301.

1.8 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.
 - 1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 3. Do not use frozen materials or materials containing ice or snow.
 - 4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.
 - 5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.2 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.
3. Obtain aggregate from single source.
4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I/II, gray.
2. Fly Ash: ASTM C618, Class C or F.
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
4. Silica Fume: ASTM C1240 amorphous silica.

C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Alkali-Silica Reaction: Comply with one of the following:
 - a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.
 - b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.
 - c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. for moderately reactive aggregate or 3 lb./cu. yd. for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301.
2. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260/C260M.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride in steel-reinforced concrete.
1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 2. Retarding Admixture: ASTM C494/C494M, Type B.
 3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
 7. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
- 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) Barrier-Bac; Inteplast Group.
 - 2) Cortec Corporation.
 - 3) GCP Applied Technologies Inc.
 - 4) Master Builders Solutions.
 - 5) Sika Corporation.
 - 6) Specialty Products Group.
- F. Water and Water Used to Make Ice: ASTM C94/C94M, potable or complying with ASTM C1602/C1602M, including all limits listed in Table 2 and the requirements of paragraph 5.4

2.3 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
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. Bon Tool Co.
 - b. Brickform; a division of Solomon Colors.
 - c. ChemMasters, Inc.
 - d. Dayton Superior Corporation.
 - e. Euclid Chemical Company (The); an RPM company.
 - f. Kaufman Products, Inc.
 - g. Lambert Corporation.
 - h. Laticrete International, Inc.
 - i. Master Builders Solutions.
 - j. Metalcrete Industries.
 - k. Nox-Crete Products Group.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- l. [SINAK.](#)
 - m. [Sika Corporation.](#)
 - n. [SpecChem, LLC.](#)
 - o. [TK Products Construction Coatings, a Fenix Group SPC Company.](#)
 - p. [Vexcon Chemicals Inc.](#)
 - q. [W. R. Meadows, Inc.](#)
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.
 1. Color:
 - a. Ambient Temperature Below 50 deg F: Black.
 - b. Ambient Temperature between 50 deg F and 85 deg F: Any color.
 - c. Ambient Temperature Above 85 deg F: White.
- D. Curing Paper: 8-foot-wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.
 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. [Fortifiber Building Systems Group.](#)
- E. Water: Potable or complying with ASTM C1602/C1602M.
- F. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.
 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. [Anti-Hydro International, Inc.](#)
 - b. [ChemMasters, Inc.](#)
 - c. [Dayton Superior Corporation.](#)
 - d. [Euclid Chemical Company \(The\); an RPM company.](#)
 - e. [Kaufman Products, Inc.](#)
 - f. [Lambert Corporation.](#)
 - g. [Laticrete International, Inc.](#)
 - h. [Nox-Crete Products Group.](#)
 - i. [SpecChem, LLC.](#)
 - j. [TK Products Construction Coatings, a Fenix Group SPC Company.](#)
 - k. [Vexcon Chemicals Inc.](#)
 - l. [W. R. Meadows, Inc.](#)

2.4 RELATED MATERIALS

- A. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- B. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:
 - 1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.5 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.
 - 1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - 1. Fly Ash or Other Pozzolans: 25 percent by mass.
 - 2. Slag Cement: 50 percent by mass.
 - 3. Silica Fume: 10 percent by mass.
 - 4. Total of Fly Ash or Other Pozzolans, Slag Cement, and Silica Fume: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
 - 5. Total of Fly Ash or Other Pozzolans and Silica Fume: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
- C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.
 - 1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete and concrete with a w/cm below 0.50.
 - 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
 - 5. Use permeability-reducing admixture in concrete mixtures where indicated.

2.6 CONCRETE MIXTURES

- A. Normal-weight concrete used for foundation walls, footings, concrete pads, and tie beams.
 - 1. Exposure Class: ACI 318 F1 S1 W0 W1.
 - 2. Minimum Compressive Strength: 4000 psi at 28 days.
 - 3. Maximum w/cm: 0.45.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

4. Slump Limit: 4 inches, plus or minus 1 inch; 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
5. Air Content:
 - a. Exposure Class F1: 5.0 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inch nominal maximum aggregate size.
6. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and furnish batch ticket information.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:
 1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
 2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:
 1. Daily access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.
 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.4 JOINTS

- A. Construct joints true to line, with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.
 1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Owner's Representative.
 2. Place joints perpendicular to main reinforcement.
 - a. Continue reinforcement across construction joints unless otherwise indicated.
 - b. Do not continue reinforcement through sides of strip placements of floors and slabs.
 3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 4. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
 5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Doweled Joints:
 1. Install dowel bars and support assemblies at joints where indicated on Drawings.
 2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.
- D. Dowel Plates: Install dowel plates at joints where indicated on Drawings.

3.5 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.
 - 1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
 - 2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.
- B. Notify Owner's Representative and testing and inspection agencies 24 hours prior to commencement of concrete placement.
- C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Owner's Representative in writing, but not to exceed the amount indicated on the concrete delivery ticket.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
 - 1. If a section cannot be placed continuously, provide construction joints as indicated.
 - 2. Deposit concrete to avoid segregation.
 - 3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
 - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
 - d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

3.6 FINISHING FORMED SURFACES

- A. As-Cast Surface Finishes:
 - 1. ACI 301 Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
 - a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
 - b. Remove projections larger than 1/4 inch.
 - c. Patch tie holes.
 - d. Surface Tolerance: ACI 117 Class B.

3.7 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.
 - a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - b. Cast anchor-bolt insert into bases.
 - c. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.8 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h, calculated in accordance with ACI 305.1, before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
3. If forms remain during curing period, moist cure after loosening forms.
4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
- d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
- e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
 - 2) Maintain continuity of coating and repair damage during curing period.

3.9 TOLERANCES

- A. Conform to ACI 117.

3.10 CONCRETE SURFACE REPAIRS

- A. Defective Concrete:
 - 1. Repair and patch defective areas when approved by Owner's Representative.
 - 2. Remove and replace concrete that cannot be repaired and patched to Owner's Representative's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.
 - a. Limit cut depth to 3/4 inch.
 - b. Make edges of cuts perpendicular to concrete surface.
 - c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
 - d. Fill and compact with patching mortar before bonding agent has dried.
 - e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
 - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Owner's Representative.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Perform structural repairs of concrete, subject to Owner's Representative's approval, using epoxy adhesive and patching mortar.
- E. Repair materials and installation not specified above may be used, subject to Owner's Representative's approval.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
 - 1. Testing agency to be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
 - 2. Testing agency to immediately report to Owner's Representative, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
 - 3. Testing agency to report results of tests and inspections, in writing, to Owner, Owner's Representative, Contractor, and concrete manufacturer within 48 hours of inspections and tests.
 - a. Test reports to include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:
 - 1) Project name.
 - 2) Name of testing agency.
 - 3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
 - 4) Name of concrete manufacturer.
 - 5) Date and time of inspection, sampling, and field testing.
 - 6) Date and time of concrete placement.
 - 7) Location in Work of concrete represented by samples.
 - 8) Date and time sample was obtained.
 - 9) Truck and batch ticket numbers.
 - 10) Design compressive strength at 28 days.
 - 11) Concrete mixture designation, proportions, and materials.
 - 12) Field test results.
 - 13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
 - 14) Type of fracture and compressive break strengths at seven days and 28 days.
- B. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.
- C. Inspections:
 - 1. Headed bolts and studs.
 - 2. Verification of use of required design mixture.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Concrete placement, including conveying and depositing.
 4. Curing procedures and maintenance of curing temperature.
 5. Verification of concrete strength before removal of shores and forms from beams and slabs.
 6. Batch Plant Inspections: On a random basis, as determined by Owner's Representative.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M to be performed in accordance with the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C143/C143M:
 - a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - b. Perform additional tests when concrete consistency appears to change.
 3. Slump Flow: ASTM C1611/C1611M:
 - a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - b. Perform additional tests when concrete consistency appears to change.
 4. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete.
 - a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 5. Concrete Temperature: ASTM C1064/C1064M:
 - a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
 6. Compression Test Specimens: ASTM C31/C31M:
 - a. Cast and laboratory cure two sets of two 6-inch by 12-inch or 4-inch by 8-inch cylinder specimens for each composite sample.
 - b. Cast, initial cure, and field cure two sets of two standard cylinder specimens for each composite sample.
 7. Compressive-Strength Tests: ASTM C39/C39M.
 - a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days.
 - b. Test one set of two field-cured specimens at seven days and one set of two specimens at 28 days.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- c. A compressive-strength test to be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
- 8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor to evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- 9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.
- 10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Owner's Representative but will not be used as sole basis for approval or rejection of concrete.
- 11. Additional Tests:
 - a. Testing and inspecting agency to make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Owner's Representative.
 - b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Owner's Representative.
 - 1) Acceptance criteria for concrete strength to be in accordance with ACI 301, Section 1.6.6.3.
- 12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- 13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 24 hours of completion of floor finishing and promptly report test results to Owner's Representative.

3.12 PROTECTION

- A. Protect concrete surfaces as follows:
 - 1. Protect from petroleum stains.
 - 2. Diaper hydraulic equipment used over concrete surfaces.
 - 3. Prohibit use of pipe-cutting machinery over concrete surfaces.
 - 4. Prohibit placement of steel items on concrete surfaces.
 - 5. Prohibit use of acids or acidic detergents over concrete surfaces.

END OF SECTION

SECTION 044313.13 - ANCHORED STONE MASONRY VENEER

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stone masonry anchored to concrete backup.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each variety of stone, stone accessory, and manufactured product.
- C. Samples for Initial Selection: For colored mortar and other items involving color selection.
- D. Samples for Verification:
1. For each stone type indicated. Include at least four Samples in each set and show the full range of color and other visual characteristics in completed Work.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For Installer.
- C. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, supply sources, and other information as required to identify materials used. Include mix proportions for mortar and source of aggregates.
1. Neither receipt of list nor approval of mockups constitutes approval of deviations from the Contract Documents contained in mockups unless Architect approves such deviations in writing.
- D. Material Test Reports:
1. Stone Test Reports: For each stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, other than

abrasion resistance, according to referenced ASTM standards. Base reports on testing done within previous three years.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs experienced stonemasons and stone fitters.
- B. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Build mockup of typical wall area as shown on Drawings.
 - 2. Build mockups for typical exterior wall in sizes approximately 120 inches long by full height by full thickness, including face and backup wythes and accessories.
 - a. Include stone coping at top of mockup.
 - b. Include through-wall flashing installed for a 24-inch length in corner of mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit stone masonry above half of flashing).
 - 3. Protect accepted mockups from the elements with weather-resistant membrane.
 - 4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 PRECONSTRUCTION TESTING

- A. Preconstruction Sealant Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for compatibility and adhesion testing according to sealant manufacturer's standard testing methods and Section 079200 "Joint Sealants," Samples of materials that will contact or affect joint sealants.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- B. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- C. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, in a dry location, or in covered weatherproof dispensing silos.
- D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.8 FIELD CONDITIONS

- A. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed stone masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
- B. Stain Prevention: Immediately remove mortar and soil to prevent them from staining stone masonry face.
 - 1. Protect base of walls from rain-splashed mud and mortar splatter using coverings spread on the ground and over the 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 end of each day to prevent rain from splashing mortar and dirt on completed stone masonry.
- C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace stone masonry damaged by frost or freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
 - 1. 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, but not less than seven days after completing cleaning.
- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1.9 COORDINATION

- A. Advise installers of adjacent Work about specific requirements for placement of reinforcement, veneer anchors, flashing, and similar items to be built into stone masonry.
- B. Coordinate locations of dovetail slots installed in concrete that are to receive stone anchors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Stone: Obtain each variety of stone, from single quarry, whether specified in this Section or in another Section of the Specifications, with resources to provide materials of consistent quality in appearance and physical properties.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of uniform quality for each cementitious component from single manufacturer and each aggregate from single source or producer.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Varieties and Sources: Subject to compliance with requirements, provide stone of varieties and from sources complying with Section 044200 "Exterior Stone Cladding."

2.2 GRANITE

- A. Material Standard: Comply with ASTM C615/C615M.
- B. Description: Uniform, medium-grained, gray stone without veining to match existing stone on state street.
- C. Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.

2.3 MORTAR MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or Type II, except Type III may be used for cold-weather construction; natural color or white cement may be used as required to produce mortar color indicated.
 - 1. Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
 - 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. Heidelberg Materials.
 - b. Holcim (US) Inc.
 - c. Lafarge North America Inc.
 - d. Mutual Materials Co.
- D. Mortar Cement: ASTM C1329/C1329M.
 - 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. Lafarge North America Inc.
- E. Masonry Cement: ASTM C91/C91M.
 - 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:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. [Cemex S.A.B. de C.V.](#)
- b. [Heidelberg Materials.](#)
- c. [Holcim \(US\) Inc.](#)
- d. [Lafarge North America Inc.](#)
- e. [National Cement Company, Inc.](#)

F. Aggregate: ASTM C144 and as follows:

1. For pointing mortar, use aggregate graded with 100 percent passing No. 16 sieve.

G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

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. [Euclid Chemical Company \(The\); a subsidiary of RPM International, Inc.](#)
 - b. [GCP Applied Technologies Inc.](#)
 - c. [Sonneborn Products.](#)

H. Water: Potable.

2.4 VENEER ANCHORS

A. Materials:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A1064/A1064M; with ASTM A153/A153M, Class B-2.
2. Stainless Steel Wire: ASTM A580/A580M, Type 304.
3. Hot-Dip Galvanized-Steel Sheet: ASTM A1008/A1008M, cold-rolled, carbon-steel sheet, hot-dip galvanized after fabrication to comply with ASTM A153/A153M, Class B-2.
4. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.

B. Size: Sufficient to extend at least halfway, but not less than 1-1/2 inches, through stone masonry and with at least a 5/8-inch cover on exterior face.

C. Wire Veneer Anchors: Wire ties formed from W1.7 or 0.148-inch-diameter, stainless steel wire.

1. Ties are bent in the form of loops with legs not less than 15 inches in length and with last 2 inches bent at 90 degrees.
2. Ties are bent in the form of rectangular loops with ends bent downward for inserting into eyes projecting from masonry joint reinforcement specified in Section 042000 "Unit Masonry."
3. Ties are bent in the form of triangular loops designed to be attached to masonry joint reinforcement specified in Section 042000 "Unit Masonry" with vertical wires passing through ties and through eyes projecting from masonry joint reinforcement.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Corrugated-Metal Veneer Anchors: Not less than 0.030-inch- thick by 7/8-inch-wide stainless steel sheet with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch.
- E. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.
 2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.078-inch-thick, stainless steel sheet.
 3. Fabricate wire ties from 0.187-inch- diameter, stainless steel wire unless otherwise indicated.
 4. Fabricate wire connector sections from 0.187-inch- diameter, stainless steel wire.
 5. Contractor's Option: Unless otherwise indicated, provide any of the adjustable masonry-veneer anchors specified.
 6. Masonry-Veneer Anchors; Double-Pintle Plate: Rib-stiffened, sheet metal anchor section with screw holes at top and bottom, projecting horizontal leg with slots for vertical legs of double pintle wire tie.
 - 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) Heckmann Building Products, Inc.
 - 2) Hohmann & Barnard, Inc.
 - 3) Quality Steel and Wire LLC.
 - 4) Wire-Bond.
 7. Masonry-Veneer Anchors; Slotted Plate: Sheet metal anchor section, with screw holes at top and bottom; and raised rib-stiffened strap, stamped into center to provide a slot between strap and base for wire tie. Use self-adhering tape to seal penetration behind anchor plate.
 - 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) Heckmann Building Products, Inc.
 - 2) Hohmann & Barnard, Inc.
 - 3) Quality Steel and Wire LLC.
 - 4) Wire-Bond.
 8. Masonry-Veneer Anchors; Slotted Plate with Prongs: Sheet metal anchor section, with screw holes at top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation; and raised rib-stiffened strap, stamped into center to provide a slot between strap and base for wire tie.
 - 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:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 1) [Hohmann & Barnard, Inc.](#)
 - 2) [Wire-Bond.](#)
9. Masonry-Veneer Anchors; Single-Barrel Screw: Self-drilling, single-barrel screw designed to receive wire tie. Screw has a smooth barrel the same thickness as insulation.
- 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) [Heckmann Building Products, Inc.](#)
 - 2) [Hohmann & Barnard, Inc.](#)
 - 3) [Rodenhause Inc.](#)
 - 4) [Wire-Bond.](#)
10. Masonry-Veneer Anchors; Single-Barrel Screw with Double-Pintle Wingnut: Self-drilling, single-barrel screw with wingnut head designed to receive double-pintle wire tie. Screw has a smooth barrel the same thickness as insulation.
- 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) [Heckmann Building Products, Inc.](#)
 - 2) [Hohmann & Barnard, Inc.](#)
- F. Polymer-Coated, Steel Tapping Screws for Concrete Masonry: Self-tapping screws with specially designed threads for tapping and wedging into masonry, with hex washer head and neoprene washer, 3/16-inch diameter by 1-1/2-inch length, and with organic polymer coating with more than 800-hour, salt-spray resistance to red rust in accordance with ASTM B117.
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. [ITW Buildex; Illinois Tool Works, Inc.](#)
 - b. [Powers Fasteners.](#)

2.5 STONE TRIM ANCHORS

- A. Stone Trim Anchors: Units fabricated with tabs or dowels designed to engage kerfs or holes in stone trim units and holes for fasteners or postinstalled anchor bolts for fastening to substrates or framing as indicated.
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. [Canaren Inc.](#)
 - b. [Heckmann Building Products, Inc.](#)
 - c. [Hohmann & Barnard, Inc.](#)
 - d. [Meadow Burke.](#)

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Materials: Fabricate anchors from stainless steel, ASTM A240/A240M or ASTM A666, Type 304. Fabricate dowels from stainless steel, ASTM A276, Type 304.
- C. Fasteners for Stone Trim Anchors: Annealed stainless steel bolts, nuts, and washers; ASTM F593 for bolts and ASTM F594 for nuts, Alloy Group 1.
- D. Postinstalled Anchor Bolts for Fastening Stone Trim Anchors: Chemical anchors or torque-controlled expansion anchors or undercut anchors made from stainless steel components complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 for bolts and nuts; ASTM A666 or ASTM A276, Type 304 or Type 316, for anchors.

2.6 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing, where flashing is exposed or partly exposed and where indicated, complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
 - 1. Stainless Steel: ASTM A240/A240M, Type 304, 0.016 inch thick.
 - 2. Copper: ASTM B370, Temper H00 or H01, cold-rolled copper sheet, 10-oz./sq. ft. weight or 0.0135 inch thick for fully concealed flashing; 16-oz./sq. ft. weight or 0.0216 inch thick elsewhere.
 - 3. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
 - 4. Fabricate through-wall metal flashing embedded in masonry from stainless steel or copper, with ribs at 3-inch intervals along length of flashing to provide an integral mortar bond.
 - 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) Cheney Flashing Company.
 - 2) Hohmann & Barnard, Inc.
 - 3) Keystone Flashing Company, Inc.
 - 5. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
 - 6. Fabricate through-wall flashing with drip edge unless otherwise indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
- B. Application: Unless otherwise indicated, use the following:
 - 1. Where flashing is indicated to receive counterflashing, use metal flashing.
 - 2. Where flashing is indicated to be turned down at or beyond wall face, use metal flashing.
 - 3. Where flashing is fully concealed, use metal flashing.
- C. Solder and Sealants for Sheet Metal Flashings:
 - 1. Solder for Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless steel sheet manufacturer.
 - 2. Solder for Copper: ASTM B32, Grade Sn50.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Adhesives, Primers, and Seam Tapes for Flexible Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane, or PVC.
- B. Asphalt Dampproofing: Cut-back asphalt complying with ASTM D4479/D4479M, Type I or asphalt emulsion complying with ASTM D1227, Type III or Type IV.
- C. Weep/Vent Products: Use the following unless otherwise indicated:
 - 1. Rectangular Plastic Tubing: Clear butyrate, 3/8 by 1-1/2 inches by thickness of stone masonry.
 - 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) CavClear; a division of Archovations, Inc.
 - 2) Mortar Net Solutions.
- D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
 - 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. Advanced Building Products Inc.
 - b. CavClear; a division of Archovations, Inc.
 - c. Mortar Net Solutions.
 - 2. Provide one of the following configurations:
 - a. Strips, full depth of cavity and 10 inches wide, with dovetail-shaped notches 7 inches deep that prevent mesh from being clogged with mortar droppings.
 - b. Strips, not less than 3/4 inch thick and 10 inches wide, with dimpled surface designed to catch mortar droppings and prevent weep holes from being clogged with mortar.
 - c. Sheets or strips full depth of cavity and installed to full height of cavity.
 - d. Sheets or strips not less than 3/4 inch thick and installed to full height of cavity with additional strips 4 inches high at weep holes and thick enough to fill entire depth of cavity and prevent weep holes from being clogged with mortar.

2.8 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.
 - 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. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
 - b. EaCo Chem, Inc.
 - c. Hydroclean; Hydrochemical Techniques, Inc.
 - d. PROSOCO, Inc.

2.9 FABRICATION

- A. General: Fabricate stone units in sizes and shapes required to comply with requirements indicated.
 - 1. For granite, comply with recommendations in NBGQA's "Specifications for Architectural Granite."
- B. Split stone to produce pieces of thickness, size, and shape indicated, including details on Drawings and pattern specified in "Setting Stone Masonry" Article.
 - 1. Shape stone specified to be laid in three-course, random range ashlar pattern with sawed beds.
- C. Dress joints (bed and vertical) straight and at right angle to face unless otherwise indicated. Shape beds to fit supports.
- D. Cut and drill sinkages and holes in stone for anchors and supports.
- E. Carefully inspect stone at quarry or fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units before shipment.
 - 1. Clean sawed backs of stone to remove rust stains and iron particles.
- F. Thickness of Stone: Provide thickness indicated, but not less than the following:
 - 1. Thickness: 4 inches plus or minus 1/2 inch.
- G. Finish exposed stone faces and edges to comply with requirements indicated for finish and to match approved samples and mockups.
 - 1. Finish: Split face.
 - 2. Finish for Copings: Smooth thermal finish to all sides exposed to view.
 - a. Finish exposed ends of copings same as front and back faces.

2.10 MORTAR MIXES

- 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.
 - 2. Use portland cement-lime, masonry cement, or mortar cement mortar unless otherwise indicated.
 - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
 - 4. Mixing Pointing Mortar: Thoroughly mix cementitious and aggregate materials together before adding water. Then mix again, adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for one to two hours. Add remaining water in small portions until mortar reaches required consistency. Use mortar within 30 minutes of final mixing; do not retemper or use partially hardened material.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in the form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Stone Masonry: Comply with ASTM C270, Proportion Specification.
 - 1. Mortar for Setting Stone: Type S.
 - 2. Mortar for Pointing Stone: Type N.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces indicated to receive stone masonry, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone masonry.
- B. Examine substrate to verify that dovetail slots, inserts, reinforcement, veneer anchors, flashing, and other items installed in substrates and required for or extending into stone masonry are correctly installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coat concrete and unit masonry backup with asphalt dampproofing.
- B. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.3 INSTALLATION OF STONE MASONRY

- A. Perform necessary field cutting and trimming as stone is set.
 - 1. Use power saws to cut stone that is fabricated with saw-cut surfaces. Cut lines straight and true, with edges eased slightly to prevent snipping.
 - 2. Use hammer and chisel to split stone that is fabricated with split surfaces. Make edges straight and true, matching similar surfaces that were shop or quarry fabricated.
 - 3. Pitch face at field-split edges as needed to match stones that are not field split.
- B. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.
- C. Arrange stones in three-course, random-range ashlar pattern with random course heights, random lengths (interrupted coursed), and uniform joint widths.
- D. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.
- E. Install supports, fasteners, and other attachments indicated or necessary to secure stone masonry in place.
- F. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
- G. Install steel lintels where indicated. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.
- H. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any. Lay walls with joints not less than 3/8 inch at narrowest points or more than 1/2 inch 5/8 inch at widest points.
- I. Provide sealant joints of widths and at locations indicated.
 - 1. Keep sealant joints free of mortar and other rigid materials.
 - 2. Sealant joints are specified in Section 079200 "Joint Sealants."
- J. Install metal expansion strips in sealant joints at locations indicated. Build flanges of expansion strips into masonry by embedding in mortar between stone masonry and backup wythe. Lap each joint 4 inches in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
- K. Install embedded flashing and weep holes at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
 - 1. At concrete backing, extend flashing through stone masonry, turned up a minimum of 4 inches, and insert in reglet.
 - 2. Extend sheet metal flashing 1/2 inch beyond masonry face at exterior, and turn flashing down to form a drip.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- L. Place weep holes and vents in joints where moisture may accumulate, including at base of cavity walls, above shelf angles, and at flashing.
 - 1. Use rectangular plastic tubing to form weep holes.
 - 2. Space weep holes 24 inches o.c.
 - 3. Trim wicking material used in weep holes flush with exterior wall face after mortar has set.
 - 4. Place pea gravel in cavities as soon as practical to a height of not less than 2 inches above top of flashing, to maintain drainage.
 - 5. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

3.4 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch in 40 feet or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet or 1/2 inch in 40 feet or more.
- B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet or 1/2 inch in 40 feet or more.
- C. Variation of Linear Building Line: For position shown in plan, do not exceed 1/2 inch in 20 feet or 3/4 inch in 40 feet or more.
- D. Measure variation from level, plumb, and position shown in plan as a variation of the average plane of each stone face from level, plumb, or dimensioned plane.
- E. Variation in Mortar-Joint Thickness: Do not vary from joint size range indicated.
- F. Variation in Plane between Adjacent Stones: Do not exceed one-half of tolerance specified for thickness of stone.

3.5 INSTALLATION OF ANCHORED STONE MASONRY

- A. Anchor stone masonry to concrete with corrugated-metal veneer anchors unless otherwise indicated. Secure anchors by inserting dovetailed ends into dovetail slots in concrete.
- B. Anchor stone masonry to unit masonry with corrugated-metal or individual wire veneer anchors unless otherwise indicated. Embed anchors in unit masonry mortar joints or grouted cells at a distance of at least one-half of unit masonry thickness.
- C. Anchor stone masonry to unit masonry with wire anchors unless otherwise indicated. Connect anchors to masonry joint reinforcement by inserting pintles into eyes of masonry joint reinforcement projecting from unit masonry.
- D. Anchor stone masonry to concrete with wire anchors unless otherwise indicated. Connect anchors to masonry joint reinforcement with vertical rods inserted through anchors and through eyes of masonry joint reinforcement projecting from unit masonry.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Embed veneer anchors in mortar joints of stone masonry at least halfway, but not less than 1-1/2 inches, through stone masonry and with at least a 5/8-inch cover on exterior face.
- F. Space anchors to provide not less than one anchor per 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings, sealant joints, and perimeter at intervals not exceeding 12 inches.
- G. Anchor stone trim with stone trim anchors where indicated. Install anchors by fastening to substrate and inserting tabs and dowels into kerfs and holes in stone units. Provide compressible filler in ends of dowel holes and bottoms of kerfs to prevent end bearing of dowels and anchor tabs on stone. Fill remainder of anchor holes and kerfs with mortar.
- H. Set stone in full bed of mortar with full head joints unless otherwise indicated. Build anchors into mortar joints as stone is set.
- I. Fill collar joint with mortar as stone is set.
- J. Rake out joints for pointing with mortar to depth of not less than 1/2 inch before setting mortar has hardened. Rake joints to uniform depths with square bottoms and clean sides.

3.6 POINTING

- A. Prepare stone-joint surfaces for pointing with mortar by removing dust and mortar particles. Where setting mortar was removed to depths greater than surrounding areas, apply pointing mortar in layers not more than 3/8 inch deep until a uniform depth is formed.
- B. Point stone joints by placing and compacting pointing mortar in layers of not more than 3/8 inch deep. Compact each layer thoroughly and allow to it become thumbprint hard before applying next layer.
- C. Tool joints, when pointing mortar is thumbprint hard, with a smooth jointing tool to produce the following joint profile:
 - 1. Joint Profile: Smooth, flat face slightly below edges of stone.

3.7 ADJUSTING AND CLEANING

- A. Remove and replace stone masonry of the following description:
 - 1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
 - 2. Defective joints.
 - 3. Stone masonry not matching approved samples and mockups.
 - 4. Stone masonry not complying with other requirements indicated.
- B. Replace in a manner that results in stone masonry matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.
- C. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

D. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before cleaning stone masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
4. Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.
5. Clean stone masonry by bucket and brush hand-cleaning method described in BIA Technical Note No. 20, Revised II, using job-mixed detergent solution.
6. Clean stone masonry with proprietary acidic cleaner applied according to manufacturer's written instructions.
7. Clean limestone masonry to comply with recommendations in ILI's "Indiana Limestone Handbook."

3.8 EXCESS MATERIALS AND WASTE

- A. Excess Stone: Stack excess stone where directed by Owner for Owner's use.
- B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other waste, and legally dispose of off Owner's property.

END OF SECTION

SECTION 064013 - EXTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior frames and jambs for opaque finish.
2. Miscellaneous materials.
3. Shop priming.
4. Shop finishing.

1.2 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections, to ensure that exterior architectural woodwork can be supported and installed as indicated.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
- C. Wood-Preservative Treatment:
1. Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
 2. Indicate type of preservative used and net amount of preservative retained.
 3. Include chemical-treatment manufacturer's written instructions for finishing treated material and manufacturer's written warranty.
- D. Fire-Retardant Treatment: Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- E. Waterborne Treatments: For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- F. Shop Drawings:
1. Include dimensioned plans, elevations, sections, and attachment details.
- G. Samples: For each exposed product and for each color and finish specified.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Size:

- a. Panel Products: 12 inches by 12 inches.
- b. Lumber Products: Not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For architectural woodwork manufacturer and Installer.

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Architectural Woodwork Standards, Section 2.
- B. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation of exterior architectural woodwork only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow, or dampness.
- B. Field Measurements: Where exterior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL WOODWORK MANUFACTURERS

- 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. VT Industries, Inc.

2.2 ARCHITECTURAL WOODWORK, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of exterior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - 1. The Contract Documents contain requirements that are more stringent than the Architectural Woodwork Standards. Comply with Contract Documents and the Architectural Woodwork Standards.

2.3 EXTERIOR FRAMES AND JAMBS FOR OPAQUE FINISH

- A. Architectural Woodwork Standards Grade: Custom.
- B. Wood Species: All-heart redwood or any closed-grain hardwood.
 - 1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.
 - 2. Wood Moisture Content: 9 to 15 percent.

2.4 WOOD MATERIALS

- A. Hardboard: ANSI A135.4.
- B. Softwood Plywood: DOC PS 1, exterior, medium-density overlay.

2.5 PRESERVATIVE-TREATED-WOOD MATERIAL

- A. Preservative-Treated-Wood Materials: Provide with water-repellent preservative treatment complying with AWWPA N1 (dip, spray, flood, or vacuum-pressure treatment).
 - 1. Preservative Chemicals: 3-iodo-2-propynyl butyl carbamate (IPBC).
 - 2. Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.
- B. Extent of Preservative-Treated Wood Materials: Treat wood materials.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Items fabricated from the following wood species need not be treated:
 - a. Redwood.
 - b. White oak.
 - c. African mahogany.
 - d. Honduras mahogany.
 - e. Ipe.
 - f. Dark red meranti.
 - g. Teak.

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated, acceptable to authorities having jurisdiction, and that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches into wood substrate.
 1. Use stainless steel unless otherwise indicated.
 2. For pressure-preservative-treated wood, use stainless steel fasteners.
- B. Nails: ASTM F1667.
- C. Power-Driven Fasteners: ICC-ES AC70.
- D. Wood Screws and Lag Screws: ASME B18.2.1, ASME B18.6.1, or ICC-ES AC233.
- E. Carbon-Steel Bolts: ASTM A307 with ASTM A563 hex nuts and, where indicated, flat washers all hot-dip zinc coated.
- F. Stainless Steel Bolts: ASTM F593, Alloy Group 1 or 2; with ASTM F594, Alloy Group 1 or 2 hex nuts and, where indicated, flat washers.

2.7 MISCELLANEOUS MATERIALS

- A. Blocking, Shims, and Nailers: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
 1. Wood-Preservative Treatment: By pressure process, AWP A U1; Use Category UC3b.
 - a. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
 - b. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - c. Mark lumber with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee's (ALSC) Board of Review.
 2. Fire-Retardant Treatment: Complying with requirements.

2.8 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate exterior architectural woodwork to dimensions, profiles, and details indicated.
 - 1. Ease edges to radius indicated for the following:
 - a. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
- C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.
 - 1. Disassemble components only as necessary for shipment and installation.
 - 2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
 - 3. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.
 - a. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.
 - b. Verify that parts fit as intended, and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

2.9 SHOP PRIMING

- A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.
- B. Exterior Architectural Woodwork for Opaque Finish: Shop prime all surfaces with one coat of wood primer as specified in Section 099113 "Exterior Painting."

2.10 SHOP FINISHING

- A. Preparation for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.
 - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of exterior architectural woodwork. Apply two coats to end-grain surfaces.
- B. Opaque Finish: Comply with Section 099113 "Exterior Painting."

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition exterior architectural woodwork to average prevailing humidity conditions at Project site.
- B. Before installing exterior architectural woodwork, examine shop-fabricated work for completion, and complete work as required, including removing packing and backpriming concealed surfaces.

3.2 INSTALLATION

- A. Grade: Install exterior architectural woodwork to comply with same grade as item to be installed.
- B. Assemble exterior architectural woodwork, and complete fabrication at Project site to the extent that it was not completed during shop fabrication.
- C. Install exterior architectural woodwork level, plumb, true in line, and without distortion.
 - 1. Shim as required with concealed shims.
 - 2. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut exterior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Preservative-Treated Wood Materials: Where field cut or drilled, treat cut ends and drilled holes according to AWP A M4.
- F. Anchor exterior architectural woodwork to anchors or blocking built in or directly attached to substrates.
 - 1. Secure with countersunk, concealed fasteners and blind nailing.
 - 2. Use fine finishing nails for exposed fastening, countersunk and filled flush with exterior architectural woodwork.
 - 3. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced and with adjacent rows staggered.
 - 4. For shop-finished items, use filler matching finish of items being installed.

3.3 REPAIR

- A. Repair damaged and defective exterior architectural woodwork, where possible, to eliminate functional and visual defects.
- B. Where not possible to repair, replace defective woodwork.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.4 CLEANING

- A. Clean exterior architectural woodwork on exposed and semi-exposed surfaces.

END OF SECTION

SECTION 074624 - WOOD SHINGLE AND SHAKE SIDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood-shingle-clad panels.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Wood-shingle-clad panels.

- C. Samples for Initial Selection: For each type of siding product with factory-applied finishes.

- D. Samples for Verification: For the following products, of sizes indicated, to verify color and finish selected.

1. Wood-Shingle-Clad Wall Panels: Full height by 12 inches long.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

- B. Qualification Statements: For Installer.

- C. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

- B. Maintenance Data: For siding to include in maintenance manuals.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Extra Stock Material: Furnish extra materials, from the same production run, to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Wood-Shingle-Clad Wall Panels: 100 sq. ft. of each type, finish, and color in unbroken bundles.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: CSSB member.
- B. Grading Agency Qualifications: An independent testing and inspecting agency recognized by authorities having jurisdiction as qualified to label siding for compliance with referenced grading rules.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store siding in a dry, well-ventilated, weathertight location in accordance with manufacturer's written instructions.
- B. Store rolls of felt used for weather-resistive barrier on end, and on pallets or other raised surfaces. Do not double stack rolls.
 - 1. Protect unused felt from weather, sunlight, and moisture when left overnight or when work is not in progress.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit siding installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.
 - 1. Field-Finished Siding: Proceed with installation of siding only when existing and forecast weather conditions permit installation and immediate application of at least one coat of specified finish on siding before it is exposed to rain, snow, or dampness.

1.10 WARRANTY

- A. Materials Warranty: Manufacturer's warranty administered by CSSB and on CSSB's standard form in which manufacturer agrees to repair or replace CSSB-labeled products that fail in materials within specified warranty period. Material failures include manufacturing defects that result in leaks.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Warranty Period: <Insert number> year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain each type of product from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire Resistance: Provide wood products that are fire-retardant treated in accordance with AWP A U1, pressure treated in closed vessels under pressures of not less than 50 psig, and as follows:
 1. Surface-Burning Characteristics: In accordance with ASTM E84; tested by a qualified testing agency acceptable to authorities having jurisdiction, as follows:
 - a. Flame-Spread Index: 25 or less.
 - b. Progressive Combustion: No evidence of significant progressive combustion when the test is continued for an additional 20-minute period.
 - c. Flame Front: Does not progress more than 10-1/2 ft. beyond the centerline of burners at any time during the test.
 - d. Effect of Weathering: No increase in the listed classification when subjected to accelerated weathering in accordance with ASTM D2898, Method A.
 2. Product Identification: Attach a label to each bundle of wood products that includes the following:
 - a. Identification mark of testing agency acceptable to authorities having jurisdiction.
 - b. Identification of treating manufacturer, chemical treatment, method of application, purpose of treatment, and warranties available.
 - c. Species of wood.
 - d. Flame-spread and smoke-developed indexes.
 - e. Method of drying after treatment.
 - f. The words "No increase in the listed classification when subjected to the Standard Rain Test."
 - g. References to model-code approval.
- B. Decay Resistance: Provide wood products that are preservative treated in accordance with AWP A U1, chromated copper arsenate pressure treatment; with a minimum of 0.40 lb/cu. ft. retention.
 1. Identification: Attach a label to each bundle of wood products; identify manufacturer and include chemical treatment, method of application, purpose of treatment, and warranties available.

2.3 WOOD-SHINGLE-CLAD PANELS

- A. Cedar-Shingle Panels: Clear, vertical-grain, western red cedar shingles bonded with exterior-type adhesives to 5/16-inch-thick, 96-inch-long, DOC PS 1 Exterior C-D plywood panels; with one shingle course per panel.
 - 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. Cedar Valley Manufacturing, Inc.
 - b. Shakertown 1992, Inc.
 - 2. Style: Even butt line, tight keyway.
 - 3. Exposure: Nominal 4-1/4 inches per course.
- B. Prefabricated Corners: Flush type.
- C. Finish: Semitransparent penetrating stain, oil based, factory applied.
 - 1. Color: As selected by Architect from manufacturer's full range to match existing siding color.

2.4 ACCESSORIES

- A. Felt Weather-Resistive Barrier: ASTM D226/D226M Type II or ASTM D4869/D4869M Type III, asphalt-saturated organic felt, nonperforated.
- B. Nails: ASTM F1667, **[stainless steel, Type 316,] [stainless steel, Type 304,] [hot-dip galvanized-steel, ASTM A153/A153M coating,]** wire nails, sharp pointed, and of sufficient length to penetrate a minimum of 3/4 inch into sheathing.
 - 1. Cedar: Use box nails.
 - 2. Felt Weather-Resistive Barrier: Use roofing nails.
 - 3. Nails in Contact with Metal Flashing: Use nails made from same metal as flashing or made from metal compatible with metal flashing.
- C. Wood-Shingle-Clad Panel Fasteners: As recommended in writing by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF FELT WEATHER-RESISTIVE BARRIER

- A. Comply with felt manufacturer's written installation instructions and CSSB written recommendations applicable to products and applications indicated unless more stringent requirements apply.
- B. Cover exposed exterior surface of sheathing with felt nailed to framing immediately after sheathing is installed.
 - 1. Apply horizontally with a 2-inch overlap and a 6-inch end lap. Wrap around inside and outside corners 4 inches.
 - 2. Cut back felt 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.
 - 3. Apply felt to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.

3.3 INSTALLATION OF FLEXIBLE FLASHING

- A. Apply flexible flashing to comply with manufacturer's written installation instructions.
 - 1. Prime substrates as recommended by flashing manufacturer.
 - 2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
 - 3. Lap flashing over felt weather-resistive barrier at bottom and sides of openings.
 - 4. Lap felt weather-resistive barrier over flashing at heads of openings.
 - 5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

3.4 INSTALLATION OF WOOD-SHINGLE-CLAD PANELS

- A. Install wood-shingle-clad-panel products in accordance with manufacturer's written installation instructions.
- B. Install panels level, plumb, true, and aligned with adjacent materials.
- C. Install panels working from the lowest level to top of wall area.

END OF SECTION

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Nonstaining silicone joint sealants.
2. Latex joint sealants.

1.2 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data:
1. Nonstaining silicone joint sealants.
 2. Latex joint sealants.
- C. Samples for Initial Selection: Manufacturer's standard color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

1.3 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:
1. Joint-sealant location and designation.
 2. Manufacturer and product name.
 3. Type of substrate material.
 4. Proposed test.
 5. Number of samples required.
- C. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- D. Field Quality-Control Reports: For field-adhesion-test reports, for each sealant application tested.
- E. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Manufacturers' special warranties.
- C. Installer's special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Authorized representative who is trained and approved by manufacturer.
- B. Testing Agency Qualifications: Qualified in accordance with ASTM C1021 to conduct the testing indicated.

1.6 FIELD 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.

1.7 WARRANTY

- A. Special Installer's Warranty: 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 agrees to furnish joint sealants to repair or replace those joint sealants 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 stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Disintegration of joint substrates from 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 SOURCE LIMITATIONS

- A. Obtain joint sealants from single manufacturer for each sealant type.

2.2 JOINT SEALANTS, 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. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested in accordance with ASTM C1248.
- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.
 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. Adfast.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.
 - c. Pecora Corporation.
 - d. Sika Corporation - Building Components.
 - e. Soudal Accumetric.
 - f. The Dow Chemical Company.
 - g. Tremco Incorporated.

2.4 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

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. Adfast.
 - b. Everkem Diversified Products, Inc.
 - c. Franklin International.
 - d. PPG Paints; PPG Industries, Inc.
 - e. Pecora Corporation.
 - f. Sherwin-Williams Company (The).
 - g. Tremco Incorporated.

2.5 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 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. Adfast.
 - b. Alcot Plastics Ltd.
 - c. Construction Foam Products; a division of Nomaco, Inc.
 - d. Master Builders Solutions, brand of MBCC Group, a Sika company.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, 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 performance of the Work.
- 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 C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type 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 in accordance with 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 in accordance with Figure 8A in ASTM C1193 unless otherwise indicated.

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

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

SECTION 081433 - STILE AND RAIL WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior stile and rail wood doors.

1.2 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Exterior stile and rail wood doors.

C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data, including the following:

1. Door schedule indicating door and frame location, type, size, fire protection rating, and swing.
2. Door elevations, dimensions and location of hardware, lite locations, and glazing thickness.
3. Details of frame for each frame type, including dimensions and profile.
4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
5. Dimensions and locations of mortises and holes for hardware.
6. Clearances and undercuts.
7. Requirements for veneer matching.
8. Doors to be factory finished and application requirements.

D. Samples for Initial Selection: For factory-finished doors and factory-finished door frames.

1.3 CLOSEOUT SUBMITTALS.

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Special warranties.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in opaque plastic bags or cardboard cartons.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.5 FIELD CONDITIONS

- A. Environmental Limitations:
 - 1. Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity levels designed for building occupants for the remainder of construction period.

1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace doors and frames that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Delamination of veneer.
 - b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 - 2. Warranty must also include installation and finishing that may be required due to repair or replacement of defective doors and frames.
 - 3. Warranty must be in effect during specified period of time from date of Substantial Completion.
 - 4. Warranty Period for Exterior Doors: Five years.
 - 5. Insulating Glass Vision Panels: Five years.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain stile and rail wood doors from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Exterior Door Thermal Transmittance: Maximum whole fenestration product U-factor of 0.65, in accordance with AAMA 1503, ASTM E1423, or NFRC 100.

2.3 MATERIALS

- A. Use only materials that comply with referenced standards and other requirements specified.
 - 1. Assemble exterior doors, including components, with wet-use adhesives complying with ASTM D5572 for finger joints and with ASTM D5751 for joints other than finger joints.
- B. Panel Products: Any of the following unless otherwise indicated:
 - 1. Particleboard: ANSI A208.1, Grade M-2.
 - 2. Medium-density fiberboard (MDF), complying with ANSI A208.2, Grade 130.
 - 3. Hardboard complying with ANSI A135.4.
 - 4. Veneer-core plywood.
- C. Safety Glass: Provide products complying with testing requirements in 16 CFR 1201, for Category II materials, unless those of Category I are expressly indicated and permitted.

2.4 EXTERIOR STILE AND RAIL WOOD DOORS

- A. Exterior Stile and Rail Wood Doors: Exterior custom doors complying with the AWI, AWMAC, and WI's Architectural Woodwork Standards, or WDMA I.S. 6A, and with other requirements specified.
 - 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. Masonite Architectural.
 - b. VT Industries, Inc.
 - 2. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.
 - 3. Architectural Woodwork Standards Quality Grade: Custom.
 - 4. Panel Designs: As indicated on Drawings.
 - a. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval.
 - b. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
 - 5. Finish: Opaque.
 - 6. Door Construction for Opaque Finish:
 - a. Stile and Rail Construction:
 - 1) Veneered, structural composite lumber or veneered edge- and end-glued lumber.
 - 7. Stile and Rail Widths: As indicated on Drawings.
 - 8. Raised-Panel Thickness: As indicated on Drawings.
 - 9. Molding Profile (Sticking): As selected by Architect from manufacturer's full range.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

10. Glass: Uncoated, clear, insulating-glass units made from two lites of 3.0-mm-thick, fully tempered glass with 1/4-inch interspace.
11. Mark, label, or otherwise identify stile and rail wood doors as complying with WDMA I.S. 6A and grade specified.

2.5 STILE AND RAIL WOOD DOOR FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels unless otherwise indicated:
 1. Clearances:
 - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
 - b. Provide 1/2 inch from bottom of door to top of decorative floor finish or covering.
 - c. Where threshold is shown on Drawings or scheduled, provide not more than 3/8 inch from bottom of door to top of threshold.
 2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
- B. Fabricate stile and rail wood doors in sizes indicated for field fitting.
- C. Glazed Openings:
 1. Factory install glazing in doors. Install glass using manufacturer's standard elastomeric glazing sealant complying with ASTM C920. Secure glass in place with removable wood moldings. Miter wood moldings at corner joints.
- D. Exterior Doors: Factory treat exterior doors with water-repellent preservative after fabrication has been completed but before factory finishing.
 1. Comply with WDMA I.S. 4.

2.6 FACTORY FINISHING

- A. Comply with referenced quality standard for factory finishing.
 1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 2. Finish faces, all four edges, edges of cutouts, and mortises.
 3. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Opaque Finish:
 1. Architectural Woodwork Standards Grade: Custom.
 - a. System 10, UV Curable, Water Based.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Color: As selected by Architect from manufacturer's full range.
3. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
 1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Section 087111 "Door Hardware (Descriptive Specification)."
- B. Install doors and frames to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
 1. Install fire-rated door frames in accordance with NFPA 80.
 - a. Install frames level, plumb, true, and straight.
 - 1) Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
 - b. Anchor frames to anchors or blocking built in or directly attached to substrates.
 - 1) Secure with countersunk, concealed fasteners and blind nailing.
 - 2) Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
 - c. For shop-finished items, use filler matching finish of items being installed.
- C. Job-Fitted Doors:
 1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
 - a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.
 2. Machine doors for hardware.
 3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
 4. Clearances:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
 - b. Where threshold is shown on Drawings or scheduled, provide 3/8 inch from bottom of door to top of threshold unless otherwise indicated.
- 5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- E. Factory- Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION

SECTION 087111 - DOOR HARDWARE (DESCRIPTIVE SPECIFICATION)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hinges.
2. Bored locks.
3. Lock cylinders, cylindrical and mortised.
4. Wall- and floor-mounted stops.
5. Door gasketing.
6. Thresholds.
7. Electric strikes.
8. Power supply units.

B. Related Requirements:

1. Section 081433 "Stile and Rail Wood Doors."

1.2 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. 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. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- C. Existing Openings: Where 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 proper door operation.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data:
1. Hinges.
 2. Bored locks.
 3. Lock cylinders.
 4. Wall- and floor-mounted stops.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

5. Door gasketing.
 6. Thresholds.
 7. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- C. Product Data Submittals: For each product.
- D. Samples: For each exposed product in each finish specified, in manufacturer's standard size.
1. Tag Samples with full product description to coordinate Samples with door hardware schedule.
- E. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of product data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
 3. Content: Include the following information:
 - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
 - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - d. Fastenings and other installation information.
 - e. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
 - f. Mounting locations for door hardware.
 - g. List of related door devices specified in other Sections for each door and frame.
- F. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For Installer and Architectural Hardware Consultant.
- C. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

- D. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Maintenance Data: For each type of door hardware to include in maintenance manuals.
- C. Schedules: Final door hardware and keying schedule.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
 - 1. Warehousing Facilities: In Project's vicinity.
 - 2. Scheduling Responsibility: Preparation of door hardware and keying schedule.
- B. Architectural Hardware Consultant Qualifications: A person 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.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lockup for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.8 WARRANTY

- A. Special Warranty: 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 doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain each type of door hardware from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the USDOJ's "2010 ADA Standards for Accessible Design".
 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.
 2. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
 3. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
 4. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

2.3 HINGES

- A. Antifriction-Bearing Hinges:
 1. Mounting: Full mortise (butts).
 2. Bearing Material: Manufacturer's standard antifriction bearing.
 3. Grade 1 (heavy weight).
 4. Base and Pin Metal:
 - a. Exterior Hinges: Stainless steel with stainless steel pin.
 5. Pins: Nonrising loose unless otherwise indicated.
 - a. Outswinging Exterior Doors: Nonremovable.
 6. Tips: Flat button.
 7. Corners: Square.

2.4 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. 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.
- C. Lock Backset: 2-3/4 inches unless otherwise indicated.
- D. Lock Trim:
 - 1. Levers: Forged or cast.
 - a. Construction: Solid.
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - 3. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.
 - 4. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.
- F. Bored Locks: ANSI/BHMA A156.2, Grade 1, Series 4000.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - a. Allegion plc.
 - b. Corbin Russwin, Inc.: an ASSA ABLOY Group company.
 - c. SARGENT Manufacturing Company; ASSA ABLOY.
 - d. STANLEY; dormakaba USA, Inc.
 - e. Yale Security Inc; ASSA ABLOY.
- G. Mortise Locks: ANSI/BHMA A156.13, Series 1000.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - a. Allegion plc.
 - b. Corbin Russwin, Inc.: an ASSA ABLOY Group company.
 - c. SARGENT Manufacturing Company; ASSA ABLOY.
 - d. STANLEY; dormakaba USA, Inc.
 - e. Yale Security Inc; ASSA ABLOY.

2.5 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limit to, the following:
 - a. Allegion plc.
 - b. BEST Access Solutions, Inc.; dormakaba USA Inc.
 - c. Corbin Russwin, Inc.: an ASSA ABLOY Group company.
 - d. SARGENT Manufacturing Company; ASSA ABLOY.
 - e. STANLEY; dormakaba USA, Inc.
 - f. Yale Security Inc; ASSA ABLOY.
- B. Standard Lock Cylinders: ANSI/BHMA A156.5, Grade 1 permanent cores; face finished to match lockset.
 - 1. Core Type: Removable.
 - 2. Number of Pins: Match existing.
 - 3. Lock Type: Bored-lock type.

2.6 ELECTRIC LATCHES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Von Duprin.
 - 2. HES.

2.7 KEYING

- A. Keying System: Factory registered, complying with guidelines in ANSI/BHMA A156.28, appendix. Provide one extra key blank for each lock.
 - 1. Existing System:
 - a. Master key or grand master key locks to Owner's existing system.
- B. Keys: Nickel silver.

2.8 MECHANICAL STOPS AND HOLDERS

- A. Wall- and Floor-Mounted Stops: ANSI/BHMA A156.16; polished cast-brass, -bronze, or -aluminum base metal.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

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

- a. Allegion plc.
- b. Architectural Builders Hardware Mfg., Inc.
- c. ASI-American Specialties, Inc.
- d. Baldwin; part of the Spectrum Brands Hardware and Home Improvement Group (HHI).
- e. Burns Manufacturing Incorporated.
- f. Cal-Royal Products, Inc.
- g. Don-Jo Mfg., Inc.
- h. Door Controls International.
- i. Hager Companies.
- j. Hiawatha, Inc; a division of the Activar Construction Products Group.
- k. Rockwood Manufacturing Company; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY.
- l. Trimco.
- m. Pemko Manufacturing Company Inc.; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY.

B. Dome-Type Floor Stop: Grade 1; with minimum 1-inch-high bumper for doors without threshold and 1-3/8-inch-high bumper for doors with threshold.

C. Wall Bumpers: Grade 1; with rubber bumper; 2-1/2-inch diameter, minimum 3/4-inch projection from wall; with backplate for concealed fastener installation.

1. Bumper Configuration: Concave.

2.9 DOOR GASKETING

A. Door Gasketing: ANSI/BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

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

- a. Hager Companies.
- b. Legacy Manufacturing.
- c. M-D Building Products, Inc.
- d. National Guard Products, Inc.
- e. Pemko Manufacturing Company Inc.; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY.
- f. Reese Enterprises, Inc.
- g. Sealeze.
- h. Zero International; Allegion plc.

B. Maximum Air Leakage: When tested in accordance with ASTM E283/E283M with tested pressure differential of 0.3 inch wg, as follows:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
- C. Adhesive-Backed Perimeter Gasketing: Vinyl bulb gasket material applied to frame rabbet with self-adhesive.
- D. Door Sweeps: Neoprene or vinyl gasket material held in place by flat housing or flange; surface mounted to face of door with screws.
 1. Housing or Flange Material: Aluminum.

2.10 THRESHOLDS

- A. Thresholds: ANSI/BHMA A156.21; fabricated to full width of opening indicated.
 1. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limit to, the following:
 - a. Hager Companies.
 - b. National Guard Products, Inc.
 - c. Pemko Manufacturing Company Inc.; ASSA ABLOY Accessories and Door Controls Group, Inc.; ASSA ABLOY.
 - d. Rixson Specialty Door Controls; ASSA ABLOY.
 - e. Zero International; Allegion plc.
- B. Saddle Thresholds:
 1. Type: Thermal break and fluted top.
 2. Base Metal: Aluminum.

2.11 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-rating 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 indicated, 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 ANSI/BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended; however, aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

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.

2.12 FINISHES

- A. Provide finishes complying with ANSI/BHMA A156.18 as indicated in door hardware schedule.
- 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 1. Wood Doors: DHI's "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

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

protective trim units with finishing work. 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 in accordance with industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
1. Replace construction cores with permanent cores as directed by Owner.
 2. Furnish permanent cores to Owner for installation.
- E. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- F. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- G. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
1. Do not notch perimeter gasketing to install other surface-applied hardware.
- H. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

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.
- B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant is to examine and readjust each item of door hardware, including adjusting operating forces, 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.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Maintenance Service: Beginning at Substantial Completion, maintenance service is to include 12 months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Parts and supplies are to be manufacturer's authorized replacement parts and supplies.

3.7 DOOR HARDWARE SCHEDULE

- A. Hardware Set 1: Each door to have the following:

1. HW-1 Wood Single Exterior Door

No.	Item	Notes
3	Hinges	Stanley; "CB199 Heavy-Weight Concealed Bearing, Satin Stainless Steel"
1	Lock Set	Sargent; "10X Line Bored Locks", Function – 04 Closet (F86)
1	Cylinder	Match Existing Sargent – Removable Core
1	Doorstop	Ives; "FS13 Dome (floor)/WS401CVS Convex (wall)"
1 set	Weatherstripping	
	Jamb/Head	Pemko; "346C"
	Door Sweep	Pemko; "345AV"
1	Threshold	Pemko; Saddle ADA Compliant
1	Lockset	Sargent "8200 Series Mortised Lockset", Function XX, Lever trim style "Coastal Series-Gulf Port." Finish Black Suede Powder Coat.
1	Cylinder	Match Existing Sargent-Removable Core
1	Electric Latch	Von Duprin 6211 Series Electric Strike, FSE (fail secure)
1	Power Supply	Von Duprin

END OF SECTION

SECTION 096340 - STONE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Dimension stone exterior flooring.

1.2 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

A. Product Data: For each variety of stone, stone accessory, and manufactured product.

B. Shop Drawings: Include plans, sections, details, and attachments to other work.

1. Show locations and details of joints both within stone flooring and between stone flooring and other finish materials.
2. Show direction of veining, grain, or other directional patterns.

C. Samples for Initial Selection: For joint materials involving color selection.

D. Samples for Verification:

1. For each stone type indicated, in sets of Samples not less than 12 inches square. Include at least three or more Samples in each set and show the full range of color and other visual characteristics in completed Work.

1.3 INFORMATIONAL SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Qualification Data: For fabricator.

C. Material Test Reports:

1. Stone Test Reports: For stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, according to referenced ASTM standards. Base reports on testing within previous five years.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate stone flooring.
- B. Installer Qualifications:
 - 1. A firm or individual experienced in installing stone paving similar in material, design, and extent to that indicated for this Project, whose work has a record of successful in-service performance.
- C. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for fabrication and execution.
 - 1. Build mockup of typical exterior pavement area about 100 feet square.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, and other causes.
 - 1. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
 - 2. Store stone on wood A-frames or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to stone. Ventilate under covers to prevent condensation.
- B. Mark stone units, on surface that is concealed after installation, with designations used on Shop Drawings to identify individual stone units. Orient markings on vertical panels, so that they are right side up when units are installed.

1.6 FIELD CONDITIONS

- A. Maintain air and material temperatures to comply with requirements of installation material manufacturers, but not less than 50 deg F during installation and for seven days after completion.
- B. Cold-Weather Requirements for Exterior Stone Flooring: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
- C. Hot-Weather Requirements for Stone Flooring: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602 and with the following:

1. Maintain temperature of materials below 100 deg F.
2. Do not apply mortar to substrates with temperatures of 100 deg F and above.
3. When the ambient temperature exceeds 90 deg F, fog spray installed stone flooring until damp at least three times a day until flooring is three days old.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from single quarry, whether specified in this Section or in another Section of the Specifications, with resources to provide materials of consistent quality in appearance and physical properties.
 1. For stone types that include same list of varieties and sources, provide same variety from same source for each.
- B. Stone Fabricators: Subject to compliance with requirements, provide products by one of the following:
 1. Freshwater Stone.
 2. Swenson Granite.

2.2 GRANITE

- A. Material Standard: Comply with ASTM C615/C615M.
- B. Regional Materials: Stone shall be fabricated within 500 miles of Project site from materials that have been extracted, harvested, or recovered within 500 miles of Project site. If materials are transported by rail or water, the distance transported by rail or water shall be multiplied by 0.25 to determine the distance to Project site.
- C. Description: Uniform, fine-grained, gray stone.
- D. Varieties and Sources: Subject to compliance with requirements, provide one of the following:
 1. Freshwater Pearl (Freshwater Stone).
 2. Woodbury Gray (Swenson Granite).
 3. Deer Isle (Freshwater Stone).
- E. Finish: Thermal.
- F. Match Architect's samples for color, finish, and other stone characteristics relating to aesthetic effects.

2.3 ACCESSORIES

- A. Temporary Spacers: Resilient plastic, nonstaining to stone, sized to suit joint thickness.

- B. Cleaner: Stone cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

2.4 FABRICATION OF STONE

- A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.
- B. Fabricate stone to comply with requirements indicated and with the following references:
 - 1. For granite, comply with recommendations in NBGQA's "Specifications for Architectural Granite."
- C. Cut stone to produce pieces of thickness, size, and shape indicated.
 - 1. Stone Thickness: 2 inches unless otherwise indicated.
 - 2. Pattern:
 - a. Random, polygonal pattern as indicated composed of units of not less than 9 sq. ft. or more than 50 sq. ft. in area.
 - 3. Stone Edges: Square cut with top corner slightly eased to prevent snipping.
 - 4. Joint Width: 1/4 inch.
- D. Pattern Arrangement: Fabricate and arrange stone units with veining and other natural markings to comply with the following requirements:
 - 1. Cut stone from one block or contiguous, matched blocks in which natural markings occur.
 - 2. Arrange units in blend pattern.
 - 3. Number stone units and note numbers on Shop Drawings to designate installation location of each unit.
- E. Carefully inspect finished stone units at fabrication plant for compliance with appearance, material, and fabrication requirements. Replace defective units. Clean sawed backs of stones to remove rust stains and iron particles.
 - 1. Grade and select stone for overall uniform appearance when assembled in place.
 - 2. Natural variations in appearance are acceptable if installed stone units match range of colors and other appearance characteristics represented in approved Samples and mockups.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive stone paving and conditions under which stone paving will be

installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone flooring.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Before setting stone, clean dirty or stained stone surfaces by removing soil, stains, and foreign materials. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.3 INSTALLATION, GENERAL

- A. Do necessary field cutting as stone is set. Cut lines straight and true, and finish field-cut edges to match shop-cut edges.
 - 1. Use power saws with diamond blades to cut stone.
- B. Set stone to comply with requirements indicated. Match stone for color and pattern by using units numbered in sequence as indicated on Shop Drawings.
- C. Scribe and field cut stone as necessary to fit at obstructions. Produce neat joints of size specified or indicated.

3.4 INSTALLATION TOLERANCES

- A. Variation in Line: For positions shown in plan for edges of flooring, ramps, steps, changes in color or finish, and continuous joint lines, do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
- B. Variation in Joint Width: Do not vary from average joint width more than plus or minus 1/16 inch or one-fourth of nominal joint width, whichever is less.
- C. Variation in Surface Plane: Do not exceed 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch in maximum from level or slope indicated.
- D. Variation in Plane between Adjacent Units (Lipping): Do not exceed 1/16-inch difference between planes of adjacent units.

3.5 ADJUSTING AND CLEANING

- A. Remove and replace stonework of the following description:
 - 1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
 - 2. Stone paving and joints not matching approved Samples and mockups.

3. Stonework not complying with other requirements indicated.
 - B. Replace in a manner that results in stonework matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.
 - C. In-Progress Cleaning: Clean stonework as work progresses.
 - D. Clean stonework after setting is complete. Use procedures recommended by stone fabricator for application types.

3.6 PROTECTION

- A. Protect installed stonework during construction with nonstaining kraft paper. Where adjoining areas require construction work access, cover stonework with a minimum of 3/4-inch untreated plywood over nonstaining kraft paper.

END OF SECTION

SECTION 099113 - EXTERIOR PAINTING

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. Primers.
- 2. Finish coatings.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
 - 1. Include preparation requirements and application instructions.
 - 2. Indicate VOC content.
- C. Samples: For each type of topcoat product.
- D. Samples for Initial Selection: For each type of topcoat product.
- E. Product Schedule: Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint Products: 5 percent, but not less than 1 gal. of each material and color applied.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- 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. Behr Paint Company.
 - 2. Benjamin Moore & Co.
 - 3. California Paints; ICP Building Solutions Group.
 - 4. Carboline Company; a subsidiary of RPM International.
 - 5. Conco Paints.
 - 6. Coronado Paint; Benjamin Moore & Co.
 - 7. Diamond Vogel Paint Company.
 - 8. Dunn-Edwards Corporation (a Nippon Paint Holdings Co. Ltd. company).
 - 9. H&C Decorative Concrete Products; a brand of Sherwin-Williams Co.
 - 10. Hempel (USA), Inc.
 - 11. McCormick Paints.
 - 12. Pratt & Lambert; a subsidiary of The Sherwin-Williams Company.
 - 13. Rodda Paint Co.
 - 14. Rust-Oleum Corporation; a subsidiary of RPM International, Inc.
 - 15. Sherwin-Williams Company (The).
 - 16. Valspar; a brand of The Sherwin-Williams Company.
 - 17. Vista Paint Corporation.
- B. Source Limitations: Obtain each paint product from single source from single manufacturer.

2.2 PAINT PRODUCTS, GENERAL

- A. Material Compatibility:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturer for use in paint system and on substrate indicated.

B. Colors: As selected by Architect from manufacturer's full range.

2.3 PRIMERS

A. Exterior Wood Preservative: Solvent-based, zinc or copper naphthenate, penetrating antifungal treatment for exterior wood.

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. Rust-Oleum Corporation; a subsidiary of RPM International, Inc.

B. Water-Based Bonding Primer: Pigmented, water-based-emulsion primer formulated for exterior use and to promote adhesion of subsequent specified coatings.

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. Behr Paint Company.
 - b. Benjamin Moore & Co.
 - c. Dunn-Edwards Corporation (a Nippon Paint Holdings Co. Ltd. company).
 - d. Hempel (USA), Inc.
 - e. McCormick Paints.
 - f. PPG Paints; PPG Industries, Inc.
 - g. Pratt & Lambert; a subsidiary of The Sherwin-Williams Company.
 - h. Rodda Paint Co.
 - i. Rust-Oleum Corporation; a subsidiary of RPM International, Inc.
 - j. Sherwin-Williams Company (The).
 - k. Valspar; a brand of The Sherwin-Williams Company.

2.4 FINISH COATINGS

A. Exterior Latex Paint, Semigloss: Water-based, pigmented emulsion coating formulated for alkali, mold, microbial, and water resistance and for use on exterior surfaces, such as masonry, portland cement plaster, and primed wood and metal.

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. Behr Paint Company.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- b. [Benjamin Moore & Co.](#)
 - c. [Diamond Vogel Paint Company.](#)
 - d. [Dunn-Edwards Corporation \(a Nippon Paint Holdings Co. Ltd. company\).](#)
 - e. [Hempel \(USA\), Inc.](#)
 - f. [McCormick Paints.](#)
 - g. [PPG Paints; PPG Industries, Inc.](#)
 - h. [Pratt & Lambert; a subsidiary of The Sherwin-Williams Company.](#)
 - i. [Rodda Paint Co.](#)
 - j. [Rust-Oleum Corporation; a subsidiary of RPM International, Inc.](#)
 - k. [Sherwin-Williams Company \(The\).](#)
 - l. [Valspar; a brand of The Sherwin-Williams Company.](#)
 - m. [Vista Paint Corporation.](#)
 2. Gloss Level: Manufacturer's standard semigloss finish.
- B. Exterior Latex Paint, Gloss: Water-based, pigmented, acrylic-copolymer-emulsion coating formulated for alkali, mold, microbial, scrub, blocking (sticking of two painted surfaces), and water resistance and for use on exterior, primed, wood and metal trim, sashes, frames, and doors.
 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. [Behr Paint Company.](#)
 - b. [Dunn-Edwards Corporation \(a Nippon Paint Holdings Co. Ltd. company\).](#)
 - c. [Hempel \(USA\), Inc.](#)
 - d. [PPG Paints; PPG Industries, Inc.](#)
 - e. [Rodda Paint Co.](#)
 - f. [Sherwin-Williams Company \(The\).](#)
 - g. [Vista Paint Corporation.](#)
 2. Gloss Level: Manufacturer's standard gloss finish.
- C. Exterior, Water-Based, Light Industrial Coating, Semigloss: Corrosion-resistant, water-based, pigmented, emulsion coating formulated for resistance to blocking (sticking of two painted surfaces), water, alkalis, moderate abrasion, and mild chemical exposure and for use on exterior, primed, wood and metal surfaces.
 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. [Behr Paint Company.](#)
 - b. [Dunn-Edwards Corporation \(a Nippon Paint Holdings Co. Ltd. company\).](#)
 - c. [McCormick Paints.](#)
 - d. [Rodda Paint Co.](#)
 - e. [Rust-Oleum Corporation; a subsidiary of RPM International, Inc.](#)
 - f. [Sherwin-Williams Company \(The\).](#)
 - g. [Vista Paint Corporation.](#)

2. Gloss and Sheen Level: Manufacturer's standard semigloss finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 1. Wood: 15 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility, with finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems specified in this Section.
- D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- E. Wood Substrates:
 1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
 2. Sand surfaces that will be exposed to view, and remove sanding dust.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 INSTALLATION

- A. Apply paints in accordance with manufacturer's written instructions.
 1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in the Exterior Painting Schedule may be omitted on items that are factory primed or factory finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
 1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
 3. Allow empty paint cans to dry before disposal.
 4. Collect waste paint by type and deliver to recycling or collection facility.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.5 EXTERIOR PAINTING SCHEDULE, METAL SUBSTRATES

A. Steel and Iron Substrates:

1. Water-Based, Light Industrial Coating System:

- a. Prime Coat: Shop primer specified in Section in which substrate is specified.
- b. Intermediate Coat: Matching topcoat.
- c. Topcoat: Exterior, water-based, light industrial coating, semigloss.

B. Aluminum Substrates:

1. Water-Based, Light Industrial Coating System:

- a. Prime Coat: Quick-drying aluminum primer.
- b. Intermediate Coat: Matching topcoat.
- c. Topcoat: Exterior, water-based, light industrial coating, semigloss.

3.6 EXTERIOR PAINTING SCHEDULE, WOOD SUBSTRATES

A. Exposed Wood-Framing Substrates:

1. Latex over Latex Primer System:

- a. Prime Coat: Exterior, latex wood primer.
- b. Intermediate Coat: Matching topcoat.
- c. Topcoat: Exterior latex paint, semigloss.

END OF SECTION

SECTION 260010 - SUPPLEMENTAL REQUIREMENTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements generally applicable to all electrical Work on the Project, including but not limited to Work specified in Divisions 26, 27, and 28.

1.2 REFERENCES

A. Abbreviations and Acronyms for Electrical Terms and Units of Measure:

1. 8P8C: An 8-position 8-contact modular jack.
2. A: Ampere, unit of electrical current.
3. AC or ac: Alternating current.
4. AFCI: Arc-fault circuit interrupter.
5. AIC: Ampere interrupting capacity.
6. AL, Al, or ALUM: Aluminum.
7. ASD: Adjustable-speed drive.
8. ATS: Automatic transfer switch.
9. AWG: American wire gauge; see ASTM B258.
10. BAS: Building automation system.
11. BIL: Basic impulse insulation level.
12. BIM: Building information modeling.
13. BMS: Building management system.
14. CAD: Computer-aided design or drafting.
15. CATV: Community antenna television.
16. CB: Circuit breaker.
17. cd: Candela, the SI fundamental unit of luminous intensity.
18. CO/ALR: Copper-aluminum, revised.
19. COPS: Critical operations power system.
20. CU or Cu: Copper.
21. CU-AL or AL-CU: Copper-aluminum.
22. dB: Decibel, a unitless logarithmic ratio of two electrical, acoustical, or optical power values.
23. dB(A-weighted) or dB(A): Decibel acoustical sound pressure level with A-weighting applied in accordance with IEC 61672-1.
24. dB(adjusted) or dBa: Decibel weighted absolute noise power with respect to 3.16 pW (minus 85 dBm).
25. dBm: Decibel absolute power with respect to 1 mW.
26. DC or dc: Direct current.
27. DCOA: Designated critical operations area.
28. DDC: Direct digital control (HVAC).
29. EGC: Equipment grounding conductor.
30. ELV: Extra-low voltage.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

31. EMF: Electromotive force.
32. EMI: Electromagnetic interference.
33. EMP: Electrical maintenance program (operation and maintenance); electromagnetic pulse (transient analysis).
34. EPS: Emergency power supply.
35. EPSS: Emergency power supply system.
36. ESS: Energy storage system.
37. EV: Electric vehicle.
38. EVPE: Electric vehicle power export equipment.
39. EVSE: Electric vehicle supply equipment.
40. FACU: Fire-alarm control unit.
41. fc: Footcandle, an internationally recognized unit of illuminance equal to one lumen per square foot or 10.76 lx. The simplified conversion 1 fc = 10 lx in the Specifications is common practice and considered adequate precision for building construction activities. When there are conflicts, lux is the primary unit; footcandle is specified for convenience.
42. FLC: Full-load current.
43. ft: Foot.
44. ft-cd: Foot-candle, the antiquated U.S. standard unit of illuminance, equal to one international candle measured at a distance of one foot, that was superseded in 1948 by the unit "footcandle" when the SI unit candela (cd) replaced the international candle; see "fc."
45. FTP: File transfer protocol.
46. GEC: Grounding electrode conductor.
47. GFCI: Ground-fault circuit interrupter.
48. GFPE: Ground-fault protection of equipment.
49. GND: Ground.
50. HACR: Heating, air conditioning, and refrigeration.
51. HDPE: High-density polyethylene.
52. HID: High-intensity discharge.
53. HP or hp: Horsepower.
54. HVAC: Heating, ventilating, and air conditioning.
55. Hz: Hertz.
56. IBT: Intersystem bonding termination.
57. ICT: Information and communications technology.
58. inch: Inch. To avoid confusion, the abbreviation "in." is not used.
59. I/O: Input/output.
60. IP: Ingress protection rating (enclosures); Internet protocol (communications).
61. IR: Infrared.
62. IS: Intrinsically safe.
63. IT&R: Inspecting, testing, and repair.
64. ITE: Information technology equipment.
65. kAIC: Kiloampere interrupting capacity.
66. kmil or MCM: One thousand circular mils.
67. kV: Kilovolt.
68. kVA: Kilovolt-ampere.
69. kvar: Kilovolt-ampere reactive.
70. kW: Kilowatt.
71. kWh: Kilowatt-hour.
72. LAN: Local area network.
73. lb: Pound (weight).
74. lbf: Pound (force).

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 75. LCD: Liquid-crystal display.
- 76. LCDI: Leakage-current detector-interrupter.
- 77. LED: Light-emitting diode.
- 78. Li-ion: Lithium-ion.
- 79. lm: Lumen, the SI-derived unit of luminous flux.
- 80. LNG: Liquefied natural gas.
- 81. LP-Gas: Liquefied petroleum gas.
- 82. LRC: Locked-rotor current.
- 83. LV: Low voltage.
- 84. lx: Lux, the SI-derived unit of illuminance equal to one lumen per square meter.
- 85. m: Meter.
- 86. MCC: Motor-control center.
- 87. MDC: Modular data center.
- 88. MG set: Motor-generator set.
- 89. MIDI: Musical instrument digital interface.
- 90. MLO: Main lugs only.
- 91. MPEG-2: Abbreviation for the ISO/IEC Moving Picture Experts Group's standard for generic coding of moving pictures and associated audio information (ISO/IEC 13818) released in 1995 and used for most over-the-air and satellite broadcast digital television.
- 92. MPEG-4: Abbreviation for the ISO/IEC Moving Picture Experts Group's standard framework for coding of audio-visual objects (ISO/IEC 14496) released in 1999, with digital rights management and more advanced compression algorithms than MPEG-2.
- 93. MOV: Metal-oxide varistor.
- 94. MV: Medium voltage.
- 95. MVA: Megavolt-ampere.
- 96. mW: Milliwatt.
- 97. MW: Megawatt.
- 98. MWh: Megawatt-hour.
- 99. N.C.: Normally closed.
- 100. Ni-Cd: Nickel-cadmium.
- 101. Ni-MH: Nickel-metal hydride.
- 102. NIU: Network interface unit.
- 103. N.O.: Normally open.
- 104. NPT: National (American) standard pipe taper.
- 105. OCPD: Overcurrent protective device.
- 106. ONT: Optical network terminal.
- 107. PC: Personal computer.
- 108. PCS: Power conversion system.
- 109. PCU: Power-conditioning unit.
- 110. PF or pf: Power factor.
- 111. PHEV: Plug-in hybrid electric vehicle.
- 112. PLC: Programmable logic controller.
- 113. PLFA: Power-limited fire alarm.
- 114. PoE: Power over Ethernet.
- 115. POTS: Plain old telephone service. See "public switched telephone network" definition.
- 116. PSTN: Public switched telephone network.
- 117. PV: Photovoltaic.
- 118. PVC: Polyvinyl chloride.
- 119. pW: Picowatt.
- 120. RFI: (electrical) Radio-frequency interference; (contract) Request for interpretation.
- 121. RMS or rms: Root-mean-square.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

122. RPM or rpm: Revolutions per minute.
123. SCADA: Supervisory control and data acquisition.
124. SCCR: Short-circuit current rating.
125. SCR: Silicon-controlled rectifier.
126. SPD: Surge protective device.
127. sq.: Square.
128. SWD: Switching duty.
129. TCP/IP: Transmission Control Protocol/Internet Protocol.
130. TEFC: Totally enclosed fan-cooled.
131. TR: Tamper resistant.
132. TVSS: Transient voltage surge suppressor.
133. UL: (standards) UL Standards & Engagement Inc.; (product categories) UL, LLC.
134. UL CCN: UL Category Control Number.
135. UPS: Uninterruptible power supply.
136. USB: Universal serial bus.
137. UV: Ultraviolet.
138. V: Volt, unit of electromotive force.
139. V(ac): Volt, alternating current.
140. V(dc): Volt, direct current.
141. VA: Volt-ampere, unit of complex electrical power.
142. VAR: Volt-ampere reactive, unit of reactive electrical power.
143. VFC: Variable-frequency controller.
144. VOM: Volt-ohm-multimeter.
145. VoIP: Voice over Internet Protocol.
146. VPN: Virtual private network.
147. VRLA: Valve regulated lead acid; also called "sealed lead acid (SLA)" or "valve regulated sealed lead acid."
148. W: Watt, unit of real electrical power.
149. WAN: Wide area network.
150. Wh: Watt-hour, unit of electrical energy usage.
151. WPT: Wireless power transfer.
152. WPTE: Wireless power transfer equipment.
153. WR: Weather resistant.

B. Abbreviations and Acronyms for Electrical Raceway Types:

1. EMT: Electrical metallic tubing.
2. EMT-A: Aluminum electrical metallic tubing.
3. EMT-S: Steel electrical metallic tubing.
4. EMT-SS: Stainless steel electrical metallic tubing.
5. ENT: Electrical nonmetallic tubing.
6. EPEC: Electrical HDPE underground conduit (thin wall).
7. EPEC-A: Type A electrical HDPE underground conduit.
8. EPEC-B: Type B electrical HDPE underground conduit.
9. ERMCM: Electrical rigid metal conduit.
10. ERMCM-A: Aluminum electrical rigid metal conduit.
11. ERMCM-S: Steel electrical rigid metal conduit.
12. ERMCM-S-G: Galvanized-steel electrical rigid metal conduit.
13. ERMCM-S-PVC: PVC-coated-steel electrical rigid metal conduit.
14. ERMCM-SS: Stainless steel electrical rigid metal conduit.
15. FMC: Flexible metal conduit.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

16. FMC-A: Aluminum flexible metal conduit.
17. FMC-S: Steel flexible metal conduit.
18. FMT: Steel flexible metallic tubing.
19. FNMC: Flexible nonmetallic conduit. See "LFNC."
20. HDPE: HDPE underground conduit (thick wall).
21. HDPE-40: Schedule 40 HDPE underground conduit.
22. HDPE-80: Schedule 80 HDPE underground conduit.
23. IMC: Steel electrical intermediate metal conduit.
24. LFMC: Liquidtight flexible metal conduit.
25. LFMC-A: Aluminum liquidtight flexible metal conduit.
26. LFMC-S: Steel liquidtight flexible metal conduit.
27. LFMC-SS: Stainless steel liquidtight flexible metal conduit.
28. LFNC: Liquidtight flexible nonmetallic conduit.
29. LFNC-A: Layered (Type A) liquidtight flexible nonmetallic conduit.
30. LFNC-B: Integral (Type B) liquidtight flexible nonmetallic conduit.
31. LFNC-C: Corrugated (Type C) liquidtight flexible nonmetallic conduit.
32. PVC: Rigid PVC conduit.
33. PVC-40: Schedule 40 rigid PVC conduit.
34. PVC-80: Schedule 80 rigid PVC Conduit.
35. PVC-A: Type A rigid PVC concrete-encased conduit.
36. PVC-EB: Type EB rigid PVC concrete-encased underground conduit.
37. RGS: See ERMCM-S-G.
38. RMC: See ERMCM.
39. RTRC: Reinforced thermosetting resin conduit.
40. RTRC-AG: Low-halogen, aboveground reinforced thermosetting resin conduit.
41. RTRC-AG-HW: Heavy wall, low-halogen, aboveground reinforced thermosetting resin conduit.
42. RTRC-AG-SW: Standard wall, low-halogen, aboveground reinforced thermosetting resin conduit.
43. RTRC-AG-XW: Extra heavy wall, low-halogen, aboveground reinforced thermosetting resin conduit.
44. RTRC-BG: Low-halogen, belowground reinforced thermosetting resin conduit.

C. Abbreviations and Acronyms for Electrical Single-Conductor and Multiple-Conductor Cable Types:

1. AC: Armored cable.
2. CATV: Coaxial general-purpose cable.
3. CATVP: Coaxial plenum cable.
4. CATVR: Coaxial riser cable.
5. CI: Circuit integrity cable.
6. CL2: Class 2 cable.
7. CL2P: Class 2 plenum cable.
8. CL2R: Class 2 riser cable.
9. CL2X: Class 2 cable, limited use.
10. CL3: Class 3 cable.
11. CL3P: Class 3 plenum cable.
12. CL3R: Class 3 riser cable.
13. CL3X: Class 3 cable, limited use.
14. CM: Communications general-purpose cable.
15. CMG: Communications general-purpose cable.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

16. CMP: Communications plenum cable.
17. CMR: Communications riser cable.
18. CMUC: Under-carpet communications wire and cable.
19. CMX: Communications cable, limited use.
20. DG: Distributed generation cable.
21. FC: Flat cable.
22. FCC: Flat conductor cable.
23. FPL: Power-limited fire-alarm cable.
24. FPLP: Power-limited fire-alarm plenum cable.
25. FPLR: Power-limited fire-alarm riser cable.
26. IGS: Integrated gas spacer cable.
27. ITC: Instrumentation tray cable.
28. ITC-ER: Instrumentation tray cable, exposed run.
29. MC: Metal-clad cable.
30. MC-HL: Metal-clad cable, hazardous location.
31. MI: Mineral-insulated, metal-sheathed cable.
32. MTW: (machine tool wiring) Moisture-, heat-, and oil-resistant thermoplastic cable.
33. MV: Medium-voltage cable.
34. NM: Nonmetallic sheathed cable.
35. NMC: Nonmetallic sheathed cable with corrosion-resistant nonmetallic jacket.
36. NMS: Nonmetallic sheathed cable with signaling, data, and communications conductors, plus power or control conductors.
37. NPLF: Non-power-limited fire-alarm circuit cable.
38. NPLFP: Non-power-limited fire-alarm circuit cable for environmental air spaces.
39. NPLFR: Non-power-limited fire-alarm circuit riser cable.
40. NUCC: Nonmetallic underground HDPE conduit with conductors.
41. OFC: Conductive optical fiber general-purpose cable.
42. OFCG: Conductive optical fiber general-purpose cable.
43. OFCP: Conductive optical fiber plenum cable.
44. OFCR: Conductive optical fiber riser cable.
45. OFN: Nonconductive optical fiber general-purpose cable.
46. OFNG: Nonconductive optical fiber general-purpose cable.
47. OFNP: Nonconductive optical fiber plenum cable.
48. OFNR: Nonconductive optical fiber riser cable.
49. P: Marine shipboard cable.
50. PLTC: Power-limited tray cable.
51. PLTC-ER: Power-limited tray cable, exposed run.
52. PV: Photovoltaic cable.
53. RHH: (high heat) Thermoset rubber, heat-resistant cable.
54. RHW: Thermoset rubber, moisture-resistant cable.
55. SA: Silicone rubber cable.
56. SE: Service-entrance cable.
57. SER: Service-entrance cable, round.
58. SEU: Service-entrance cable, flat.
59. SIS: Thermoset cable for switchboard and switchgear wiring.
60. TBS: Thermoplastic cable with outer braid.
61. TC: Tray cable.
62. TC-ER: Tray cable, exposed run.
63. TC-ER-HL: Tray cable, exposed run, hazardous location.
64. THW: Thermoplastic, heat- and moisture-resistant cable.
65. THHN: Thermoplastic, heat-resistant cable with nylon jacket outer sheath.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 66. THHW: Thermoplastic, heat- and moisture-resistant cable.
- 67. THWN: Thermoplastic, moisture- and heat-resistant cable with nylon jacket outer sheath.
- 68. TW: Thermoplastic, moisture-resistant cable.
- 69. UF: Underground feeder and branch-circuit cable.
- 70. USE: Underground service-entrance cable.
- 71. XHH: Cross-linked polyethylene, heat-resistant cable.
- 72. XHHW: Cross-linked polyethylene, heat- and moisture-resistant cable.

D. Definitions:

- 1. 8-Position 8-Contact (8P8C) Modular Jack: An unkeyed jack with up to eight contacts commonly used to terminate twisted pair and multiconductor Ethernet cable. Also called a "TIA-1096 miniature 8-position series jack" (8PSJ), or an "IEC 8877 8-pole jack."
 - a. Be careful when suppliers use "RJ45" generically. Obsolete RJ45 jacks used for analog telephone cables have rejection keys. 8P8C jacks used for digital telephone cables and Ethernet cables do not have rejection keys.
- 2. Basic Impulse Insulation Level (BIL): Reference insulation level expressed in impulse crest voltage with a standard wave not longer than 1.5 times 50 microseconds and 1.5 times 40 microseconds.
- 3. Cable: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "cable" is (1) a conductor with insulation, or a stranded conductor with or without insulation (single-conductor cable); or (2) a combination of conductors insulated from one another (multiple-conductor cable).
- 4. Communications Jack: A fixed connecting device designed for insertion of a communications cable plug.
- 5. Communications Outlet: One or more communications jacks, or cables and plugs, mounted in a box or ring, with a suitable protective cover.
- 6. Conductor: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "conductor" is (1) a wire or combination of wires not insulated from one another, suitable for carrying an electric current; (2) (National Electrical Safety Code) a material, usually in the form of wire, cable, or bar, suitable for carrying an electric current; or (3) (general) a substance or body that allows a current of electricity to pass continuously along it.
- 7. Conduit: A structure containing one or more duct raceways.
- 8. Designated Seismic System: An architectural, electrical, or mechanical system and its components for which the component importance factor is greater than 1.0 when determined in accordance with Section 018123 "Facility Seismic and Wind Criteria."
- 9. Direct Buried: Installed underground without encasement in concrete or other protective material.
- 10. Duct Bank: An arrangement of conduit providing one or more continuous duct raceways between two points.
- 11. Duct Raceway: A single enclosed raceway for conductors or cable.
- 12. Electrical Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.
- 13. Enclosure: The case or housing of an apparatus, or the fence or wall(s) surrounding an installation, to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage. Types of enclosures and enclosure covers include the following:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Cabinet: An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung.
 - b. Concrete Box: A box intended for use in poured concrete.
 - c. Conduit Body: A means for providing access to the interior of a conduit or tubing system through one or more removable covers at a junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.
 - d. Conduit Box: A box having threaded openings or knockouts for conduit, EMT, or fittings.
 - e. Cover Plate: A cover designed for protecting wiring devices installed in flush-mounted device boxes while permitting their safe operation; also called a faceplate or wallplate.
 - f. Cutout Box: An enclosure designed for surface mounting that has swinging doors or covers secured directly to and telescoping with the walls of the enclosure.
 - g. Device Box: A box with provisions for mounting a wiring device directly to the box.
 - h. Extension Ring: A ring intended to extend the sides of an outlet box or device box to increase the box depth, volume, or both.
 - i. Floor Box: A box mounted in the floor intended for use with a floor box cover and other components to complete the floor box enclosure.
 - j. Floor-Mounted Enclosure: A floor box and floor box cover assembly with means to mount in the floor that is sealed against the entrance of scrub water at the floor level.
 - k. Floor Nozzle: An enclosure used on a wiring system, intended primarily as a housing for a receptacle, provided with a means, such as a collar, for surface-mounting on a floor, which may or may not include a stem to support it above the floor level, and is sealed against the entrance of scrub water at the floor level.
 - l. Junction Box: A box with a blank cover that joins different runs of raceway or cable and provides space for connection and branching of the enclosed conductors.
 - m. Outlet Box: A box that provides access to a wiring system having pryout openings, knockouts, threaded entries, or hubs in either the sides or the back, or both, for the entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting an outlet box cover, but without provisions for mounting a wiring device directly to the box.
 - n. Pedestal Floor Box Cover: A floor box cover that, when installed as intended, provides a means for typically vertical or near-vertical mounting of receptacle outlets above the floor's finished surface.
 - o. Pull Box: A box with a blank cover that joins different runs of raceway and provides access for pulling or replacing the enclosed cables or conductors.
 - p. Ring: A sleeve, which is not necessarily round, used for positioning a recessed wiring device flush with the plaster, concrete, drywall, or other wall surface.
 - q. Ring Cover: A box cover, with raised center portion to accommodate a specific wall or ceiling thickness, for mounting wiring devices or luminaires flush with the surface.
 - r. Termination Box: An enclosure designed for installation of termination base assemblies consisting of bus bars, terminal strips, or terminal blocks with provision for wire connectors to accommodate incoming or outgoing conductors, or both.
14. Emergency Systems: Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having

- jurisdiction that are designed to ensure continuity of lighting, electrical power, or both, to designated areas and equipment in the event of failure of the normal supply for safety to human life.
15. Fault Limited: Providing or being served by a source of electrical power that is limited to not more than 100 W when tested in accordance with UL 62368-1.
 - a. The term "fault limited" is intended to encompass most Class 1, 2, and 3 power-limited sources complying with Article 725 of NFPA 70; Class ES1 and ES2 electrical energy sources that are Class PS1 electrical power sources (e.g., USB); and Class ES3 electrical energy sources that are Class PS1 and PS2 electrical power sources (e.g., PoE). See UL 62368-1 for discussion of classes of electrical energy sources and classes of electrical power sources.
 16. High-Performance Building: A building that integrates and optimizes on a life-cycle basis all major high-performance attributes, including energy conservation, environment, safety, security, durability, accessibility, cost-benefit, productivity, sustainability, functionality, and operational considerations.
 17. Jacket: A continuous nonmetallic outer covering for conductors or cables.
 18. Luminaire: A complete lighting unit consisting of a light source such as a lamp, together with the parts designed to position the light source and connect it to the power supply. It may also include parts to protect the light source or the ballast or to distribute the light.
 19. Mode: The terms "Active Mode," "Off Mode," and "Standby Mode" are used as defined in the Energy Independence and Security Act (EISA) of 2007.
 20. Multi-Outlet Assembly: A type of surface, flush, or freestanding raceway designed to hold conductors, receptacles, and switches, assembled in the field or at the factory.
 21. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein. Also called "single-line diagram."
 22. Plenum: A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system.
 23. Protective Device: A device that senses when an abnormal current flow, abnormal voltage potential, or other abnormal electrical waveform exists and then disconnects the affected portion of the circuit from the system. Common protective devices include fuses, circuit breakers, relays, ground-fault circuit interrupters, and arc-fault circuit interrupters.
 24. Public Switched Telephone Network (PSTN): Analog telephone technology that uses twisted pair cables from a telephone-provider central office for the transmission medium. "PSTN" refers to the telephone network; "POTS" refers to the individual subscriber line.
 25. Receptacle: A fixed connecting device arranged for insertion of a power cord plug. Also called a power jack.
 26. Receptacle Outlet: One or more receptacles mounted in a box with a suitable protective cover.
 27. Sheath: A continuous metallic covering for conductors or cables.
 28. UL Category Control Number (CCN): An alphabetic or alphanumeric code used to identify product categories covered by UL's Listing, Classification, and Recognition Services.
 29. Voice over Internet Protocol (VoIP): Digital telephone packet technology that uses the internet for its transmission medium.
 30. Voltage Class: For specified circuits and equipment, voltage classes are defined as follows:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Control Voltage: Having electromotive force between any two conductors, or between a single conductor and ground, that is supplied from a battery or other Class 2 or Class 3 power-limited source.
 - b. Line Voltage: (1) (controls) Designed to operate using the supplied low-voltage power without transformation. (2) (transmission lines, transformers, SPDs) The line-to-line voltage of the supplying power system.
 - c. Extra-Low Voltage (ELV): Not having electromotive force between any two conductors, or between a single conductor and ground, exceeding 30 V(ac rms), 42 V(ac peak), or 60 V(dc).
 - d. Low Voltage (LV): Having electromotive force between any two conductors, or between a single conductor and ground, that is rated above 30 V but not exceeding 1000 V.
 - e. Medium Voltage (MV): Having electromotive force between any two conductors, or between a single conductor and ground, that is rated about 1 kV but not exceeding 69 kV.
 - f. High Voltage: (1) (circuits) Having electromotive force between any two conductors, or between a single conductor and ground, that is rated above 69 kV but not exceeding 230 kV. (2) (safety) Having sufficient electromotive force to inflict bodily harm or injury.
31. Wire: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "wire" is a slender rod or filament of drawn metal. A group of small wires used as a single wire is properly called a "stranded wire." A wire or stranded wire covered with insulation is properly called an "insulated wire" or a "single-conductor cable." Nevertheless, when the context indicates that the wire is insulated, the term "wire" will be understood to include the insulation.

1.3 COORDINATION

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions:
- 1. Notify Architect and Owner no fewer than seven days in advance of proposed interruption of electrical service.
 - 2. Do not proceed with interruption of electrical service without Owner's written permission.
 - 3. Coordinate interruption with systems impacted by outage including, but not limited to, the following:
 - a. Exercising generators.
 - b. Emergency lighting.
 - c. Elevators.
 - d. Fire-alarm systems.
 - e. Security systems.
- B. Interruption of Existing Security System: Do not interrupt security system to facilities occupied by Owner or others unless permitted under the following conditions:
- 1. Notify Architect and Owner no fewer than seven days in advance of proposed interruption of security system.
 - 2. Do not proceed with interruption of security system without Owner's written permission.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.4 PREINSTALLATION MEETINGS

- A. Electrical Preconstruction Conference: Schedule conference with Architect and Owner, not later than 10 days after Notice to Proceed. Agenda topics include, but are not limited to, the following:
 - 1. Electrical installation schedule.
- B. Electronic Safety and Security Preconstruction Conference: Schedule conference with Architect and Owner not later than 10 days after Notice to Proceed. Agenda topics include, but are not limited to, the following:
 - 1. Installation schedule for security, fire-alarm, and other life-safety systems.
 - 2. Monitoring services work coordination and monitoring service requests.

1.5 SEQUENCING

- A. Conduct and submit results of power system studies before submitting product data and Shop Drawings for electrical equipment.

1.6 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Electrical Installation Schedule: At preconstruction meeting, and periodically thereafter as dates change, provide schedule for electrical installation Work to Owner and Architect including, but not limited to, milestone dates for the following activities:
 - 1. Submission of power system studies.
 - 2. Submission of specified coordination drawings.
 - 3. Submission of action submittals specified in Division 26.
 - 4. Orders placed for major electrical equipment.
 - 5. Arrival of major electrical equipment on-site.
 - 6. Preinstallation meetings specified in Division 26.
 - 7. Utility service outages.
 - 8. Utility service inspection and activation.
 - 9. Closing of walls and ceilings containing electrical Work.
 - 10. System startup, testing, and commissioning activities for major electrical equipment.
 - 11. System startup, testing, and commissioning activities for emergency lighting.
 - 12. System startup, testing, and commissioning activities for lighting control systems.
 - 13. Requests for special inspections.
 - 14. Requests for inspections by authorities having jurisdiction.
- C. Installation Schedule for Security and Other Life-Safety Systems: At preconstruction meeting, and periodically thereafter as dates change, provide schedule for installation of security, fire-alarm, and the other life-safety Work to Owner and Architect including, but not limited to, milestone dates for the following activities:
 - 1. Submission of specified coordination drawings.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Submission of action submittals specified in Division 28.
3. Orders placed for major equipment.
4. Arrival of major equipment on-site.
5. Preinstallation meetings specified in Division 28.
6. Security system outages.
7. Security system inspection and activation.
8. Closing of walls and ceilings containing the security and fire-alarm Work.
9. System startup, testing, and commissioning activities for security equipment.
10. System startup, testing, and commissioning activities for fire-alarm interfaces with the Work specified in other divisions.
11. System startup, testing, and commissioning activities for automation systems (SCADA, BMS, lighting, HVAC, etc.).
12. Requests for special inspections.
13. Requests for inspections by authorities having jurisdiction.

1.7 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Operation and Maintenance Data:
 1. Provide emergency operation, normal operation, and preventive maintenance manuals for each system, equipment, and device listed below:
 - a. Electronic Security Systems.
 2. Include the following information:
 - a. Manufacturer's operating specifications.
 - b. User's guides for software and hardware.
 - c. Schedule of maintenance material items recommended to be stored at the Project site.
 - d. Detailed instructions covering operation under both normal and abnormal conditions.
 - e. Time-current curves for overcurrent protective devices and manufacturer's written instructions for testing and adjusting their settings.
 - f. List of load-current and overload-relay heaters with related motor nameplate data.
 - g. List of lamp types and photoelectric relays used on the Project, with ANSI and manufacturers' codes.
 - h. Manufacturer's instructions for setting field-adjustable components.
 - i. Manufacturer's instructions for testing, adjusting, and reprogramming microprocessor controls.
 - j. EPSS: Manufacturer's system checklists, maintenance schedule, and maintenance log sheets in accordance with NFPA 110.
 - k. Exterior pole inspection and repair procedures.
- C. Software and Firmware Operational Documentation: Provide software and firmware operational documentation, including the following:
 1. Software operating and upgrade manuals.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Names, versions, and website addresses for locations of installed software.
3. Device address list.
4. Printout of software application and graphic screens.
5. Testing and adjusting of panic and emergency power features.
6. For lighting controls, include the following:
 - a. Adjustments of scene preset controls, adjustable fade rates, and fade overrides.
 - b. Operation of adjustable zone controls.

PART 2 - PRODUCTS

2.1 SUBSTITUTION LIMITATIONS FOR ELECTRICAL EQUIPMENT

- A. Substitution requests for electrical equipment will be entertained under the following conditions:
 1. Substitution requests may be submitted for consideration prior to the Electrical Preconstruction Conference if accompanied by value analysis data indicating that substitution will comply with the Project performance requirements while significantly increasing value for Owner throughout life of facility.

2.2 SUBSTITUTION LIMITATIONS FOR COMMUNICATIONS EQUIPMENT

- A. Substitution requests for communications equipment will be entertained under the following conditions:
 1. Substitution requests may be submitted for consideration prior to the Communications Preconstruction Conference if accompanied by value analysis data indicating that substitution will comply with the Project performance requirements while significantly increasing value for Owner throughout life of facility.
 2. Contractor is responsible for sequencing and scheduling equipment procurement. After the Communications Preconstruction Conference, insufficient lead time for equipment delivery will not be considered a valid reason for substitution.

2.3 SUBSTITUTION LIMITATIONS FOR ELECTRONIC SAFETY AND SECURITY EQUIPMENT

- A. Substitution requests for electronic safety and security equipment will be entertained under the following conditions:
 1. Substitution requests may be submitted for consideration prior to the Electronic Safety and Security Preconstruction Conference if accompanied by value analysis data indicating that substitution will comply with the Project performance requirements while significantly increasing value for Owner throughout life of facility.
 2. Contractor is responsible for sequencing and scheduling equipment procurement. After the Electronic Safety and Security Preconstruction Conference, insufficient lead time for equipment delivery will not be considered a valid reason for substitution.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

PART 3 - EXECUTION

3.1 INSTALLATION OF ELECTRICAL WORK

- A. Unless more stringent requirements are specified in the Contract Documents or manufacturers' written instructions, comply with NFPA 70 and NECA NEIS 1 for installation of electrical Work on the Project. Consult Architect for resolution of conflicting requirements.

3.2 CLOSEOUT ACTIVITIES

- A. Training:
 - 1. With assistance from factory-authorized service representatives, train Owner's maintenance personnel:

END OF SECTION

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire.
2. Metal-clad cable, Type MC.
3. Connectors and splices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260523 "Control-Voltage Electrical Power Cables" for control systems communications cables and Classes 1, 2, and 3 control cables.
3. Section 271513 "Communications Copper Horizontal Cabling" for twisted pair cabling used for data circuits.

1.2 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
- C. Product Schedule: Indicate type, use, location, and termination locations.

1.3 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Field quality-control reports.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. 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. [Alpha Wire Company.](#)
2. [American Bare Conductor.](#)
3. [Belden Inc.](#)
4. [Cerro Wire LLC.](#)
5. [Encore Wire Corporation.](#)
6. [General Cable; Prysmian Group North America.](#)
7. [Okonite Company \(The\).](#)
8. [Service Wire Co.](#)
9. [Southwire Company, LLC.](#)
10. [WESCO.](#)

- C. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

- D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

- E. Conductor Insulation:

1. Type RHH and Type RHW-2: Comply with UL 44.
2. Type THHN and Type THWN-2: Comply with UL 83.
3. Type XHHW-2: Comply with UL 44.

2.2 METAL-CLAD CABLE, TYPE MC

- A. Description: A factory assembly of one or more current-carrying insulated conductors in an overall metallic sheath.

- B. 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. [AFC Cable Systems; Atkore International.](#)
2. [Alpha Wire Company.](#)
3. [American Bare Conductor.](#)
4. [Belden Inc.](#)
5. [Encore Wire Corporation.](#)
6. [General Cable; Prysmian Group North America.](#)
7. [Okonite Company \(The\).](#)
8. [Service Wire Co.](#)
9. [Southwire Company, LLC.](#)
10. [WESCO.](#)

- C. Standards:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Comply with UL 1569.
3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Circuits:

1. Single circuit with color-coded conductors.

E. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

F. Ground Conductor: Insulated.

G. Conductor Insulation:

1. Type TFN/THHN/THWN-2: Comply with UL 83.
2. Type XHHW-2: Comply with UL 44.

H. Armor: Steel, interlocked.

2.3 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

B. 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. 3M Electrical Products.
2. ABB, Electrification Business.
3. AFC Cable Systems; Atkore International.
4. Gardner Bender.
5. Hubbell Utility Solutions; Hubbell Incorporated.
6. Ideal Industries, Inc.
7. ILSCO.
8. NSi Industries LLC.
9. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
10. Service Wire Co.
11. TE Connectivity Ltd.

C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.

1. Material: Copper.
2. Type: Two hole with long barrels.
3. Termination: Compression.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Branch Circuits:

1. Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Exposed Branch Circuits: Type THHN/THWN-2, single conductors in raceway.

B. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway or MC-Cable.

3.3 INSTALLATION, GENERAL

A. Conceal cables within conduits in finished walls and drywall. Provide cables within conduits above accessible ceilings, unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points according to Section 260533.13 "Conduits for Electrical Systems" prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

E. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inch of slack.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 FIELD QUALITY CONTROL

A. Tests and Inspections:

- 1. After installing conductors and cables and before electrical circuitry has been energized, test conductors feeding the following critical equipment and services for compliance with requirements:
 - a. Emergency lighting.
- 2. Perform each of the following visual and electrical tests:
 - a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
 - b. Test bolted connections for high resistance using one of the following:
 - 1) A low-resistance ohmmeter.
 - 2) Calibrated torque wrench.
 - 3) Thermographic survey.
 - c. Inspect compression-applied connectors for correct cable match and indentation.
 - d. Inspect for correct identification.
 - e. Inspect cable jacket and condition.
 - f. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500 V(dc) for 300 V rated cable and 1000 V(dc) for 600 V rated cable for a one-minute duration.
 - g. Continuity test on each conductor and cable.
 - h. Uniform resistance of parallel conductors.

B. Cables will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports to record the following:

- 1. Procedures used.
- 2. Results that comply with requirements.
- 3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION

SECTION 260523 - CONTROL-VOLTAGE ELECTRICAL POWER CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Category 6a balanced twisted pair cable.
2. Balanced twisted pair cable hardware.
3. Twin-axial data highway cable.
4. RS-485 cable.
5. Control cable.
6. Control-circuit conductors.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Source quality-control reports.
- C. Field quality-control reports.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Flame Travel and Smoke Density in Plenums: As determined by testing identical products according to NFPA 262, by a qualified testing agency. Identify products for installation in plenums with appropriate markings of applicable testing agency.
 - 1. Flame Travel Distance: 60 inch or less.
 - 2. Peak Optical Smoke Density: 0.5 or less.
 - 3. Average Optical Smoke Density: 0.15 or less.
- C. Flame Travel and Smoke Density for Riser Cables in Non-Plenum Building Spaces: As determined by testing identical products according to UL 1666.
- D. Flame Travel and Smoke Density for Cables in Non-Riser Applications and Non-Plenum Building Spaces: As determined by testing identical products according to UL 1685.

2.2 CATEGORY 6a BALANCED TWISTED PAIR CABLE

- A. Description: Four-pair, balanced-twisted pair cable, certified to meet transmission characteristics of Category 6a cable at frequencies up to 500 MHz.
- B. 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. 3M.
 - 2. AMP NETCONNECT; a TE Connectivity Ltd. company.
 - 3. Belden, Inc.
 - 4. Berk-Tek Leviton; a Nexans/Leviton alliance.
 - 5. CommScope, Inc.
 - 6. General Cable; Prysmian Group North America.
 - 7. Genesis Cable Products; Honeywell International, Inc.
 - 8. Hitachi Cable America Inc.
 - 9. Mohawk; a division of Belden Networking, Inc.
 - 10. Prysmian Cables and Systems; Prysmian Group North America.
 - 11. Superior Essex Inc.; subsidiary of LS Corp.
 - 12. SYSTIMAX Solutions; a CommScope Inc. brand.
- C. Standard: Comply with TIA-568-C.2 for Category 6a cables.
- D. Conductors: 100 ohm, No. 23 AWG solid copper.
 - 1. Lead Content: Less than 300 parts per million.
- E. Shielding/Screening: Unshielded twisted pairs (UTP).
- F. Cable Rating: Plenum.
- G. Jacket: Yellow thermoplastic.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2.3 BALANCED TWISTED PAIR CABLE HARDWARE

- A. Description: Hardware designed to connect, splice, and terminate balanced twisted pair copper communications cable.
- B. 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. 3M.
 2. American Technology Systems Industries, Inc.
 3. AMP NETCONNECT; a TE Connectivity Ltd. company.
 4. Belden, Inc.
 5. Berk-Tek Leviton; a Nexans/Leviton alliance.
 6. CommScope, Inc.
 7. Dynacom Corporation.
 8. General Cable; Prysmian Group North America.
 9. Genesis Cable Products; Honeywell International, Inc.
 10. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 11. KRONE Incorporated.
 12. Leviton Manufacturing Co., Inc.
 13. Mohawk; a division of Belden Networking, Inc.
 14. Molex Premise Networks.
 15. Panduit Corp.
 16. Prysmian Cables and Systems; Prysmian Group North America.
 17. Simon Co. (The).
 18. Superior Essex Inc.; subsidiary of LS Corp.
 19. SYSTIMAX Solutions; a CommScope Inc. brand.
- C. General Requirements for Balanced Twisted Pair Cable Hardware:
1. Comply with the performance requirements of Category 6a.
 2. Comply with TIA-568-C.2, IDC type, with modules designed for punch-down caps or tools.
 3. Cables must be terminated with connecting hardware of same category or higher.
- D. Source Limitations: Obtain balanced twisted pair cable hardware from single source from single manufacturer.
- E. Cross-Connect: Modular array of connecting blocks arranged to terminate building cables and permit interconnection between cables.
1. Number of Terminals per Field: One for each conductor in assigned cables.
- F. Patch Panel: Modular panels housing numbered jack units with IDC-type connectors at each jack location for permanent termination of pair groups of installed cables.
1. Features:
 - a. Universal T568A and T568B wiring labels.
 - b. Labeling areas adjacent to conductors.
 - c. Replaceable connectors.
 - d. 48 ports.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Construction: 16-gauge steel and mountable on 19 inch equipment racks.
 3. Number of Jacks per Field: One for each four-pair conductor group of indicated cables, plus spares and blank positions adequate to suit specified expansion criteria.
- G. Patch Cords: Factory-made, four-pair cables in lengths indicated; terminated with an eight-position modular plug at each end.
1. Patch cords must have bend-relief-compliant boots and color-coded icons to ensure performance. Patch cords must have latch guards to protect against snagging.
 2. Patch cords must have color-coded boots for circuit identification.
- H. Legend:
1. Machine printed, in the field, using adhesive-tape label.

2.4 RS-232 CABLE

- 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. Allied Wire & Cable Inc.
 2. Belden Inc.
 3. General Cable; Prysmian Group North America.
 4. Genesis Cable Products; Honeywell International, Inc.
 5. Southwire Company, LLC.
- B. Plenum-Type, TIA 232-F:
1. Nine, No. 22 AWG, stranded (7x30) tinned copper conductors.
 2. Lead Content: Less than 300 parts per million.
 3. PE insulation.
 4. Aluminum foil-polyester tape shield with 100 percent shield coverage.
 5. Fluorinated ethylene propylene jacket.
 6. Conductors are cabled on common axis with No. 24 AWG, stranded (7x32) tinned copper drain wire.
 7. Flame Resistance: Comply with NFPA 262.

2.5 RS-485 CABLE

- A. Plenum-Rated Cable: NFPA 70, Type CMP.
1. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned-copper conductors.
 2. Fluorinated ethylene propylene insulation.
 3. Unshielded.
 4. Fluorinated ethylene propylene jacket.
 5. Flame Resistance: NFPA 262.
 6. Lead Content: Less than 300 parts per million.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2.6 CONTROL CABLE

- A. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.
 - 1. Multi-pair, twisted, No. 16 AWG, stranded (19x29) tinned-copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.
 - 5. Flame Resistance: Comply with NFPA 262.
 - 6. Lead Content: Less than 300 parts per million.

2.7 CONTROL-CIRCUIT CONDUCTORS

- 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. Encore Wire Corporation.
 - 2. General Cable; Prysmian Group North America.
 - 3. Service Wire Co.
 - 4. Southwire Company, LLC.
- B. Class 1 Control Circuits: Stranded copper, Type THHN/THWN-2, complying with UL 83 in raceway.
- C. Class 2 Control Circuits: Stranded copper, Type THHN/THWN-2, complying with UL 83 in raceway.
- D. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type THHN/THWN-2, complying with UL 83 in raceway.
- E. Class 2 Control Circuits and Class 3 Remote-Control and Signal Circuits That Supply Critical Circuits: Circuit Integrity (CI) cable.
 - 1. Smoke control signaling and control circuits.

2.8 SOURCE QUALITY CONTROL

- A. Factory test twisted pair cables according to TIA-568-C.2.
- B. Cable will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Test cables on receipt at Project site.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Test each pair of twisted pair cable for open and short circuits.

3.2 INSTALLATION OF RACEWAYS AND BOXES

- A. Comply with requirements in Section 260533 "Raceways and Boxes for Electrical Systems" for raceway selection and installation requirements for boxes, conduits, and wireways as supplemented or modified in this Section.
 1. Outlet boxes for telecommunications wiring must be no smaller than 4-11/16 inch square by 2-1/8 inch deep. Boxes must be provided with extension rings sized to bring edge of ring to within 1/8 inch of the finished wall surface.
 2. Flexible metal conduit must not be used.
- B. Comply with TIA-569-D for pull-box sizing and length of conduit and number of bends between pull points.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Comply with NECA 1.
- B. General Requirements for Cabling:
 1. Comply with TIA-568-C Series of standards.
 2. Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems."
 3. Terminate all conductors; cable must not contain unterminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
 4. Cables may not be spliced and must be continuous from terminal to terminal. Do not splice cable between termination, tap, or junction points.
 5. Cables serving a common system may be grouped in a common raceway. Install network cabling and control wiring and cable in separate raceway from power wiring. Do not group conductors from different systems or different voltages.
 6. Secure and support cables at intervals not exceeding 30 inch and not more than 6 inch from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
 7. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems." Install lacing bars and distribution spools.
 8. Do not install bruised, kinked, scored, deformed, or abraded cable. Remove and discard cable if damaged during installation and replace it with new cable.
 9. Cold-Weather Installation: Bring cable to room temperature before dereeling. Do not use heat lamps for heating.
 10. Pulling Cable: Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems." Monitor cable pull tensions.
 11. Support: Provide independent support as indicated. Do not allow cables to lie on removable ceiling tiles.
 12. Provide and fasten securely in place with hardware specifically designed and installed so as to not damage cables.
 13. Provide strain relief.
 14. Allow extra length for connecting to terminals. Do not bend cables in a radius less than 10 times the cable OD. Use sleeves or grommets to protect cables from vibration at points where they pass around sharp corners and through penetrations.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

15. Ground wire must be copper, and grounding methods must comply with IEEE C2. Demonstrate ground resistance.
- C. Balanced Twisted Pair Cable Installation:
1. Comply with TIA-568-C.2.
 2. Provide termination hardware as specified in Section 271513 "Communications Copper Horizontal Cabling" unless otherwise indicated.
 3. Do not untwist balanced twisted pair cables more than 1/2 inch at the point of termination to maintain cable geometry.
- D. Installation of Control-Circuit Conductors:
1. Provide wiring in raceways.
 2. Use insulated spade lugs for wire and cable connection to screw terminals.
 3. Comply with requirements specified in Section 260533 "Raceways and Boxes for Electrical Systems."
- E. Open-Cable Installation:
1. Provide cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
 2. Provide copper cable in a continuous cable tray or open top pathway a minimum of 8 inch above ceilings by cable supports not more than 30 inch apart.
 3. Cable must not be run through or on structural members or in contact with pipes, ducts, or other potentially damaging items. Do not run cables between structural members and corrugated panels.
- F. Separation from EMI Sources:
1. Comply with BICSI TDMM and TIA-569-D recommendations for separating unshielded copper voice and data communications cable from potential EMI sources including electrical power lines and equipment.
 2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment must be as follows:
 - a. Electrical Equipment or Circuit Rating Less Than 2 kVA: A minimum of 5 inch.
 - b. Electrical Equipment or Circuit Rating between 2 and 5 kVA: A minimum of 12 inch.
 - c. Electrical Equipment or Circuit Rating More Than 5 kVA: A minimum of 24 inch.
 3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment must be as follows:
 - a. Electrical Equipment or Circuit Rating Less Than 2 kVA: A minimum of 2-1/2 inch.
 - b. Electrical Equipment or Circuit Rating between 2 and 5 kVA: A minimum of 6 inch.
 - c. Electrical Equipment or Circuit Rating More Than 5 kVA: A minimum of 12 inch.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures must be as follows:
 - a. Electrical Equipment or Circuit Rating Less Than 2 kVA: No requirement.
 - b. Electrical Equipment or Circuit Rating between 2 and 5 kVA: A minimum of 3 inch.
 - c. Electrical Equipment or Circuit Rating More Than 5 kVA: A minimum of 6 inch.
5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or 5 HP and Larger: A minimum of 48 inch.
6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inch.

3.4 CONTROL-CIRCUIT CONDUCTORS

A. Minimum Conductor Sizes:

1. Class 1 remote-control and signal circuits; No 14 AWG.
2. Class 2 low-energy, remote-control, and signal circuits; No. 16 AWG.
3. Class 3 low-energy, remote-control, alarm, and signal circuits; No 12 AWG.

3.5 FIRESTOPPING

- A. Comply with TIA-569-D, Annex A, "Firestopping."
- B. Comply with BICSI TDMM, "Firestopping" Chapter.

3.6 GROUNDING

- A. For data communication wiring, comply with TIA-607-B and with BICSI TDMM, "Bonding and Grounding (Earthing)" Chapter.
- B. For control-voltage wiring and cabling, comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."

3.7 IDENTIFICATION

- A. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- B. Identify data and communications system components, wiring, and cabling according to TIA-606-B; label printers must use label stocks, laminating adhesives, and inks complying with UL 969.
- C. Identify each wire on each end and at each terminal with a number-coded identification tag. Each wire must have a unique tag.

3.8 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Visually inspect cable jacket materials for UL or third-party certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA-568-C.1.
2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
3. Test cabling for direct-current loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination, but not after cross-connection.
 - a. Test instruments must meet or exceed applicable requirements in TIA-568-C.2. Perform tests with a tester that complies with performance requirements in its "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in its "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.

- B. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.
- C. End-to-end cabling will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Grounding and bonding conductors.
2. Grounding and bonding connectors.
3. Intersystem bonding bridge grounding connector.
4. Grounding and bonding busbars.

1.2 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
- C. Field quality-control reports.

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING CONDUCTORS

A. Equipment Grounding Conductor:

1. General Characteristics: 600 V, THHN/THWN-2 or THWN-2, copper or tinned-copper wire or cable, green color, in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. ASTM - Bare Copper Grounding and Bonding Conductor:

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. ERICO; brand of nVent Electrical plc.
 - b. Harger Lightning & Grounding; business of Harger, Inc.
2. Referenced Standards: Complying with one or more of the following:
 - a. Soft or Annealed Copper Wire: ASTM B3.
 - b. Concentric-Lay Stranded Copper Conductor: ASTM B8.
 - c. Tin-Coated Soft or Annealed Copper Wire: ASTM B33.

2.2 GROUNDING AND BONDING CONNECTORS

- A. Source Limitations: Obtain products from single manufacturer.
- B. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - 2. Listing Criteria:
 - a. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.
- C. UL KDER - Crimped Pressure-Type Grounding and Bonding Cable Connector:
 - 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. ABB, Electrification Business.
 - b. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - c. ILSCO.
 - d. allG Fabrication (formerly ALT).
 - 2. General Characteristics: Crimp-and-compress connectors that bond to conductor when connector is compressed around conductor.
 - a. Tinned copper, C and H shaped.
- D. UL KDER - Split-Bolt Pressure-Type Grounding and Bonding Cable Connector:
 - 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. ABB, Electrification Business.
 - b. ERICO; brand of nVent Electrical plc.
 - c. Greaves Corp.; Essex Products Group, Inc.
 - d. allG Fabrication (formerly ALT).
 - e. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - 2. General Characteristics: Bolts that surround cable and bond to cable under compression when nut is tightened.
 - a. Tinned copper.

2.3 INTERSYSTEM BONDING BRIDGE GROUNDING CONNECTORS

- A. Description: Devices that provide means for connecting communications systems grounding and bonding conductors at service equipment or at disconnecting means for buildings or structures.
- B. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - 2. Listing Criteria:
 - a. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.
- C. UL KDSH - Two-Piece Intersystem Bonding Bridge Grounding Connector:
 - 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. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - b. Crouse-Hinds; brand of Eaton, Electrical Sector.
 - c. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - 2. General Characteristics: Copper body and polycarbonate cover; four terminating points.

PART 3 - EXECUTION

3.1 SELECTION OF GROUNDING AND BONDING PRODUCTS

- A. Grounding and Bonding Conductors:
 - 1. Provide solid conductor for 8 AWG and smaller, and stranded conductors for 6 AWG and larger unless otherwise indicated.

3.2 INSTALLATION OF GROUNDING AND BONDING

- A. Comply with manufacturer's published instructions.
- B. Special Techniques:
 - 1. Grounding and Bonding Conductors:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
2. Grounding and Bonding Connectors: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.
 - a. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
 - b. Make connections with clean, bare metal at points of contact.
 - c. Make aluminum-to-steel connections with stainless steel separators and mechanical clamps.
 - d. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
 - e. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
 - f. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
3. Grounding Underground Distribution System Components:
 - a. Comply with IEEE C2 grounding requirements.
4. Equipment Grounding and Bonding:
 - a. Install insulated equipment grounding conductors with feeders and branch circuits.

3.3 FIELD QUALITY CONTROL FOR GROUNDING AND BONDING

A. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with calibrated torque wrench in accordance with manufacturer's published instructions.

B. Nonconforming Work:

1. Grounding system will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective components and retest.

C. Collect, assemble, and submit test and inspection reports.

1. Report measured ground resistances that exceed the following values:
 - a. Power and Lighting Equipment or System with Capacity of 500 kVA and Less:
10 Ω .

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.4 PROTECTION

- A. After installation, protect grounding and bonding cables and equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Designer.

END OF SECTION

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Support, anchorage, and attachment components.
2. Fabricated metal equipment support assemblies.

1.2 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Slotted support systems, hardware, and accessories.
 - b. Clamps.
 - c. Hangers.
 - d. Sockets.
 - e. Eye nuts.
 - f. Fasteners.
 - g. Anchors.
 - h. Saddles.
 - i. Brackets.
2. Include rated capacities and furnished specialties and accessories.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame Rating: Class 1.
2. Self-extinguishing according to ASTM D635.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center in at least one surface.
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. ABB, Electrification Business.
 - b. Allied Tube & Conduit; Atkore International.
 - c. CADDY; brand of nVent Electrical plc.
 - d. Cooper B-line; brand of Eaton, Electrical Sector.
 - e. Flex-Strut Inc.
 - f. G-Strut.
 - g. Gripple Inc.
 - h. Haydon Corporation.
 - i. MIRO Industries Inc.
 - j. Metal Ties Innovation.
 - k. Rocket Rack; Robroy Industries.
 - l. Unistrut; Atkore International.
 - m. Wesanco, Inc.
 2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 3. Material for Channel, Fittings, and Accessories: Galvanized steel.
 4. Channel Width: Selected for applicable load criteria.
 5. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 6. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 7. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 8. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- C. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - 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) Cooper B-line; brand of Eaton, Electrical Sector.
 - 2) Empire Industries, Inc.
 - 3) Hilti, Inc.
 - 4) ITW Ramset/Red Head; Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
3. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
4. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325.
5. Toggle Bolts: All steel springhead type.
6. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 SELECTION

- A. Comply with the following standards for selection and installation of hangers and supports, except where requirements on Drawings or in this Section are stricter:
 1. NECA NEIS 101
 2. NECA NEIS 102.
- B. Comply with requirements for raceways specified in Section 260533.13 "Conduits for Electrical Systems."
- C. Comply with requirements for boxes specified in Section 260533.16 "Boxes and Covers for Electrical Systems."
- D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and ERM C as required by NFPA 70. Minimum rod size must be 1/4 inch in diameter.
- E. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2 inch and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

3.2 INSTALLATION OF SUPPORTS

- A. Comply with NECA NEIS 101 for installation requirements except as specified in this article.
- B. Raceway Support Methods: In addition to methods described in NECA NEIS 1, EMT and ERM C may be supported by openings through structure members, in accordance with NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination must be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. To Wood: Fasten with lag screws or through bolts.
 2. To New Concrete: Bolt to concrete inserts.
 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 4. To Existing Concrete: Expansion anchor fasteners.
 5. To Light Steel: Sheet metal screws.
 6. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 PAINTING

- A. Touchup:
1. Clean abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - a. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

END OF SECTION

SECTION 260533.13 - CONDUITS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type EMT duct raceways and elbows.
2. Type FMC duct raceways.
3. Type LFMC duct raceways.
4. Fittings for conduit, tubing, and cable.
5. Joint compounds.
6. Solvent cements.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional coordination, scheduling, sequencing, submittal, and installation requirements applicable to the Work for electrical, communications, and electronic safety and security systems on the Project, including wiring methods.
2. Section 260519 "Low-Voltage for Electrical Power Conductors and Cables" specifies nonmetallic underground conduit with conductors (Type NUCC).
3. Section 260529 "Hangers and Supports for Electrical Systems" specifies conduit hangers and supports referenced by this Section.
4. Section 260543 "Underground Ducts and Raceways for Electrical Systems" specifies exterior duct banks, manholes, and underground utility construction.
5. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels.

1.2 REFERENCES

A. Abbreviations and Acronyms for Electrical Raceway Types:

1. EMT: Electrical metallic tubing.
2. EMT-S: Steel electrical metallic tubing.
3. ERMC: Electrical rigid metal conduit.
4. ERMC-S: Steel electrical rigid metal conduit.
5. FMC: Flexible metal conduit.
6. FMC-S: Steel flexible metal conduit.
7. LFMC: Liquidtight flexible metal conduit.
8. LFMC-S: Steel liquidtight flexible metal conduit.
9. PVC-40: Schedule 40 rigid PVC conduit.

B. Definitions:

1. Conduit: A structure containing one or more duct raceways.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Direct Buried: Installed underground without encasement in concrete or other protective material.
3. Duct Bank: An arrangement of conduit providing one or more continuous duct raceways between two points.
4. Duct Raceway: A single enclosed raceway for conductors or cable.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
- C. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Manufacturer's published instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 TYPE EMT DUCT RACEWAYS AND ELBOWS

- A. UL FJMX - Steel Electrical Metal Tubing (EMT-S) and Elbows:
 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. Allied Tube & Conduit; Atkore International.
 - b. Calconduit; Atkore International.
 - c. Emerson Electric Co., Automation Solutions.
 - d. Picoma; Zekelman Industries.
 - e. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
 - f. Topaz Lighting & Electric.
 - g. Western Tube; Zekelman Industries.
 - h. Wheatland Tube; Zekelman Industries.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. UL CCN FJMX; including UL 797.
3. Standard Features:
 - a. Material: Steel.
 - b. Exterior Coating: Zinc.
 - c. Interior Coating: Zinc.
 - d. Minimum Trade Size: Metric designator 16 (trade size 1/2).
4. Other Available Features Required by the Project:
 - a. Colors: As indicated on the Drawings.

2.3 TYPE ERM C DUCT RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

A. UL DYIX - Galvanized-Steel Electrical Rigid Metal Conduit (ERM C-S-G), Elbows, Couplings, and Nipples:

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. Allied Tube & Conduit; Atkore International.
 - b. Calconduit; Atkore International.
 - c. Crouse-Hinds; brand of Eaton, Electrical Sector.
 - d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - e. Patriot Aluminum Products, LLC.
 - f. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
 - g. Rymco USA brand; manufactured and listed by subsidiary Conduit S.A. de C.V.
 - h. Topaz Lighting & Electric.
 - i. Western Tube; Zekelman Industries.
 - j. Wheatland Tube; Zekelman Industries.
2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. UL CCN DYIX; including UL 6.
3. Standard Features:
 - a. Exterior Coating: Zinc.
 - b. Interior Coating: Zinc.
 - c. Minimum Trade Size: Metric designator 16 (trade size 1/2).

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2.4 TYPE FMC DUCT RACEWAYS

A. UL DXUZ - Steel Flexible Metal Conduit (FMC-S):

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. ABB, Electrification Business.
 - b. Anaconda Sealtite; Anamet Electrical, Inc.
 - c. Electri-Flex Company.
 - d. International Metal Hose Co.
 - e. Penn Aluminum Conduit & EMT; Penn Aluminum International LLC; Berkshire Hathaway.
 - f. Topaz Lighting & Electric.
2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. UL CCN DXUZ; including UL 1.
3. Standard Features:
 - a. Material: Steel.
 - b. Minimum Trade Size: Metric designator 16 (trade size 1/2).
4. Other Available Features Required by the Project:
 - a. Colors: As indicated on the Drawings.

2.5 TYPE LFMC DUCT RACEWAYS

A. UL DXHR - Steel Liquidtight Flexible Metal Conduit (LFMC-S):

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. ABB, Electrification Business.
 - b. Anaconda Sealtite; Anamet Electrical, Inc.
 - c. Electri-Flex Company.
 - d. International Metal Hose Co.
2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. UL CCN DXHR; including UL 360.
3. Standard Features:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Material: Steel.
 - b. Minimum Trade Size: Metric designator 16 (trade size 1/2).
4. Other Available Features Required by the Project:
- a. Colors: As indicated on the Drawings.

2.6 TYPE PVC DUCT RACEWAYS AND FITTINGS

A. UL DZYZR - Schedule 40 Rigid PVC Conduit (PVC-40) and Fittings:

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. ABB, Electrification Business.
 - b. Calconduit; Atkore International.
 - c. JM Eagle.
 - d. NAPCO; Westlake Chemical Corp.
 - e. National Pipe and Plastic, Inc. (Oldcastle).
 - f. Opti-Com Manufacturing Network, Inc (OMNI).
 - g. Topaz Lighting & Electric.
2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. UL CCN DZYZR; including UL 651.
3. Standard Features:
 - a. Dimensional Specifications: Schedule 40.
 - b. Minimum Trade Size: Metric designator 16 (trade size 1/2).

2.7 FITTINGS FOR CONDUIT, TUBING, AND CABLE

A. UL FKAV - Fittings for Type EMT Duct Raceways:

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. ABB, Electrification Business.
 - b. Allied Tube & Conduit; Atkore International.
 - c. Appleton; Emerson Electric Co., Automation Solutions.
 - d. Calconduit; Atkore International.
 - e. Crouse-Hinds; brand of Eaton, Electrical Sector.
 - f. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
 - g. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- h. [Southwire Company, LLC.](#)
 - i. [Topaz Lighting & Electric.](#)
 - 2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. UL CCN FKAV; including UL 514B.
 - 3. Standard Features:
 - a. Material: Steel.
 - b. Coupling Method: Compression coupling.
 - c. Expansion and Deflection Fittings: UL 651 with flexible bonding jumper.
- B. UL ILNR - Fittings for Type FMC Duct Raceways:
 - 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. [American Fittings Corp. \(AMFICO\).](#)
 - b. [Liquid Tight Connector Co.](#)
 - c. [Southwire Company, LLC.](#)
 - 2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. UL CCN ILNR; including UL 514B.
- C. UL DXAS - Fittings for Type LFMC Duct Raceways:
 - 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. Arlington Industries, Inc.
 - b. [Liquid Tight Connector Co.](#)
 - 2. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. UL CCN DXAS; including UL 514B.

PART 3 - EXECUTION

3.1 SELECTION OF CONDUITS FOR ELECTRICAL SYSTEMS

- A. Unless more stringent requirements are specified in the Contract Documents or manufacturer's published instructions, comply with NFPA 70 for selection of duct raceways. Consult Architect for resolution of conflicting requirements.
- B. Outdoors:
 - 1. Exposed and Subject to Physical Damage: ERM C.
 - 2. Concealed Aboveground: ERM C.
 - 3. Direct Buried: PVC-40.
 - 4. Concrete Encased in Trench: PVC-40.
 - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
- C. Indoors:
 - 1. Exposed and Subject to Physical Damage: EMT.
 - 2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 - 3. Damp or Wet Locations: ERM C.
- D. Duct Fittings: Select fittings in accordance with NEMA FB 2.10 guidelines.
 - 1. ERM C and IMC: Provide threaded-type fittings unless otherwise indicated.

3.2 INSTALLATION OF CONDUITS FOR ELECTRICAL SYSTEMS

- A. Comply with manufacturer's published instructions.
- B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:
 - 1. Electrical Construction: ICC IBC, ICC IF C, NFPA 1, NFPA 70, and NECA NEIS 1.
 - 2. Electrical Safety: NFPA 70E.
 - 3. Commissioning of Active and Passive Fire Protection Features: NFPA 3 and NFPA 4.
 - 4. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
 - 5. Communications Work: BICSI N1.
 - 6. Life Safety and Means of Egress Work: NFPA 101.
 - 7. Emergency and Standby Power Work: NFPA 110, NFPA 111, and NECA NEIS 416.
 - 8. Work in Confined Spaces: NFPA 350.
 - 9. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
 - 10. Type EMT-S: Article 358 of NFPA 70 and NECA NEIS 101.
 - 11. Type ERM C-S: Article 344 of NFPA 70 and NECA NEIS 101.
 - 12. Type FMC-S: Article 348 of NFPA 70 and NECA NEIS 101.
 - 13. Type LFMC: Article 350 of NFPA 70 and NECA NEIS 101.
 - 14. Expansion Fittings: NEMA FB 2.40.
 - 15. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. General Requirements for Installation of Duct Raceways:

- a. Complete duct raceway installation before starting conductor installation.
- b. Make bends in duct raceway using large-radius preformed ells except for parallel bends. Field bending must be in accordance with NFPA 70 minimum radii requirements. Provide only equipment specifically designed for material and size involved.
- c. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- d. Support conduit within 12 inch of enclosures to which attached.
- e. Install duct sealing fittings at accessible locations in accordance with NFPA 70 and fill them with listed sealing compound. For concealed duct raceways, install fitting in flush steel box with blank cover plate having finish similar to that of adjacent plates or surfaces. Install duct sealing fittings in accordance with NFPA 70.
- f. Install devices to seal duct raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal interior of duct raceways at the following points:
 - 1) Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2) Where an underground service duct raceway enters a building or structure.
 - 3) Conduit extending from interior to exterior of building.
 - 4) Conduit extending into pressurized duct raceway and equipment.
 - 5) Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
 - 6) Where otherwise required by NFPA 70.
- g. Do not install conduits within 2 inch of the bottom side of a metal deck roof.
- h. Keep duct raceways at least 6 inch away from parallel runs of flues and steam or hot-water pipes. Install horizontal duct raceway runs above water and steam piping.
- i. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
- j. Install pull wires in empty duct raceways. Provide polypropylene or monofilament plastic line with not less than 200 lb tensile strength. Leave at least 12 inch of slack at both ends of pull wire. Cap underground duct raceways designated as spare above grade alongside duct raceways in use.
- k. Install duct raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.
 - 1) Termination fittings with shoulders do not require two locknuts.
- l. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35 (trade size 1-1/4) and insulated throat metal bushings on metric designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Types ERMCMC:
 - a. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound that maintains electrical conductivity to threads of duct raceway and fittings before making up joints. Follow compound manufacturer's published instructions.
3. Types FMC, LFMC:
 - a. Provide a maximum of 72 inch of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
4. Types PVC:
 - a. Do not install Type PVC conduit where ambient temperature exceeds 122 deg F. Conductor ratings must be limited to 75 deg C except where installed in a trench outside buildings with concrete encasement, where 90 deg C conductors are permitted.
 - b. Comply with manufacturer's published instructions for solvent welding and fittings.
 - c. Join joints with solvent cement in accordance with manufacturer's published instructions and allowed to cure before handling. Joints to be bent, pushed, or pulled must set for minimum 24 h after joining.
5. Stub-ups to Above Recessed Ceilings:
 - a. Provide EMT for duct raceways.
 - b. Provide a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
6. Duct Fittings: Install fittings in accordance with NEMA FB 2.10 guidelines.
 - a. EMT: Provide compression, fittings. Comply with NEMA FB 2.10.
 - b. Flexible Conduit: Provide only fittings listed for use with flexible conduit type. Comply with NEMA FB 2.20.
7. Expansion-Joint Fittings:
 - a. Install in runs of aboveground PVC that are located where environmental temperature change may exceed 30 deg F and that have straight-run length that exceeds 25 ft. Install in runs of aboveground ERMCMC and EMT conduit that are located where environmental temperature change may exceed 100 deg F and that have straight-run length that exceeds 100 ft.
8. Identification: Provide labels for conduit assemblies, duct raceways, and associated electrical equipment.
 - a. Provide warning signs.

D. Interfaces with Other Work:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Firestop penetrations of fire-rated floor and wall assemblies.
2. Provide conduit hangers and supports.

3.3 FIELD QUALITY CONTROL OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. Conduit Placement:
 - a. Verify that center-line location and offsets are in accordance with the Drawings.
 - b. Verify that hangers and supports for conduits are attached to structure.
 - c. Verify that nuts on bolts or hanger rods are secure.
 - d. Verify that space between raceways and cored holes are filled with non-shrinking grout or other approved material indicated on the Drawings and the Specifications.
 - e. Verify that expansion devices are installed at locations indicated on the Drawings and the Specifications.
 - f. Verify that ends are cut square to provide flush-butting surfaces when spliced and inside edges are free of burrs that could impede installation of cables.
 - g. Verify minimum separation of utilities, or that approved mechanical protection has been provided to surrounding conduit(s) where minimum separation cannot be achieved.
3. Document all changes on Record Drawings.

B. Nonconforming Work:

1. Conduit will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

C. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

3.4 CLEANING

- #### A.
- Verify that bentonite or other drilling fluids are contained and removed, and site is restored to its original or improved condition.

3.5 PROTECTION

- #### A.
- Protect coatings, finishes, and cabinets from damage and deterioration.
1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

SECTION 260533.16 - BOXES AND COVERS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Junction boxes and pull boxes.
3. Cover plates for device boxes.
4. Hoods for outlet boxes.

B. Products Installed, but Not Furnished, under This Section:

1. See Section 260553 "Identification for Electrical Systems" for electrical equipment labels.

1.2 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Junction boxes and pull boxes.
3. Cover plates for device boxes.
4. Hoods for outlet boxes.

1.3 INFORMATIONAL SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Manufacturers' Published Instructions:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Junction boxes and pull boxes.
3. Cover plates for device boxes.
4. Hoods for outlet boxes.

PART 2 - PRODUCTS

2.1 METALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN QCIT; including UL 514A.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL QCIT - Metallic Outlet Boxes and Covers:

1. Description: Box having pryout openings, knockouts, threaded entries, or hubs in either the sides of the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.
2. 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. ABB, Electrification Business.
 - b. Appleton; Emerson Electric Co., Automation Solutions.
 - c. Arlington Industries, Inc.
 - d. Crouse-Hinds; brand of Eaton, Electrical Sector.
 - e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - f. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - g. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - h. MonoSystems, Inc.
 - i. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
 - j. Pass & Seymour; Legrand North America, LLC.
 - k. Patriot Aluminum Products, LLC.
 - l. Plasti-Bond; Robroy Industries.
 - m. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - n. Spring City Electrical Manufacturing Company.
 - o. Topaz Lighting & Electric.
 - p. Wiremold; Legrand North America, LLC.
3. Options:
 - a. Material: Cast metal.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- b. Sheet Metal Depth: Minimum 1.5 inch.
- c. Cast-Metal Depth: Minimum 1.8 inch.
- d. Luminaire Outlet Boxes and Covers: Nonadjustable, listed and labeled for attachment of luminaire weighing up to 50 lb.

D. UL QCIT - Metallic Conduit Bodies:

- 1. Description: Means for providing access to interior of conduit or tubing system through one or more removable covers at junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.
- 2. 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. ABB, Electrification Business.
 - b. Appleton; Emerson Electric Co., Automation Solutions.
 - c. Crouse-Hinds; brand of Eaton, Electrical Sector.
 - d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - e. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
 - f. Pass & Seymour; Legrand North America, LLC.
 - g. Patriot Aluminum Products, LLC.
 - h. Plasti-Bond; Robroy Industries.
 - i. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - j. Topaz Lighting & Electric.

E. UL QCIT - Metallic Device Boxes:

- 1. Description: Box with provisions for mounting wiring device directly to box.
- 2. 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. ABB, Electrification Business.
 - b. Appleton; Emerson Electric Co., Automation Solutions.
 - c. Arlington Industries, Inc.
 - d. Crouse-Hinds; brand of Eaton, Electrical Sector.
 - e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - f. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - g. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - h. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
 - i. Patriot Aluminum Products, LLC.
 - j. Plasti-Bond; Robroy Industries.
 - k. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - l. Topaz Lighting & Electric.
- 3. Options:
 - a. Material: Cast metal.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- b. Sheet Metal Depth: minimum 1.5 inch.
- c. Cast-Metal Depth: minimum 1.8 inch.

F. UL QCIT - Metallic Extension Rings:

- 1. Description: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.
- 2. 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. ABB, Electrification Business.
 - b. Appleton; Emerson Electric Co., Automation Solutions.
 - c. Cooper B-line; brand of Eaton, Electrical Sector.
 - d. Crouse-Hinds; brand of Eaton, Electrical Sector.
 - e. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - f. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
 - g. Pass & Seymour; Legrand North America, LLC.
 - h. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - i. Topaz Lighting & Electric.

2.2 JUNCTION BOXES AND PULL BOXES

A. Performance Criteria:

- 1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
- 2. Listing Criteria: UL CCN BGUZ; including UL 50 and UL 50E.

B. Source Quality Control:

- 1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
- 2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL BGUZ - Indoor Sheet Metal Junction and Pull Boxes:

- 1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
- 2. 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. Adalet.
 - b. Appleton; Emerson Electric Co., Automation Solutions.
 - c. Cooper B-line; brand of Eaton, Electrical Sector.
 - d. FSR Inc.
 - e. Hoffman; brand of nVent Electrical plc.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- f. [Hubbell Industrial Controls; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
- g. [Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
- h. [Milbank Manufacturing Company.](#)
- i. [N J Sullivan Company.](#)
- j. [O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.](#)
- k. [Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
- l. [Spring City Electrical Manufacturing Company.](#)
- m. [Square D; Schneider Electric USA.](#)

3. Options:

- a. Degree of Protection: Type 1.

D. UL BGUZ - Indoor Cast-Metal Junction and Pull Boxes:

- 1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
- 2. [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. [Adalet.](#)
- b. [Appleton; Emerson Electric Co., Automation Solutions.](#)
- c. [Crouse-Hinds; brand of Eaton, Electrical Sector.](#)
- d. [O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.](#)

3. Options:

- a. Degree of Protection: Type 1.

E. UL BGUZ - Outdoor Sheet Metal Junction and Pull Boxes:

- 1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
- 2. [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. [Adalet.](#)
- b. [Appleton; Emerson Electric Co., Automation Solutions.](#)
- c. [Cooper B-line; brand of Eaton, Electrical Sector.](#)
- d. [FSR Inc.](#)
- e. [Hoffman; brand of nVent Electrical plc.](#)
- f. [Hubbell Industrial Controls; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
- g. [Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
- h. [Milbank Manufacturing Company.](#)

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- i. [N J Sullivan Company.](#)
 - j. [O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.](#)
 - k. [Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
 - l. [Spring City Electrical Manufacturing Company.](#)
 - m. [Square D; Schneider Electric USA.](#)
3. Options:
- a. Degree of Protection: Type 3R.

F. UL BGUZ - Outdoor Cast-Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. [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. [Adalet.](#)
 - b. [Appleton; Emerson Electric Co., Automation Solutions.](#)
 - c. [Crouse-Hinds; brand of Eaton, Electrical Sector.](#)
 - d. [O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.](#)
3. Options:
 - a. Degree of Protection: Type 3R.

2.3 COVER PLATES FOR DEVICES BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria: UL CCN QCIT or UL CCN QCMZ; including UL 514D.
3. Wallplate-Securing Screws: Metal with head color to match wallplate finish.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL QCIT or QCMZ - Metallic Cover Plates for Device Boxes:

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:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. [ABB, Electrification Business.](#)
 - b. [Appleton; Emerson Electric Co., Automation Solutions.](#)
 - c. [Arrow Hart, Wiring Devices; Eaton, Electrical Sector.](#)
 - d. [Crouse-Hinds; brand of Eaton, Electrical Sector.](#)
 - e. [Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
 - f. [Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
 - g. [Intermatic, Inc.](#)
 - h. [Leviton Manufacturing Co., Inc.](#)
 - i. [O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.](#)
 - j. [Panduit Corp.](#)
 - k. [Pass & Seymour; Legrand North America, LLC.](#)
 - l. [Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
 - m. [Topaz Lighting & Electric.](#)
 - n. [Wiremold; Legrand North America, LLC.](#)
2. Options:
- a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
 - b. Wallplate Material: 0.032 inch thick, Type 302/304 non-magnetic stainless steel with brushed finish.

D. UL QCIT or QCMZ - Nonmetallic Cover Plates for Device Boxes:

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. [ABB, Electrification Business.](#)
 - b. [Appleton; Emerson Electric Co., Automation Solutions.](#)
 - c. [Arlington Industries, Inc.](#)
 - d. [Arrow Hart, Wiring Devices; Eaton, Electrical Sector.](#)
 - e. [Crouse-Hinds; brand of Eaton, Electrical Sector.](#)
 - f. [Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
 - g. [Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
 - h. [Intermatic, Inc.](#)
 - i. [Leviton Manufacturing Co., Inc.](#)
 - j. [O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.](#)
 - k. [Panduit Corp.](#)
 - l. [Pass & Seymour; Legrand North America, LLC.](#)
 - m. [Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.](#)
 - n. [Topaz Lighting & Electric.](#)
 - o. [Wiremold; Legrand North America, LLC.](#)
2. Options:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
- b. Wallplate Material: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device.
- c. Color: Ivory.

2.4 HOODS FOR OUTLET BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria:
 - a. UL CCN QCIT or UL CCN QCMZ; including UL 514D.
 - b. Receptacle, Hood, Cover Plate, Gaskets, and Seals: UL 498 Supplement SA when mated with box or enclosure complying with UL 514A, UL 514C, or UL 50E.
3. Mounts to box using fasteners different from wiring device.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL QCIT or QCMZ - Extra-Duty, While-in-Use Hoods for Outlet Boxes:

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. ABB, Electrification Business.
 - b. Allied Tube & Conduit; Atkore International.
 - c. Appleton; Emerson Electric Co., Automation Solutions.
 - d. Arlington Industries, Inc.
 - e. Arrow Hart, Wiring Devices; Eaton, Electrical Sector.
 - f. Intermatic, Inc.
 - g. Leviton Manufacturing Co., Inc.
 - h. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
2. Additional Characteristics: Marked "Extra-Duty" in accordance with UL 514D.
3. Options:
 - a. Provides clear, weatherproof, "while-in-use" cover.
 - b. Manufacturer may combine nonmetallic device box with hood as extra-duty rated assembly.

PART 3 - EXECUTION

3.1 SELECTION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

- A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of boxes and enclosures. Consult Designer for resolution of conflicting requirements.
- B. Degree of Protection:
 - 1. Outdoors:
 - a. Type 3R unless otherwise indicated.
 - b. Locations Aboveground Where Mechanism Must Operate When Ice Covered: Type 3S.
 - 2. Indoors:
 - a. Type 1 unless otherwise indicated.
 - b. Damp or Dusty Locations: Type 2.

3.2 INSTALLATION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

- A. Comply with manufacturer's published instructions.
- B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:
 - 1. Outlet, Device, Pull, and Junction Boxes: Article 314 of NFPA 70.
 - 2. Consult Designer for resolution of conflicting requirements.
- C. Special Installation Techniques:
 - 1. Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures.
 - 2. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to bottom of box unless otherwise indicated.
 - 3. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box, whether installed indoors or outdoors.
 - 4. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
 - 5. Locate boxes so that cover or plate will not span different building finishes.
 - 6. Support boxes in recessed ceilings independent of ceiling tiles and ceiling grid.
 - 7. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for purpose.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

8. Fasten junction and pull boxes to, or support from, building structure. Do not support boxes by conduits.
9. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to ensure a continuous ground path.
10. Boxes and Enclosures in Areas or Walls with Acoustical Requirements:
 - a. Seal openings and knockouts in back and sides of boxes and enclosures with acoustically rated putty.
 - b. Provide gaskets for wallplates and covers.
11. Identification: Provide labels for boxes and associated electrical equipment.
 - a. Identify field-installed conductors, interconnecting wiring, and components.
 - b. Provide warning signs.
 - c. Label each box with engraved metal or laminated-plastic nameplate.

3.3 CLEANING

- A. Remove construction dust and debris from boxes before installing wallplates, covers, and hoods.

3.4 PROTECTION

- A. After installation, protect boxes from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Designer.

END OF SECTION

SECTION 260543 - UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Direct buried conduit, ducts, and duct accessories.

1.2 DEFINITIONS

- A. Direct Buried: Duct or a duct bank that is buried in the ground, without any additional casing materials such as concrete.
- B. Duct: A single duct or multiple ducts. Duct may be either installed singly or as component of a duct bank.
- C. Duct Bank:
1. Two or more ducts installed in parallel, with or without additional casing materials.
 2. Multiple duct banks.
- D. GRC: Galvanized rigid (steel) conduit.
- E. Trafficways: Locations where vehicular or pedestrian traffic is a normal course of events.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
1. Include duct-bank materials, including spacers and miscellaneous components.
 2. Include duct, conduits, and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
 3. Include accessories for handholes, boxes, and other utility structures.
- C. Shop Drawings:
1. Factory-Fabricated Handholes and Boxes Other Than Precast Concrete:
 - a. Include dimensioned plans, sections, and elevations, and fabrication and installation details.
 - b. Include duct entry provisions, including locations and duct sizes.
 - c. Include cover design.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- d. Include grounding details.
- e. Include dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
- f. Include joint details.

D. Sustainable design submittals.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Manufacturers' published instructions.
- C. Field Reports:
 - 1. Factory Test Reports: For handholes and boxes.
 - 2. Manufacturer's field reports for field quality-control support.

1.5 FIELD CONDITIONS

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities unless permitted under the following conditions, and then only after arranging to provide temporary electrical service according to requirements indicated:
 - 1. Notify Architect no fewer than five business days in advance of proposed interruption of electrical service.
 - 2. Do not proceed with interruption of electrical service without written permission.
- B. Ground Water: Assume ground-water level is at grade level unless a lower water table is noted on Drawings.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND FITTINGS

- A. GRC: Comply with ANSI C80.1 and UL 6, Schedule 40.
- B. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.

2.2 RIGID NONMETALLIC DUCT

- A. Underground Plastic Utilities Duct: Type EPC-40-PVC RNC, complying with NEMA TC 2 and UL 651, with matching fittings complying with NEMA TC 3 by same manufacturer as duct.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.
- C. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 DUCT ACCESSORIES

- A. Duct Spacers: Factory-fabricated, rigid, PVC interlocking spacers; sized for type and size of duct with which used, and selected to provide minimum duct spacing indicated while supporting duct during concreting or backfilling.
- B. Underground-Line Warning Tape: In accordance with Section 31 20 00 "Earth Moving."

2.4 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

- A. Performance Criteria:
 - 1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
 - 2. General Characteristics:
 - a. ASTM C858 for design and manufacturing processes.
 - b. SCTE 77, Tier 22.
- B. Polymer Concrete Handholes and Boxes with Polymer Concrete Cover:
 - 1. Description: Molded of sand, concrete, and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or combination.
 - 2. 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. Armorcast Products Company; brand of Hubbell Utility Solutions; Hubbell Incorporated.
 - b. MacLean Highline.
 - c. NewBasis.
 - d. Oldcastle Infrastructure Inc.; CRH Americas.
 - e. Quazite; brand of Hubbell Utility Solutions; Hubbell Incorporated.
 - 3. Configuration: Units must be designed for flush burial and have open bottom unless otherwise indicated.
 - 4. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure and installed location.
 - a. Cover Finish: Nonskid finish must have minimum coefficient of friction of 0.50.
 - b. Cover Legend: Molded lettering, "ELECTRIC" or "COMMUNICATIONS".
 - 5. Conduit Entrance Provisions: Conduit-terminating fittings must mate with entering ducts for secure, fixed installation in enclosure wall.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

6. Duct Entrance Provisions: Duct-terminating fittings must mate with entering duct for secure, fixed installation in enclosure wall.
7. Handholes 12 inch wide by 24 inch long and larger must have factory-installed inserts for cable racks and pulling-in irons.
8. Options:
 - a. Color: Green.

C. Fiberglass Handholes and Boxes with Polymer Concrete Frame and Cover:

1. Description: Sheet-molded, fiberglass-reinforced, polyester resin enclosure joined to polymer concrete top ring or frame.
2. 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. Armorcast Products Company; brand of Hubbell Utility Solutions; Hubbell Incorporated.
 - b. NewBasis.
 - c. Oldcastle Infrastructure Inc.; CRH Americas.
 - d. Quazite; brand of Hubbell Utility Solutions; Hubbell Incorporated.
3. Configuration: Units must be designed for flush burial and have open bottom unless otherwise indicated.
4. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
 - a. Cover Finish: Nonskid finish must have minimum coefficient of friction of 0.50.
 - b. Cover Legend: Molded lettering, "ELECTRIC" or "COMMUNICATIONS".
5. Duct Entrance Provisions: Duct-terminating fittings must mate with entering duct for secure, fixed installation in enclosure wall.
6. Handholes 12 inch wide by 24 inch long and larger must have factory-installed inserts for cable racks and pulling-in irons.
7. Options:
 - a. Color: Green.

D. Fiberglass Handholes and Boxes:

1. Description: Molded of fiberglass-reinforced polyester resin, with covers made of polymer concrete or reinforced fiberglass.
2. 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. MacLean Highline.
 - b. Nordic Fiberglass, Inc.
 - c. Oldcastle Infrastructure Inc.; CRH Americas.
 - d. Quazite; brand of Hubbell Utility Solutions; Hubbell Incorporated.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Configuration: Units must be designed for flush burial and have open bottom unless otherwise indicated.
4. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
 - a. Cover Finish: Nonskid finish must have minimum coefficient of friction of 0.50.
 - b. Cover Legend: Molded lettering, "ELECTRIC" or "COMMUNICATIONS".
5. Duct Entrance Provisions: Duct-terminating fittings must mate with entering duct for secure, fixed installation in enclosure wall.
6. Handholes 12 inch wide by 24 inch long and larger must have factory-installed inserts for cable racks and pulling-in irons.
7. Options:
 - a. Color: Green.

E. High-Density Polyethylene (HDPE) Boxes:

1. Description: Injection molded of HDPE or copolymer-polypropylene. Cover must be made of polymer concrete.
2. 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. Nordic Fiberglass, Inc.
 - b. Oldcastle Infrastructure Inc.; CRH Americas.
 - c. PenCell Plastics; brand of Hubbell Utility Solutions; Hubbell Incorporated.
 - d. Quazite; brand of Hubbell Utility Solutions; Hubbell Incorporated.
3. Configuration: Units must be designed for flush burial and have open bottom unless otherwise indicated.
4. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
 - a. Cover Finish: Nonskid finish must have minimum coefficient of friction of 0.50.
 - b. Cover Legend: Molded lettering, "ELECTRIC" or "COMMUNICATIONS".
5. Duct Entrance Provisions: Duct-terminating fittings must be installed perpendicular to box wall and mate with entering duct for secure, fixed installation in enclosure wall without putting stress on box wall or fitting.
6. Options:
 - a. Color: Green.

2.5 UTILITY STRUCTURE ACCESSORIES

- A. Description: Utility equipment and accessory items used for utility structure access and utility support, listed and labeled for intended use and application.
- B. Pulling Eyes in Concrete Walls: Eyebolt with reinforcing-bar fastening insert, 2 inch diameter eye, and 1-by-4 inch bolt.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Working Load Embedded in 6 inch, 4000 psi Concrete: 13,000 lbf minimum tension.
- C. Pulling Eyes in Nonconcrete Walls: Eyebolt with reinforced fastening, 1-1/4 inch diameter eye, rated 2500 lbf minimum tension.
- D. Ground Rod Sleeve: 3 inch PVC sleeve in manhole floors 2 inch from wall adjacent to, but not underneath, ducts routed from facility.
- E. Cover Hooks: Heavy duty, designed for lifts 60 lbf and greater. Two ladders(s) are required.

2.6 DUCT SEALING

- 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. ABB, Electrification Business.
 2. CommScope, Inc.
 3. Gardner Bender.
 4. Ideal Industries, Inc.
 5. NSi Industries LLC.
 6. TE Connectivity Ltd.
- B. Duct-Sealing Compound: Nonhardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 deg F. Compound must be capable of withstanding temperature of 300 deg F without slump and adhering to clean surfaces of plastic ducts, metallic conduit, conduit and duct coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals. Duct sealing compound must be removable without damaging ducts or cables.
- C. Inflatable Duct-Sealing System: Wraparound inflatable bladder that seals ducts that are empty or containing conductors against air and water infiltration. System is suitable for use in steel, plastic, or concrete ducts and penetrations.

2.7 SOURCE QUALITY CONTROL

- A. Test and inspect precast concrete utility structures according to ASTM C 1037.
- B. Nonconcrete Handhole and Pull-Box Prototype Test: Test prototypes of manholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
 1. Tests of materials shall be performed by an independent testing agency.
 2. Strength tests of complete boxes and covers shall be by an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
 3. Testing machine pressure gages shall have current calibration certification, complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate layout and installation of duct, duct bank, handholes, and boxes with final arrangement of other utilities, site grading, and surface features as determined in field. Notify Architect if there is conflict between areas of excavation and existing structures or archaeological sites to remain.
- B. Coordinate elevations of duct and duct-bank entrances into handholes, and boxes with final locations and profiles of duct and duct banks, as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations as required to suit field conditions and to ensure that duct and duct bank will drain to handholes, and as approved by Architect.
- C. Clear and grub vegetation to be removed, and protect vegetation to remain in accordance with Section 311000 "Site Clearing." Remove and stockpile topsoil for reapplication in accordance with Section 311000 "Site Clearing."

3.2 SELECTION OF UNDERGROUND DUCTS

- A. Aboveground Conduit and Underground Vertical Conduit Bends; GRC, unless indicated otherwise.
- B. Duct for Electrical Branch Circuits: Type EPC-40-PVC RNC, direct buried unless otherwise indicated.

3.3 SELECTION OF UNDERGROUND ENCLOSURES

- A. Handholes and Boxes for 600 V and Less:
 - 1. Units in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Polymer concrete, SCTE 77, Tier 15 Fiberglass enclosures with polymer concrete frame and cover, SCTE 77, Tier 15 Fiberglass-reinforced polyester resin, SCTE 77, Tier 15 High-density plastic, SCTE 77, Tier 15 structural load rating.
 - 2. Cover design load shall not exceed the design load of the handhole or box.

3.4 EARTHWORK

- A. Excavation and Backfill: Comply with Section 31 20 00 "Earth Moving," but do not use heavy-duty, hydraulic-operated, compaction equipment.
- B. Restore surface features at areas disturbed by excavation, and re-establish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

- C. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Section 329200 "Turf and Grasses" and Section 329300 "Plants."
- D. Cut and patch existing pavement in path of underground duct, duct bank, and underground structures in accordance with "Cutting and Patching" Article in Section 017300 "Execution."

3.5 INSTALLATION OF DUCTS AND DUCT BANKS

A. Reference Standards:

- 1. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NEMA TCB 2 for installation of underground ducts and duct banks.
- 2. Consult Architect for resolution of conflicting requirements.

B. Special Techniques:

- 1. Slope: Pitch duct minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope duct from high point between two manholes to drain in both directions.
- 2. Curves and Bends:
 - a. Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with minimum radius of 48 inch, both horizontally and vertically, at other locations unless otherwise indicated.
 - b. Field bending must be in accordance with NFPA 70 minimum radii requirements, except bends over 45 degrees must be made with minimum radius of 48 inch. Use only equipment specifically designed for material and size involved. Use PVC heating bender for bending PVC conduit.
- 3. Joints: Use solvent-cemented joints in nonmetallic duct and fittings and make watertight in accordance with manufacturer's published instructions. Stagger couplings so those of adjacent duct do not lie in same plane.
- 4. End Bell Entrances to Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inch o.c. for 5 inch duct, and vary proportionately for other duct sizes.
 - a. Begin change from regular spacing to end-bell spacing 10 ft from end bell, without reducing duct slope and without forming trap in line.
 - b. Grout end bells into structure walls from both sides to provide watertight entrances.
- 5. Building Wall Penetrations: Make transition from underground duct to steel raceway at least 10 ft outside building wall, without reducing duct line slope away from building and without forming trap in line. Use fittings manufactured for transition to steel raceway type installed.
- 6. Install manufactured steel raceway elbows for stub-ups at poles unless otherwise indicated.
- 7. Sealing: Provide temporary closure at terminations of duct with pulled cables. Seal spare duct at terminations. Use sealing compound and plugs to withstand at least 15 psig hydrostatic pressure.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

8. Pulling Cord: Install 200 lbf test nylon cord in empty ducts.
9. Direct-Buried Duct and Duct Bank:
 - a. Excavate trench bottom to provide firm and uniform support for duct. Comply with requirements in Section 31 20 00 "Earth Moving" for preparation of trench bottoms for pipes less than 6 inch in nominal diameter.
 - b. Width: As indicated.
 - c. Depth: As indicated.
 - d. Support ducts on duct spacers coordinated with duct size, duct spacing, and outdoor temperature.
 - e. Spacer Installation: Place spacers close enough to prevent sagging and deforming of duct, with not less than four spacers per 20 ft of duct. Place spacers within 24 inch of duct ends. Stagger spacers approximately 6 inches between tiers. Secure spacers to earth and to ducts to prevent floating during concreting. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
 - f. Install duct with minimum of 3 inch between ducts for like services and 12 inches between power and communications duct.
 - g. Install manufactured GRC elbows for stub-ups, at building entrances, and at changes of direction in duct direction unless otherwise indicated.
 - h. Install manufactured steel elbows for stub-ups, at building entrances, and at changes of direction in duct.
 - 1) Couple GRC duct to steel raceway with adapters designed for this purpose, and encase coupling with minimum 3 inch of concrete.
 - 2) Stub-ups to Outdoor Equipment: Extend concrete-encased steel raceway horizontally minimum of 60 inches from edge of base. Install insulated grounding bushings on terminations at equipment.
 - a) Stub-ups must terminate in coupling installed flush with finished base and minimum 3 inch from conduit side to edge of base. Coordinate final location with the manufacturer's written recommendations for equipment selected.
 - i. After installing first tier of duct, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand place backfill to 4 inch over duct and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction. Comply with requirements in Section 31 20 00 "Earth Moving" for installation of backfill materials.
10. Underground-Line Warning Tape: Bury detectable underground line specified in Section 31 20 00 "Earth Moving" no less than 12 inch above concrete-encased duct and duct banks and approximately 12 inches below grade. Align tape parallel to and within 3 inches of centerline of duct bank. Provide additional warning tape for each 12 inch increment of ductbank width over nominal 18 inch. Space additional tapes 12 inches apart, horizontally across width of ducts.
11. Ground ducts and duct banks in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."

3.6 INSTALLATION OF CONCRETE HANDHOLES AND BOXES

A. Reference Standards:

1. Precast Concrete Handholes: Comply with ASTM C891 unless otherwise indicated.
2. Consult Architect for resolution of conflicting requirements.

B. Special Techniques:

1. Precast Concrete Handholes:
 - a. Install units level and plumb and with orientation and depth coordinated with connecting duct to minimize bends and deflections required for proper entrances.
 - b. Unless otherwise indicated, support units on level bed of crushed stone or gravel graded from 1 inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
 - c. Field-cut openings for conduits in accordance with enclosure manufacturer's published instructions. Cut wall of enclosure with tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.
2. Elevations:
 - a. Handhole Covers: In paved areas and trafficways, set surface flush with finished grade. Set covers of other handholes 1 inch above finished grade.
 - b. Where indicated, cast handhole cover frame integrally with handhole structure.
3. Hardware: Install removable hardware, including pulling eyes, cable stanchions, and cable arms, as required for installation and support of cables and conductors and as indicated.
4. Field-Installed Bolting Anchors in Concrete Handholes: Do not drill deeper than 2-inch for handholes, for anchor bolts installed in field. Use minimum of two anchors for each cable stanchion.
5. Ground handholes, and boxes in accordance with Section 26 05 26 "Grounding and Bonding for Electrical Systems."

3.7 INSTALLATION OF HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

A. Special Techniques:

1. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting duct, to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of duct, and seal joint between box and extension as recommended by manufacturer.
2. Unless otherwise indicated, support units on level bed of crushed stone or gravel, graded from 1/2 inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
3. Elevation: In paved areas and trafficways, set cover flush with finished grade. Set covers of other handholes 1 inch above finished grade.
4. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in enclosure.

5. Field cut openings for duct in accordance with enclosure manufacturer's published instructions. Cut wall of enclosure with tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.
6. For enclosures installed in asphalt paving and subject to occasional, nondeliberate, heavy-vehicle loading, form and pour concrete ring encircling, and in contact with enclosure entry, and with top surface screeded to top of box cover frame. Bottom of ring must rest on compacted earth.
 - a. Concrete: 3000 psi, 28-day strength, complying with Section 03 30 00 "Cast-in-Place Concrete," with troweled finish.
 - b. Dimensions: As indicated.
7. Ground handholes and boxes in accordance with Section 26 05 26 "Grounding and Bonding for Electrical Systems."

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Demonstrate capability and compliance with requirements on completion of installation of underground duct, duct bank, and utility structures.
2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide minimum 12 inch long mandrel equal to duct size minus 1/4 inch. If obstructions are indicated, remove obstructions and retest.
3. Test handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Section 26 05 26 "Grounding and Bonding for Electrical Systems."

B. Nonconforming Work:

1. Underground ducts, raceways, and structures will be considered defective if they do not pass tests and inspections.
2. Correct deficiencies and retest as specified above to demonstrate compliance.

C. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

3.9 CLEANING

- A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of duct until duct cleaner indicates that duct is clear of dirt and debris. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.
- B. Clean internal surfaces of manholes, including sump, and building interiors affected by Work.
 1. Sweep floor, removing dirt and debris.
 2. Remove foreign material.

END OF SECTION

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Labels.
2. Bands and tubes.
3. Tapes and stencils.
4. Tags.
5. Signs.
6. Cable ties.
7. Miscellaneous identification products.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.

C. Identification Schedule: For each piece of electrical equipment and electrical system components to be index of nomenclature for electrical equipment and system components used in identification signs and labels. Use same designations indicated on Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1 and IEEE C2.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Comply with 29 CFR 1910.144 for color identification of hazards; 29 CFR 1910.145 for danger, caution, warning, and safety instruction signs and tags; and the following:
 - 1. Ceiling-mounted hangers, supports, cable trays, and raceways must be finished, painted, or suitably marked safety yellow where less than 7.7 ft above finished floor.
- C. Signs, labels, and tags required for personnel safety must comply with the following standards:
 - 1. Safety Colors: NEMA Z535.1.
 - 2. Facility Safety Signs: NEMA Z535.2.
 - 3. Safety Symbols: NEMA Z535.3.
 - 4. Product Safety Signs and Labels: NEMA Z535.4.
 - 5. Safety Tags and Barricade Tapes for Temporary Hazards: NEMA Z535.5.
- D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, must comply with UL 969.
- E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

2.2 COLOR AND LEGEND REQUIREMENTS

- A. Raceways and Cables Carrying Circuits at 1000 V or Less:
 - 1. Black letters on orange field.
 - 2. Legend: Indicate voltage and system or service type.
- B. Color-Coding for Phase- and Voltage-Level Identification, 1000 V or Less: Use colors listed below for ungrounded feeder and branch-circuit conductors.
 - 1. Color must be factory applied.
 - 2. Colors for 240/120 V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - 3. Color for Neutral: White.
 - 4. Color for Equipment Grounds: Green.
- C. Warning Label Colors:
 - 1. Identify system voltage with black letters on orange background.
- D. Warning labels and signs must include, but are not limited to, the following legends:
 - 1. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 3 FEET MINIMUM."
- E. Equipment Identification Labels:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Black letters on white field.

2.3 LABELS

- A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

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. Brady Corporation.
- b. Champion America.
- c. emedco.
- d. Grafoplast Wire Markers.
- e. HellermannTyton.
- f. LEM Products Inc.
- g. Marking Services, Inc.
- h. Panduit Corp.
- i. Seton Identification Products; a Brady Corporation company.

- B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.

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. Brady Corporation.
- b. HellermannTyton.
- c. Marking Services, Inc.
- d. Panduit Corp.
- e. Seton Identification Products; a Brady Corporation company.

- C. Self-Adhesive Wraparound Labels: Preprinted, 3 mil thick, vinyl flexible label with acrylic pressure-sensitive adhesive.

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. A'n D Cable Products.
- b. Brady Corporation.
- c. Brother International Corporation.
- d. emedco.
- e. Grafoplast Wire Markers.
- f. Ideal Industries, Inc.
- g. LEM Products Inc.
- h. Marking Services, Inc.
- i. Panduit Corp.
- j. Seton Identification Products; a Brady Corporation company.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over legend. Labels sized such that clear shield overlaps entire printed legend.
 3. Marking for Labels:
 - a. Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.
- D. Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3 mil thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
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. A'n D Cable Products.
 - b. Brady Corporation.
 - c. Brother International Corporation.
 - d. emedco.
 - e. Grafoplast Wire Markers.
 - f. HellermannTyton.
 - g. Ideal Industries, Inc.
 - h. LEM Products Inc.
 - i. Marking Services, Inc.
 - j. Panduit Corp.
 - k. Seton Identification Products; a Brady Corporation company.
 2. Minimum Nominal Size:
 - a. 1-1/2 by 6 inch for raceway and conductors.
 - b. 3-1/2 by 5 inch for equipment.
 - c. As required by authorities having jurisdiction.

2.4 BANDS AND TUBES

- A. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inch long, with diameters sized to suit diameters and that stay in place by gripping action.
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. Brady Corporation.
 - b. HellermannTyton.
 - c. Marking Services, Inc.
 - d. Panduit Corp.
- B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameter and shrunk to fit firmly. Full shrink recovery occurs at maximum of 200 deg F. Comply with UL 224.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

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. Brady Corporation.
 - b. Panduit Corp.

2.5 TAPES AND STENCILS

- A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
 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. Carlton Industries, LP.
 - b. Champion America.
 - c. HellermannTyton.
 - d. Ideal Industries, Inc.
 - e. Marking Services, Inc.
 - f. Panduit Corp.
- B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mil thick by 1 to 2 inch wide; compounded for outdoor use.
 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. Brady Corporation.
 - b. Carlton Industries, LP.
 - c. emedco.
 - d. Marking Services, Inc.

2.6 TAGS

- A. Nonmetallic Preprinted Tags: Polyethylene tags, 0.015 inch thick, color-coded for phase and voltage level, with factory printed permanent designations; punched for use with self-locking cable tie fastener.
 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. Brady Corporation.
 - b. Carlton Industries, LP.
 - c. emedco.
 - d. Grafoplast Wire Markers.
 - e. LEM Products Inc.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- f. [Marking Services, Inc.](#)
- g. [Panduit Corp.](#)
- h. [Seton Identification Products; a Brady Corporation company.](#)

B. Write-on Tags:

- 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. [Brimar Industries, Inc.](#)
 - b. [Carlton Industries, LP.](#)
 - c. [LEM Products Inc.](#)
 - d. [Seton Identification Products; a Brady Corporation company.](#)
- 2. Marking for Tags:
 - a. Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.7 SIGNS

A. Laminated Acrylic or Melamine Plastic Signs:

- 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. [Brady Corporation.](#)
 - b. [Carlton Industries, LP.](#)
 - c. [emedco.](#)
 - d. [Marking Services, Inc.](#)
 - e. [Seton Identification Products; a Brady Corporation company.](#)
- 2. Engraved legend.
- 3. Thickness:
 - a. For signs up to 20 sq. inch, minimum 1/16 inch thick.
 - b. For signs larger than 20 sq. inch, 1/8 inch thick.
 - c. Engraved legend with black letters on white face.
 - d. Punched or drilled for mechanical fasteners with 1/4 inch grommets in corners for mounting.
 - e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

- 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:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. [HellermannTyton.](#)
2. [Ideal Industries, Inc.](#)
3. [Marking Services, Inc.](#)
4. [Panduit Corp.](#)

- B. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F in accordance with ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black, except where used for color-coding.

- C. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F in accordance with ASTM D638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location.
- B. Fasteners for Labels and Signs: Self-tapping, stainless steel screws or stainless steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Install identifying devices before installing acoustical ceilings and similar concealment.
- C. Verify identity of item before installing identification products.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- E. Apply identification devices to surfaces that require finish after completing finish work.
- F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
- G. System Identification for Raceways and Cables under 1000 V: Identification must completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.
 - 1. Secure tight to surface of conductor, cable, or raceway.
- H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- I. Emergency Operating Instruction Signs: Install instruction signs with white legend on red background with minimum 3/8 inch high letters for emergency instructions at equipment used for emergency lighting.
- J. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from floor.
- K. Accessible Fittings for Raceways: Identify cover of junction and pull box of the following systems with wiring system legend and system voltage. System legends must be as follows:
 - 1. "EMERGENCY POWER."
- L. Vinyl Wraparound Labels:
 - 1. Secure tight to surface of raceway or cable at location with high visibility and accessibility.
 - 2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to location and substrate.
- M. Snap-Around Labels: Secure tight to surface at location with high visibility and accessibility.
- N. Self-Adhesive Wraparound Labels: Secure tight to surface at location with high visibility and accessibility.
- O. Self-Adhesive Labels:
 - 1. Install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
 - 2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high label; where two lines of text are required, use labels 2 inch high.
- P. Snap-Around Color-Coding Bands: Secure tight to surface at location with high visibility and accessibility.
- Q. Heat-Shrink, Preprinted Tubes: Secure tight to surface at location with high visibility and accessibility.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- R. Marker Tapes: Secure tight to surface at location with high visibility and accessibility.
- S. Self-Adhesive Vinyl Tape: Secure tight to surface at location with high visibility and accessibility.
 - 1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for minimum distance of 6 inch where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.
- T. Nonmetallic Preprinted Tags:
 - 1. Place in location with high visibility and accessibility.
 - 2. Secure using cable ties.
- U. Write-on Tags:
 - 1. Place in location with high visibility and accessibility.
 - 2. Secure using cable ties.
- V. Metal-Backed Butyrate Signs:
 - 1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
 - 2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high sign; where two lines of text are required, use labels 2 inch high.
- W. Laminated Acrylic or Melamine Plastic Signs:
 - 1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
 - 2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high sign; where two lines of text are required, use labels 2 inch high.
- X. Cable Ties: General purpose, for attaching tags, except as listed below:
 - 1. Outdoors: UV-stabilized nylon.
 - 2. In Spaces Handling Environmental Air: Plenum rated.

3.3 IDENTIFICATION SCHEDULE

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Accessible Raceways and Metal-Clad Cables, 1000 V or Less, for Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft maximum intervals in straight runs, and at 25 ft maximum intervals in congested areas.
- D. Accessible Fittings for Raceways and Cables within Buildings: Identify cover of junction and pull box of the following systems with self-adhesive labels containing wiring system legend and system voltage. System legends must be as follows:
 1. "EMERGENCY POWER."
 2. "POWER."
- E. Power-Circuit Conductor Identification, 1000 V or Less: For conductors in pull and junction boxes use self-adhesive wraparound labels snap-around labels to identify phase.
 1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft maximum intervals in straight runs, and at 25 ft maximum intervals in congested areas.
- F. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, use self-adhesive labels with conductor or cable designation, origin, and destination.
- G. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive labels with conductor designation.
- H. Conductors to Be Extended in Future: Attach write-on tags to conductors and list source, date, and intended future service.
- I. Auxiliary Electrical Systems Conductor Identification: Self-adhesive vinyl tape that is uniform and consistent with system used by manufacturer for factory-installed connections.
 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
- J. Instructional Signs: Self-adhesive labels, including color code for grounded and ungrounded conductors.
- K. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive labels.
 1. Apply to exterior of door, cover, or other access.
 2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:
 - a. Controls with external control power connections.
 - b. Control panels.
 - c. Telecommunications panels.
 - d. Security panels.
 - e. Lighting control panels.
- L. Operating Instruction Signs: Laminated acrylic or melamine plastic signs.
- M. Emergency Operating Instruction Signs: Self-adhesive labels with white legend on red background with minimum 3/8 inch high letters for emergency instructions at equipment used for emergency operations.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

N. Equipment Identification Labels:

1. Indoor Equipment: Engraved.
2. Equipment to Be Labeled:
 - a. Enclosures and electrical cabinets.
 - b. Access doors and panels for concealed electrical items.
 - c. Enclosed switches.
 - d. Enclosed circuit breakers.
 - e. Enclosed controllers.
 - f. Push-button stations.
 - g. Contactors.
 - h. Remote-controlled switches, dimmer modules, and control devices.
 - i. Battery-inverter units.
 - j. Monitoring and control equipment.

END OF SECTION

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Outdoor photoelectric switches.
2. Emergency lighting controls.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional coordination, scheduling, sequencing, submittal, and installation requirements applicable to the Work for electrical, communications, and electronic safety and security systems on the Project, including wiring methods.
2. Section 260526 "Grounding and Bonding for Electrical Systems" specifies grounding and bonding of lighting control devices referenced by this Section.
3. Section 260529 "Hangers and Supports for Electrical Systems" specifies hangers and supports referenced by this Section.
4. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs referenced by this Section.
5. Section 262726 "Wiring Devices" for wall-box dimmers and manual light switches.

1.2 DEFINITIONS

- A. BCELTS: Branch circuit emergency lighting transfer switch.
- B. DPDT: Double pole double throw.
- C. DPST: Double pole single throw.
- D. N.C.: Normally closed.
- E. N.O.: Normally open.
- F. PIR: Passive infrared.
- G. SPDT: Single pole double throw.
- H. SPST: Single pole single throw.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

B. Product Data: For each type of product.

1. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.
 - a. If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
 - b. Listing criteria identified in approval letter must match specified listing criteria. UL label indicating approval of equipment's enclosure is not considered approval of equipment for intended application.
 - c. Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for discontinued or superseded products are unacceptable for submitted product.
2. Include manufacturer's sample extended warranty language.

C. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Manufacturer's published instructions.
- C. Field Reports:
 1. Manufacturer's field reports for field quality-control support.
 2. Field reports for software and firmware upgrades.

1.5 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Warranty documentation.
- C. Software and firmware service agreement.

1.6 WARRANTY

- A. Special Manufacturer Extended Warranty: Manufacturer warrants that lighting control devices perform in accordance with specified requirements and agrees to provide repair or replacement of components or products that fail to perform as specified within extended-warranty period. Warranty must convey to Owner upon acceptance of the Work.
 1. Failures include, but are not limited to, the following:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Faulty operation of lighting control devices.
2. Initial Extended-Warranty Period: Three years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements:

1. Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Must comply with CCR Title 24.

2.2 OUTDOOR PHOTOELECTRIC SWITCHES

A. UL WJFX - Solid-State, Low-Voltage, Outdoor Photoelectric Switch:

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. Eaton.
 - b. Intermatic, Inc.
 - c. Leviton Manufacturing Co., Inc.
 - d. NSi Industries LLC.
 - e. TE Connectivity Ltd.
 - f. nLight; Acuity Brands Lighting, Inc.
2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories.
4. Standard Features:
 - a. Solid state; one set of N.O. dry contacts rated for 24 V(dc) at 1 A and 24 V(ac) at 1 A, to operate connected load, and compatible with lighting control system.
 - b. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range.
 - c. Time Delay: Thirty-second minimum, to prevent false operation.
 - d. Mounting: 1/2 inch threaded male conduit.
 - e. Failure Mode: Luminaire stays ON.
 - f. Power Pack:
 - 1) Dry contacts rated for 20 A driver or LED load at 120 and 277 V(ac), for tungsten at 120 V(ac), and for at 120 V(ac). Sensor has 24 V(dc), 150 mA, Class 2 power source.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a) LED status lights to indicate load status.
 - b) Plenum rated.
- 2) Digital controller capable:
- a) With integral current monitoring.
 - b) Plenum rated.

2.3 EMERGENCY LIGHTING CONTROLS

A. UL FTBR - Automatic Load Control Relay:

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. Bodine; Signify North America; Signify Holding.
 - b. Chloride; Signify North America; Signify Holding.
 - c. HLI Solutions; brand of GE Current, a Daintree Company.
 - d. Intelligent Lighting Controls Inc.
 - e. Lithonia Lighting; Acuity Brands Lighting, Inc.
 - f. WattStopper; Legrand North America, LLC.
 - g. nLight; Acuity Brands Lighting, Inc.
2. Source Limitations: Obtain products from single manufacturer.
3. Listing Criteria: Investigated, labeled, and marked by qualified electrical testing laboratory in accordance with guide information and standards specified for the following UL product categories:
 - a. Emergency Lighting and Power Equipment: UL CCN FTBR, including UL 924.
4. Standard Features:
 - a. N.C., electrically held relay.
 - b. Coil Rating: 120 277 V.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.
- B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SELECTION OF CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than 18 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than 14 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.3 INSTALLATION OF LIGHTING CONTROL DEVICES

- A. Comply with manufacturer's published instructions.
- B. Reference Standards for Installation: Unless more stringent installation requirements are specified in the Contract Documents or manufacturer's published instructions, comply with the following:
 - 1. Electrical Construction: ICC IBC, ICC IFB, NFPA 1, NFPA 70, and NECA NEIS 1.
 - 2. Electrical Maintenance: NFPA 70B.
 - 3. Electrical Safety: NFPA 70E.
 - 4. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.
 - 5. Communications Work: BICSI N1.
 - 6. Life Safety and Means of Egress Work: NFPA 101.
 - 7. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
 - 8. Consult Architect for resolution of conflicting requirements.
- C. Special Installation Techniques:
 - 1. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.
 - 2. Installation of Wiring:
 - a. Conduit: Minimum conduit size is 1/2 inch.
 - b. Wiring within Enclosures: Separate power-limited and nonpower-limited conductors in accordance with conductor manufacturer's published instructions.
 - c. Size conductors in accordance with lighting control device manufacturer's published instructions unless otherwise indicated.
 - d. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, device, and outlet boxes; terminal cabinets; and equipment enclosures.
- D. Interfaces with Other Work:
 - 1. Identification: Provide labels for lighting control devices and associated electrical equipment.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Identify field-installed conductors, interconnecting wiring, and components.
- b. Label each enclosure with engraved metal or laminated-plastic nameplate.
- c. Identify controlled circuits in lighting contactors.
- d. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.
- e. Label time switches and contactors with a unique designation.

3.4 FIELD QUALITY CONTROL

A. Administrant for Lighting Tests and Inspections:

1. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:

1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Nonconforming Work:

1. Lighting control devices will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

D. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

3.5 ADJUSTING

- #### A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to the Project site during other-than-normal occupancy hours for this purpose. Some of the Work may be required during hours of darkness.

3.6 CLOSEOUT ACTIVITIES

A. Demonstration:

1. With assistance from factory-authorized service representatives, demonstrate to Owner's maintenance and clerical personnel and building occupants how to operate the following systems and equipment:
 - a. Lighting control devices.

B. Training:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. With assistance from factory-authorized service representatives, train Owner's maintenance personnel on the following topics:
 - a. How to adjust, operate, and maintain lighting control devices.

END OF SECTION

SECTION 260943.23 - RELAY-BASED LIGHTING CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Lighting control relay panels.
2. Networked lighting control panels.
3. Manual switches and cover plates.
4. Field-mounted signal sources.
5. Conductors and cables.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 DEFINITIONS

- A. Monitoring: Acquisition, processing, communication, and display of equipment status data, metered electrical parameter values, power quality evaluation data, event and alarm signals, tabulated reports, and event logs.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for control modules, power distribution components, relays, manual switches and cover plates, and conductors and cables.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
3. Sound data including results of operational tests of central dimming controls.
4. Operational documentation for software and firmware.

C. Shop Drawings: For each relay panel and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types and details for types other than Type 1.
3. Detail wiring partition configuration, current, and voltage ratings.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

4. Short-circuit current rating of relays.
5. Wire Termination Diagrams and Schedules: Coordinate nomenclature and presentation with Drawings and block diagram. Differentiate between manufacturer-installed and field-installed wiring.
6. Block Diagram: Show interconnections between components specified in this Section and devices furnished with power distribution system components. Indicate data communication paths and identify networks, data buses, data gateways, concentrators, and other devices to be used. Describe characteristics of network and other data communication lines.
7. Submit evidence that lighting controls are compatible with connected monitoring and control devices and systems specified in.
 - a. Show interconnecting signal and control wiring, and interface devices that show compatibility of inputs and outputs.
 - b. For control interfaces and adapters, list network protocols and provide statements from manufacturers that input and output devices comply with interoperability requirements of the protocol.

D. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Sample warranties.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle and prepare panels for installation in accordance with NECA 407.

1.6 WARRANTY

- A. Special Manufacturer Extended Warranty: Manufacturer warrants that components of standalone multipreset modular dimming controls perform in accordance with specified requirements and agrees to provide repair or replacement of components that fail to perform as specified within extended warranty period.
 1. Initial Extended Warranty Period: Two year(s) from date of Substantial Completion, for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Sequence of Operations: Input signal from field-mounted manual switches, or digital signal sources, must open or close one or more lighting control relays in the lighting control panels. Any combination of inputs must be programmable to any number of control relays.
- B. Surge Protective Device: Factory installed as an integral part of control components or field-mounted surge suppressors complying with UL 1449, SPD Type 2.
- C. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70 by qualified electrical testing laboratory recognized by authorities having jurisdiction and marked for intended location and application.
- D. Comply with 47 CFR 15, Subparts A and B, for Class A digital devices.
- E. Comply with UL 916.

2.2 LIGHTING CONTROL RELAY PANELS

- 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. ABB, Electrification Business.
 - 2. Intermatic, Inc.
 - 3. Leviton Manufacturing Co., Inc.
 - 4. Lithonia Lighting; Acuity Brands Lighting, Inc.
 - 5. Lutron Electronics Co., Inc.
 - 6. Philips; Signify North America; Signify Holding.
 - 7. Siemens Industry, Inc., Energy Management Division.
 - 8. Touch-Plate Technologies.
 - 9. WattStopper; Legrand North America, LLC.
- B. Description: Standalone lighting control panel using mechanically latched relays to control lighting and appliances.
- C. Lighting Control Panel:
 - 1. A single enclosure with incoming lighting branch circuits, control circuits, switching relays, and on-board timing and control unit.
 - 2. A vertical barrier separating branch circuits from control wiring.
- D. Control Unit: Contain the power supply and electronic control for operating and monitoring individual relays.
 - 1. Timing Unit:
 - a. 365-day calendar, astronomical clock, and automatic adjustments for daylight savings and leap year.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- b. Clock configurable for 12-hour (A.M./P.M.) or 24-hour format.
 - c. Four independent schedules, each having 24 time periods.
 - d. Schedule periods settable to the minute.
 - e. Day-of-week, day-of-month, day-of-year with one-time or repeating capability.
 - f. 10 special date periods.
2. Sequencing Control with Override:
 - a. Automatic sequenced on and off switching of selected relays at times set at the timing unit, allowing timed overrides from external switches.
 - b. Sequencing control must operate relays one at a time, completing the operation of all connected relays in not more than 10 seconds.
 - c. Override control must allow any relay connected to it to be switched on or off by a field-deployed manual switch or by an automatic switch, such as an occupancy sensor.
 - d. Override control "blink warning" must warn occupants approximately five minutes before actuating the off sequence.
3. Nonvolatile memory must retain all setup configurations. After a power failure, the controller must automatically reboot and return to normal system operation, including accurate time of day and date.

E. Relays:

1. Electrically operated, mechanically held single-pole switch, rated at 20 A at 277 V. Short-circuit current rating must be not less than 5 kA. Control must be three-wire, 24 V(ac).

F. Power Supply: NFPA 70, Class 2, sized for connected equipment, plus 20 percent spare capacity. Powered from a dedicated branch circuit of the panelboard that supplies power to the line side of the relays, sized to provide control power for the local panel-mounted relays, bus system, control-voltage inputs, field-installed occupancy sensors, and photo sensors.

G. Operator Interface:

1. Integral alphanumeric keypad and digital display, and intuitive drop-down menus to assist in programming.
2. Log and display relay on-time.
3. Connect relays to one or more time and sequencing schemes.

2.3 NETWORKED LIGHTING CONTROL PANELS

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. ABB, Electrification Business.
2. Intermatic, Inc.
3. Lithonia Lighting; Acuity Brands Lighting, Inc.
4. Lutron Electronics Co., Inc.
5. Touch-Plate Technologies.
6. WattStopper; Legrand North America, LLC.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Description: Lighting control panels using mechanically latched relays to control lighting and appliances. The panels must be capable of being interconnected with digital communications to appear to the operator as a single lighting control system.
- C. Lighting Control Panels:
 - 1. A single enclosure with incoming lighting branch circuits, control circuits, switching relays, and on-board timing and control unit.
 - 2. A vertical barrier separating branch circuits from control wiring.
- D. Main Control Unit: Installed in the main lighting control panel only; powered from the branch circuit of the standard control unit.
 - 1. Ethernet Communications: Comply with TCP/IP protocol. The main control unit must provide for programming of all control functions of the main and all networked slave lighting control panels including timing, sequencing, and overriding.
 - 2. Protocol: Controllers must support serial RS/485 and Ethernet IP communications.
 - 3. Timing Unit:
 - a. 365-day calendar, astronomical clock, and automatic adjustments for daylight savings and leap year.
 - b. Clock configurable for 12-hour (A.M./P.M.) or 24-hour format.
 - c. Four independent schedules, each having 24 time periods.
 - d. Schedule periods settable to the minute.
 - e. Day-of-week, day-of-month, day-of-year with one-time or repeating capability.
 - f. 16 special date periods.
 - 4. Time Synchronization: The timing unit must be updated not less than every hour(s) with the network time server.
 - 5. Sequencing Control with Override:
 - a. Automatic sequenced on and off switching of selected relays at times set at the timing unit, allowing timed overrides from external switches.
 - b. Sequencing control must operate relays one at a time, completing the operation of all connected relays in not more than 10 seconds.
 - c. Override control must allow any relay connected to it to be switched on or off by a field-deployed manual switch or by an automatic switch, such as an occupancy sensor.
 - d. Override control "blinking warning" must warn occupants approximately five minutes before actuating the off sequence.
 - e. Activity log, storing previous relay operation, including the time and cause of the change of status.
 - f. Download firmware to the latest version offered by manufacturer.
- E. Standard Control Unit, Installed in All Lighting Control Panels: Contain electronic controls for programming the operation of the relays in the control panel, contain the status of relays, and contain communications link to enable the digital functions of the main control unit. Comply with UL 916.
 - 1. Electronic control for operating and monitoring individual relays, and display relay on-time.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Nonvolatile memory must retain all setup configurations. After a power failure, the controller must automatically reboot and return to normal system operation.
3. Integral keypad and digital-display front panel for local setup, including the following:
 - a. Blink notice, time adjustable from software.
 - b. Ability to log and display relay on-time.
 - c. Capability for accepting downloadable firmware so that the latest production features may be added in the future without replacing the module.

F. Relays:

1. Electrically operated, mechanically held single-pole switch, rated at 20 A at 277 V. Short-circuit current rating must be not less than 5 kA. Control must be three-wire, 24 V(ac) digital control network.

G. Power Supply: NFPA 70, Class 2, UL listed, sized for connected equipment, plus not less than 20 percent spare capacity. Powered from a dedicated branch circuit of the panelboard that supplies power to the line side of the relays, sized to provide control power for the local panel-mounted relays, bus system, control-voltage inputs, field-installed occupancy sensors, and control-voltage photo sensors.

H. Operator Interface: At the main control unit, provide interface for a tethered connection of for configuring all networked lighting control panels using setup software designed for the specified operating system. Include one portable device for initial programming of the system and training of Owner's personnel. That device must remain the property of Owner.

I. Software:

1. Menu-driven data entry.
2. Online and offline programming and editing.
3. Provide for entry of the room or space designation for the load side of each relay.
4. Monitor and control all relays, showing actual relay state and the name of the automatic actuating control, if any.
5. Size the software appropriate to the system.

2.4 MANUAL SWITCHES AND COVER PLATES

A. Push-Button Switches: Modular, momentary contact for operating one or more relays and to override automatic controls.

1. Provide white switch and faceplate. Provide from same manufacturer as control system.

B. Legend: Engraved or permanently silk-screened on cover plate where indicated. Use designations indicated on Drawings.

2.5 FIELD-MOUNTED SIGNAL SOURCES

A. Photocells: Comply with Section 260923 "Lighting Control Devices." Control power may be taken from the lighting control panel, and signal must be compatible with the relays.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2.6 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Class 2 Power Source: Not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Classes 2 and 3 Control Cables: Multiconductor cable with copper conductors not smaller than No. 18 AWG. Comply with requirements in Section 260523 "Control-Voltage Electrical Power Cables."
- C. Class 1 Control Cables: Multiconductor cable with copper conductors not smaller than No. 14 AWG. Comply with requirements in Section 260523 "Control-Voltage Electrical Power Cables."
- D. Twisted-Pair Data Cable: Category 6.
 - 1. Comply with requirements for twisted pair cabling in Section 260523 "Control-Voltage Electrical Power Cables."
 - 2. Comply with requirements in Section 271513 "Communications Copper Horizontal Cabling."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Receive, inspect, handle, and store panels in accordance with NECA 407.
- B. Examine panels before installation. Reject panels that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panels for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF WIRING

- A. Wiring Methods:
 - 1. Install conductors and cables concealed in accessible ceilings, walls, and floors where possible.
 - 2. Conceal raceway and cables except in unfinished spaces.
 - 3. Provide plenum-rated cable, where installed exposed or in open cable tray, within environmental airspaces, including plenum ceilings.
 - 4. Comply with requirements for raceways specified in Section 260533.13 "Conduits for Electrical Systems."
- B. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.3 INSTALLATION OF PANELS

- A. Install panels and accessories in accordance with NECA 407.
- B. Mount panel cabinet plumb and rigid without distortion of box.
- C. Install filler plates in unused spaces.

3.4 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- B. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 260553 "Identification for Electrical Systems."
- C. Create a directory to indicate loads served by each relay; incorporate Owner's final room designations. Obtain approval before installing. Use a PC to create directory; handwritten directories are unacceptable.
- D. Lighting Control Panel Nameplates: Label each panel with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

- A. Tests and Inspections:
- B. Nonconforming Work:
 - 1. Lighting control panel will be considered defective if it does not pass tests and inspections.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- C. Prepare test and inspection reports, including a certified report that identifies lighting control panels and describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations made after remedial action.
- D. Manufacturer Services:
 - 1. Engage factory-authorized service representative to perform field tests and inspections.

3.6 SYSTEM STARTUP

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup checks in accordance with manufacturer's instructions.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Confirm correct communications wiring, initiate communications between panels, and program the lighting control system in accordance with approved configuration schedules, time-of-day schedules, and input override assignments.

3.7 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

END OF SECTION

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Panelboards.
2. Disconnecting and overcurrent protective devices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional abbreviations, definitions, submittals, qualifications, testing agencies, and other requirements applicable to the Work for electrical, communications, and electronic safety and security systems on Project, including wiring methods.
2. Section 260529 "Hangers and Supports for Electrical Systems" specifies concrete bases and supports for panelboards installed by this Section.
3. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs installed by this Section.

1.2 DEFINITIONS

A. MCCB: Molded-case circuit breaker.

B. VPR: Voltage protection rating.

1.3 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data: For each type of product. In addition to information identified in Section 013300 "Submittal Procedures," submit the following:

1. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.
2. Include manufacturer's sample extended warranty language.

C. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Manufacturer's published instructions.
- C. Field Reports:
 - 1. Manufacturer's field reports for field quality-control support.
 - 2. Field reports for voltage monitoring and adjusting.
 - 3. Field reports for infrared scanning.

1.5 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Warranty documentation.

1.6 QUALIFICATIONS

- A. Low-Voltage Electrical Testing and Inspecting Agency: Entities possessing active credentials from a qualified electrical testing laboratory recognized by authorities having jurisdiction.
 - 1. On-site electrical testing supervisors must have documented certification and experience with testing electrical equipment in accordance with NETA testing standards.

1.7 WARRANTY

- A. Special Installer Extended Warranty: Installer warrants that fabricated and installed panelboards perform in accordance with specified requirements and agrees to repair or replace components or products that fail to perform as specified within extended-warranty period.
 - 1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
- B. Comply with NEMA PB 1.

2.2 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- 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:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. [ABB, Electrification Business.](#)
2. [Eaton.](#)
3. [Siemens Industry, Inc., Energy Management Division.](#)
4. [Square D; Schneider Electric USA.](#)

B. MCCB: Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers:
 - a. Inverse time-current element for low-level overloads.
 - b. Instantaneous magnetic trip element for short circuits.
 - c. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. GFCI Circuit Breakers: Single- and double-pole configurations with Class A ground-fault protection (6 mA trip).
3. GFPE Circuit Breakers: Class B ground-fault protection (30 mA trip).
4. Arc-Fault Circuit Interrupter Circuit Breakers: Comply with UL 1699; 120/240 V, single-pole configuration.
5. Subfeed Circuit Breakers: Vertically mounted.
6. MCCB Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Breaker handle indicates tripped status.
 - c. UL listed for reverse connection without restrictive line or load ratings.
 - d. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - e. Ground-Fault Protection: Remote-mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 - f. Shunt Trip: 120 V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
 - g. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's published instructions.

3.2 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components.
- B. Device Nameplates: Label each branch circuit device in power panelboards with nameplate.
- C. Breaker Labels: Faceplate must list current rating, UL and IEC certification standards, and AIC rating.
- D. Circuit Directory:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Provide directory card inside panelboard door, mounted in transparent card holder.
 - a. Circuit directory must identify specific purpose with detail sufficient to distinguish it from other circuits.
2. Provide computer-generated circuit directory mounted inside panelboard door with transparent plastic protective cover.
 - a. Circuit directory must identify specific purpose with detail sufficient to distinguish it from other circuits.

3.3 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test for low-voltage air circuit breakers stated in NETA ATS, Paragraph 7.6 Circuit Breakers. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

B. Nonconforming Work:

1. Remove and replace defective units and retest.

3.4 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

END OF SECTION

SECTION 265000 - LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Luminaires.
2. Luminaire fittings.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" specifies additional requirements applicable to coordinating, scheduling, and sequencing of the Work specified in this Section.
2. Section 260519 "Low-Voltage Electrical Power Conductors and Cables" and Section 260523 "Control-Voltage Electrical Power Cables" specifies wiring connections installed by this Section.
3. Section 260529 "Hangers and Supports for Electrical Systems" specifies channel and angle supports installed by this Section.
4. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs installed by this Section.
5. Section 260923 "Lighting Control Devices" specifies automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors installed by this Section.

1.2 DEFINITIONS

- A. BUG Rating: Backlight, uplight, and glare rating for light pollution from exterior luminaires.
- B. Correlated Color Temperature (CCT): The absolute temperature (in kelvins) of a blackbody whose chromaticity (color quality) most nearly resembles that of the light source.
- C. Color Rendering Index (CRI): The measure of the degree of color shift objects undergo when illuminated by the light source as compared with the color of those same objects when illuminated by a reference light source. The lower the CRI of a light source, the more difficult it is to identify colors and stripes on electronic components and wiring.
- D. IDA: International Dark-Sky Association.
- E. IES: Illuminating Engineering Society.
- F. LPD: Lighting power density.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
 - 1. Luminaires: Include the following additional information:
 - a. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.
 - 1) If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
 - 2) Listing criteria identified in approval letter must match specified listing criteria. Approval of only equipment's enclosure is not considered approval of equipment for intended application.
 - 3) Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for similar products are not acceptable.
 - b. Product Certificates: Include product certificates stating compliance with standards listed below, signed by manufacturer or fabricator.
 - 1) Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with current accreditation under National Voluntary Laboratory Accreditation Program (NVLAP) for Energy Efficient Lighting Products.
 - 2) Testing Agency Certified Data: For luminaires indicated on Lighting Fixture Schedule on the Drawings, photometric data certified by qualified independent testing laboratory. Photometric data for remaining luminaires must be certified by manufacturer.
 - c. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - d. Include operating characteristics, electrical characteristics, and furnished accessories.
 - e. Include schedule of submitted lighting products. Arrange schedule and accompanying product data in order by luminaire and lamp designations indicated on the Drawings.
 - f. Include battery and charger data for emergency lighting units.
 - g. Include ballast factor.
 - h. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.
 - i. Include photometric data and adjustment factors obtained from qualified laboratory tests.
 - j. Include manufacturer's sample warranty language.
 - 2. Luminaire Fittings: Include the following additional information:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.
 - 1) If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
 - 2) Listing criteria identified in approval letter must match specified listing criteria. Approval of only equipment's enclosure is not considered approval of equipment for intended application.
 - 3) Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for similar products are not acceptable.
 - b. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - c. Include operating characteristics, electrical characteristics, and furnished accessories.
 - d. Include schedule of submitted lighting products. Arrange schedule and accompanying product data in order by luminaire and lamp designations indicated on the Drawings.
 - e. Include manufacturer's sample warranty language.
- C. Shop Drawings: Prepare and submit the following:
- 1. Drawings, Diagrams, and Supporting Documents for Custom Luminaires:
 - a. Include plans, elevations, sections, and mounting and attachment details.
 - b. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - c. Include diagrams for power, signal, and control wiring.
- D. Sustainable Design Submittals:
- 1. Product data for sustainable design features for each type of product.
 - 2. ASHRAE/IES 90.1 LPD Compliance Documentation: Prepare plans and calculations demonstrating that as-constructed lighting power density complies with mandatory provisions of ASHRAE/IES 90.1 and that as-constructed lighting, including daylighting and controls, improves on baseline energy performance. If included with the Project, indicate locations of energy meters for lighting loads.
- E. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Manufacturers' published instructions.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

C. Field Reports:

1. Manufacturer's field reports for field quality-control support.
2. Manufacturer's field reports for system startup support.

1.5 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Warranty documentation.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Spare parts.
- C. Extra stock material.

1.7 QUALIFICATIONS

- A. Luminaire Photometric Testing Laboratory: Entity possessing active qualifications specified in Section 014000 "Quality Requirements" accredited under NIST HB 150-1, and complying with applicable IES testing standards.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect exposed surface finishes on lighting equipment by applying strippable, temporary protective covering before shipping.

1.9 WARRANTY FOR LUMINAIRES

- A. Special Manufacturer Extended Warranty: Manufacturer warrants that luminaires perform in accordance with specified requirements and agrees to provide repair or replacement of products that fail to perform as specified within extended-warranty period.
 1. Extended-Warranty Period: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.

1.10 WARRANTY FOR BATTERIES

- A. Special Manufacturer Extended Warranty for Batteries: Manufacturer warrants that batteries perform in accordance with specified requirements and agrees to provide repair or replacement of batteries that fail to perform as specified within extended-warranty period.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Initial Extended-Warranty Period for Li-ion Batteries: Three years from date of Substantial Completion; full coverage for materials only, free on board origin, freight prepaid.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 LUMINAIRES

- A. Luminaire:

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. Albeo; brand of GE Current, a Daintree company; American Industrial Partners (AIP).
 - b. Alera Lighting; brand of GE Current, a Daintree company; American Industrial Partners (AIP).
 - c. Amerlux.
 - d. Architectural Area Lighting; brand of GE Current, a Daintree company; American Industrial Partners (AIP).
 - e. Atlas Lighting Products.
 - f. Columbia Lighting; brand of GE Current.
 - g. Cooper Lighting Solutions; Signify North America Corp.
 - h. Deco Lighting.
 - i. Digital Lumens.
 - j. E-conolight.
 - k. Kim Lighting; brand of GE Current, a Daintree company; American Industrial Partners (AIP).
 - l. LMPG Inc.
 - m. Lighting Services, Inc.
 - n. Lightolier; brand of Signify North America Corp.
 - o. Lithonia Lighting; Acuity Brands Lighting, Inc.
 - p. Luraline Lighting.
 - q. OSRAM SYLVANIA.
 - r. Philips; Signify North America; Signify Holding.
 - s. Pure Lighting Manufacturing Ltd.
 - t. PureEdge Lighting.
 - u. RAB Lighting.
 - v. Selux Corporation.
 - w. Specialty Lighting Industries, Inc.
 - x. Visa Lighting.
 - y. West Durable Lighting.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- z. Zumtobel Lighting, Inc.; Zumtobel Group.
- 2. Listing Criteria:
 - a. LED Luminaires: UL CCN IFAM; including UL 1598.
 - b. Marked in accordance with UL CCN HYXT, including UL 1598, for compatible power supply, installation location, and environmental conditions.
- 3. Luminaire Description: .
- 4. Standard Features:
 - a. Openings: Doors, frames, and access panels must operate smoothly, not leak light under operating conditions, and permit relamping without use of tools or parts falling from enclosure.
 - b. Nominal Operating Voltage: 120 V(ac).
 - c. CRI: 80+.
 - d. Ballast or Driver Location: Internal or remote.
 - e. LED Luminaires (UL CCN IFAM):
 - 1) Output Intensity: As indicated in lighting fixture schedule.
 - 2) Rated Life: 50 000 hours to L70.
 - 3) CCT: As indicated in lighting fixture schedule.
- 5. Sustainable Design Features:
 - a. Backlight, Uplight, and Glare (BUG) Ratings: Exterior luminaire meets IES LM-11 recommended BUG ratings at luminaire's intended location.
 - b. IDA/IES Five Principles Ready:
 - 1) Exterior luminaire is adjustable to illuminate only to extent necessary for its intended purpose.
 - 2) Exterior luminaire is aimable.
 - 3) Exterior luminaire is dimmable.
 - 4) Exterior luminaire is controllable to turn on only when needed.
 - 5) Exterior luminaire has warm color temperature.
- B. UL FTBR or FTBV - Emergency Lighting and Power Equipment:
 - 1. Standard Features:
 - a. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
 - b. Status and Test Indication: Visible and accessible without opening luminaire or entering ceiling space.
 - 1) Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
 - 2) Test Push-Button: Push-to-test button in unit housing simulates loss of normal power and demonstrates unit operability.
 - c. Nominal Operating Voltage: 120 V(ac).

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- d. Mounting: As required.
- e. Enclosure: UV stable thermoplastic housing.
- f. Light Source: LED head(s).

2. Other Available Features Required by the Project:

- a. Internal-Type Emergency Power Unit: Self-contained, modular, battery-inverter unit, factory mounted within luminaire body and compatible driver.
 - 1) Emergency Connection: Operate continuously upon loss of normal power. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire ballast or driver.
 - 2) Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
 - 3) Test Push-Button and Indicator Light: Visible and accessible without opening luminaire or entering ceiling space.
 - a) Push-Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
 - b) Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
 - 4) Battery Type: Ni-Cd.
 - 5) Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
 - 6) Remote Test: Switch in handheld remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
- b. External-Type Emergency Power Unit: Self-contained, modular, battery-inverter unit, suitable for powering one or more lamps, remote mounted from luminaire.
 - 1) Emergency Connection: Operate continuously. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire driver.
 - 2) Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
 - 3) Battery Type: Ni-Cd.
 - 4) Charger: Fully automatic, solid-state, constant-current type.
 - 5) Housing: Type 1 enclosure listed for installation inside, on top of, or remote from luminaire. Remote assembly must be located no less than half of distance recommended by driver manufacturer, whichever is less.
 - 6) Test Push-Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.

- 7) LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
- 8) Remote Test: Switch in handheld remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.

2.3 LUMINAIRE FITTINGS

A. Luminaire Support Accessories:

1. Standard Features:

- a. Sized and rated for luminaire weight.
- b. Capable of maintaining luminaire position after cleaning and relamping.
- c. Capable of supporting luminaire without causing deflection of ceiling or wall.
- d. Capable of supporting horizontal force equal to 100 percent of luminaire weight and vertical force equal to 400 percent of luminaire weight.

2. Other Available Features Required by the Project:

- a. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage wire supports adjustable in length.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF LIGHTING

- A. Comply with manufacturer's published instructions.
- B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:
 1. Electrical Construction: ICC IBC, ICC IFC, NFPA 1, NFPA 70, and NECA NEIS 1.
 2. Grounding and Bonding: NECA NEIS 331 and Article 250 of NFPA 70.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Work in Confined Spaces: NFPA 350.
4. Work in Basements and Other Developed Subterranean Spaces: NFPA 520.
5. Installation of Indoor Lighting Systems: NECA NEIS 500.
6. Installation of Exterior Lighting Systems: NECA NEIS 501.
7. Installation of Luminaires, Lampholders, and Lamps: Article 410 of NFPA 70.
8. Installation of Emergency Lighting and Exit Signs: ICC IBC, NFPA 101, and Parts IV and V in Article 700 of NFPA 70.
9. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Install luminaires level, plumb, and square with finished floor or grade unless otherwise indicated.
2. Install luminaires at height and aiming angle as indicated on the Drawings.
3. Coordinate layout and installation of luminaires with other construction.
4. Exterior Bollard Luminaires:
 - a. Align units for optimum directional alignment of light distribution.
 - b. Install on concrete base with top 4 inch above finished grade or surface at luminaire location. Cast conduit into base, and shape base to match shape of bollard base. Finish by troweling and rubbing smooth. Concrete materials, installation, and finishing are specified in Section 033000 "Cast-in-Place Concrete."
5. Exterior Corrosion Prevention:
 - a. Do not use aluminum in contact with earth or concrete. When in direct contact with dissimilar metals, protect aluminum with insulating fittings or treatment.
 - b. When embedding steel conduits in concrete, wrap conduit with 10 mil thick, pipe-wrapping plastic tape applied with a 50 percent overlap.
6. Flush-Mounted Luminaire Support:
 - a. Secured to outlet box.
 - b. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
 - c. Trim ring flush with finished surface.
7. Wall-Mounted Luminaire Support: Attached to structural members in walls.
 - a. Do not attach luminaires directly to gypsum board.
8. Remote Mounting of Ballasts or Drivers: Do not exceed distance between ballast or driver and luminaire recommended by ballast or driver manufacturer.
9. Emergency Power Units: Secure with approved fasteners in four or more locations, spaced near corners of unit.
10. Install wiring connections for luminaires.
11. Identification: Provide labels for luminaires and associated electrical equipment.
 - a. Identify field-installed conductors, interconnecting wiring, and components.
 - b. Provide warning signs.
 - c. Label each enclosure with engraved metal or laminated-plastic nameplate.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Systems Integration: Integrate lighting control devices and equipment with electrical power connections for operation of luminaires as specified.

3.3 FIELD QUALITY CONTROL OF LIGHTING

- A. Tests and Inspections:

- 1. Perform manufacturer's recommended tests and inspections.
- 2. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
- 3. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- 4. Verify operation of photoelectric controls.
- 5. Exterior Illumination Tests:
 - a. Measure light intensities at night. Use photometers with calibration referenced to NIST standards.

- B. Nonconforming Work:

- 1. Luminaire will be considered defective if it does not pass tests and inspections.
- 2. Remove and replace defective units and retest.

- C. Field Quality-Control Reports: Collect, assemble, and submit test and inspection reports.

3.4 SYSTEM STARTUP

- A. Perform startup service.

- 1. Complete installation and startup checks in accordance with manufacturer's published instructions.
- 2. Charge emergency power units and batteries minimum of 24 hours and conduct one-hour discharge test.

3.5 ADJUSTING

- A. Luminaire Aiming Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting aiming direction of luminaires to suit occupied conditions. Make up to two visits to the Project's site during other-than-normal hours for this purpose. Some of the Work may be required during hours of darkness.

- 1. During adjustment visits, inspect all luminaires. Replace lamps or luminaires that are defective.
- 2. Parts and supplies must be manufacturer's authorized replacement parts and supplies.
- 3. Adjust aim of luminaires in presence of Architect.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.6 CLOSEOUT ACTIVITIES

A. Training:

1. Train Owner's maintenance personnel on the following topics:
 - a. How to adjust, operate, and maintain luminaires.

3.7 PROTECTION

- A. After installation, protect lighting equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION

SECTION 271513 - COMMUNICATIONS COPPER HORIZONTAL CABLING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Category 6 twisted pair cable.
2. Twisted pair cable hardware, including plugs and jacks.
3. Cable management system.
4. Cabling identification products.
5. Grounding provisions for twisted pair cable.
6. Source quality control requirements for twisted pair cable.

1.2 DEFINITIONS

- A. Cross-Connect: A facility enabling the termination of cable elements and their interconnection or cross-connection.
- B. EMI: Electromagnetic interference.
- C. FTP: Shielded twisted pair.
- D. F/FTP: Overall foil screened cable with foil screened twisted pair.
- E. F/UTP: Overall foil screened cable with unscreened twisted pair.
- F. IDC: Insulation displacement connector.
- G. LAN: Local area network.
- H. Jack: Also commonly called an "outlet," it is the fixed, female connector.
- I. Plug: Also commonly called a "connector," it is the removable, male telecommunications connector.
- J. RCDD: Registered Communications Distribution Designer.
- K. Screen: A metallic layer, either a foil or braid, placed around a pair or group of conductors.
- L. Shield: A metallic layer, either a foil or braid, placed around a pair or group of conductors.
- M. S/FTP: Overall braid screened cable with foil screened twisted pair.
- N. S/UTP: Overall braid screened cable with unscreened twisted pairs.
- O. UTP: Unscreened (unshielded) twisted pair.

1.3 COPPER HORIZONTAL CABLING DESCRIPTION

- A. The maximum allowable horizontal cable length is 295 feet. This maximum allowable length does not include an allowance for the length of 16 feet to the workstation equipment or in the horizontal cross-connect.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
- C. Shop Drawings:
 - 1. System Labeling Schedules:
 - a. Electronic copy of labeling schedules, in software and format selected by Owner.
 - b. Electronic copy of labeling schedules that are part of cabling and asset identification system of software.
 - 2. Cabling administration Drawings and printouts.
 - 3. Wiring diagrams and installation details of telecommunications equipment, to show location and layout of telecommunications equipment, including the following:
- D. Twisted pair cable testing plan.
- E. Sustainable Design Submittals:
 - 1. Product Data: For each conductor and cable indicating lead content.
 - 2. Environmental Product Declaration: For each product.
- F. Field Quality-Control Submittals:
 - 1. Field quality-control reports.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For Installer, installation supervisor, and field inspector.
- C. Product Certificates: For each type of product.
- D. Source quality-control reports.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.6 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Maintenance Data: For splices and connectors to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI on staff.
 - 1. Installation Supervision: Installation must be under the direct supervision of Level 2 Installer, who must be present at all times when Work of this Section is performed at Project site.
 - 2. Testing Supervisor: Currently certified by BICSI as an RCDD to supervise on-site testing.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Test cables upon receipt at Project site.
 - 1. Test each pair of twisted pair cable for open and short circuits.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.10 COORDINATION

- A. Coordinate layout and installation of telecommunications pathways and cabling with Government's telecommunications and LAN equipment and service suppliers via the Contracting Officer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Horizontal cabling system must comply with transmission standards in TIA-568-C.1, when tested according to test procedures of this standard.
- B. Telecommunications Pathways and Spaces: Comply with TIA-569-D.
- C. Grounding: Comply with TIA-607-B.

2.2 GENERAL CABLE CHARACTERISTICS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with the applicable standard and NFPA 70 for the following types:
 - 1. Communications, Plenum Rated:
 - a. Type CMP complying with UL 1685, Type CMP in listed plenum communications raceway, or Type CMP in listed cable routing assembly.
 - b. Type CM, Type CMG, Type CMP, Type CMR, or Type CMX in metallic conduit installed according to NFPA 70, Article 300.22, "Wiring in Ducts, Plenums, and Other Air-Handling Spaces."
- B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 50 or less.
- C. RoHS compliant.

2.3 CATEGORY 6 TWISTED PAIR CABLE

- A. Description: Four-pair, balanced-twisted pair cable, certified to meet transmission characteristics of Category 6 cable at frequencies up to 500 MHz.
- B. 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. 3M.
 - 2. AMP NETCONNECT; a TE Connectivity Ltd. company.
 - 3. Belden, Inc.
 - 4. Berk-Tek Leviton; a Nexans/Leviton alliance.
 - 5. CommScope, Inc.
 - 6. General Cable; Prysmian Group North America.
 - 7. Genesis Cable Products; Honeywell International, Inc.
 - 8. Hitachi Cable America Inc.
 - 9. Mohawk; a division of Belden Networking, Inc.
 - 10. Prysmian Cables and Systems; Prysmian Group North America.
 - 11. Superior Essex Inc.; subsidiary of LS Corp.
 - 12. SYSTIMAX Solutions; a CommScope Inc. brand.
- C. Standard: Comply with NEMA WC 66/ICEA S-116-732 and TIA-568-C.2 for Category 6 cables.
- D. Conductors: 100-ohm, 23 AWG solid copper.
 - 1. Lead Content: Less than 300 parts per million.
- E. Shielding/Screening: Unshielded twisted pairs (UTP).

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- F. Cable Rating: Plenum.
- G. Jacket: Blue thermoplastic.

2.4 TWISTED PAIR CABLE HARDWARE

- A. Description: Hardware designed to connect, splice, and terminate twisted pair copper communications cable.
- B. 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. 3M.
 - 2. American Technology Systems Industries, Inc.
 - 3. AMP NETCONNECT; a TE Connectivity Ltd. company.
 - 4. Belden, Inc.
 - 5. Berk-Tek Leviton; a Nexans/Leviton alliance.
 - 6. CommScope, Inc.
 - 7. General Cable; Prysmian Group North America.
 - 8. Genesis Cable Products; Honeywell International, Inc.
 - 9. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
 - 10. Leviton Manufacturing Co., Inc.
 - 11. Mohawk; a division of Belden Networking, Inc.
 - 12. Molex Premise Networks.
 - 13. Panduit Corp.
 - 14. Prysmian Cables and Systems; Prysmian Group North America.
 - 15. Simon Co. (The).
 - 16. Superior Essex Inc.; subsidiary of LS Corp.
 - 17. SYSTIMAX Solutions; a CommScope Inc. brand.
- C. General Requirements for Twisted Pair Cable Hardware:
 - 1. Comply with the performance requirements of Category 6.
 - 2. Comply with TIA-568-C.2, IDC type, with modules designed for punch-down caps or tools.
 - 3. Cables must be terminated with connecting hardware of same category or higher.
- D. Source Limitations: Obtain twisted pair cable hardware from single source from single manufacturer.
- E. Connecting Blocks:
 - 1. 110-style IDC for Category 6.
 - 2. Provide blocks for the number of cables terminated on the block, plus 25 percent spare, integral with connector bodies, including plugs and jacks where indicated.
- F. Cross-Connect: Modular array of connecting blocks arranged to terminate building cables and permit interconnection between cables.
 - 1. Number of Terminals per Field: One for each conductor in assigned cables.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- G. Patch Panel: Modular panels housing numbered jack units with IDC-type connectors at each jack location for permanent termination of pair groups of installed cables.
 - 1. Features:
 - a. Universal T568A and T568B wiring labels.
 - b. Labeling areas adjacent to conductors.
 - c. Replaceable connectors.
 - d. 48 ports.
 - 2. Construction: 16-gauge steel and mountable on 19-inch equipment racks.
 - 3. Number of Jacks per Field: One for each four-pair conductor group of indicated cables, plus spares and blank positions adequate to suit specified expansion criteria.
- H. Patch Cords: Factory-made, four-pair cables in 36-inch and 48-inch lengths; terminated with an eight-position modular plug at each end.
 - 1. Patch cords must have bend-relief-compliant boots and color-coded icons to ensure performance. Patch cords must have latch guards to protect against snagging.
 - 2. Patch cords must have color-coded boots for circuit identification.
- I. Plugs and Plug Assemblies:
 - 1. Male; eight position; color-coded modular telecommunications connector designed for termination of a single four-pair, 100-ohm, unshielded or shielded twisted pair cable.
 - 2. Standard: Comply with TIA-568-C.2.
 - 3. Marked to indicate transmission performance.
- J. Jacks and Jack Assemblies:
 - 1. Female; eight position; modular; fixed telecommunications connector designed for termination of a single four-pair, 100-ohm, unshielded or shielded twisted pair cable.
 - 2. Designed to snap-in to a patch panel or cover plate.
 - 3. Standard: Comply with TIA-568-C.2.
 - 4. Marked to indicate transmission performance.
- K. Cover Plate:
 - 1. Metal Cover Plate: Stainless steel, complying with requirements in Section 260533.13 "Conduits for Electrical Systems."
- L. Legend:
 - 1. Machine printed, in the field, using adhesive-tape label.
 - 2. Snap-in, clear-label covers and machine-printed paper inserts.

2.5 IDENTIFICATION PRODUCTS

- A. Comply with TIA-606-B and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2.6 SOURCE QUALITY CONTROL

- A. Factory test cables on reels according to TIA-568-C.1.
- B. Factory test twisted pair cables according to TIA-568-C.2.
- C. Cable will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 WIRING METHODS

- A. Routing:
 - 1. Install cables in raceways, open J-hooks, and cable trays as indicated, except within consoles, cabinets, desks, and counters. Conceal raceway and cables, except in unfinished spaces.
 - a. Install plenum cable as specified.
 - 2. Conceal conductors and cables in ceilings, walls, and below floors.
 - 3. Provide wiring above accessible ceilings.
- B. Wiring within Enclosures: Bundle, lace, and train cables within enclosures. Connect to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools. Install conductors parallel with or at right angles to sides and back of enclosure.

3.2 INSTALLATION OF PATHWAYS

- A. Drawings indicate general arrangement of pathways and fittings.

3.3 INSTALLATION OF TWISTED-PAIR HORIZONTAL CABLES

- A. Comply with NECA 1 and NECA/BICSI 568.
- B. General Requirements for Cabling:
 - 1. Comply with TIA-568-C.0, TIA-568-C.1, and TIA-568-C.2.
 - 2. Comply with BICSI's "Information Transport Systems Installation Methods Manual (ITSIMM), Ch. 5, "Copper Structured Cabling Systems," "Cable Termination Practices" Section.
 - 3. Install 110-style IDC termination hardware unless otherwise indicated.
 - 4. Do not untwist twisted pair cables more than 1/2 inch from the point of termination to maintain cable geometry.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

5. Terminate conductors; no cable must contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.
 6. Consolidation points may be used only for making a direct connection to equipment outlets:
 - a. Do not use consolidation point as a cross-connect point, as a patch connection, or for direct connection to workstation equipment.
 - b. Locate consolidation points for twisted-pair cables at least 49 feet from communications equipment room.
 7. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
 8. Install lacing bars to restrain cables, prevent straining connections, and prevent bending cables to smaller radii than minimums recommended by manufacturer.
 9. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI Information Transport Systems Installation Methods Manual, Ch. 5, "Copper Structured Cabling Systems," "Cable Termination Practices" Section. Use lacing bars and distribution spools.
 10. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation, and replace it with new cable.
 11. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps must not be used for heating.
 12. In the communications equipment room, install a 10-foot- long service loop on each end of each cable.
 13. Pulling Cable: Comply with BICSI Information Transport Systems Installation Methods Manual, Ch. 5, "Copper Structured Cabling Systems," "Pulling and Installing Cable" Section. Monitor cable pull tensions.
- C. Open-Cable Installation:
1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
 2. Suspend twisted pair cabling, not in a wireway or pathway, a minimum of 8 inches above ceilings by cable supports not more than 48 inches apart.
 3. Cable must not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.
- D. Group connecting hardware for cables into separate logical fields.
- E. Separation from EMI Sources:
1. Comply with recommendations from BICSI's "Telecommunications Distribution Methods Manual" and TIA-569-D for separating unshielded copper communication cable from potential EMI sources, including electrical power lines and equipment.
 2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment must be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment must be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches.
4. Separation between communications cables in grounded metallic raceways, power lines, and electrical equipment located in grounded metallic conduits or enclosures must be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches.
5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches.
6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches.

3.4 FIRESTOPPING

- A. Comply with TIA-569-D, Annex A, "Firestopping."
- B. Comply with "Firestopping Systems" Article in BICSI's "Telecommunications Distribution Methods Manual."

3.5 GROUNDING

- A. Install grounding according to the "Grounding, Bonding, and Electrical Protection" chapter in BICSI's "Telecommunications Distribution Methods Manual."
- B. Comply with TIA-607-B and NECA/BICSI-607.

3.6 IDENTIFICATION

- A. Paint and label colors for equipment identification must comply with TIA-606-B for Class 2 level of administration, including optional identification requirements of this standard.
- B. Cable Schedule: Install in a prominent location in each equipment room and wiring closet. List incoming and outgoing cables and their designations, origins, and destinations. Protect with rigid frame and clear plastic cover. Furnish an electronic copy of final comprehensive schedules for Project.
- C. Cabling Administration Drawings: Show building floor plans with cabling administration-point labeling. Identify labeling convention and show labels for telecommunications closets, terminal hardware and positions, horizontal cables, work areas and workstation terminal positions, grounding buses and pathways, and equipment grounding conductors.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

D. Cable and Wire Identification:

1. Label each cable within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
2. Each wire connected to building-mounted devices is not required to be numbered at the device if wire color is consistent with associated wire connected and numbered within panel or cabinet.
3. Exposed Cables and Cables in Cable Trays and Wire Troughs: Label each cable at intervals not exceeding 15 feet.
4. Label each terminal strip, and screw terminal in each cabinet, rack, or panel.
 - a. Individually number wiring conductors connected to terminal strips, and identify each cable or wiring group, extended from a panel or cabinet to a building-mounted device, with the name and number of a particular device.
 - b. Label each unit and field within distribution racks and frames.
5. Identification within Connector Fields in Equipment Rooms and Wiring Closets: Label each connector and each discrete unit of cable-terminating and -connecting hardware. Where similar jacks and plugs are used for both voice and data communication cabling, use a different color for jacks and plugs of each service.

E. Labels must be preprinted or computer-printed type, with a printing area and font color that contrast with cable jacket color but still comply with TIA-606-B requirements for the following:

1. Cables use flexible vinyl or polyester that flexes as cables are bent.

3.7 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Visually inspect jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with TIA-568-C.1.
2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
3. Test twisted pair cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross-connection.
 - a. Test instruments must meet or exceed applicable requirements in TIA-568-C.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.

B. Data for each measurement must be documented. Data for submittals must be printed in a summary report that is formatted similarly to Table 10.1 in BICSI's "Telecommunications Distribution Methods Manual," or must be transferred from the instrument to the computer, saved as text files, printed, and submitted.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

C. Nonconforming Work:

1. End-to-end cabling will be considered defective if it does not pass tests and inspections.
2. Remove and replace cabling where test results indicate that they do not comply with specified requirements.

D. Collect, assemble, and submit test and inspection reports.

END OF SECTION

SECTION 281400 - ACCESS CONTROL SYSTEM HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Access control system units.
2. Access control system power supplies and battery chargers.
3. Access control system supplementary computer equipment.

B. Related Requirements:

1. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.
2. Section 281500 "Integrated Access Control Hardware Devices" for access control field devices controlled by hardware specified in this Section.

1.2 DEFINITIONS

- A. DGP: Data gathering panel.
- B. LAN: Local area network.
- C. RAID: Redundant array of inexpensive disks; redundant array of independent disks.
- D. RAM: Random-access memory.
- E. WAN: Wide area network.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Coordination Meeting(s): For access control system hardware. Conduct meeting(s) as videoconference or at Project site before.
1. Attendees: Installers, fabricators, representatives of manufacturers, representatives from telecommunications, Owner's security representatives, IT representatives, and administrators for field tests and inspections. Notify Architect, Construction Manager, and Owner's Commissioning Authority of scheduled meeting dates.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

B. Product Data:

1. Access control system units.
2. Access control system power supplies and battery chargers.
3. Access control system supplementary computer equipment.

C. Shop Drawings:

1. Project general notes.
2. Hardware and equipment locations.
3. Block diagram and cable/conduit routing.
4. System communications details.
5. Hardware and equipment installation details.
6. Secondary power calculations.

D. Field quality-control reports.

1.5 INFORMATIONAL SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Manufacturers' Published Instructions: Record copy of official installation and testing instructions issued to Installer by manufacturer for the following:

1. Installation instructions for access control system servers.
2. Installation instructions for access control system DGPs.
3. Installation instructions for access control system input/output interface.
4. Installation instructions for access control system door controllers.
5. Installation instructions for access control system workstation.
6. Manufacturer's recommended testing and inspection procedure for operation of access control system servers, panels, input/output interfaces, door controllers, and workstations.
7. Installation instructions for access control system power supplies and battery chargers.
8. Manufacturer's recommended testing and inspection procedure for operation of access control system power supplies and battery chargers.
9. Installation instructions for access control system printers.
10. Manufacturer's recommended testing and inspection procedure for operation of access control system printers.

C. Sample warranties.

1.6 CLOSEOUT SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Warranty documentation.

1.7 WARRANTY FOR ACCESS CONTROL SYSTEM HARDWARE

- A. Special Manufacturer Extended Warranty: Manufacturer warrants that access control system hardware perform in accordance with specified requirements and agrees to provide repair or replacement of components or products that fail to perform as specified within extended-warranty period.
 - 1. Initial Extended-Warranty Period: Three years from date of Substantial Completion; full coverage for labor, materials, and equipment.

1.8 WARRANTY FOR BATTERIES

- A. Special Manufacturer Extended Warranty for Batteries: Manufacturer warrants that batteries perform in accordance with specified requirements and agrees to provide repair or replacement of batteries that fail to perform as specified within extended-warranty period.
 - 1. Initial Extended-Warranty Period for Li-ion Batteries: Three years from date of Substantial Completion; full coverage for materials only, free on board destination, freight prepaid.

PART 2 - PRODUCTS

2.1 ACCESS CONTROL SYSTEM UNITS

- A. Description: This category covers head end units for access control systems, providing a means of regulating or controlling physical entry into an area, or access to or use of device by electrical, electronic, and/or mechanical means. Access control systems are investigated as complete configuration based upon manufacturer's specified system components. Access control systems are intended to comply with applicable life safety access and egress requirements.
- B. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70 and NFPA 72, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - b. Comply with NFPA 1, NFPA 730, NFPA 731, and ICC IBC.
 - 2. Listing Criteria: UL CCN ALVY; including UL 294.
- C. Access Control System Server: The Access Control/Security and DVM System shall be an extension of the existing Honeywell Enterprise Building Integrator System with host server hardware located in Augusta, ME.
 - 1. Accessories:
 - a. Provide Lantronix UDS1100 with 500-171-R to RS485 screw terminal adapter.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

D. Access Control System DGPs: Altronix AL1024ULACM8.

1. Source Limitations: Obtain products from.
2. Additional Characteristics:
 - a. Data ports for connection to LAN and downstream DGPs.
 - b. Integral terminal blocks secured to enclosure.
 - c. Enclosure lock with tamper switch and monitoring.
3. Options:
 - a. Input Voltage: 120 V(ac).
 - b. Battery Backup: 12 V.
 - c. DGP Communication: Ethernet TIA-485 or composite.
 - d. Mounting: Wall mount or rack mount.

E. Access Control System Door Controllers: Altronix AL1024ULACM8.

1. Source Limitations: Obtain products from single manufacturer.
2. Additional Characteristics:
 - a. Data ports for connection to LAN and downstream controllers.
 - b. Integral terminal blocks for connection of inputs/outputs to field devices.
 - c. Controller Inputs:
 - 1) Auxiliary input.
 - 2) Door contact.
 - 3) Cabinet tamper.
 - 4) Power monitor.
 - d. Controller Outputs:
 - 1) Auxiliary output.
 - 2) Door strike.
 - 3) Door operators.
 - 4) Credential readers.
3. Options:
 - a. Input Voltage: 12 to 24 V(dc).
 - b. Controller Communication: Ethernet TIA-232 TIA-485 or composite.
 - c. Mounting: Cabinet mount or wall.

F. Access Control System Input/Output Interface: Altronix.

1. Source Limitations: Obtain products from single manufacturer.
2. Additional Characteristics:
 - a. Input Voltage: 12 to 24 V(dc).
 - b. Data ports for connection to LAN and downstream panels/controllers.
 - c. Integral terminal blocks for connection of inputs/outputs to field devices.
 - d. Inputs:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 1) Auxiliary inputs from building systems.
- 2) Door contact.
- 3) Cabinet tamper.
- 4) Power monitor.

e. Outputs:

- 1) Auxiliary outputs to building systems.
- 2) Door strike.
- 3) Credential readers.
- 4) Audible devices.

3. Options:

- a. Communication: Ethernet TIA-232 TIA-485 or composite.
- b. Mounting: Cabinet mount or wall.

2.2 ACCESS CONTROL SYSTEM POWER SUPPLIES AND BATTERY CHARGERS

A. Description: This category covers power supplies and battery chargers for access control system units, controllers, input/output interfaces, workstations, printers, and encoders.

B. Performance Criteria:

1. Regulatory Requirements:

- a. Listed and labeled in accordance with NFPA 70 and NFPA 72, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
- b. Comply with NFPA 1, NFPA 730, NFPA 731, and ICC IBC.

2. Listing Criteria: UL CCN ALVY; including UL 294.

C. Access Control System Power Supply and Battery Charger:

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. Altronix Corp.
- b. Honeywell Commercial Security; Honeywell International, Inc.

2. Source Limitations: Obtain products from single manufacturer.

3. Additional Characteristics:

- a. Input Voltage: 120 V(ac).
- b. Output Voltage: 12 to 24 V(dc).
- c. Network connection for remote supervision, management, and testing.
- d. Enclosure lock with tamper switch and monitoring.
- e. Built-in battery charger.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 4. Accessories:
 - a. DIN rails for mounting.

PART 3 - EXECUTION

3.1 INSTALLATION OF ACCESS CONTROL SYSTEM HARDWARE

- A. Comply with manufacturer's published instructions.
- B. Reference Standards:
 - 1. Installation of Access Control System Hardware and Wiring: Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with requirements in guide information for UL CCN ALVY.
 - 2. Consult Architect and Owner for resolution of conflicting requirements.
- C. Interfaces with Other Work:
 - 1. Coordinate installation of new products for access control system hardware with existing conditions.

3.2 FIELD QUALITY CONTROL OF ACCESS CONTROL SYSTEM HARDWARE

- A. Acceptance Testing Preparation:
 - 1. Prepare manufacturers recommended tests and reports. Perform tests and generator reports.
- B. Field tests and inspections must be witnessed by Architect authorities having jurisdiction.
- C. Tests and Inspections:
 - 1. Perform manufacturer's recommended tests and inspections.
- D. Nonconforming Work:
 - 1. Hardware and components will be considered defective if they do not pass tests and inspections.
 - 2. Remove and replace defective units and retest.
- E. Collect, assemble, and submit test and inspection reports.
- F. Manufacturer Services:
 - 1. Engage factory-authorized service representative to perform field tests and inspections.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.3 SYSTEM STARTUP

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup checks in accordance with manufacturer's published instructions.

3.4 PROTECTION

- A. After installation, protect access control system hardware from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION

SECTION 281500 - INTEGRATED ACCESS CONTROL HARDWARE DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Integrated credential readers and entry management.
2. Access control credentials.
3. Electrified locking devices and accessories.
4. Egress management devices.
5. Access control remote devices.
6. Electronic key management systems.

1.2 DEFINITIONS

- A. NFC: Near Field Communications.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Coordination Meeting(s): For integrated access control hardware devices. Conduct meeting(s) as videoconference or at Project site before.
1. Attendees: Installers, fabricators, representatives of manufacturers, representatives from telecommunications, Owner's security representatives, IT representatives, and administrators for field tests and inspections. Notify Architect, Construction Manager, and Owner's Commissioning Authority of scheduled meeting dates.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data:
1. Integrated Credential Readers and Entry Management:
 - a. Credential readers.
 - b. Keypads.
 - c. Combination reader devices.
 2. Access Control Credentials:
 - a. Access control cards.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Electrified Locking Devices and Accessories:
 - a. Electrically controlled single-point locks and latches.
 - b. Electrically controlled two- and three-point locks and latches.
 - c. High-security electronic locks.
 - d. Status monitoring and egress devices.
 4. Egress Management Devices:
 - a. Panic hardware with special locking arrangement.
 - b. Fire-exit hardware with special locking arrangement.
 5. Access Control Remote Devices:
 - a. NFC access control devices.
 6. Electronic Key Management Systems:
 - a. Electronic key management system units.
- C. Shop Drawings:
1. Project general notes.
 2. Device layout.
 3. Block diagram and cable/conduit routing.
 4. System communications details.
 5. System mounting details.
 6. Secondary power calculations.
- D. Field quality-control reports.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Manufacturers' Published Instructions: Record copy of official installation and testing instructions issued to Installer by manufacturer for the following:
1. Installation instructions for integrated credential readers and entry management devices.
 2. Manufacturer's recommended tests and inspections for integrated credential readers and entry management devices.
 3. Printing, programming, and handling instructions for access control credentials.
 4. Installation instructions for electrified locking devices and accessories.
 5. Manufacturer's recommended tests and inspections for electrified locking devices and accessories.
 6. Installation instructions for egress management devices.
 7. Manufacturer's recommended tests and inspections for egress management devices.
 8. Installation instructions for access control remote devices.
 9. Manufacturer's recommended tests and inspections for access control remote devices.
 10. Installation instructions for electronic key management systems.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

11. Manufacturer's recommended tests and inspections for electronic key management systems.

- C. Sample warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Maintenance Contracts:
 1. Software and firmware service agreements.
- C. Warranty documentation.

1.7 WARRANTY

- A. Integrated Credential Readers and Entry Management Devices Warranty:
 1. Special Manufacturer Extended Warranty: Manufacturer warrants that integrated credential readers and entry management devices perform in accordance with specified requirements and agrees to provide repair or replacement of components or products that fail to perform as specified within extended-warranty period.
 - a. Initial Extended-Warranty Period: Three years from date of Substantial Completion; full coverage for labor, materials, and equipment.
- B. Electrified Locking Devices and Accessories Warranty:
 1. Special Manufacturer Extended Warranty: Manufacturer warrants that electrified locking devices and accessories perform in accordance with specified requirements and agrees to provide repair or replacement of components or products that fail to perform as specified within extended-warranty period.
 - a. Initial Extended-Warranty Period: Three years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 INTEGRATED CREDENTIAL READERS AND ENTRY MANAGEMENT

- A. Swipe Card Reader:
 1. Provide HID Signo Priority Seos Profile Reader, Model 20, 20k, 40, 40k.
 - a. 40NKS-02-000000.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's published instructions.
- B. Special Techniques:
 - 1. Cable Type: Shielded.
 - 2. Analog Maximum Cable Length: 1000 ft.
 - 3. Digital Maximum Cable Length: 300 ft.
- C. Interfaces with Other Work:
 - 1. Coordinate access control credentials with integrated credential readers and access control system architecture.
 - 2. Egress Management Interfaces:
 - a. Coordinate with Section 282000 "Video Surveillance" for automatic video feed callup upon delayed egress activation.

3.2 FIELD QUALITY CONTROL

- A. Field tests and inspections must be witnessed by Architect and authorities having jurisdiction.
- B. Tests and Inspections:
 - 1. Perform manufacturer's recommended tests and inspections.
- C. Nonconforming Work:
 - 1. Device will be considered defective if it does not pass tests and inspections.
 - 2. Remove and replace defective units and retest.
- D. Collect, assemble, and submit test and inspection reports.
- E. Manufacturer Services:
 - 1. Engage factory-authorized service representative to perform field tests and inspections.

3.3 PROTECTION

- A. After installation, protect integrated access control hardware devices from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION

SECTION 281523 - INTERCOM ENTRY SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Digital audio-video intercom entry systems.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Coordination Meeting(s): For intercom entry system. Conduct meeting(s) at Project site.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Digital audio-video intercom entry systems.

C. Shop Drawings:

1. Project general notes.
2. Device layout.
3. Block diagram and cable/conduit routing.
4. System communications details.
5. System mounting details.
6. Secondary power calculations.

D. Field Quality-Control Submittals:

1. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

- B. Manufacturers' Published Instructions: Record copy of official installation and testing instructions issued to Installer by manufacturer for the following:

1. Installation and startup instructions for intercom entry systems.
2. Manufacturer's recommended tests and inspections for intercom entry systems.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Maintenance Contracts:
 - 1. Software and firmware service agreement.
- C. Warranty documentation.

1.6 WARRANTY

- A. Special Installer Extended Warranty: Installer warrants that fabricated and installed intercom entry system perform in accordance with specified requirements and agrees to repair or replace components or products that fail to perform as specified within extended-warranty period.
 - 1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 DIGITAL AUDIO-VIDEO INTERCOM ENTRY SYSTEMS

- A. Description: This category covers digital audio-video intercom entry systems, together with controls and accessories for use with such operators, and similar devices.
- B. 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. Aiphone Corporation
- C. Performance Criteria:
 - 1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - 2. Listing Criteria: UL CCN ALVY; including UL 294.
- D. Options:
 - 1. Operating Temperature: Minus 29 to plus 150 deg F.
 - 2. Input Power: 18 to 24 V(dc).
 - 3. Connectivity: Hardwired.
 - 4. Minimum Ring Voltage: 25 V(ac rms).
 - 5. Maximum Ring Voltage: 90 V(ac rms).

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

6. Climate: Indoor and outdoor.
7. Mounting: Refer to Drawings for mounting information.

E. Accessories:

1. Provide windows based, laptop PC to host Aiphone video intercom system. Provide minimum requirements as required by manufacturer. Coordinate location with security personnel.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's published instructions.
- B. Special Techniques:
 1. Hardwired System:
 - a. Cable Type: Unshielded.
 - b. Maximum Power-over-Ethernet Cable Length: 300 ft.
- C. Interfaces with Other Work:
 1. Coordinate installation of new products for intercom entry systems with fence, gate, and wall systems.
- D. Wireless Security:
 1. IP Security:
 - a. Hardware Root of Trust.
 - b. SSH.
 - c. HTTPS.
 - d. Firewall.
 2. Access to system management is restricted via a separate interface.

3.2 FIELD QUALITY CONTROL

- A. Adminstrant for Security Tests and Inspections:
 1. Administer and perform tests and inspections with assistance of factory-authorized service representative.
- B. Field tests and inspections must be witnessed by authorities having jurisdiction.
- C. Tests and Inspections:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Perform manufacturer's recommended tests and inspections.

D. Nonconforming Work:

1. System will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

E. Collect, assemble, and submit test and inspection reports.

3.3 SYSTEM STARTUP

A. Perform startup service.

1. Complete installation and startup checks in accordance with manufacturer's published instructions.

3.4 PROTECTION

A. After installation, protect intercom entry system from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

3.5 MAINTENANCE

A. Software and Firmware Service Agreement:

1. Technical Support: Beginning at Substantial Completion, verify that software and firmware service agreement includes software and firmware support for two years.
2. Upgrade Service: At Substantial Completion, update software and firmware to latest version. Install and program software and firmware upgrades that become available within two years from date of Substantial Completion. Verify that upgrading software includes operating system and new or revised licenses for using software.
 - a. Upgrade Notice: No fewer than 30 days to allow Owner to schedule and access the system.
3. Upgrade Reports: Prepare report after each update, documenting upgrades installed.

END OF SECTION

SECTION 282000 - VIDEO SURVEILLANCE

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 a video surveillance system consisting of cameras, digital video recorder, data transmission wiring, and a control station with its associated equipment.
- B. Related Requirements:
 - 1. Section 283100 "Intrusion Detection" to integrate video surveillance used for intrusion detection.

1.3 DEFINITIONS

- A. AGC: Automatic gain control.
- B. BNC: Bayonet Neill-Concelman - type of connector.
- C. B/W: Black and white.
- D. CCD: Charge-coupled device.
- E. FTP: File transfer protocol.
- F. IP: Internet protocol.
- G. LAN: Local area network.
- H. MPEG: Moving picture experts group.
- I. NTSC: National Television System Committee.
- J. PC: Personal computer.
- K. PTZ: Pan-tilt-zoom.
- L. RAID: Redundant array of independent disks.
- M. TCP: Transmission control protocol - connects hosts on the Internet.
- N. UPS: Uninterruptible power supply.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- O. WAN: Wide area network.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product indicated. Include dimensions and data on features, performance, electrical characteristics, ratings, and finishes.
- C. Shop Drawings: For video surveillance. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Functional Block Diagram: Show single-line interconnections between components for signal transmission and control. Show cable types and sizes.
 - 3. Dimensioned plan and elevations of equipment racks, control panels, and consoles. Show access and workspace requirements.
 - 4. UPS: Sizing calculations.
 - 5. Wiring Diagrams: For power, signal, and control wiring.
- D. Design Data: Include an equipment list consisting of every piece of equipment by model number, manufacturer, serial number, location, and date of original installation. Add pretesting record of each piece of equipment, listing name of person testing, date of test, set points of adjustments, name and description of the view of preset positions, description of alarms, and description of unit output responses to an alarm.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Field quality-control reports.
- C. Product Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Operation and Maintenance Data: For cameras, power supplies, infrared illuminators, monitors, videotape recorders, digital video recorders, video switches, and control-station components to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Lists of spare parts and replacement components recommended to be stored at the site for ready access.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Capable of withstanding the following environmental conditions without mechanical or electrical damage or degradation of operating capability:
 1. Control Station: Rated for continuous operation in ambient temperatures of 60 to 85 deg F and a relative humidity of 20 to 80 percent, noncondensing.
 2. Interior, Controlled Environment: System components, except central-station control unit, installed in temperature-controlled interior environments shall be rated for continuous operation in ambient temperatures of 36 to 122 deg F dry bulb and 20 to 90 percent relative humidity, noncondensing. Use NEMA 250, Type 1 enclosures.
 3. Exterior Environment: System components installed in locations exposed to weather shall be rated for continuous operation in ambient temperatures of minus 30 to plus 122 deg F dry bulb and 20 to 90 percent relative humidity, condensing. Rate for continuous operation when exposed to rain as specified in NEMA 250, winds up to 85 mph and snow cover up to 24 inches thick. Use NEMA 250, Type 3R enclosures.
 4. Security Environment: Camera housing for use in high-risk areas where surveillance equipment may be subject to physical violence.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of cameras, equipment related to camera operation, and control-station equipment that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

- A. Video-signal format shall comply with NTSC standard, composite interlaced video. Composite video-signal termination shall be 75 ohms.
- B. Surge Protection: Protect components from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include surge protection for external wiring of each conductor's entry connection to components.
- C. Tamper Protection: Tamper switches on enclosures, control units, pull boxes, junction boxes, cabinets, and other system components shall initiate a tamper-alarm signal when unit is opened or partially disassembled. Control-station, control-unit alarm display shall identify tamper alarms and indicate locations.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2.2 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NECA 1.
- C. Comply with NFPA 70.
- D. Electronic data exchange between video surveillance system with an access-control system shall comply with SIA TVAC.

2.3 CAMERAS

- A. Provide Axis Cameras with Motion Detection:
 - 1. Refer to Camera Schedule on Drawings.

2.4 POWER SUPPLIES

- A. Low-voltage power supplies matched for voltage and current requirements of cameras and accessories, and of type as recommended by manufacturer of camera, infrared illuminator, and lens.
 - 1. Enclosure: NEMA 250, Type 1.

2.5 CAMERA-SUPPORTING EQUIPMENT

- 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. Bosch Security Systems, Inc.
 - 2. CBC (AMERICA) Corp.
 - 3. COP-USA.
 - 4. Crest Electronics, Inc.
 - 5. ELMO.
 - 6. Elbex Ltd.
 - 7. EverFocus Electronics Corporation.
 - 8. Honeywell Commercial Security; Honeywell International, Inc.
 - 9. Ikegami Electronics (USA) Inc.
 - 10. Interlogix; Carrier Global Corporation.
 - 11. Merit Li-Lin (USA) Corp.
 - 12. Moog, Inc.
 - 13. Panasonic Corporation of North America.
 - 14. Pelco.
 - 15. SANYO North America Corporation.
 - 16. Samsung Opto-Electronics.
 - 17. Telpix Electronics, Inc.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

18. [Tyco Security Products; brand of Johnson Controls International plc, Building Solutions North America.](#)
19. [Vicon Industries, Inc.](#)
20. [Video Mount Products.](#)
21. [Visiontech.](#)
22. [Wren Associates Limited.](#)

- B. Minimum Load Rating: Rated for load in excess of the total weight supported times a minimum safety factor of two.
- C. Pan Units: Motorized automatic-scanning units arranged to provide remote-controlled manual and automatic camera panning action, and equipped with matching mounting brackets.
1. Scanning Operation: Silent, smooth, and positive.
 2. Stops: Adjustable without disassembly, to limit the scanning arc.
- D. Pan-and-Tilt Units: Motorized units arranged to provide remote-controlled aiming of cameras with smooth and silent operation, and equipped with matching mounting brackets.
1. Panning Rotation: 0 to 355 degrees, with adjustable stops.
 2. Tilt Movement: 90 degrees, plus or minus 5 degrees, with adjustable stops.
 3. Speed: 12 degrees per second in both horizontal and vertical planes.
 4. Wiring: Factory prewired for camera and zoom lens functions and pan-and-tilt power and control.
 5. Built-in encoders or potentiometers for position feedback, and thermostat-controlled heater.
 6. Pan-and-tilt unit shall be available with preset positioning capability to recall the position of a specific scene.
- E. Mounting Brackets for Fixed Cameras: Type matched to items supported and mounting conditions. Include manual pan-and-tilt adjustment.

2.6 IP VIDEO SYSTEMS

- A. The System shall be an extension of the existing Honeywell Enterprise Building Integrator System with host server hardware located in Augusta, ME.
- B. Cameras must connect to the LAN and terminate in the Honeywell Digital Video Manager.
- C. Provide CAT6 cable. Terminate with RJ45 jack using EIA/TIA568B standard.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine pathway elements intended for cables. Check raceways and other elements for compliance with space allocations, installation tolerance, hazards to camera installation, and other conditions affecting installation.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Examine roughing-in for LAN, WAN, and IP network before device installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 WIRING

- A. Comply with requirements in Section 260533.13 "Conduits for Electrical Systems."
- B. Wiring Method: Install cables in raceways unless otherwise indicated.
 - 1. Except raceways are not required in accessible indoor ceiling spaces and attics.
 - 2. Except raceways are not required in hollow gypsum board partitions.
 - 3. Conceal raceways and wiring except in unfinished spaces.
- C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.
- D. Splices, Taps, and Terminations: For power and control wiring, use numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- E. For communication wiring, comply with the following:
 - 1. Section 271513 "Communications Copper Horizontal Cabling."
- F. Grounding: Provide independent-signal circuit grounding recommended in writing by manufacturer.

3.3 VIDEO SURVEILLANCE SYSTEM INSTALLATION

- A. Install cameras and infrared illuminators level and plumb.
- B. Install cameras with 84-inch-minimum clear space below cameras and their mountings. Change type of mounting to achieve required clearance.
- C. Set pan unit and pan-and-tilt unit stops to suit final camera position and to obtain the field of view required for camera. Connect all controls and alarms, and adjust.
- D. Install power supplies and other auxiliary components at control stations unless otherwise indicated.
- E. Install tamper switches on components indicated to receive tamper switches, arranged to detect unauthorized entry into system-component enclosures and mounted in self-protected, inconspicuous positions.
- F. Avoid ground loops by making ground connections only at the control station.
 - 1. For 12- and 24-V dc cameras, connect the coaxial cable shields only at the monitor end.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- B. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Tests and Inspections:
 - 1. Inspection: Verify that units and controls are properly installed, connected, and labeled, and that interconnecting wires and terminals are identified.
 - 2. Pretesting: Align and adjust system and pretest components, wiring, and functions to verify that they comply with specified requirements. Conduct tests at varying lighting levels, including day and night scenes as applicable. Prepare video-surveillance equipment for acceptance and operational testing as follows:
 - a. Prepare equipment list described in "Informational Submittals" Article.
 - b. Verify operation of auto-iris lenses.
 - c. Set back-focus of fixed focal length lenses. At focus set to infinity, simulate nighttime lighting conditions by using a dark glass filter of a density that produces a clear image. Adjust until image is in focus with and without the filter.
 - d. Set back-focus of zoom lenses. At focus set to infinity, simulate nighttime lighting conditions by using a dark glass filter of a density that produces a clear image. Additionally, set zoom to full wide angle and aim camera at an object 50 to 75 feet away. Adjust until image is in focus from full wide angle to full telephoto, with the filter in place.
 - e. Set and name all preset positions; consult Owner's personnel.
 - f. Set sensitivity of motion detection.
 - g. Connect and verify responses to alarms.
 - h. Verify operation of control-station equipment.
 - 3. Test Schedule: Schedule tests after pretesting has been successfully completed and system has been in normal functional operation for at least 14 days. Provide a minimum of 10 days' notice of test schedule.
 - 4. Operational Tests: Perform operational system tests to verify that system complies with Specifications. Include all modes of system operation. Test equipment for proper operation in all functional modes.
- D. Video surveillance system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

two visits to Project during other-than-normal occupancy hours for this purpose. Tasks shall include, but are not limited to, the following:

1. Check cable connections.
2. Check proper operation of cameras and lenses. Verify operation of auto-iris lenses and adjust back-focus as needed.
3. Adjust all preset positions; consult Owner's personnel.
4. Recommend changes to cameras, lenses, and associated equipment to improve Owner's use of video surveillance system.
5. Provide a written report of adjustments and recommendations.

3.6 CLEANING

- A. Clean installed items using methods and materials recommended in writing by manufacturer.
- B. Clean video-surveillance-system components, including camera-housing windows, lenses, and monitor screens.

3.7 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain video-surveillance equipment.

END OF SECTION

SECTION 283100 - INTRUSION DETECTION

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. Intrusion detection with communication links to perform monitoring, alarm, and control functions.
 - 2. Integration of other electronic and electrical systems and equipment.

- B. Related Sections:

- 1. Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for power cabling between master control units and field-mounted devices and control units.
 - 2. Section 271513 "Communications Copper Horizontal Cabling" for Category 5e, 6, and 7.
 - 3. Section 282000 "Video Surveillance" for CCTV cameras that are used as devices for video motion detection.

1.3 DEFINITIONS

- A. CCTV: Closed-circuit television.
- B. PIR: Passive infrared.
- C. RFI: Radio-frequency interference.
- D. UPS: Uninterruptible power supply.
- E. Control Unit: System component that monitors inputs and controls outputs through various circuits.
- F. Master Control Unit: System component that accepts inputs from other control units and may also perform control-unit functions. The unit has limited capacity for the number of protected zones and is installed at an unattended location or at a location where it is not the attendant's primary function to monitor the security system.
- G. Monitoring Station: Facility that receives signals and has personnel in attendance at all times to respond to signals. A central station is a monitoring station that is listed.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- H. Protected Zone: A protected premises or an area within a protected premises that is provided with means to prevent an unwanted event.
- I. Standard Intruder: A person who weighs 100 lb or less and whose height is 60 inches or less; dressed in a long-sleeved shirt, slacks, and shoes.
- J. Standard-Intruder Movement: Any movement, such as walking, running, crawling, rolling, or jumping, of a "standard intruder" in a protected zone.
- K. Systems Integration: The bringing together of components of several systems containing interacting components to achieve indicated functional operation of combined systems.
- L. Zone. A defined area within a protected premises. It is a space or area for which an intrusion must be detected and uniquely identified. The sensor or group of sensors must then be assigned to perform the detection, and any interface equipment between sensors and communication must link to master control unit.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: Components for sensing, detecting, systems integration, and control, including dimensions and data on features, performance, electrical characteristics, ratings, and finishes.
- C. Shop Drawings: Detail assemblies of standard components that are custom assembled for specific application on this Project.
 - 1. Functional Block Diagram: Show single-line interconnections between components including interconnections between components specified in this Section and those furnished under other Sections. Indicate methods used to achieve systems integration. Indicate control, signal, and data communication paths and identify networks control interface devices and media to be used. Describe characteristics of network and other data communication lines.
 - a. Indicate methods used to achieve systems integration.
 - b. Indicate control, signal, and data communication paths and identify PLCs, networks, control interface devices, and media to be used.
 - c. Describe characteristics of network and other data communication lines.
 - d. Describe methods used to protect against power outages and transient voltages including types and ratings of isolation and surge suppression devices used in data, communication, signal, control, and ac and dc power circuits.
 - 2. Raceway Riser Diagrams: Detail raceway runs required for intrusion detection and for systems integration. Include designation of devices connected by raceway, raceway type and size, and type and size of wire and cable fill for each raceway run.
 - 3. Site and Floor Plans: Indicate final outlet and device locations, routing of raceways, and cables inside and outside the building. Include room layout for master control-unit console, terminal cabinet and racks.
 - 4. Master Control-Unit Console Layout: Show required artwork and device identification.
 - 5. Device Address List: Coordinate with final system programming.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- 6. System Wiring Diagrams: Include system diagrams unique to Project. Show connections for all devices, components, and auxiliary equipment. Include diagrams for equipment and for system with all terminals and interconnections identified.
 - 7. Details of surge-protection devices and their installation.
 - 8. Sensor detection patterns and adjustment ranges.
- D. Design Data: Include method of operation and supervision of each component and each type of circuit. Show sequence of operations for manually and automatically initiated system or equipment inputs. Description must cover this specific Project; manufacturer's standard descriptions for generic systems are unacceptable.
- E. Samples for Initial Selection: For units with factory-applied color finishes.
- F. Samples for Verification: For each type of exposed finish required.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For Installer intrusion detection systems integrator testing agency.
- C. Field quality-control reports.
 - 1. Anchor inspection reports documenting inspections of built-in and cast-in anchors.
- D. Product Warranty: Sample of special warranty.
- E. Field Test Reports: Test plan and report defining all tests required to ensure that system meets technical, operational, and performance specifications within 60 days of date of Contract award.
- F. Evaluation Reports: Examination reports documenting inspections of substrates, areas, and conditions.

1.6 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Operation and Maintenance Data: For intrusion detection system to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - 1. Data for each type of product, including features and operating sequences, both automatic and manual.
 - 2. Master control-unit hardware and software data.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

1. An employer of workers, at least one of whom is a Certified Alarm Technician, Level 1.
2. Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
3. Layout Responsibility: Preparation of Shop Drawings and cabling administration Drawings by a Technician.
4. Installation Supervision: Installation shall be under the direct supervision of Technician, who shall be present at all times when Work of this Section is performed at Project site.
5. Testing Supervisor: Currently certified by BICSI as a Technician to supervise on-site testing.

B. Intrusion Detection Systems Integrator Qualifications: An experienced intrusion detection equipment supplier and Installer who has completed systems integration work for installations 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.

1. At least one of whom is a Certified Systems Integrator.

C. Testing Agency Qualifications: Certified by BICSI.

1. Testing Agency's Field Supervisor: Currently certified by BICSI as an RCDD to supervise on-site testing.

1.8 PROJECT CONDITIONS

A. Environmental Conditions: Capable of withstanding the following environmental conditions without mechanical or electrical damage or degradation of operating capability:

1. Altitude: Sea level to 4000 feet.
2. Master Control Unit: Rated for continuous operation in an ambient of 60 to 85 deg F and a relative humidity of 20 to 80 percent, noncondensing.
3. Interior, Controlled Environment: System components, except master control unit, installed in temperature-controlled interior environments shall be rated for continuous operation in ambients of 36 to 122 deg F dry bulb and 20 to 90 percent relative humidity, noncondensing.
4. Interior, Uncontrolled Environment: System components installed in non-temperature-controlled interior environments shall be rated for continuous operation in ambients of 0 to 122 deg F dry bulb and 20 to 90 percent relative humidity, noncondensing.
5. Exterior Environment: System components installed in locations exposed to weather shall be rated for continuous operation in ambients of minus 30 to plus 122 deg F dry bulb and 20 to 90 percent relative humidity, condensing. Comply with UL 294 and UL 639 for outdoor-use equipment. Rate for continuous operation when exposed to rain as specified in NEMA 250, winds up to 85 mph and snow cover up to 24 inches thick.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer and Installer agree to repair or replace components of intrusion detection devices and equipment that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FUNCTIONAL DESCRIPTION OF SYSTEM

- A. Description: Modular, microprocessor-based controls, intrusion sensors and detection devices, and communication links to perform monitoring, alarm, and control functions.
- B. Supervision: System components shall be continuously monitored for normal, alarm, supervisory, and trouble conditions. Indicate deviations from normal conditions at any location in system. Indication includes identification of device or circuit in which deviation has occurred and whether deviation is an alarm or malfunction.
1. Alarm Signal: Display at master control unit and actuate audible and visual alarm devices.
2. Trouble Condition Signal: Distinct from other signals, indicating that system is not fully functional. Trouble signal shall indicate system problems such as battery failure, open or shorted transmission line conductors, or control-unit failure.
3. Supervisory Condition Signal: Distinct from other signals, indicating an abnormal condition as specified for the particular device or control unit.
- C. System Control: Master control unit shall directly monitor intrusion detection units and connecting wiring.
- D. System Control: Master control unit shall directly monitor intrusion detection devices, perimeter detection units, and connecting wiring in a multiplexed distributed control system or as part of a network.
- E. System shall automatically reboot program without error or loss of status or alarm data after any system disturbance.
- F. Operator Commands:
1. Help with System Operation: Display all commands available to operator. Help command, followed by a specific command, shall produce a short explanation of the purpose, use, and system reaction to that command.
2. Acknowledge Alarm: To indicate that alarm message has been observed by operator.
3. Place Protected Zone in Access: Disable all intrusion-alarm circuits of a specific protected zone. Tamper circuits may not be disabled by operator.
4. Place Protected Zone in Secure: Activate all intrusion-alarm circuits of a protected zone.
5. Protected Zone Test: Initiate operational test of a specific protected zone.
6. System Test: Initiate system-wide operational test.
7. Print reports.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- G. Timed Control at Master Control Unit: Allow automatically timed "secure" and "access" functions of selected protected zones.
- H. Automatic Control of Related Systems: Alarm or supervisory signals from certain intrusion detection devices control the following functions in related systems:
 - 1. Switch selected lights.
 - 2. Switch signal to selected monitor from CCTV camera in vicinity of sensor signaling an alarm.
- I. Printed Record of Events: Print a record of alarm, supervisory, and trouble events on system printer. Sort and report by protected zone, device, and function. When master control unit receives a signal, print a report of alarm, supervisory, or trouble condition. Report type of signal (alarm, supervisory, or trouble), protected zone description, date, and time of occurrence. Differentiate alarm signals from other indications. When system is reset, report reset event with the same information concerning device, location, date, and time. Commands shall initiate the reporting of a list of current alarm, supervisory, and trouble conditions in system or a log of past events.
- J. Response Time: Two seconds between actuation of any alarm and its indication at master control unit.
- K. Circuit Supervision: Supervise all signal and data transmission lines, links with other systems, and sensors from master control unit. Indicate circuit and detection device faults with both protected zone and trouble signals, sound a distinctive audible tone, and illuminate an LED. Maximum permissible elapsed time between occurrence of a trouble condition and indication at master control unit is 20 seconds. Initiate an alarm in response to opening, closing, shorting, or grounding of a signal or data transmission line.
- L. Programmed Secure-Access Control: System shall be programmable to automatically change status of various combinations of protected zones between secure and access conditions at scheduled times. Status changes may be preset for repetitive, daily, and weekly; specially scheduled operations may be preset up to a year in advance. Manual secure-access control stations shall override programmed settings.
- M. Manual Secure-Access Control: Coded entries at manual stations shall change status of associated protected zone between secure and access conditions.

2.2 SYSTEM COMPONENT REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Control Units, Devices, and Communications with Monitoring Station: Listed and labeled by a qualified testing agency for compliance with SIA CP-01.
- C. FM Global Compliance: FM-Approved and -labeled intrusion detection devices and equipment.
- D. Comply with NFPA 70.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Compatibility: Detection devices and their communication features, connecting wiring, and master control unit shall be selected and configured with accessories for full compatibility with the following equipment:
 - 1. Door hardware specified in Section 087111 "Door Hardware."
 - 2. Video surveillance system specified in Section 282000 "Video Surveillance."
- F. Surge Protection: Protect components from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include surge protection for external wiring of each conductor entry connection to components.
 - 1. Minimum Protection for Communication, Signal, Control, and Low-Voltage Power Lines: Listed and labeled by a qualified testing agency for compliance with NFPA 731.
- G. Intrusion Detection Units: Listed and labeled by a qualified testing agency for compliance with UL 639.
- H. Interference Protection: Components shall be unaffected by radiated RFI and electrical induction of 15 V/m over a frequency range of 10 to 10,000 MHz and conducted interference signals up to 0.25-V rms injected into power supply lines at 10 to 10,000 MHz.
- I. Tamper Protection: Tamper switches on detection devices, control units, annunciators, pull boxes, junction boxes, cabinets, and other system components shall initiate a tamper-alarm signal when unit is opened or partially disassembled and when entering conductors are cut or disconnected. Master control-unit alarm display shall identify tamper alarms and indicate locations.
- J. Self-Testing Devices: Automatically test themselves periodically, but not less than once per hour, to verify normal device functioning and alarm initiation capability. Devices transmit test failure to master control unit.
- K. Antimasking Devices: Automatically check operation continuously or at intervals of a minute or less, and use signal-processing logic to detect blocking, masking, jamming, tampering, or other operational dysfunction. Devices transmit detection of operational dysfunction to master control unit as an alarm signal.
- L. Addressable Devices: Transmitter and receivers shall communicate unique device identification and status reports to master control unit.
- M. Remote-Controlled Devices: Individually and remotely adjustable for sensitivity and individually monitored at master control unit for calibration, sensitivity, and alarm condition.

2.3 ENCLOSURES

- A. Interior Sensors: Enclosures that protect against dust, falling dirt, and dripping noncorrosive liquids.
- B. Interior Electronics: NEMA 250, Type 12.
- C. Exterior Electronics: NEMA 250, Type 4X, stainless steel.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Screw Covers: Where enclosures are readily accessible, secure with security fasteners of type appropriate for enclosure.

2.4 SECURE AND ACCESS DEVICES

- 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. Bosch Security Systems, Inc.
 - 2. Corby Industries, Inc.
 - 3. Crow Electronic Engineering, Inc.
 - 4. DAQ Electronics, Inc.
 - 5. Digital Security Controls Ltd.
 - 6. Edwards; Carrier Global Corporation.
 - 7. Honeywell International Inc.
 - 8. Visonic Inc.
- B. Keypad and Display Module: Arranged for entering and executing commands for system-status changes and for displaying system-status and command-related data.
- C. Key-Operated Switch: Change protected zone between secure and access conditions.

2.5 DOOR SWITCHES

- A. Provide:
 - 1. GE Interlogix – 2507.
- B. Description: Balanced-magnetic switch, complying with UL 634, installed on frame with integral overcurrent device to limit current to 80 percent of switch capacity. Bias magnet and minimum of two encapsulated reed switches shall resist compromise from introduction of foreign magnetic fields.

2.6 PIR SENSORS

- 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. Aleph America Corporation.
 - 2. Bosch Security Systems, Inc.
 - 3. Crow Electronic Engineering, Inc.
 - 4. Digital Security Controls Ltd.
 - 5. Honeywell International Inc.
 - 6. Interlogix; Carrier Global Corporation.
 - 7. Visonic Inc.
- B. Listed and labeled by a qualified testing agency for compliance with SIA PIR-01.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Description: Sensors detect intrusion by monitoring infrared wavelengths emitted from a human body within their protected zone and by being insensitive to general thermal variations.
 - 1. Wall-Mounted Unit Maximum Detection Range: 125 percent of indicated distance for individual units and not less than 50 feet.
 - 2. Ceiling-Mounted Unit Spot-Detection Pattern: Full 360-degree conical.
 - 3. Ceiling-Mounted Unit Pattern Size: 84-inch diameter at floor level for units mounted 96 inches above floor; 18-foot diameter at floor level for units mounted 25 feet above floor.
- D. Device Performance:
 - 1. Sensitivity: Adjustable pattern coverage to detect a change in temperature of 2 deg F or less, and standard-intruder movement within sensor's detection patterns at any speed between 0.3 to 7.5 fps across two adjacent segments of detector's field of view.
 - 2. Test Indicator: LED test indicator that is not visible during normal operation. When visible, indicator shall light when sensor detects an intruder. Locate test enabling switch under sensor housing cover.
 - 3. Remote Test: When initiated by master control unit, start a test sequence for each detector element that simulates standard-intruder movement within sensor's detection patterns, causing an alarm.

2.7 SECURITY FASTENERS

- A. Operable only by tools produced for use on specific type of fastener by fastener manufacturer or other licensed fabricator. Drive system type, head style, material, and protective coating as required for assembly, installation, and strength.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of intrusion detection.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations of intrusion detection connections before intrusion detection installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of intrusion detection.
- D. Inspect built-in and cast-in anchor installations, before installing intrusion detection, to verify that anchor installations comply with requirements. Prepare inspection reports.
 - 1. Remove and replace anchors where inspections indicate that they do not comply with requirements. Reinspect after repairs or replacements are made.
 - 2. Perform additional inspections to determine compliance of replaced or additional anchor installations. Prepare inspection reports.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. For material whose orientation is critical for its performance as a ballistic barrier, verify installation orientation.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SYSTEM INTEGRATION

- A. Integrate intrusion detection system with the following systems and equipment:
 - 1. Electronic door hardware.
 - 2. Access control.
 - 3. Video surveillance.

3.3 SYSTEM INSTALLATION

- A. Comply with UL 681 and NFPA 731.
- B. Equipment Mounting: Install master control unit on finished floor with tops of cabinets not more than 72 inches above the finished floor.
- C. Install wall-mounted equipment, with tops of cabinets not more than 72 inches above the finished floor.
- D. Security Fasteners: Where accessible to inmates, install intrusion detection components using security fasteners with head style appropriate for fabrication requirements, strength, and finish of adjacent materials except that a maximum of two different sets of tools shall be required to operate security fasteners for Project. Provide stainless-steel security fasteners in stainless-steel materials.

3.4 WIRING INSTALLATION

- A. Wiring Method: Install wiring in metal raceways according to Section 260533.13 "Conduits for Electrical Systems," except in accessible indoor ceiling spaces and in interior hollow gypsum board partitions where cable may be used. Conceal raceways and wiring except in unfinished spaces and as indicated. Minimum conduit size shall be 1/2 inch. Control and data transmission wiring shall not share conduit with other building wiring systems.
- B. Wiring Method: Cable, concealed in accessible ceilings, walls, and floors when possible.
- C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points. Use lacing bars and distribution spools. Separate power-limited and non-power-limited conductors as recommended in writing by manufacturer. Install conductors parallel with or at right angles to sides and back of enclosure. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with intrusion system to terminal blocks. Mark each terminal according to system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- D. Wires and Cables:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Conductors: Size as recommended in writing by system manufacturer unless otherwise indicated.
 2. 120-V Power Wiring: Install according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables" unless otherwise indicated.
 3. Control and Signal Transmission Conductors: Install unshielded, twisted-pair cable unless otherwise indicated or if manufacturer recommends shielded cable, according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
 4. Data and Television Signal Transmission Cables: Install according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.
- F. Install power supplies and other auxiliary components for detection devices at control units unless otherwise indicated or required by manufacturer. Do not install such items near devices they serve.
- G. Identify components with engraved, laminated-plastic or metal nameplate for master control unit and each terminal cabinet, mounted with corrosion-resistant screws. Nameplates and label products are specified in Section 270553 "Identification for Communications Systems."

3.5 IDENTIFICATION

- A. Install instructions frame in a location visible from master control unit.

3.6 GROUNDING

- A. Ground system components and conductor and cable shields to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.
- B. Signal Ground Terminal: Locate at main equipment rack or cabinet. Isolate from power system and equipment grounding. Provide 5-ohm ground. Measure, record, and report ground resistance.

3.7 FIELD QUALITY CONTROL

- A. Pretesting: After installation, align, adjust, and balance system and perform complete pretesting to determine compliance of system with requirements in the Contract Documents. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new ones and retest until satisfactory performance and conditions are achieved. Prepare forms for systematic recording of acceptance test results.
1. Report of Pretesting: After pretesting is complete, provide a letter certifying that installation is complete and fully operable; include names and titles of witnesses to preliminary tests.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Tests and Inspections: Comply with provisions in NFPA 731, Ch. 9, "Testing and Inspections."
 - 1. Inspection: Verify that units and controls are properly labeled and interconnecting wires and terminals are identified.
 - 2. Test Methods: Intrusion detection systems and other systems and equipment that are associated with detection and accessory equipment shall be tested according to Table "Test Methods" and Table "Test Methods of Initiating Devices."
- E. Documentation: Comply with provisions in NFPA 731, Ch. 4, "Documentation."
- F. Tag all equipment, stations, and other components for which tests have been satisfactorily completed.

3.8 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to three visits to Project during other-than-normal occupancy hours for this purpose. Visits for this purpose shall be in addition to any required by warranty.

3.9 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain the intrusion detection system. Comply with documentation provisions in NFPA 731, Ch. 4, "Documentation and User Training."

END OF SECTION

SECTION 311000 - SITE CLEARING

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. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting, capping or sealing, and removing site utilities and abandoning site utilities in place.
7. Temporary erosion and sedimentation control.

- B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.

1.3 DEFINITIONS

- A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.
- D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 MATERIAL OWNERSHIP

- A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or video recordings.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.
- C. Topsoil stripping and stockpiling program.
- D. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.
- E. Burning: Burning is not permitted.

1.7 QUALITY ASSURANCE

- A. Topsoil Stripping and Stockpiling Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work. Include dimensioned diagrams for placement and protection of stockpiles.

1.8 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
1. Do not proceed with work on adjoining property until directed by Architect.
- C. Utility Locator Service: Engage a private utility locator service and notify the Dig Safe System and OK to Dig for area where Project is located before site clearing.
- D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.
- E. Tree- and Plant-Protection Zones: Protect according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- F. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.
- B. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer complying with MPI #23 (surface-tolerant, anticorrosive metal primer) or SSPC-Paint 20 or SSPC-Paint 29 zinc-rich coating.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- C. Protect existing site improvements to remain from damage during construction.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. Protect trees and plants remaining on-site according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.4 EXISTING UTILITIES

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
 1. Arrange with utility companies to shut off indicated utilities.
- C. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- D. Interrupting Existing Utilities: 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 not less than two days in advance of proposed utility interruptions.
 2. Do not proceed with utility interruptions without Architect's written permission.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Excavate for and remove underground utilities indicated to be removed.
- F. Removal of underground utilities is included in earthwork sections; in applicable fire suppression, plumbing, HVAC, electrical, communications, electronic safety and security, and utilities sections; and in Section 024116 "Structure Demolition" and Section 024119 "Selective Demolition."

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Grind down stumps and remove roots larger than 3 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
 - 3. Use only hand methods or air spade for grubbing within protection zones.
 - 4. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
 - 1. Limit height of topsoil stockpiles to 12 feet high.
 - 2. Do not stockpile topsoil within protection zones.
 - 3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
 - 4. Stockpile surplus topsoil to allow for respreading deeper topsoil.
 - 5. Stockpile topsoil off site when insufficient space is available on site.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.7 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
 - 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for walks, pavements, turf and grasses, and plants.
3. Excavating and backfilling for structures.
4. Subbase course for concrete walks.
5. Subbase course and base course for asphalt paving.
6. Subsurface drainage backfill for walls and trenches.
7. Excavating and backfilling trenches for utilities and pits for buried utility structures.

B. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for recording preexcavation and earth-moving progress.
2. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
3. Section 329200 "Turf and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.
4. Section 329300 "Plants" for finish grading in planting areas and tree and shrub pit excavation and planting.

1.2 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, will be without additional compensation.

F. Fill: Soil materials used to raise existing grades.

G. Rock:

1. Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 1 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D1586.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other fabricated stationary features constructed above or below the ground surface.

I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

K. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct preexcavation conference at Project site.

1. Review methods and procedures related to earthmoving, including, but not limited to, the following:
 - a. Personnel and equipment needed to make progress and avoid delays.
 - b. Coordination of Work with utility locator service.
 - c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
 - d. Extent of trenching by hand or with air spade.
 - e. Field quality control.

1.4 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data: For each type of the following manufactured products required:

1. Geotextiles.
2. Warning tapes.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For qualified testing agency.
- C. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
 - 1. Classification according to ASTM D2487.
 - 2. Laboratory compaction curve according to ASTM D1557.

1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E329 and ASTM D3740 for testing indicated.

1.7 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Architect.
- C. Utility Locator Service: Engage a private utility locator service and notify the "Dig Safe System" and "OK to Dig" for area where Project is located before beginning earth-moving operations.
- D. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 015000 "Temporary Facilities and Controls" and Section 311000 "Site Clearing" are in place.
- E. Do not commence earth-moving operations until plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.
- F. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

6. Excavation or other digging unless otherwise indicated.
 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D2487, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D2487, or a combination of these groups.
1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, and conforming to MDOT Subsection 703.06, Type A, crushed.
- E. Subbase Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, and conforming to MDOT, Subsection 703.06, Type D, except maximum particle size shall be 4 inches.
- F. Structural Fill: Non-frost susceptible, well-graded sand and gravel mixture free of roots, topsoil, loam, organic material, and any other deleterious materials, as well as clods of silt or clay, and meet the following gradation requirements:

Screen or Sieve Size	Percent Passing
6 inches	100
3 inches	70 to 100
No. 4	35 to 70
No. 40	5 to 35
No. 200	0 to 5

(Note: Maximum particle size shall be limited to 3 inches within 2 feet of foundation walls, footings, and floor slabs.)

- G. Drainage Course: Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and zero to 5 percent passing a No. 8 sieve.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- H. Sand: ASTM C33/C33M; fine aggregate.

2.2 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability:

- a. Class 2; AASHTO M 288.
- b. As follows:
 - 1) Grab Tensile Strength: 157 lbf; ASTM D4632.
 - 2) Tear Strength: 56 lbf; ASTM D4533.
 - 3) Puncture Strength: 56 lbf; ASTM D4833.
- c. Apparent Opening Size: No. 70 sieve, maximum; ASTM D4751.
- d. Permittivity: 1.5 per second, minimum; ASTM D4491.
- e. UV Stability: 50 percent after 500 hours' exposure; ASTM D4355.

2.3 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:

- 1. Red: Electric.
- 2. Yellow: Gas, oil, steam, and dangerous materials.
- 3. Orange: Telephone and other communications.
- 4. Blue: Water systems.
- 5. Green: Sewer systems.

- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

- 1. Red: Electric.
- 2. Yellow: Gas, oil, steam, and dangerous materials.
- 3. Orange: Telephone and other communications.
- 4. Blue: Water systems.
- 5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Provide dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- D. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

3.3 EXPLOSIVES

- A. Explosives:
 - 1. Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
 - a. 24 inches outside of concrete forms other than at footings.
 - b. 12 inches outside of concrete forms at footings.
 - c. 6 inches outside of minimum required dimensions of concrete cast against grade.
 - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
 - e. 6 inches beneath bottom of concrete slabs-on-grade.
 - f. 6 inches beneath pipe in trenches and the greater of 24 inches wider than pipe or 42 inches wide.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 2. Excavation for Underground Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.
- B. Excavations at Edges of Tree- and Plant-Protection Zones:
 1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Clearance: 12 inches each side of pipe or conduit.

C. Trench Bottoms:

1. Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
 - a. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

D. Trenches in Tree- and Plant-Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
3. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.8 SUBGRADE INSPECTION

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade below the pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.
 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, subdrainage.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing and inspecting underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring, bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Section 033000 "Cast-in-Place Concrete."
- D. Backfill voids with satisfactory soil while removing shoring and bracing.
- E. Initial Backfill:
 - 1. Soil Backfill: Place and compact initial backfill of bedding, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
 - a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Final Backfill:
 - 1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- G. Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade.

3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
1. Under grass and planted areas, use satisfactory soil material.
 2. Under walks and pavements, use satisfactory soil material.
 3. Under steps and ramps, use structural fill.
 4. Under footings and foundations, use structural fill.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D1557:
1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent.
 3. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
 4. For utility trenches, compact each layer of initial and final backfill soil material at 95 percent.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
 - 1. Turf or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1 inch.
 - 3. Pavements: Plus or minus 1/2 inch.

3.17 SUBSURFACE DRAINAGE

- A. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
- B. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
 - 1. Place and compact impervious fill over drainage backfill in 6-inch-thick compacted layers to final subgrade.

3.18 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
 - 1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 - 2. Place base course material over subbase course under hot-mix asphalt pavement.
 - 3. Shape subbase course and base course to required crown elevations and cross-slope grades.
 - 4. Place subbase course and base course 6 inches or less in compacted thickness in a single layer.
 - 5. Place subbase course and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

6. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D1557.
- C. Pavement Shoulders: Place shoulders along edges of subbase course and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D1557.

3.19 FIELD QUALITY CONTROL

- A. Special Inspections: Contractor will engage a qualified special inspector to perform the following special inspections:
 1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
 2. Determine that fill material classification and maximum lift thickness comply with requirements.
 3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.
- B. Testing Agency: Contractor must engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- E. Testing agency will test compaction of soils in place according to ASTM D1556, ASTM D2167, ASTM D2937, and ASTM D6938, as applicable. Tests will be performed at the following locations and frequencies:
 1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab but in no case fewer than three tests.
 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length but no fewer than two tests.
 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length but no fewer than two tests.
- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.20 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.21 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION



R.W. Gillespie & Associates, Inc.

Geotechnical Engineering • Environmental Consulting • Materials Testing Services

30 January 2024

Allison Towne DiMatteo, PLA
Oak Point Associates
P.O. Box 1259
Biddeford, Maine 04005

VIA EMAIL: atowne@oakpoint.com

Subject: Geotechnical Engineering Evaluation Report
Proposed Blaine House Site Security Improvements
Augusta, Maine
RWG&A Project No. 0767-169

Dear Ms. DiMatteo:

R.W. Gillespie & Associates, Inc. (RWG&A), is pleased to present the results of the geotechnical engineering evaluation for the proposed Blaine House site security improvements at 192 State Street, Augusta, Maine. The services were performed in general accordance with RWG&A's Proposal No. P-11473.GI dated 30 August 2023. The purpose of the services was to obtain information regarding subsurface conditions on which to base geotechnical engineering evaluations of a perimeter security fence and a gatehouse building. The attached report summarizes the results of RWG&A's subsurface explorations, laboratory testing, and engineering evaluations and provides our geotechnical engineering design recommendations.

RWG&A has enjoyed working with Oak Point Associates on this project. If you have any questions, or if we may be of further service, please contact us.

Sincerely,
R. W. GILLESPIE & ASSOCIATES, INC.

Temitope Omokinde
Geotechnical Engineer

Erik J. Wiberg, P.E.
Principal Geotechnical Engineer

TO/EJW:fg

G:\PROJECTS\0700\0767\0767-169-23 Blaine House Site Security\Report\2024-01-30 GI Report 767-169.docx

Corporate Office: 20 Pomerleau Street, Suite 100 • Biddeford, ME 04005 • 207-286-8008 • Fax 207-710-0000

Branch Offices: 177 Shattuck Way, Suite 1 West • Newington, NH 03801 • 603-427-0244 • Fax 603-430-2041

44 Wood Avenue, Suite 1 • Mansfield, MA 02048 • 508-623-0101

www.rwgillespie.com

R.W. Gillespie & Associates, Inc.

**Report
of**

GEOTECHNICAL ENGINEERING EVALUATION

for

**BLAINE HOUSE SITE SECURITY IMPROVEMENTS
192 STATE STREET
AUGUSTA, MAINE**

**Prepared
for**

**OAK POINT ASSOCIATES
BIDDEFORD, MAINE**

**Prepared
by**

**R. W. GILLESPIE & ASSOCIATES, INC.
BIDDEFORD, MAINE**



**Erik J. Wiberg, P.E.
State of Maine License No. 9178**

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
1.01 Background.....	1
1.02 Scope of Services.....	1
2.0 SUBSURFACE EXPLORATION	2
3.0 LABORATORY TESTING	2
4.0 SUBSURFACE CONDITIONS.....	3
4.01 Subsurface Soils.....	3
4.02 Groundwater	3
5.0 EVALUATION OF GEOTECHNICAL DATA	4
5.01 General.....	4
5.02 Proposed Construction.....	4
5.03 Cast-in-place Wall Foundation and Ground Floor Slab	4
5.04 Construction Considerations	4
6.0 RECOMMENDATIONS.....	5
6.01 Site Preparation.....	5
6.02 Site Filling.....	6
6.03 Foundations.....	6
6.04 Foundation Drainage.....	7
6.05 Ground Floor Slabs.....	8
6.06 Temporary Excavations	8
6.07 Geotechnical Observation.....	9
7.0 CLOSURE	9

FIGURES:

- Figure 1. Locus Map
- Figure 2. Exploration Location Plan

APPENDICES:

- Appendix A. Limitations
- Appendix B. Exploration Logs
- Appendix C. Laboratory Test Results

1.0 INTRODUCTION

1.01 Background

The project consists of security improvements to the Blaine House property at 192 State Street, Augusta, Maine. The property location is shown in Figure 1, *Locus Map*. The proposed construction consists of a new perimeter security fence and gatehouse building. The security fence would more or less follow the existing perimeter fence and extend northward adjacent to sidewalks on Chamberlain and State Streets. The fence would be supported on a cast-in-place foundation wall with a continuous spread-footing foundation that would support the proposed security fence. A gatehouse is planned between the Blaine House driveway and staff house.

RWG&A's understanding of the site and proposed construction is based on communications with Oak Point Associates (OPA), including information in the emails dated 21 August 2023; 3:44 PM and 29 November 2023; 12:43PM. The email included the following drawings dated 25 April 2023:

- *Overall Site Master Plan, Facility Evaluations – The Blaine House*, shows a concept layout and annotated with requested boring locations.
- *Typical Concept Perimeter Fence Section, Facility Evaluations – The Blaine House*.
- *Existing Site Plan, Facility Evaluations - The Blaine House* shows site features, including underground utility locations.

1.02 Scope of Services

This evaluation was performed to develop site-specific soil and laboratory data, and to make geotechnical engineering evaluations for the proposed security fence and gatehouse building foundations. Services were performed in general accordance with RWG&A Proposal No. P-11473.GI dated 30 August 2023. Refer to Appendix A for limitations and use of this report. As performed, RWG&A's scope of services included the following items:

1. Reviewed project information and readily available published subsurface information.
2. Prepared a geotechnical subsurface exploration and sampling program to obtain subsurface information for geotechnical engineering evaluations.
3. Contacted DigSafe and OK-TO-DIG registered utility owners to verify planned boring locations were clear of utilities.
4. Arranged to have the soil borings performed by a drilling company as a subcontractor to RWG&A. Provided technical monitoring of exploration activities so that depths, locations, and sampling methods could be modified in response to the subsurface conditions encountered. Observed, logged, and sampled the explorations.

5. Performed laboratory tests on selected soil samples recovered from the subsurface explorations.
6. Conducted engineering evaluations of the geotechnical aspects of the proposed project. Emphasis was placed on foundation type, allowable foundation loads, ground floor slabs, lateral load resistance, seismic site class, and excavations.
7. Prepared this report presenting the findings, conclusions, and recommendations of the geotechnical engineering evaluation.

2.0 SUBSURFACE EXPLORATION

The subsurface exploration program consisted of eighteen soil borings designated B-1 through B-14, including B-6A, B-6B, B-8A, and B-8B, which were drilled to confirm refusal surface depths. Figure 2, *Exploration Location Plan*, shows the approximate locations of the borings; RWG&A and OPA selected and marked the exploration locations before drilling. OPA arranged for a private utility locating service to verify the area near planned boring locations were clear of underground utilities.

Bronson Drilling, Inc. of Winchester, Massachusetts, drilled the borings on 18 and 19 December 2023 with an AMS 9100-SK PowerProbe drilling machine. Borings were drilled to depths 5 to 20 feet below the ground surface. The test borings were drilled using the direct-push methods with continuous core sampling at about 5-foot intervals.

Boring activities were coordinated and monitored by an RWG&A representative who also prepared the exploration logs. The soils were described in general accordance with *ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. Logs of the borings are included in Appendix B. Stratification depths shown on the logs represent the estimated boundaries between the different soil types encountered; the actual transitions are more gradual and vary over short distances. Information presented on the logs should only be considered representative of subsurface conditions encountered within the vertical reach of the borings on the dates and at the drilled locations.

3.0 LABORATORY TESTING

Laboratory testing was performed to assist in describing and estimating the engineering properties of the soils. The laboratory testing program consisted of twelve particle-size distribution tests with natural moisture content determinations. The tests were performed in general accordance with the following methods and procedures:

- *ASTM D6913/6913M – 17, Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.*
- *ASTM D2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.*

- *ASTM D7928 – 17, Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis*

Moisture content test results are presented in the exploration logs. Results of the particle-size distribution tests are presented in Appendix C, Laboratory Test Results. Tests were conducted at the RWG&A soil and materials testing laboratory in Biddeford, Maine, which is accredited by the American Association of State Highway and Transportation Officials (AASHTO) for the tests performed.

4.0 SUBSURFACE CONDITIONS

4.01 Subsurface Soils

In summary, the subsurface conditions encountered consisted of topsoil over fill underlain by naturally deposited sand with silt to silty sand, sandy silt, or clayey silt to silty clay extending to boring termination depths. Refusal surfaces were encountered at B-6, B-6A, B-6B, B-8, B-8A, and B-8B at depths ranging from 5 to 11 feet below local ground surface; the nature of the refusal surfaces is uncertain but might have been on cobbles, boulders, bedrock, or artificial objects. Please refer to the exploration logs in Appendix B for descriptions of subsurface conditions encountered at specific locations. Generalized soil descriptions with associated ranges of thicknesses encountered in the explorations are summarized below:

Unit	Encountered Thickness (feet)	Generalized Description
Topsoil	0.5 to 1	Moist, fine sand, some silt, roots and organic matter, dark brown.
Fill	2 to 7	Moist, coarse to fine sand with trace to some coarse to fine gravel and few to some silt, brown to gray.
Sand with Silt to Silty sand (SP-SM to SM)	4 to 14	Moist to wet, coarse to fine sand with few to little silt and trace fine gravel, brownish gray
Sandy Silt (ML)	5 to 10	Wet, silt with little to some coarse to fine sand and trace fine gravel, brown to gray.
Clayey Silt to Silty Clay (ML to CL)	5 to 8	Wet, silt with few fine sand, and little clay, to clay, with little silt and few fine sand, brown to gray. Encountered at B-1 and B-6A.

4.02 Groundwater

Free water was observed in the boreholes B-1 through B-5, B-6A, B-7, and B-14 at depths ranging from 5 to 13 feet below the current ground surface. The absence of groundwater data on the logs implies free water was not observed when the borings were drilled, but does not necessarily mean that groundwater will not be encountered at these locations or within the vertical reach of the borings. Free water levels encountered during the subsurface exploration program were influenced by the exploration methods (e.g., use of drilling fluids, slow

groundwater response due to low soil permeability) and might not represent stabilized groundwater levels. Groundwater levels at the site will fluctuate due to season, temperature, rainfall and construction activity; therefore, water levels during and following construction will vary from those observed in the explorations.

5.0 EVALUATION OF GEOTECHNICAL DATA

5.01 General

Engineering evaluations for this project are based on the subsurface explorations, laboratory testing data, and the design information available to RWG&A when the report was prepared. This report addresses geotechnical engineering issues with the proposed security improvements. The engineering evaluations that follow should be reviewed by RWG&A to confirm their continued applicability if the design or construction will vary from that shown in the above referenced drawing. Evaluation of retaining features or walls with unbalanced fill against them is outside of the scope of this evaluation. It is recommended that foundation design and construction comply with the requirements of applicable ordinances, regulations, and codes.

5.02 Proposed Construction

The proposed construction consists of a perimeter security fence supported on a continuous cast-in-place foundation wall and a gate-house structure with no below-grade space. It's understood that site grades will be maintained at the planned fence alignment and gatehouse building.

5.03 Cast-in-place Wall Foundation and Ground Floor Slab

With proper site preparation, the proposed fence and gatehouse building may be supported by shallow foundations consisting of spread and/or continuous footing bearing on naturally deposited inorganic soil or newly compacted fill. A slab-on-grade floor is appropriate for the gatehouse building.

5.04 Construction Considerations

Site Preparation: The naturally deposited soils are expected to be susceptible to disturbance by construction activities exposed at subgrade before fill placement or footing construction. Project specifications should require the Contractor to maintain the integrity of exposed subgrade soils for subsequent construction activities.

Construction Dewatering: The onsite naturally deposited soils are too sensitive to disturbance when wet. To reduce disturbance of exposed subgrade soils, diverting runoff, providing positive grading to shed seepage and runoff from flat areas, and compacting exposed soils to reduce rutting, ponding, and surface water infiltration will be important. It should be anticipated that excavations more than about 3 feet below the ground surface might encounter groundwater.

Use of Onsite Soils: It is anticipated that the surficial topsoil will be stripped and incorporated into proposed landscaped areas, where practicable, or hauled off-site. Topsoil and organic materials are considered unsuitable for use as common fill.

The subsurface soils from foundation excavations will generally consist of fill, naturally deposited sand with silt to silty sand, sandy silt, or silty clay. Laboratory particle-size analysis results indicate the existing fill and naturally deposited soil are unsuitable for reuse as foundation backfill and structural fill below ground floor slabs. If onsite soils are proposed for use other than common fill, the soil should be stockpiled separately and tested to determine if it meets specification requirements for its intended use.

The naturally deposited soils are moisture-sensitive due to their high fines content and will be difficult to place and compact when wet. Moisture-density relationships should be established during construction to provide guidance for appropriate working moisture contents. Working moisture content for moisture-sensitive soils typically ranges from about minus three to plus one percent of optimum moisture content.

6.0 RECOMMENDATIONS

The recommendations presented below are provided for use in design of the perimeter security fence and gatehouse building. Foundation design and construction will be greatly influenced by subsurface conditions at the project site. RWG&A recommends foundation design and construction comply with the requirements of all applicable ordinances, regulations, and rules. When this report was prepared, the applicable building code in Augusta, Maine was the Maine Uniform Building and Energy Code, which adopts *2015 International Building Code*® by reference.

6.01 Site Preparation

1. All topsoil, organic material, debris, rubbish, frozen soils, muck, loose/soft or disturbed soils, and other unsuitable materials should be removed from the area of new construction. Unsuitable materials include uncontrolled fills (i.e., fills placed without systematic densification and moisture control to a specified percent compaction), asphaltic pavement, and deleterious substances.
2. Construction dewatering might be needed depending on excavation depths, precipitation, and season. Groundwater levels should be maintained at least 1 foot below exposed subgrade during foundation construction and until perimeter foundation drains are installed. It should be practical to dewater excavations to about 1 foot below groundwater level at the time of construction by open pumping methods. Excavations deeper than about 1 foot below groundwater will likely require pre-drainage with deep sumps and/or wells. Surface runoff and groundwater infiltration should be controlled so excavation, filling, and foundation construction can be completed in the dry.
3. Site grading should provide positive drainage from constructed facilities during and after construction.

6.02 Site Filling

4. Structural fill should be used as fill below foundations, below ground floor slabs, and as backfill within 2 feet of footings, piers, and foundation walls. Structural fill should be a well-graded sand and gravel mixture free of roots, topsoil, loam, organic material, and any other deleterious materials, as well as clods of silt or clay, and meet the following gradation requirements:

Screen or Sieve Size	Percent Passing
6 inches	100
3 inches	70 – 100
No. 4	35-70
No. 40	5-35
No. 200	0-5

(Note: Maximum particle size should be limited to 3 inches within 2 feet of foundation walls, footings, and floor slabs.)

5. Crushed stone should be *State of Maine Department of Transportation (MaineDOT) Standard Specifications November 2020 Edition Section 703 – Aggregates, 703.13 Crushed Stone 3/4-Inch*.
6. In open areas, structural fill should be placed in level, uniform lifts not exceeding 12 inches in uncompacted thickness, and be compacted with self-propelled compaction equipment. In confined areas and within 4 feet of foundation walls, structural fill should be placed in lifts not exceeding 6 inches in uncompacted thickness and be compacted with hand-operated compaction equipment. All fill placed for footing and slab support should be compacted to at least 95 percent of the maximum dry density as determined by *ASTM Standard D1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))*.
7. Crushed stone should be placed in lifts not exceeding 6 inches in loose lift thickness and be compacted with a minimum of six complete coverages with a reversible vibratory plate compactor with an operating weight of 500 pounds, minimum.

6.03 Foundations

8. The proposed fence and gatehouse building may be supported on spread and/or continuous footings bearing on the naturally deposited inorganic soils, compacted structural fill, or crushed stone encapsulated in non-woven geotextile. The footings should be proportioned for an allowable bearing pressure of 1,500 pounds per square foot. Minimum footing width should be in accordance with concrete design and building code requirements and not less than 2 feet. For footings having a least lateral dimension of less than 3 feet, the above allowable pressure should be taken as $\frac{1}{3}$ of the above value times the least dimension in feet.

9. Excavation of footing and ground floor slab-bearing surfaces in soil should be performed by earthwork equipment fitted with smooth-edged buckets. Cobbles, boulders, bedrock and other obstructions encountered in foundation excavations should be removed to a minimum of 6 inches below design bottom of footing level and replaced with structural fill.
10. A 6 to 12-inch thick overexcavation and replacement with compacted structural fill or crushed stone may be used to help protect naturally deposited soil subgrade from disturbance during construction. Non-woven geotextile (Mirafi 160N or equivalent) should be provided between crushed stone and adjacent soils. Crushed stone or structural fill should extend outside the limits of the foundation equivalent to the layer thickness.
11. Final subgrade preparation should include compaction of fill or naturally deposited soil subgrades with hand-guided, vibratory compaction equipment; non-vibratory hand-guided roller compaction equipment should be used over fine-grained soil surfaces. Following compaction and before concrete placement, care should be taken to limit disturbance of the bearing surfaces. Any loose, softened, or disturbed material due to construction traffic should be removed before concrete placement and backfilled with compacted structural fill.
12. It is recommended that design bottom of footing level for footings exposed to freezing temperatures be a minimum of 4.75 feet below the lowest adjacent ground surface exposed to freezing temperatures. At heated interior locations, footings may be designed to bear a minimum of 2 feet below the top of ground floor slab or adjacent ground surface, whichever is lower. If exposure to freezing temperatures is anticipated, either during or following construction, then interior footings bearing on structural fill or naturally deposited soils should be lowered in accordance with the recommendations for exterior footings.
13. The integrity of natural soils and structural fill must be maintained during cold weather. Footing and slab subgrades should not be allowed to freeze. The naturally deposited soils are considered moderately to highly frost-susceptible. Freezing of subgrade soils beneath footings and floor slabs might result in heaving and post-construction settlement. The Contractor should make every effort to prevent freezing of subgrade soils. All frozen and previously frozen soils should be removed and replaced with compacted structural fill if frost penetration occurs. At no time should frozen material be placed as fill.
14. Lateral loads from wind and earthquake may be resisted by friction between the bottoms of footings and supporting subgrades and by passive earth pressures against the sides of the foundation. A friction coefficient of 0.25 and an equivalent fluid pressure of 100 pounds per cubic foot against sides of footings should be used in design of footings.

6.04 Foundation Drainage

15. Perimeter footing drains should be installed around the gatehouse building to prevent water accumulation around and near the foundation and reduce fugitive moisture and water vapors. The drains should be installed at the exterior bottom of footing level. The

drains should consist of perforated pipe bedded in 2 cubic feet of underdrain stone per linear foot. The underdrain stone should be encapsulated in a filter fabric.

16. Flow from the foundation drains should be conveyed by gravity to a surface drainage feature or storm drain that will be free-flowing at all times and under all conditions. Multiple outlets should be provided to not depend on a single flow path. The purpose of the outlets is to provide redundant flow paths so that the drains will be free-flowing under all conditions and circumstances. Surface water drainage features including roof drains, pipes, catch basins, manholes, drip edges, and infiltration trenches and basins, should direct water away from foundation drainage at all times and locations. Roof drains should not be connected to the foundation drains.

6.05 Ground Floor Slabs

17. Interior floors within heated spaces may be slab-on-grade construction based on a subgrade modulus of 100 pounds per cubic inch. The slab should be underlain with a minimum of 12 inches of compacted structural fill. A vapor retarder should be provided below the ground floor slab to reduce moisture infiltration. Concrete slab-on-grade floors, regardless of their design or construction, are prone to some cracking, and the use of control joints and concrete reinforcing are methods to reduce random patterned cracking. It is anticipated design and construction details of the floor slab, including concrete thickness, reinforcing, bedding, control joint depth and spacing, and the vapor retarder type and thickness, will be provided by the project Structural Engineer.
18. Exterior slabs at entrances and other locations exposed to freezing temperatures and/or locations sensitive to frost action should be underlain by a minimum of 4.75 feet of compacted structural fill or underdrain stone. The underdrain stone should be completely wrapped in a filter fabric to prevent the migration of surrounding soils into the stone. Underdrain stone should consist of State of Maine Department of Transportation, *Standard Specifications Revision of December 2020, 703.22 Underdrain Backfill Material Type C*. Slabs at locations where frost heaving is tolerable should be underlain by a minimum of 24 inches of structural fill. The surrounding area should be pitched to drain away to reduce available moisture for ice and frost lens generation.

6.06 Temporary Excavations

19. Soils at this site, encountered below surficial topsoil consisted of fill, naturally deposited sand with silt to silty sand, sandy silt, and clayey silt to silty clay. We anticipate foundation excavations above groundwater can be accomplished using sloped, open-cut techniques. It is also anticipated that dewatering can be accomplished using sumps and open pumping methods down to about 1 foot below groundwater level encountered during construction.

The Contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Such regulations are strictly

enforced, and if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

As a safety measure, it is recommended all vehicles and spoil piles be kept a minimum lateral distance from the top of excavations equal to no less than 100 percent of the slope height. Exposed slope faces should be protected against the elements.

6.07 Geotechnical Observation

The geotechnical recommendations provided as the basis for design of this project were developed using limited numbers of observations and tests. The Owner should be sensitive to the potential need for adjustment in the field. We recommend that the Owner retain RWG&A to observe geotechnical construction aspects of the project. These services should include observing general compliance with the design concepts, specifications and recommendations, and assisting in development of design changes should subsurface conditions differ from those anticipated before construction. Observation improves the likelihood of the design intent being carried out during construction. In addition, it allows RWG&A to confirm its design recommendations. For this project, geotechnical observation of the following aspects is recommended:

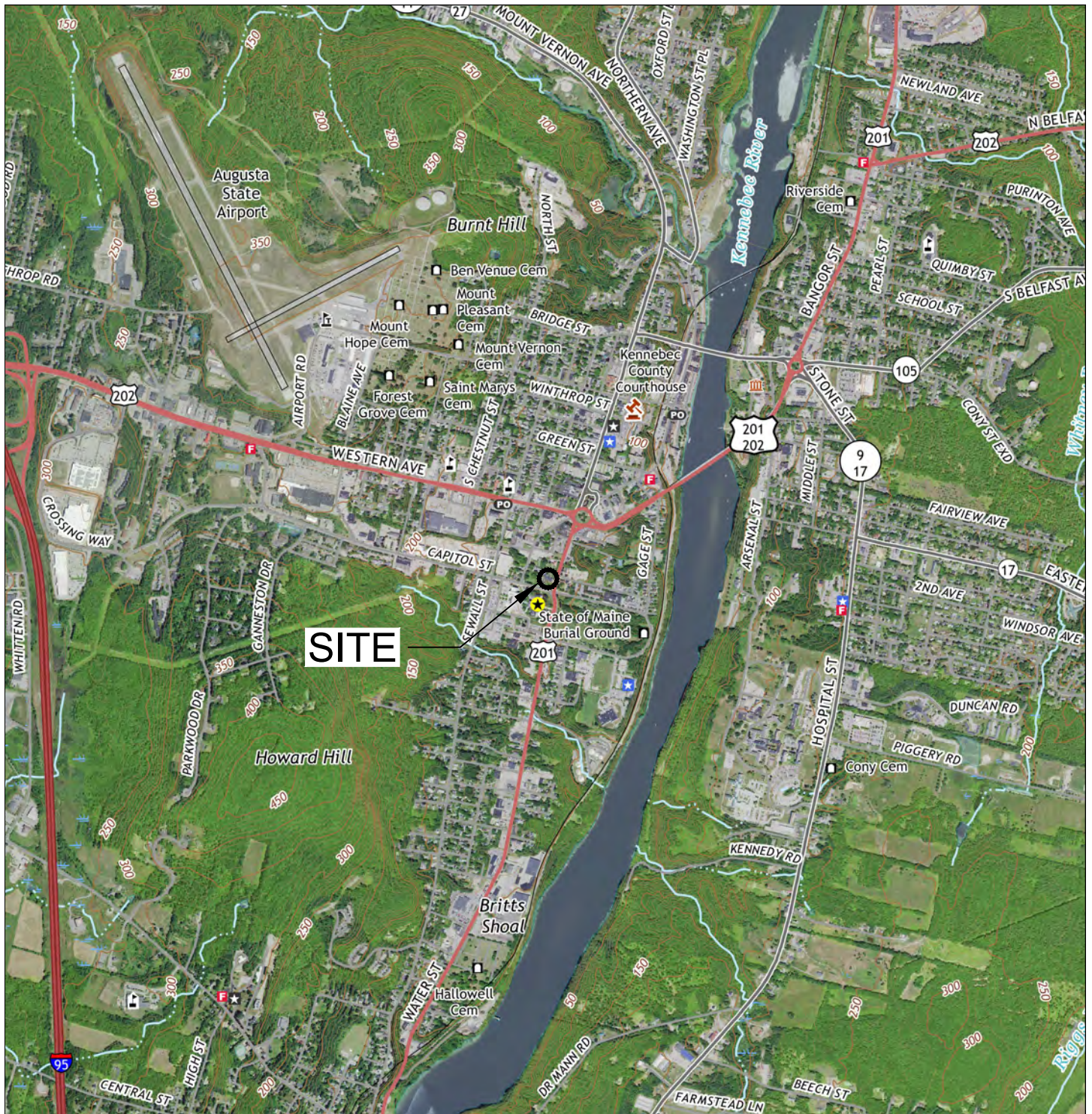
- Site stripping,
- Preparation of foundation subgrades,
- Structural fill placement and compaction.

In addition to geotechnical observation, RWG&A can provide full-service construction inspection and materials testing. This would include soils, portland cement and asphaltic concrete, structural steel and welding inspections, destructive and non-destructive testing, and special inspection services in fulfillment of building code requirements.

7.0 CLOSURE

This report has been prepared for specific application for the proposed Blaine House security improvement project at 192 State Street in Augusta, Maine, for the exclusive use of Oak Point Associates. This work has been completed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. If any changes are made in the nature, design, or location of the proposed construction, the conclusions and recommendations of this report should be reviewed by RWG&A.

The recommendations presented are based on the results of widely spaced explorations. The nature of variations between the explorations may not become evident until construction has begun. If variations are encountered, it will be necessary for RWG&A to re-evaluate the recommendations presented in this report. RWG&A requests an opportunity for a general review of the final design and specifications to determine that earthwork and foundation recommendations have been interpreted in the manner they were intended.



0 2000 3000 4000

SCALE, FEET

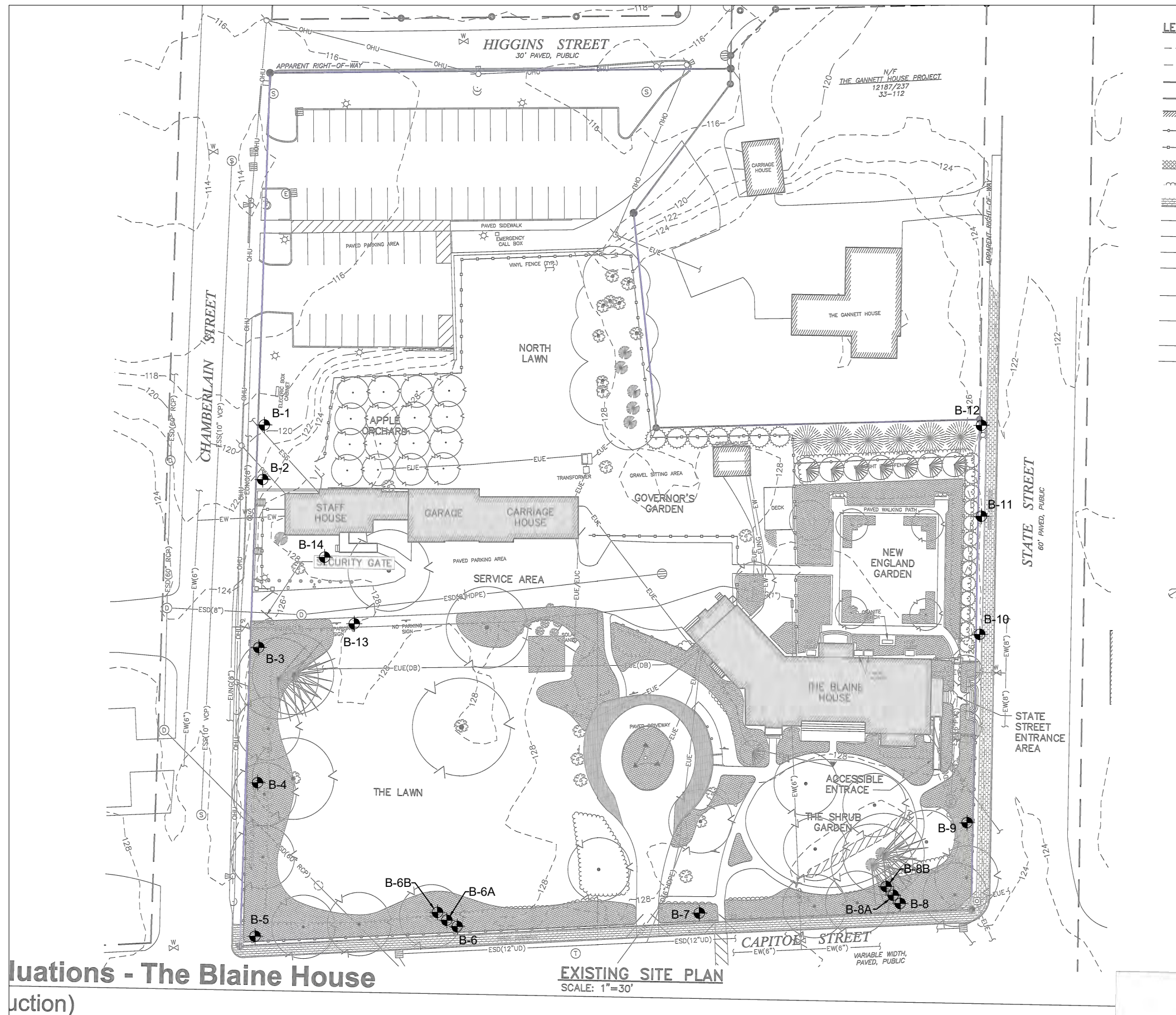
SOURCE:
USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLE OF
AUGUSTA, ME, DATED 2021.

FIGURE 1
LOCUS MAP
GEOTECHNICAL ENGINEERING EVALUATION
BLAINE HOUSE SITE SECURITY IMPROVEMENTS
192 STATE STREET
AUGUSTA, MAINE

DECEMBER 2023

PROJECT NO. 0767-169





LEGEND:

B-1

APPROXIMATE LOCATION OF MACROCORE
BORING DRILLED FOR RWG&A ON 18 AND 19
DECEMBER 2023.

SOURCE:

DRAWING TITLED "EXISTING SITE PLAN", PREPARED BY OAK
POINT ASSOCIATES, DATED APRIL 25, 2023, MARKED "NOT
FOR CONSTRUCTION".

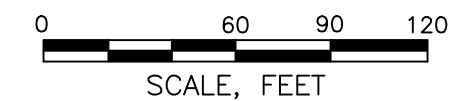
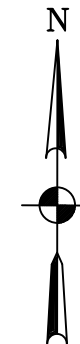


FIGURE 2
EXPLORATION LOCATION PLAN
GEOTECHNICAL ENGINEERING EVALUATION
BLAINE HOUSE SITE SECURITY IMPROVEMENTS
AUGUSTA, MAINE

JANUARY 2024

PROJECT NO. 0767-169



APPENDIX A
LIMITATIONS

Geotechnical Engineering Evaluation
Proposed Blaine House Security Improvements
Augusta, Maine

LIMITATIONS

This evaluation has been limited to consideration of the geotechnical engineering aspects of the proposed Blaine House security improvement project at 192 State Street in August, Maine. The primary purpose of the evaluation was to obtain information regarding subsurface conditions on which to base recommendations about the geotechnical engineering aspects of design and construction of a perimeter security fence and a gatehouse building. This report identifies construction considerations intended to solely assist engineers who will design the project and monitor its construction, and not to the benefit of others, including but not limited to the Contractor. This report is neither a technical specification nor intended to be used as a specification for bidding or building the project.

This geotechnical engineering evaluation might also aid Contractors responsible for constructing the planned fence and gatehouse building. However, the recommendations and comments provided hereinafter are not intended to be instructions or directives to the project Contractors. The project Contractors must evaluate construction issues encountered in the work based on their experience with similar projects, considering their methods and procedures.

RWG&A has not considered the construction from a worker safety perspective. Construction safety is the responsibility of the project Contractor, who is also solely responsible for the means, methods, and sequencing of construction operations. RWG&A is providing this information as a service to Oak Point Associates. Under no circumstances should this information be interpreted to mean that RWG&A and/or Oak Point Associates assume responsibility for construction site safety or the Contractor's activities; such responsibility is not implied and should not be inferred.

RWG&A's services excluded:

- Any environmental site assessment relative to oil and hazardous materials or evidence of a potential release or threat of oil or hazardous materials on, below, or around the site. (Note: any statement in this report, or on the exploration logs, regarding odors or unusual or suspicious conditions is for informational purposes only and is not intended to constitute an environmental assessment.)
- Any service to investigate or detect the presence of mold or other biological contaminants or any service designed or intended to prevent or lower the risk of an infestation of mold or other biological contaminants (MOBC infestation).
- Any service to investigate or detect the presence of potentially hazardous subsurface vapor sources or any service designed or intended to prevent or lower the risk of vapor intrusion.

APPENDIX B
EXPLORATION LOGS

Geotechnical Engineering Evaluation
Proposed Blaine House Security Improvements
Augusta, Maine

RWG&A, Inc. soil descriptions are based on the following criteria. Descriptive terminology is used to denote the grain size and percentage of each component. The soil descriptions are based on visual-manual classification procedures, Standard Penetration Test results, and the results of laboratory testing on selected soil samples, where available. The Unified Soil Classification Group Symbol will be indicated in capital letters.

COMPONENT DEFINITIONS BY GRADATION SIEVE LIMITS

Materials	Definitions	Fractions	Upper	Lower
Boulders	Material too large to pass through an opening 12 in. square.			
Cobbles	Material passing through a 12 in. opening and retained on the 3 in. sieve.			
Gravel	Material passing the 3 in. sieve and retained on 1/4" (No. 4 sieve).	Coarse Fine	3 in. 3/4 in.	3/4 in. 1/4 in.
Sand	Material passing the No. 4 sieve and retained on the No. 200 sieve.	Coarse Medium Fine	No. 4 (1/4") No. 10 (1/8") No. 40 (1/32")	No. 10 (1/8") No. 40 (1/32") No. 200
Silt	Material passing the No. 200 sieve which is usually non-plastic in character and exhibits little or no strength when air dried.		No. 200	
Clay	Material passing the No. 200 sieve which can also be made to exhibit plasticity within a certain range of moisture contents and which exhibits considerable strength when air dried.		No. 200	

SOIL DESCRIPTION

General

Soils are described as to the Unified Soil Classification Systems Group Symbol, density or consistency, color, grain size distribution and other pertinent properties such as plasticity and dry strength. The RWG&A order of descriptors is as follows:

1. USCS Group Name and Symbol, or Fill
2. Density or Consistency
3. Moisture
4. Grain Size & Constituent percentages
5. Other pertinent descriptors
6. Color

DESCRIPTIVE TERMINOLOGY DENOTING COMPONENT PROPORTIONS

<u>Descriptive Terms</u>	<u>Range of Proportions</u>
Noun (major component)	≥50%
Adjective (secondary component)	20 - 50%
Some (third component)	25 - 45%
Little (second or third component)	15 - 25%
Few (second or third component)	5 - 15%
Trace	0 - 5%
With	Amount of component not determined. Used as a conjunction only. Does not indicate component percentile

OTHER DESCRIPTIVE TERMS

Where appropriate, geological classifications are also used (Glacial Till, etc.)

TYPICAL DESCRIPTIONS

SAND WITH SILT (SP-SM): Medium dense, moist, coarse to medium sand, few silt, brown.

FILL; Loose, dry, fine sand, some gravel and silt, with brick and concrete fragments, dark brown.

SILTY CLAY (CL); Very stiff, moist, silty clay, olive-brown.

<u>DENSITY OR CONSISTENCY OF SOILS</u>		
<u>COHESIVE SOILS</u>		
<u>Consistency of Cohesive Soils</u>	<u>Standard Penetration Test (Blows Per Foot) (N)</u>	<u>Undrained Shear Strength (TSF)</u>
Very Soft	0 - 2	Below 0.13 (250 psf)
Soft	2 - 4	0.13 to 0.25 (to 500 psf)
Medium	4 - 8	0.25 to 0.5 (to 1,000 psf)
Stiff	8 - 15	0.5 to 1.0 (to 2,000 psf)
Very Stiff	15 - 30	1.0 to 2.0 (to 4,000 psf)
Hard	Over 30	over 2.0 (over 4,000 psf)
Consistency of cohesive soils is based upon field vane shear, torvane, or pocket penetrometer, or laboratory vane shear or Unconsolidated-Undrained Triaxial Compression tests. Consistency of cohesive soils is based upon the Standard Penetration test when no other data is available.		
<u>COHESIONLESS SOILS</u>		
<u>Density of Cohesionless Soils</u>	<u>Standard Penetration Test (Blows per Foot) (in)</u>	
Very Loose	0 - 4	
Loose	4 - 10	
Medium Dense	10 - 30	
Dense	30 - 50	
Very Dense	over 50	
<u>PENETRATION RESISTANCE</u>		
<u>STANDARD PENETRATION TEST (ASTM D1586)</u> - a 2.0-inch diameter, 1-3/8 inch inside diameter split barrel sample is driven into soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The total number of blows required for penetration from 6 to 18 inches is the Standard Penetration Resistance (N).		
<u>COBBLES AND BOULDERS</u>		
The percentage of cobbles and boulders is estimated visually where possible.		
<u>Descriptive Term</u>	<u>Estimated Percentage</u>	
Very Few	0 - 10%	
Few	10 - 25%	
Common	25 - 40%	
Numerous	40 - 50%	
If the percentage cannot be determined, as in a typical test boring, then use “with” to indicate the presence of cobbles and/or boulders. (i.e., gravelly sand with cobbles and boulders).		
<u>FILLS</u>		
The following terminology is used to denote size range of man-made materials within fill deposits:		
<u>Size Range</u>	<u>Comparative Soil Terms</u>	
<No. 200 Sieve	Silt - size	
No. 200 to 1/4 in.	Sand - size	
1/4 in. to 3 in.	Gravel - size	
3 in. to 12 in.	Cobble - size	
>12 in.	Boulder - size	
<u>SUPPLEMENTAL SOIL DESCRIPTION TERMINOLOGY</u>		
<u>Term</u>	<u>Example</u>	
Seam	Typically 1/16 to 1/2 inch thick	1/4 inch sand seams
Layer	Greater than 1/2 inch thick	2-inch sand layers
Occasional	One or less per foot of thickness	
Frequent	More than one per foot of thickness	
Interbedded	Alternating soil layers of different composition	
Varved	Alternating thin seams of silt and clay	
Mottled	Variations in color	



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-1

Total Depth (ft): 20

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 5'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/18/23
Date Completed: 12/18/23
Surface Elevation: 120 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (12 inches).	48				
			SAND WITH SILT (SP-SM); Moist, fine sand, few silt, gray.					
5		S-2	SANDY SILT (ML); Wet, silt, some medium to fine sand, brown to gray.	36			25.1	MC GS
10		S-3	Trace fine gravel.	36			24.8	MC GS
15		S-4	SILTY CLAY (CL); Wet, little silt, few fine sand, gray.	0				
20			Bottom of exploration at 20.0'; Not refusal.					
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-2

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 5'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/18/23
Date Completed: 12/18/23
Surface Elevation: 123 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (12 inches).	48				
				SILTY SAND (SM); Moist, medium to fine sand, fragments of brick, gray.					
5				SANDY SILT (ML); Wet, silt, some medium to fine sand, gray.					
10			S-2		48			25.7	MC GS
15				Bottom of exploration at 15.0'; Not refusal.					
20									
25									
30									

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-3

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 13'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 127 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			TOPSOIL AND ORGANIC MATERIAL (12 inches).					
			FILL; Sand with silt, moist, medium to fine sand, few silt, brown.					
			SILTY SAND (SM); Moist to wet, coarse to fine sand, some silt, brownish gray.					
5		S-1		48			16.4	MC GS
10		S-2		48				
			Becomes wet.					
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-4

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 7'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (12 inches).	30				
			FILL; Sand with silt, moist, coarse to fine sand, few silt, little coarse to fine gravel, brown.					
5		S-2	SILTY SAND (SM); Moist to wet, coarse to fine sand, little silt, trace fine gravel, gray.	60			20.9	MC GS
10								
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-5

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 10'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (6 inches). FILL; Silty sand with gravel, moist to wet, coarse to fine sand, some coarse to fine gravel, some silt, brown to gray.	30			0.7	MC GS
5		S-2	SANDY SILT (ML); Moist to wet, some coarse to fine sand, trace fine gravel, brownish gray. Becomes wet.	30			23.4	MC GS
10								
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes:



- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Total Depth (ft): 5

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth:

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

[illegible]

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-6A

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 7'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			See B-6 for 0'-5'.					
5			Cobbles or boulders (5'-7').					
		S-1	SILT WITH SAND AND CLAY (ML); Wet, little coarse to fine sand, some clay, gray.				65	MC GS HYD
10		S-2	Few clay.	60				
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes: Offset 1 foot northwest of B-6 and drilled B-6A.



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-6B

Total Depth (ft): 5

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: Not Obs.

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0				See B-6 for 0'-5'.					
5				Bottom of exploration at 5.0'; Probe refusal on possible cobble, boulder, bedrock, or other obstruction.					
10									
15									
20									
25									
30									

Notes: Offset 3 feet northwest of B-6 to drill B-6B.



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-7

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 10'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (6 inches).	24				
			FILL; Sand with silt, wet, coarse to fine sand, few silt, trace coarse to fine gravel, brown.					
5		S-2		58			18	MC GS
			SILTY SAND (SM); Moist, medium to fine sand, some silt, trace fine gravel, gray.					
10			Wet, trace clay.					
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-8

Total Depth (ft): 8

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: Not Obs.

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			TOPSOIL AND ORGANIC MATERIAL (12 inches).					
		S-1	FILL; Silty sand, moist to wet, coarse to fine sand, some silt, few fine gravel, brown.	30			23.4	MC GS
5		S-2		0				
			Bottom of exploration at 8.0'; Probe refusal on possible cobble, boulder, bedrock, or other obstruction.					
10								
15								
20								
25								
30								

Notes: Unable to push sampler from 5-8 feet. Probe couldn't penetrate at 8 feet.



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-8A

Total Depth (ft): 11

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: Not Obs.

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0				See B-8 for 0'-5'.					
5			S-2	Cobbles or boulders. Difficult probing and recovery.	0				
10				Bottom of exploration at 11.0'; Probe refusal on possible cobble, boulder, bedrock, or other obstruction.					
15									
20									
25									
30									

Notes: Offset 1 foot northwest of B-8 to drill B-8A.



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-8B

Total Depth (ft): 9

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: Not Obs.

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	See B-8 for 0'-5'.	20				
5			FILL; Gravelly sand, moist, coarse to fine sand, some coarse to fine gravel, trace silt, brown.					
			Cobbles or boulders 7'-9'.					
10			Bottom of exploration at 9.0'; Probe refusal on possible cobble, boulder, bedrock, or other obstruction.					
15								
20								
25								
30								

Notes: Offset 6 feet northwest of B-8A to drill B-8B.



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-9

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: Not Obs.

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 128 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (6 inches). FILL; Sand with silt, moist, medium to fine sand, few silt, brown.	30				
5		S-2	FILL; Silty sand with gravel, moist, coarse to fine sand, some silt, little fine gravel, gray.	30			12.8	MC GS
10		S-3	SILTY SAND (SM); Moist, medium to fine sand, little silt, gray.	46				
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-10

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: Not Obs.

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 126 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			TOPSOIL AND ORGANIC MATERIAL (12 inches).					
			SILTY SAND (SM); Moist, medium to fine sand, little silt, trace clay, gray.					
5		S-1		40				
10								
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-11

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: Not Obs.

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 126 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (12 inches).	48				
				SILTY SAND (SM); Moist, medium to fine sand, little silt, trace clay, gray.					
5									
10			S-2		48				
15				Bottom of exploration at 15.0'; Not refusal.					
20									
25									
30									

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-12

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: Not Obs.

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/19/23
Date Completed: 12/19/23
Surface Elevation: 126 Feet
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (12 inches).	36				
			SILTY SAND (SM); Moist, medium to fine sand, some silt, brown to gray.					
5		S-2		50			20.6	MC GS
10								
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-13

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 10'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/18/23
Date Completed: 12/18/23
Surface Elevation:
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (6 inches). SAND WITH SILT (SP-SM); Moist, fine sand, few silt, brown to gray.	36				
5			SILTY SAND (SM); Moist, fine sand, some silt, trace clay, gray.					
10		S-2	Becomes wet. SANDY SILT (ML); Wet, some fine sand, few clay, gray.	36				
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-14

Total Depth (ft): 15

Sheet 1 of 1

Project Name: Blaine House Site Security Improvements
RWG&A Project No. 0767-169-23
Location: Augusta, Maine
Client: Oak Point Associates
RWG&A Representative: Temitope Omokinde
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with soil
Observed Water Depth: 10'

Drilling Co.: Bronson Drilling
Drill Rig: Power Probe 9100-SK
Driller Rep.: Dan Bronson
Date Started: 12/18/23
Date Completed: 12/18/23
Surface Elevation:
Drilling Method:
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (12 inches). SILTY SAND (SM); Moist, fine sand, some silt, gray.	48				
5		S-2		36				
10			SANDY SILT (ML); Wet, silt, some fine sand, few clay, gray.					
15			Bottom of exploration at 15.0'; Not refusal.					
20								
25								
30								

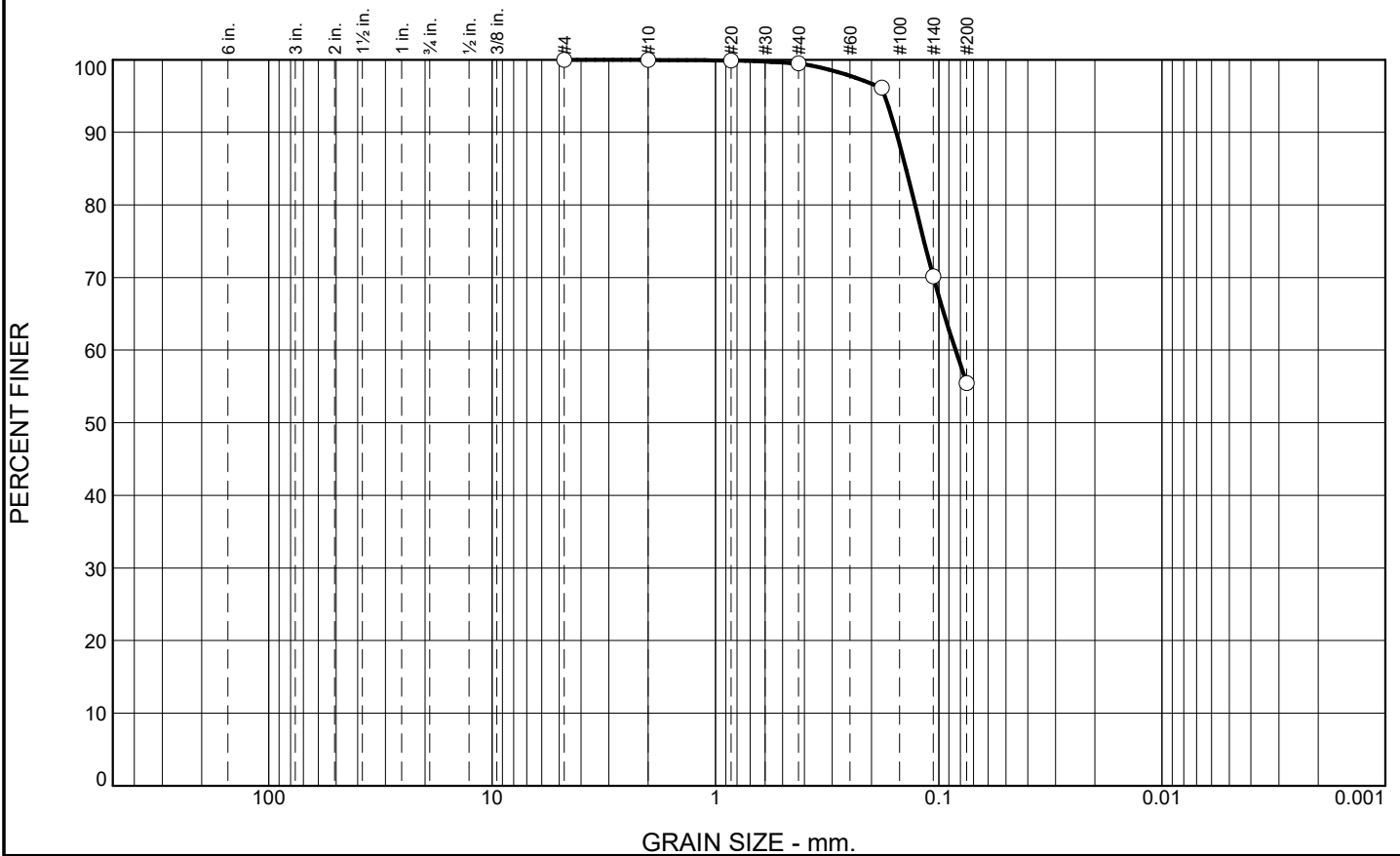
Notes:

APPENDIX C

LABORATORY TEST RESULTS

Geotechnical Engineering Evaluation
Proposed Blaine House Security Improvements
Augusta, Maine

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	44.0	55.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.5		
#80	96.1		
#140	70.2		
#200	55.5		

* (no specification provided)

Soil Description
sandy silt

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.1550 D₈₅= 0.1403 D₆₀= 0.0841
 D₅₀= D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= ML AASHTO= A-4(0)

Remarks
 Moisture Content: 25.1%

Location: B-1
 Sample Number: S-2 Depth: 5-10'

Date: 01/02/2024

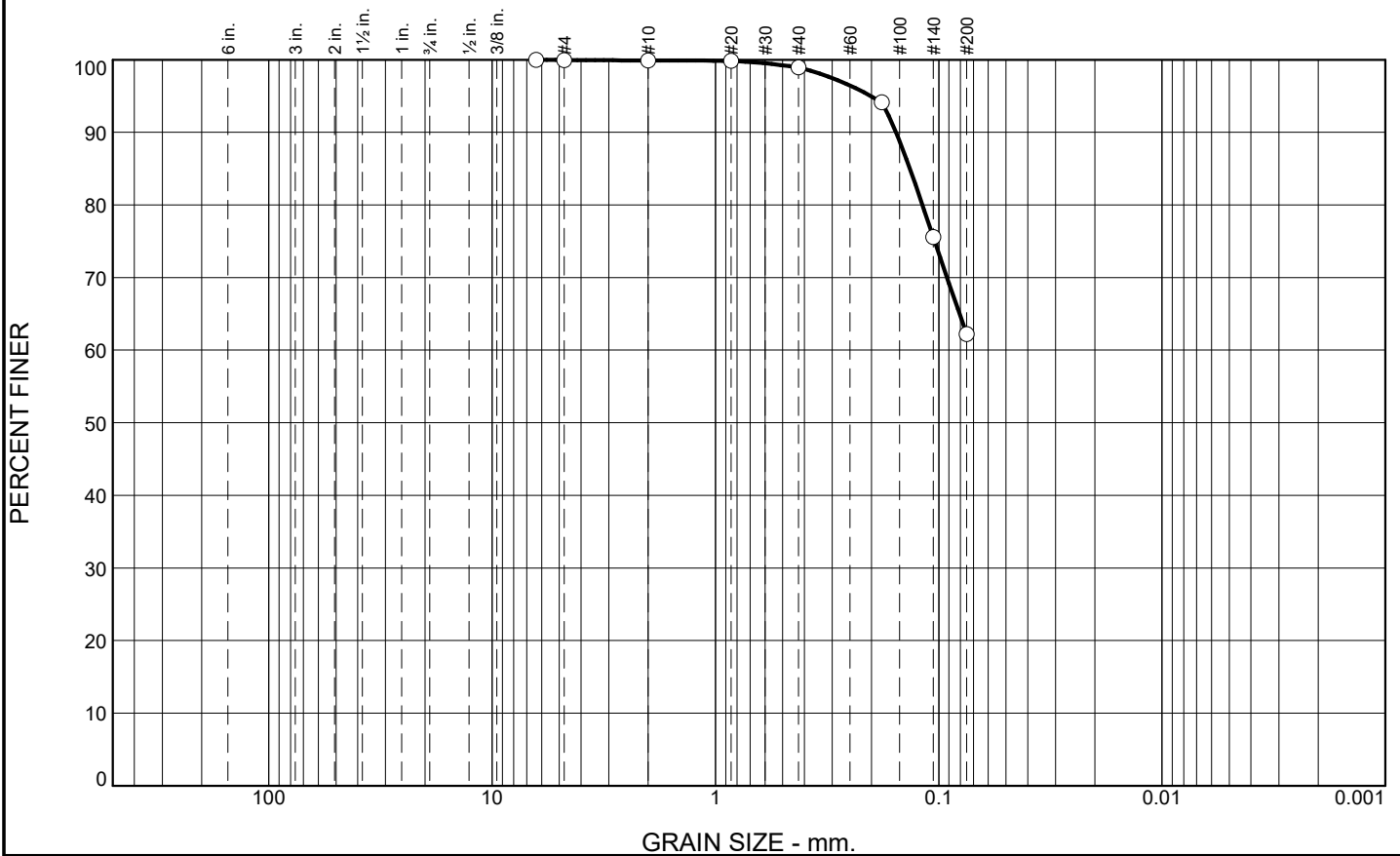
**R.W. Gillespie
 & Associates, Inc.
 Biddeford, Maine**

Client: Oak Point Associates
Project: Blaine House Site Security Improvements
 Augusta, ME
Project No: 0767-169

Lab No. 17817-01

Tested By: CAG/AFH Checked By: MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.0	1.0	36.7	62.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/4"	100.0		
#4	99.9		
#10	99.9		
#20	99.9		
#40	98.9		
#80	94.1		
#140	75.6		
#200	62.2		

* (no specification provided)

Soil Description
sandy silt

Atterberg Limits
PL= LL= NV PI=

Coefficients
D₉₀= 0.1554 D₈₅= 0.1347 D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification
USCS= ML AASHTO= A-4(0)

Remarks
Moisture Content: 24.9%

Location: B-1

Sample Number: S-3

Depth: 14-15'

Date: 01/02/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

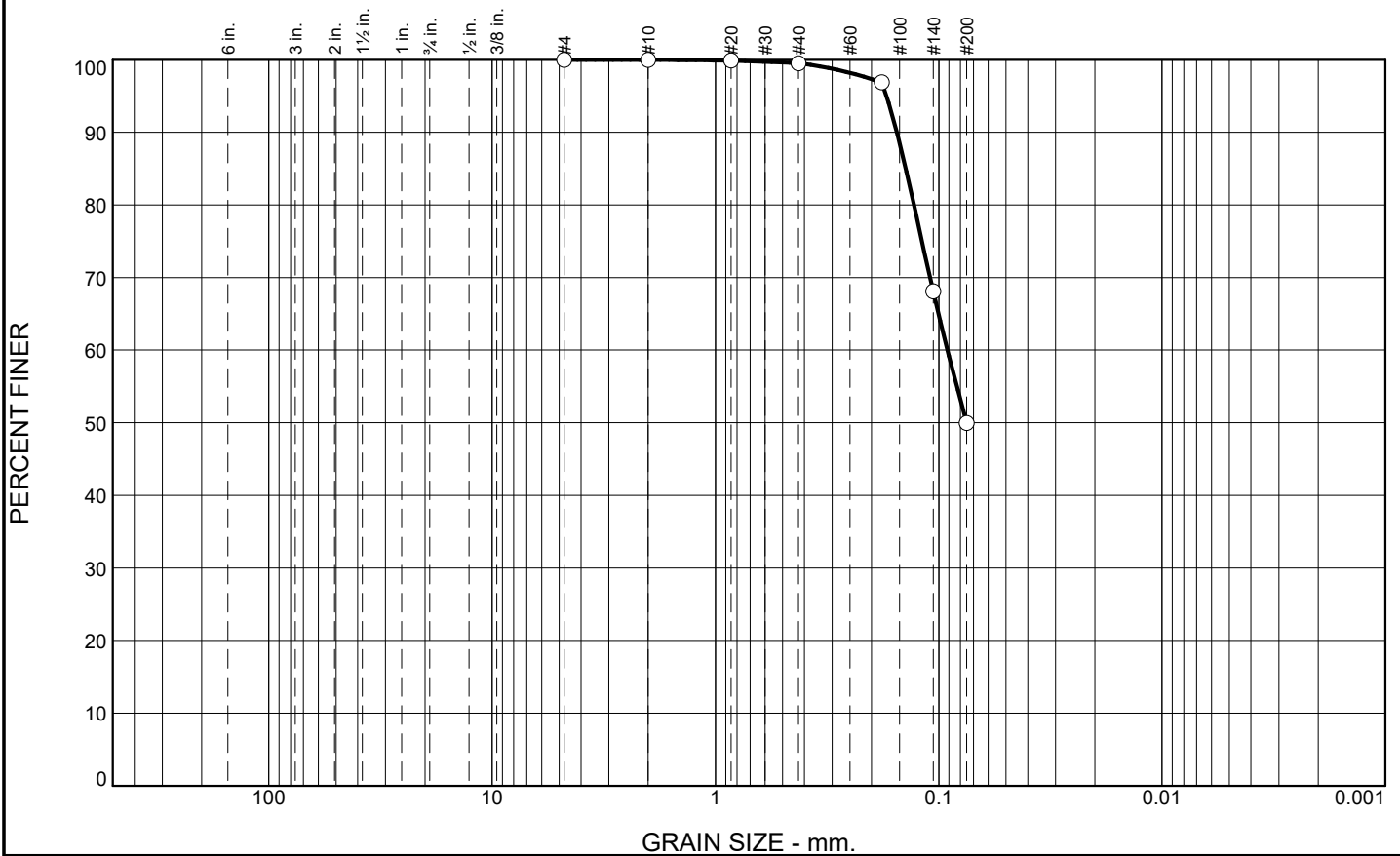
Project No: 0767-169

Lab No. 17817-02

Tested By: CAG/AFH

Checked By: MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	49.5	50.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.5		
#80	96.9		
#140	68.1		
#200	50.0		

* (no specification provided)

Soil Description
sandy silt

Atterberg Limits
PL= LL= NV PI=

Coefficients
D₉₀= 0.1541 D₈₅= 0.1406 D₆₀= 0.0915
D₅₀= 0.0751 D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification
USCS= ML AASHTO= A-4(0)

Remarks
Moisture Content: 25.7%

Location: B-2

Sample Number: S-2

Depth: 10-15'

Date: 01/02/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

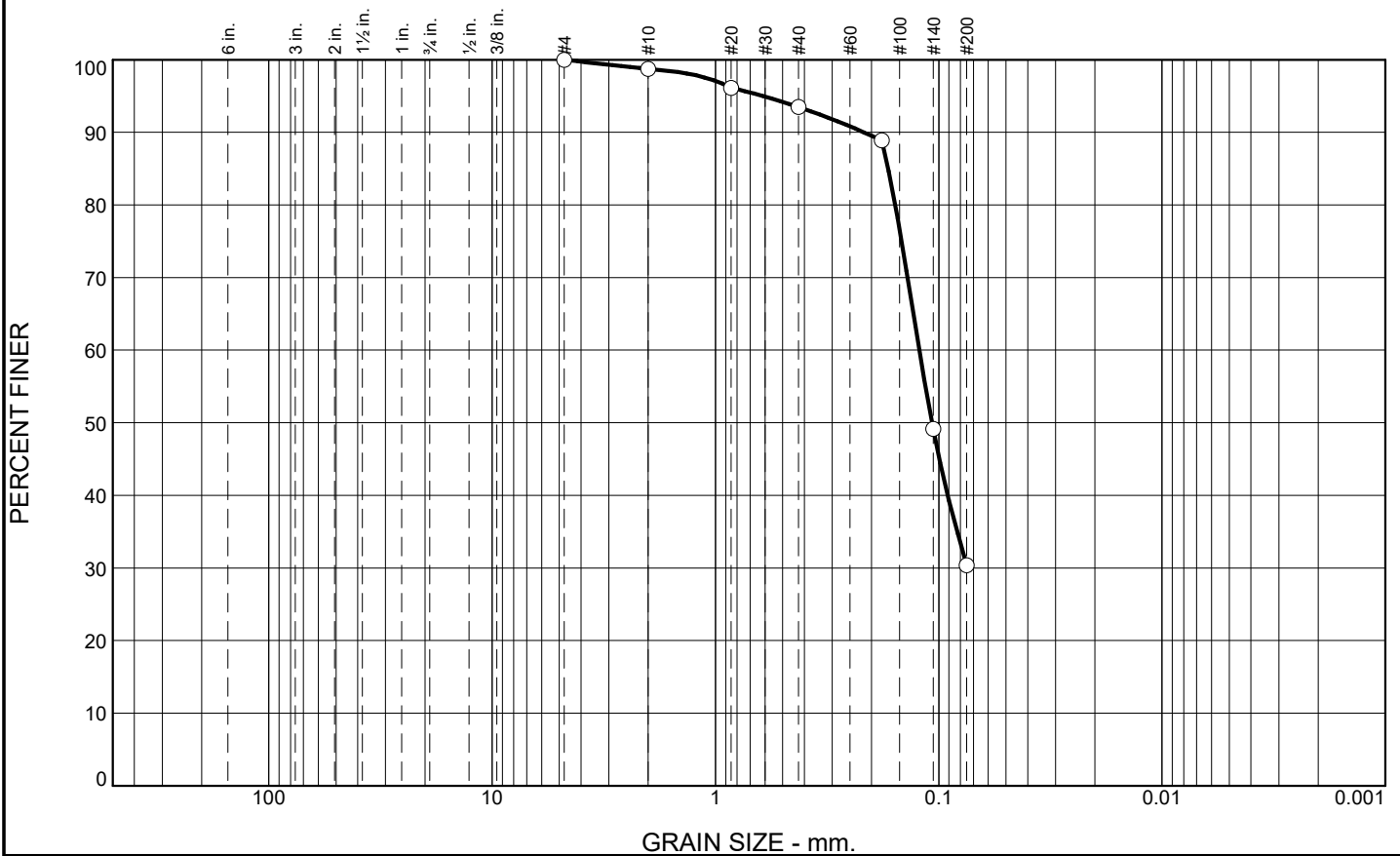
Project No: 0767-169

Lab No. 17817-03

Tested By: CAG/AFH

Checked By: MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.3	5.2	63.1	30.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	98.7		
#20	96.1		
#40	93.5		
#80	88.9		
#140	49.1		
#200	30.4		

* (no specification provided)

Soil Description
silty sand

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.2165 D₈₅= 0.1684 D₆₀= 0.1222
 D₅₀= 0.1073 D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-2-4(0)

Remarks
 Moisture Content: 16.4%

Location: B-3
 Sample Number: S-1 Depth: 3-5'

Date: 01/02/2024

**R.W. Gillespie
 & Associates, Inc.
 Biddeford, Maine**

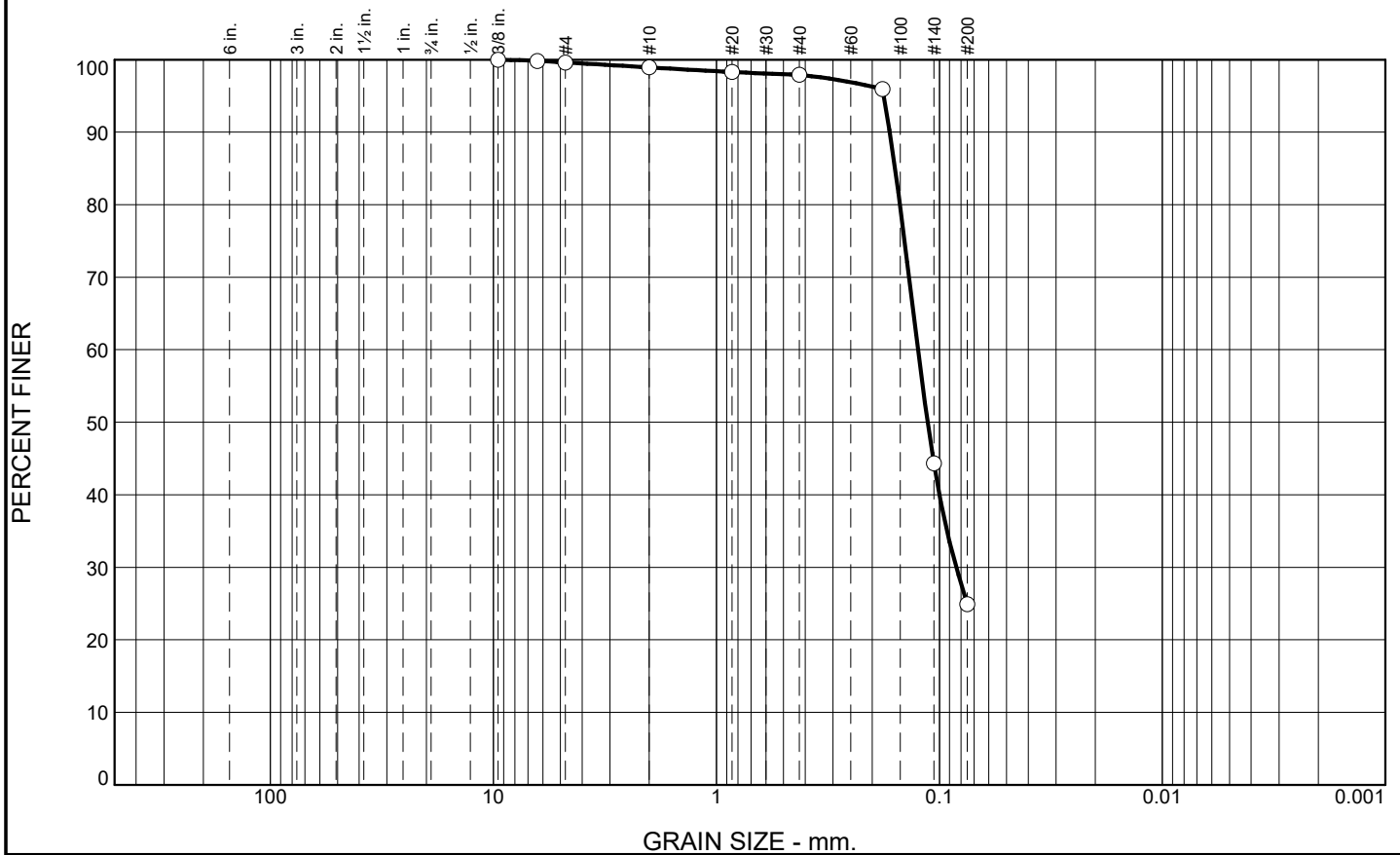
Client: Oak Point Associates
Project: Blaine House Site Security Improvements
 Augusta, ME
Project No: 0767-169

Lab No. 17817-04

Tested By: CAG/AFH Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	0.7	1.0	73.0	24.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
1/4"	99.8		
#4	99.6		
#10	98.9		
#20	98.3		
#40	97.9		
#80	95.9		
#140	44.3		
#200	24.9		

* (no specification provided)

Soil Description
silty sand

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.1669 D₈₅= 0.1581 D₆₀= 0.1248
 D₅₀= 0.1130 D₃₀= 0.0841 D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-2-4(0)

Remarks
 Moisture Content: 20.9%

Location: B-4

Sample Number: S-2

Depth: 4.5-10'

Date: 01/04/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

Project No: 0767-169

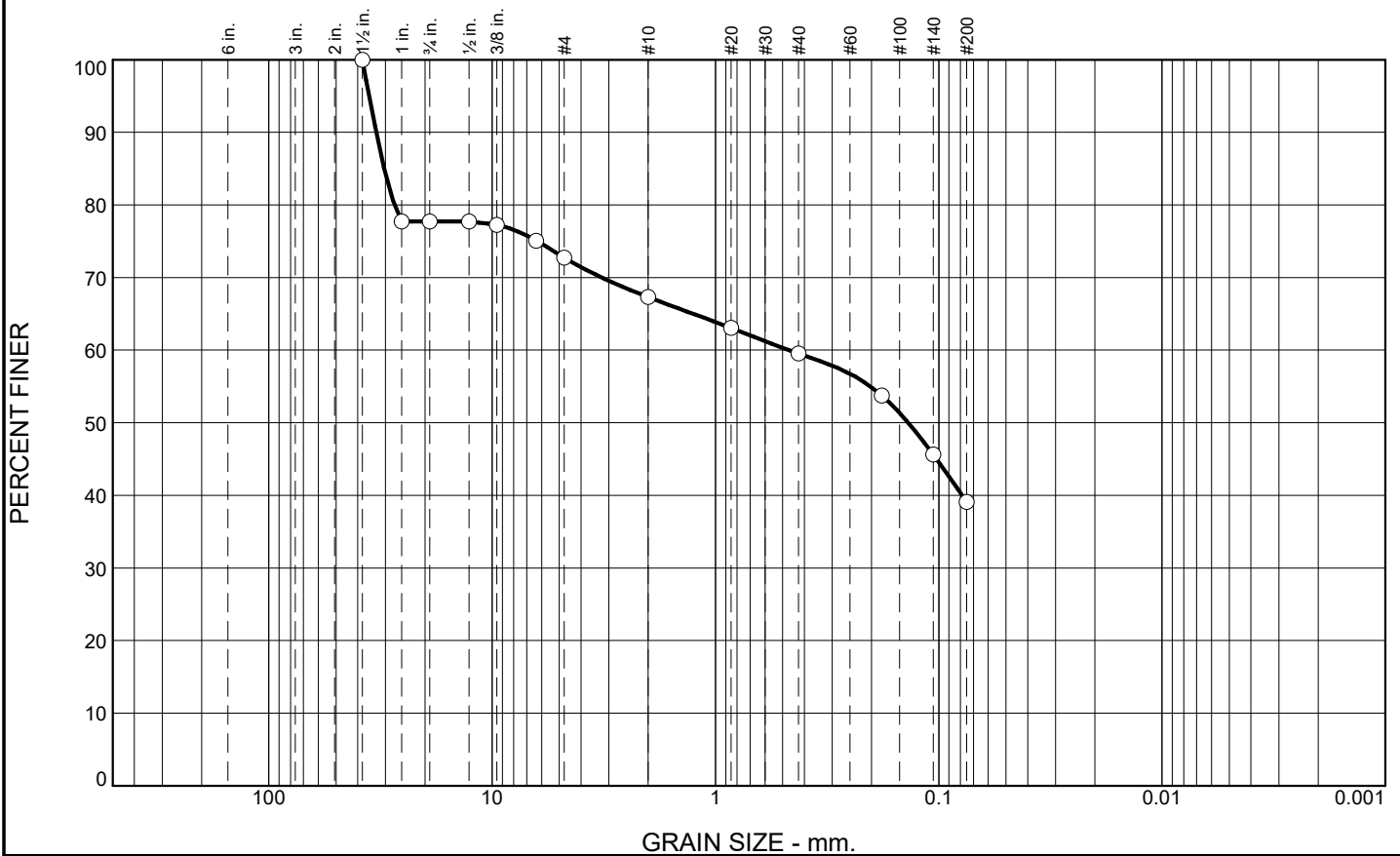
Lab No. 17817-05

Tested By: CAG/AFH

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	22.3	5.0	5.4	7.8	20.4	39.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100.0		
1"	77.7		
3/4"	77.7		
1/2"	77.7		
3/8"	77.3		
1/4"	75.1		
#4	72.7		
#10	67.3		
#20	63.1		
#40	59.5		
#80	53.8		
#140	45.6		
#200	39.1		

* (no specification provided)

<u>Soil Description</u>		
silty sand with gravel		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 33.0080	D ₈₅ = 30.4183	D ₆₀ = 0.4689
D ₅₀ = 0.1371	D ₃₀ =	D ₁₅ =
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= SM	AASHTO= A-4(0)	
<u>Remarks</u>		
Moisture Content: 0.7%		

Location: B-5

Sample Number: S-1

Depth: 0.5-5.5'

Date: 01/02/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

Project No: 0767-169

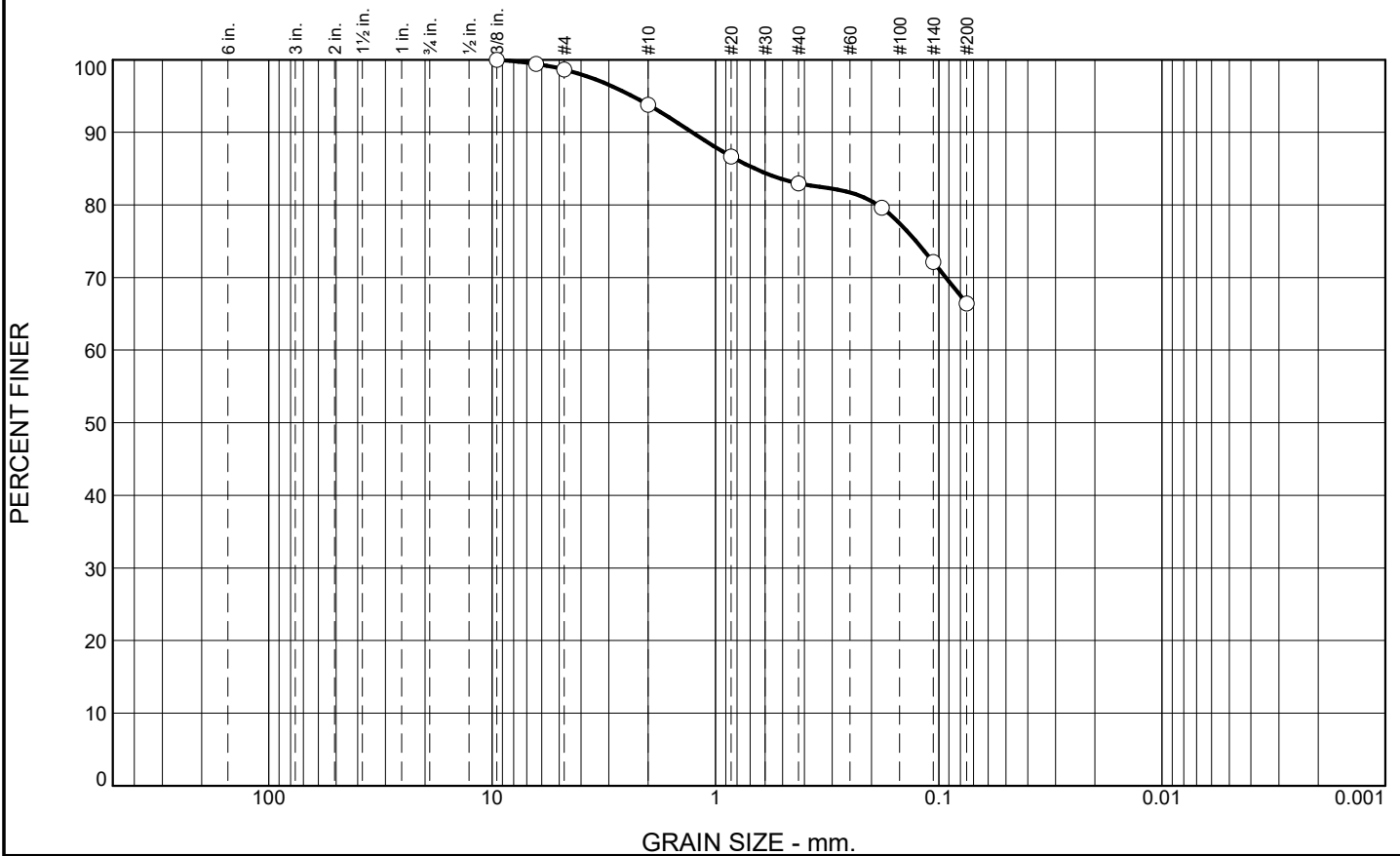
Lab No. 17817-06

Tested By: CAG/AFH

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.4	4.8	10.8	16.6	66.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
1/4"	99.4		
#4	98.6		
#10	93.8		
#20	86.7		
#40	83.0		
#60	79.6		
#140	72.1		
#200	66.4		

* (no specification provided)

Soil Description

sandy silt

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 1.2717

D₈₅= 0.6659

D₆₀=

D₅₀=

D₃₀=

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= ML

AASHTO= A-4(0)

Remarks

Moisture Content: 23.4%

Location: B-5

Sample Number: S-2

Depth: 5.5-10'

Date: 01/02/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

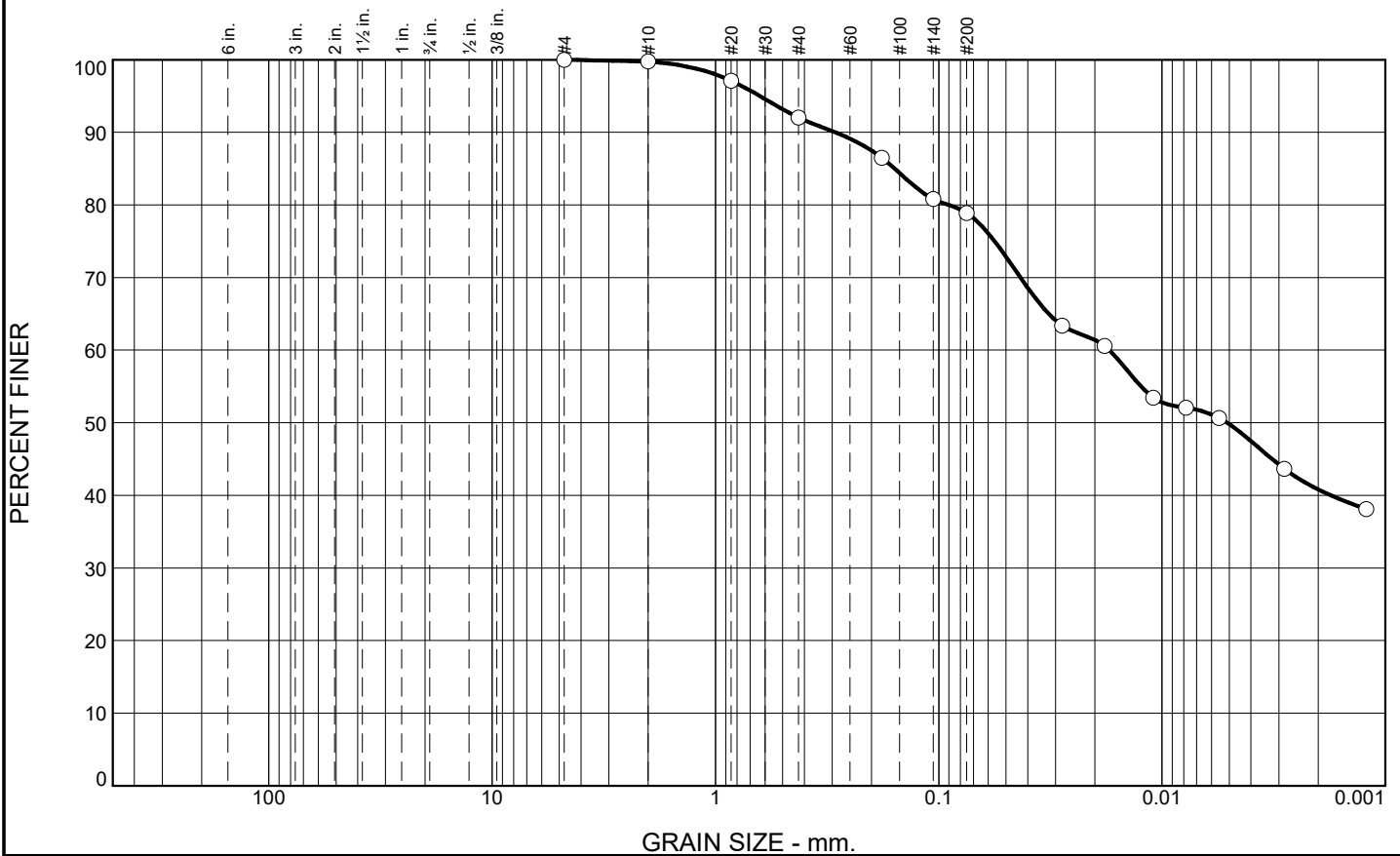
Project No: 0767-169

Lab No. 17817-07

Tested By: CAG/AFH

Checked By: MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	7.7	13.2	38.1	40.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.8		
#20	97.1		
#40	92.1		
#80	86.5		
#140	80.8		
#200	78.9		
0.0280 mm.	63.4		
0.0181 mm.	60.6		
0.0110 mm.	53.4		
0.0078 mm.	52.1		
0.0056 mm.	50.7		
0.0028 mm.	43.7		
0.0012 mm.	38.1		

* (no specification provided)

Soil Description
silt with sand

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.2917 D₈₅= 0.1575 D₆₀= 0.0172
 D₅₀= 0.0051 D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= ML AASHTO= A-4(0)

Remarks
 Moisture Content: 65.0%

Location: B-6A

Sample Number: S-1

Depth: 7-11'

Date: 01/05/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

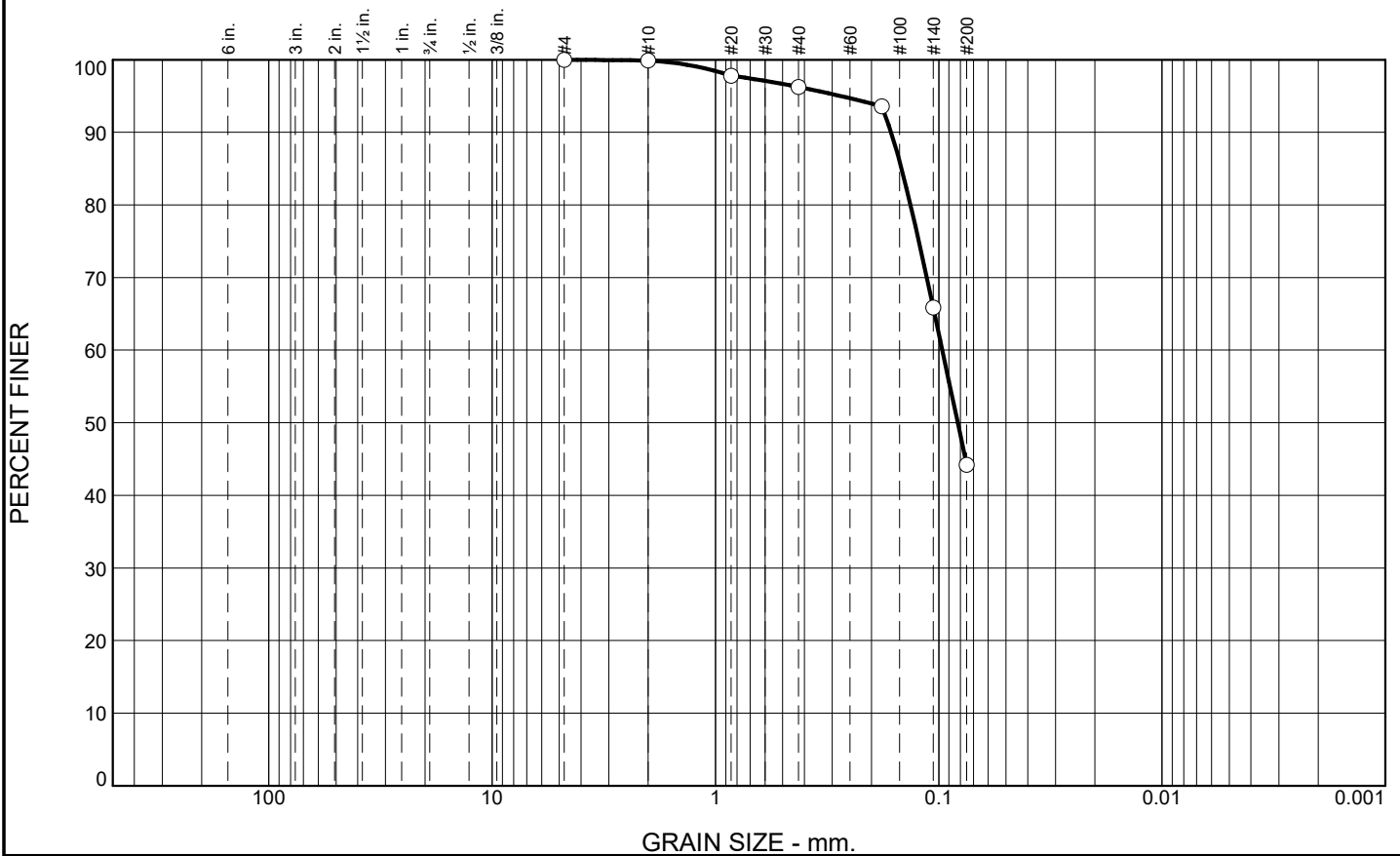
Project No: 0767-169

Lab No. 17817-08

Tested By: CAG/JMT

Checked By: MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	3.7	52.0	44.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	97.8		
#40	96.2		
#80	93.6		
#140	65.9		
#200	44.2		

* (no specification provided)

Soil Description
silty sand

Atterberg Limits
 PL= LL= NV PI=

Coefficients
 D₉₀= 0.1634 D₈₅= 0.1468 D₆₀= 0.0965
 D₅₀= 0.0823 D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= AASHTO=

Remarks
 Moisture Content: 18.0%

Location: B-7

Sample Number: S-2

Depth: 6-10'

Date: 01/02/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

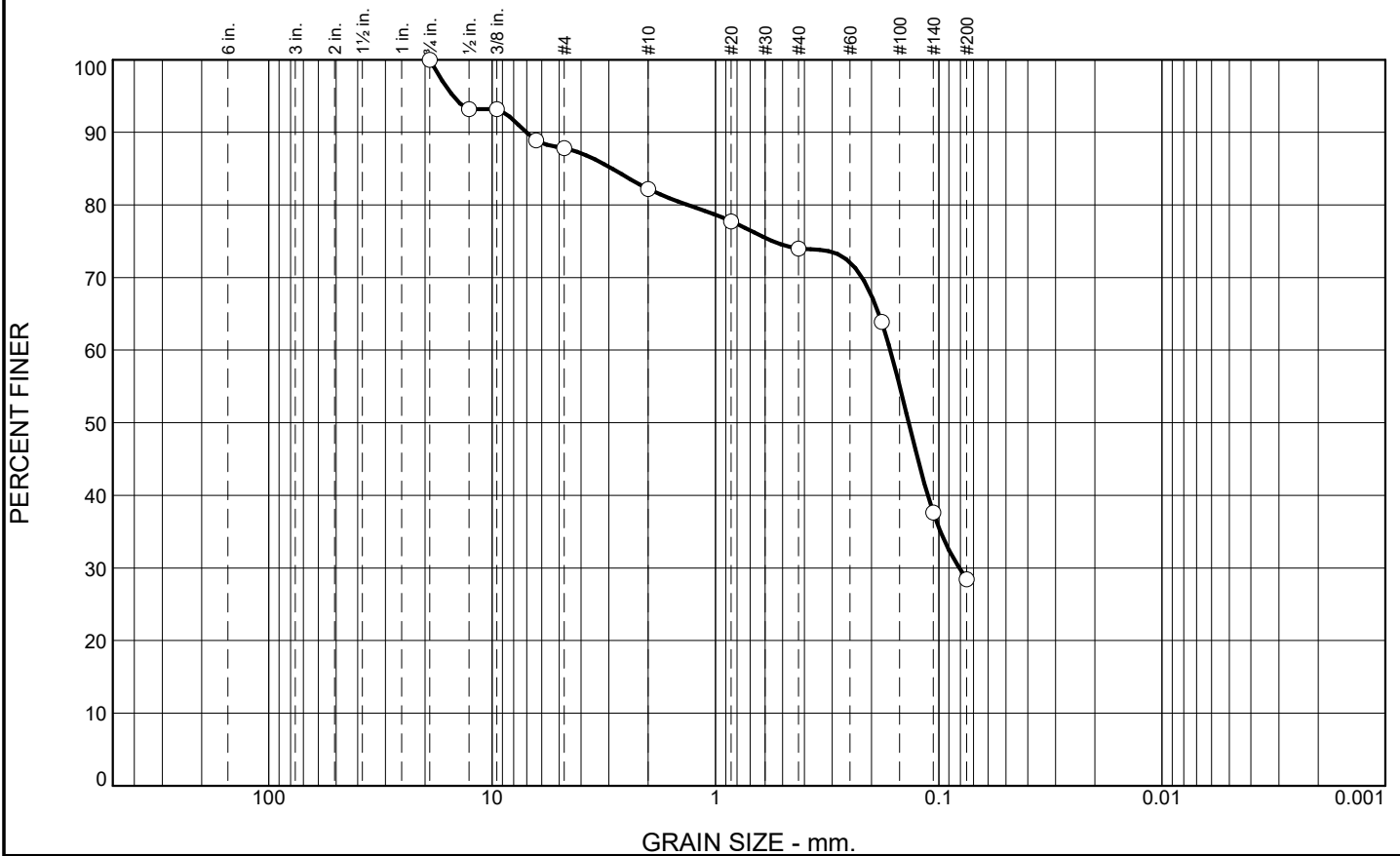
Project No: 0767-169

Lab No. 17817-09

Tested By: CAG/AFH

Checked By: MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.2	5.6	8.2	45.6	28.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	93.2		
3/8"	93.2		
1/4"	88.9		
#4	87.8		
#10	82.2		
#20	77.7		
#40	74.0		
#80	63.9		
#140	37.6		
#200	28.4		

* (no specification provided)

Soil Description
 silty sand

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 7.0327 D₈₅= 2.9069 D₆₀= 0.1650
 D₅₀= 0.1363 D₃₀= 0.0809 D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-2-4(0)

Remarks
 Moisture Content: 23.4%

Location: B-8

Sample Number: S-1

Depth: 1-5'

Date: 01/02/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

Project No: 0767-169

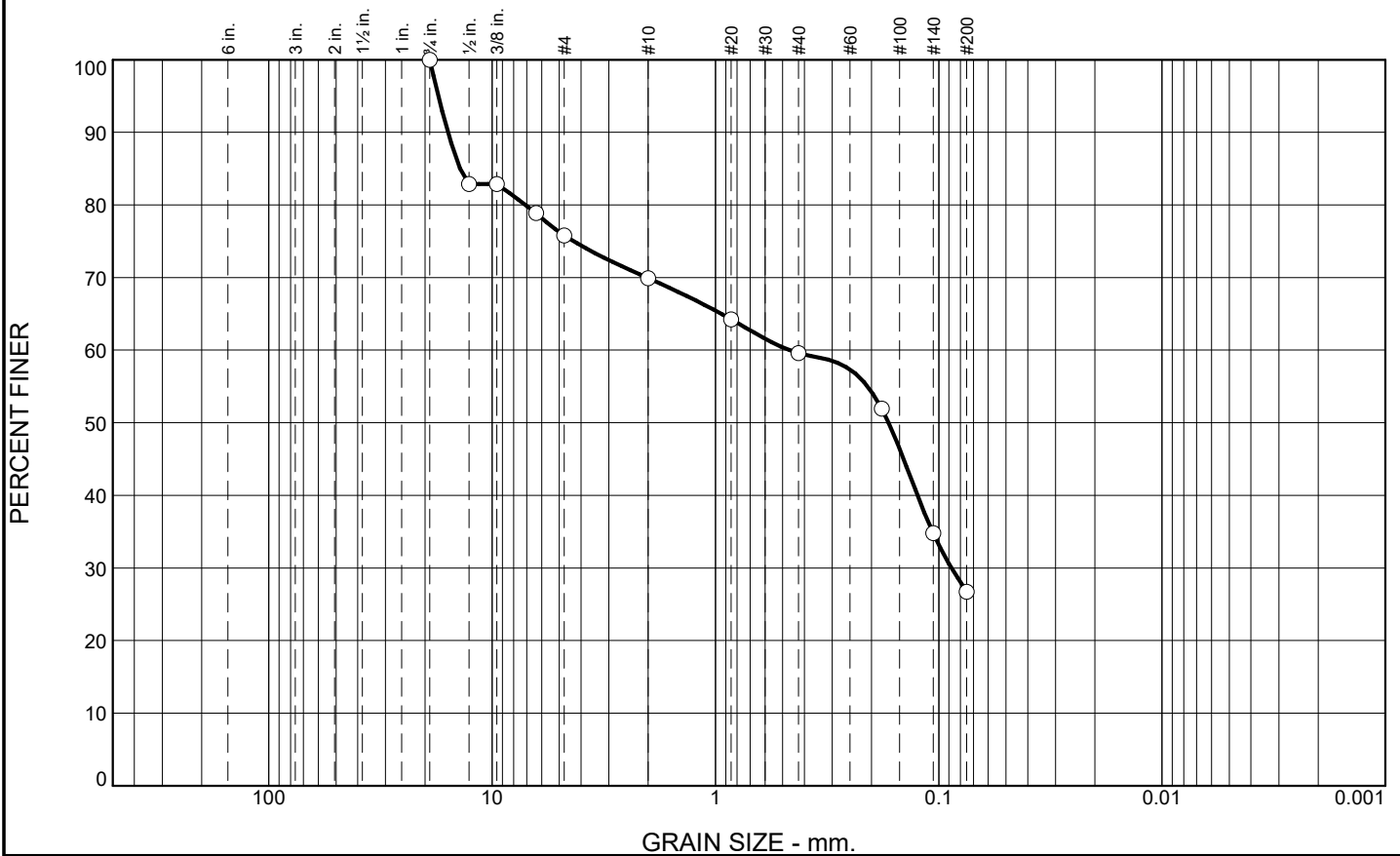
Lab No. 17817-10

Tested By: CAG/AFH

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	24.2	5.9	10.3	32.9	26.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	82.9		
3/8"	82.9		
1/4"	78.9		
#4	75.8		
#10	69.9		
#20	64.2		
#40	59.6		
#80	51.9		
#140	34.8		
#200	26.7		

* (no specification provided)

<u>Soil Description</u>		
silty sand with gravel		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 15.7680	D ₈₅ = 13.9032	D ₆₀ = 0.4655
D ₅₀ = 0.1678	D ₃₀ = 0.0877	D ₁₅ =
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= SM	AASHTO= A-2-4(0)	
<u>Remarks</u>		
Moisture Content: 12.8%		

Location: B-9

Sample Number: S-2

Depth: 5-7'

Date: 01/02/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates

Project: Blaine House Site Security Improvements
Augusta, ME

Project No: 0767-169

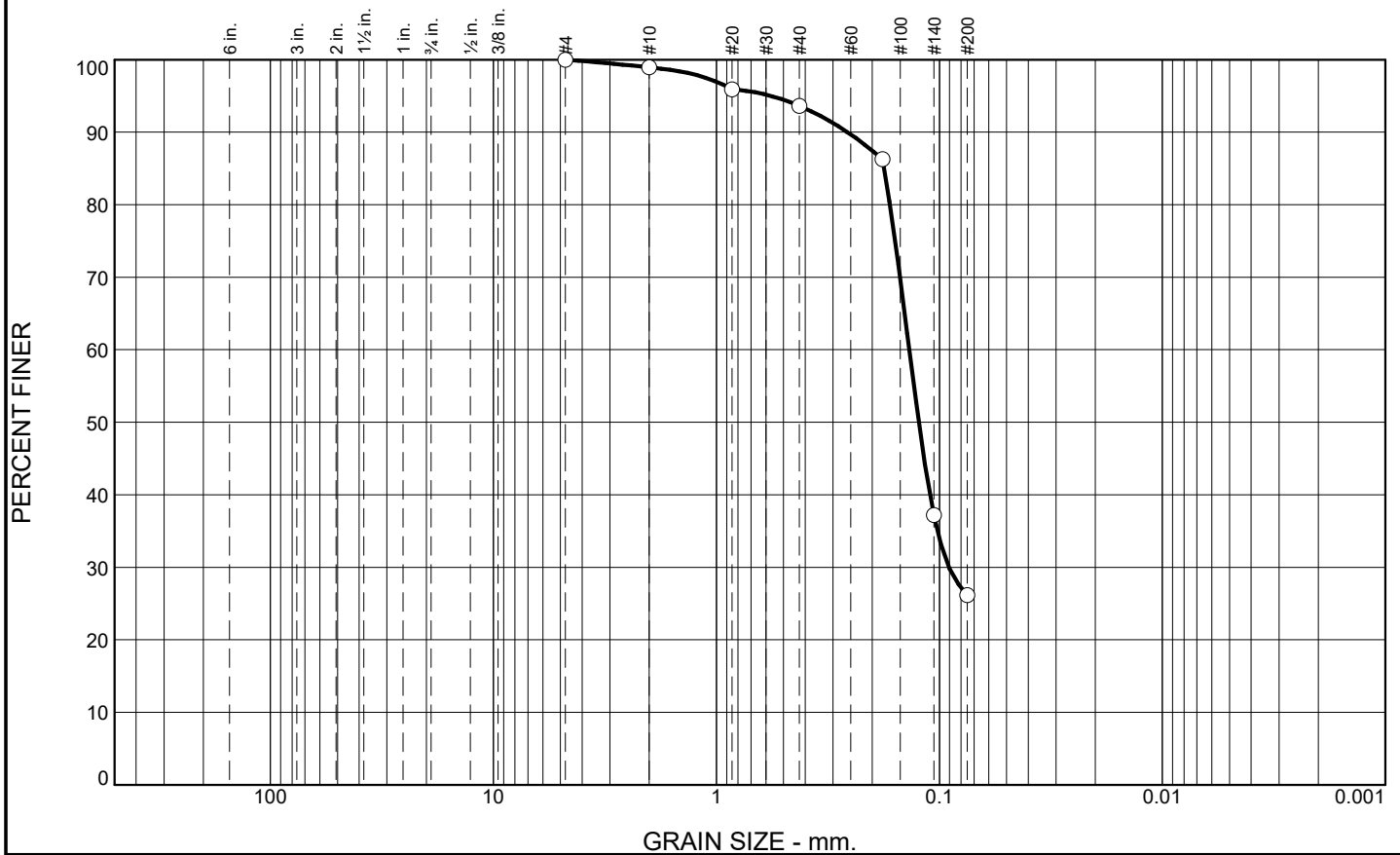
Lab No. 17817-11

Tested By: CAG/AFH

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.1	5.3	67.4	26.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	98.9		
#20	95.9		
#40	93.6		
#80	86.3		
#140	37.2		
#200	26.2		

* (no specification provided)

Soil Description
silty sand

Atterberg Limits
PL= LL= PI=

Coefficients
D₉₀= 0.2588 D₈₅= 0.1769 D₆₀= 0.1365
D₅₀= 0.1237 D₃₀= 0.0906 D₁₅=
D₁₀= C_u= C_c=

Classification
USCS= SM AASHTO= A-2-4(0)

Remarks
Moisture Content: 20.6%

Location: B-12
Sample Number: S-2 Depth: 5-10'

Date: 01/02/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: Oak Point Associates
Project: Blaine House Site Security Improvements
Augusta, ME
Project No: 0767-169

Lab No. 17817-12

Tested By: CAG/AFH Checked By: MTG

MTG

SECTION 321216 - ASPHALT PAVING

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. Hot-mix asphalt paving.
 - 2. Cold milling of existing asphalt pavement.
 - 3. Hot-mix asphalt patching.
 - 4. Curbs.
 - 5. Traffic signs.
 - 6. Pavement marking paint.
 - 7. Detectable warning mats.

- B. Related Requirements:

- 1. Section 024116 "Structure Demolition" and Section 024119 "Selective Demolition" for demolition and removal of existing asphalt pavement.
 - 2. Section 312000 "Earth Moving" for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.
 - 3. Section 321313 "Concrete Paving" for concrete pavement and for separate concrete curbs, gutters, and driveway aprons.
 - 4. Section 321373 "Concrete Paving Joint Sealants" for joint sealants and fillers at pavement terminations.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
 - a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
 - b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: Include technical data and tested physical and performance properties.
- C. Hot-Mix Asphalt Designs:
 - 1. Certification, by Maine DOT, of approval of each hot-mix asphalt design proposed for the Work.
 - 2. For each hot-mix asphalt design proposed for the Work.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For paving-mix manufacturer and testing agency.
- C. Material Certificates: Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.
 - 1. Aggregates.
 - 2. Asphalt binder.
 - 3. Asphalt cement.
 - 4. Cutback prime coat.
 - 5. Emulsified asphalt prime coat.
 - 6. Tack coat.
- D. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by Maine DOT.
- B. Testing Agency Qualifications: Qualified in accordance with ASTM D3666 for testing indicated.
- C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the Maine Department of Transportation Standard Specifications for Highways and Bridges (MDOT), latest edition, for asphalt paving work.
 - 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 - 1. Prime Coat: Minimum surface temperature of 60 deg F.
 - 2. Tack Coat: Minimum surface temperature of 60 deg F.
 - 3. Asphalt Base Course and Binder Course: Minimum surface temperature of 40 deg F and rising at time of placement.
 - 4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse and Fine Aggregate: MDOT, Subsection 703.07, for 0.3 to 3 (18,000 pound) ESAL's.
- C. Mineral Filler: AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

- A. Asphalt Binder: AASHTO M 320, PG 64-28.
- B. Prime/Tack Coat: AASHTO M 140 emulsified asphalt, or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
- C. Water: Potable.

2.3 AUXILIARY MATERIALS

- A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement as permitted by MDOT, provided performance is equal to hot-mix asphalt paving produced from all new materials.
- B. Sand: AASHTO M 29, Grade No. 2 or No. 3.

2.4 MIXES

- A. Recycled Content of Hot-Mix Asphalt: As permitted by MDOT, Subsection 401.03.
 - 1. Surface Course Limit: Recycled content no more than 15 percent by weight.
- B. Hot-Mix Asphalt: MDOT, Section 401, dense-graded, hot-laid, hot-mix asphalt plant mixes complying with the following requirements:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Provide MDOT approved mixes based on 0.3 to less than 3 million ESAL's and with a history of satisfactory performance in geographical area where Project is located.
2. Binder Course: Grading type 12.5 mm.
3. Surface Course: Grading type 9.5 mm.

2.5 CURBS

- A. Granite Curb: MDOT, Section 712.04, Vertical Granite Curb (Type 1).

2.6 TRAFFIC SIGNS

- A. Provide in conformance with MDOT, Section 645, Sign Type 1, Regulatory and Warning Signs, and the Manual on Uniform Traffic Control Devices, latest edition.

2.7 PAVEMENT-MARKING PAINT

- A. Pavement-Marking Paint: MDOT Section 708.03, 100 percent acrylic type, low VOC, fast drying, waterborne traffic paint.
 1. Color: As indicated.

2.8 DETECTABLE WARNING MATS

- A. Accessibility Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities for tactile warning surfaces.
- B. Cast-In Detectable Warning Mats: Accessible truncated-dome detectable warning resilient mats, UV resistant, manufactured for casting into and adhering to concrete surfaces, with slip-resistant surface treatment on domes, field of mat, and beveled outside edges.
 1. Material: Modified rubber compound, UV resistant.
 2. Color: Safety yellow.
 3. Shapes and Sizes:
 - a. Rectangular panel, 24 by 48 inches.
 4. Dome Spacing and Configuration: Manufacturer's standard compliant spacing pattern.
 5. Mounting: Cast-in concrete and fastened with fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proceed with paving only after unsatisfactory conditions have been corrected.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.2 PREPARATION

- A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
 - 2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 - 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

3.3 COLD MILLING

- A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.
 - 1. Mill to a depth of 1-1/2 inches.
 - 2. Mill to a uniform finished surface free of excessive gouges, grooves, and ridges.
 - 3. Control rate of milling to prevent tearing of existing asphalt course.
 - 4. Repair or replace curbs, driveway aprons, manholes, and other construction damaged during cold milling.
 - 5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
 - 6. Patch surface depressions deeper than 1 inch after milling, before wearing course is laid.
 - 7. Handle milled asphalt material in accordance with approved waste management plan required in Section 017419 "Construction Waste Management and Disposal."
 - 8. Keep milled pavement surface free of loose material and dust.
 - 9. Do not allow milled materials to accumulate on-site.

3.4 PATCHING

- A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.
- B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal./sq. yd..
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Placing Two-Course Patch Material: Partially fill excavated pavements with hot-mix asphalt base course mix and, while still hot, compact. Cover asphalt base course with compacted layer of hot-mix asphalt surface course, finished flush with adjacent surfaces.

3.5 SURFACE PREPARATION

- A. Ensure that prepared subgrade has been proof-rolled and is ready to receive paving. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.
- B. Emulsified Asphalt Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.10 to 0.30 gal./sq. yd. per inch depth. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.
 - 1. Protect primed substrate from damage until ready to receive paving.
- C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.6 HOT-MIX ASPHALT PLACEMENT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 - 1. Place hot-mix asphalt base course and binder course in number of lifts and thicknesses indicated.
 - 2. Place hot-mix asphalt surface course in single lift.
 - 3. Spread mix at a minimum temperature of 250 deg F.
 - 4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
 - 5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
 - 1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
 - 2. Complete a section of asphalt base course and binder course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.7 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
 - 1. Clean contact surfaces and apply tack coat to joints.
 - 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
 - 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
 - 4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method in accordance with AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."
 - 5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
 - 6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.8 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
 - 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
 - 1. Average Density, Rice Test Method: 92 percent of reference maximum theoretical density in accordance with ASTM D2041/D2041M, but not less than 90 percent or greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.9 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:
 - 1. Base Course and Binder Course: Plus or minus 1/2 inch.
 - 2. Surface Course: Plus 1/4 inch, no minus.
- B. Pavement Surface Smoothness: Compact each course to produce surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
 - 1. Base Course and Binder Course: 1/4 inch.
 - 2. Surface Course: 1/8 inch.
 - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.10 CURB INSTALLATION

- A. Granite Curbs: Install according to MDOT, Section 609.03, unless indicated otherwise.

3.11 SIGN INSTALLATION

- A. Install according to MDOT Standard Specifications, Section 645.

3.12 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Owner.
- B. Allow paving to age for the amount of time recommended by the marking manufacturer before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply marking paint in accordance with Maine Department of Transportation Standard Specifications, Section 627.

3.13 DETECTABLE WARNING MATS INSTALLATION

- A. General: Prepare substrate and install tactile warning surfacing according to manufacturer's written instructions unless otherwise indicated.
- B. Lay out detectable warning mats and mark concrete at edges of mats.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Set mat in place. Firmly seat mat in concrete, eliminating air pockets and establishing full contact with substrate. If necessary, temporarily apply weight to mat to ensure full contact with concrete.
- D. Install anchor devices through face of mat and into pavement using anchors located as recommended by manufacturer. Set heads of anchors flush with mat surface.
- E. Mask mat perimeter and adjacent concrete, and apply sealant in continuous bead around perimeter of mat.
- F. Remove masking, excess sealant, and soil from exposed surfaces of detectable warning mat and surrounding concrete pavement using cleaning agents recommended in writing by manufacturer.
- G. Protect installed mat from traffic until concrete has set.

3.14 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined in accordance with ASTM D3549/D3549M.
- C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- D. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.15 WASTE HANDLING

- A. General: Handle asphalt-paving waste in accordance with approved waste management plan required in Section 017419 "Construction Waste Management and Disposal."

END OF SECTION

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes concrete paving including the following:
 - 1. Walks.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for general building applications of concrete.
 - 2. Section 321216 "Asphalt Paving" for detectable warning mats.
 - 3. Section 321373 "Concrete Paving Joint Sealants" for joint sealants in expansion and contraction joints within concrete paving and in joints between concrete paving and asphalt paving or adjacent construction.

1.2 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to concrete paving, including but not limited to, the following:
 - a. Concrete mixture design.
 - b. Quality control of concrete materials and concrete paving construction practices.
 - 2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete paving Subcontractor.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.
- C. Material Certificates: For the following, from manufacturer:
 - 1. Cementitious materials.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Fiber reinforcement.
 - 4. Admixtures.
 - 5. Curing compounds.
 - 6. Applied finish materials.
 - 7. Bonding agent or epoxy adhesive.
 - 8. Joint fillers.
- D. Material Test Reports: For each of the following:
 - 1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.
- E. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- B. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests must be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship.
2. Build mockups of concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Architect and not less than 96 inches by 60 inches.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

1.8 FIELD CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 2. Do not use frozen materials or materials containing ice or snow.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. Epoxy-Coated Welded-Wire Reinforcement: ASTM A884/A884M, Class A, plain steel.
- B. Epoxy-Coated Reinforcing Bars: ASTM A775/A775M or ASTM A934/A934M; with ASTM A615/A615M, Grade 60 deformed bars.
- C. Epoxy-Coated-Steel Wire: ASTM A884/A884M, Class A; coated, **[plain]** **[deformed]**.
- D. Epoxy-Coated, Joint Dowel Bars: ASTM A775/A775M; with ASTM A615/A615M, Grade 60 plain-steel bars.
- E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
- F. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

2.4 CONCRETE MATERIALS

- A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Portland Cement: ASTM C150/C150M, gray portland cement Type I/II.
 2. Fly Ash: ASTM C618, Class C or Class F.
 3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
 4. Blended Hydraulic Cement: ASTM C595/C595M, Type IS, portland blast-furnace slag, Type IP, portland-pozzolan, Type IL, Portland-limestone, or Type IT, ternary blended cement.
- B. Normal-Weight Aggregates: ASTM C33/C33M, Class 4S or Class 4M, uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.
1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Air-Entraining Admixture: ASTM C260/C260M.
- D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 2. Retarding Admixture: ASTM C494/C494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
- E. Water: Potable and complying with ASTM C94/C94M.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry or cotton mats.
- B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
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. Bon Tool Co.
 - b. Brickform; a division of Solomon Colors.
 - c. ChemMasters, Inc.
 - d. Dayton Superior Corporation.
 - e. Euclid Chemical Company (The); a subsidiary of RPM International, Inc.
 - f. Kaufman Products, Inc.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- g. [Lambert Corporation.](#)
- h. [Laticrete International, Inc.](#)
- i. [Master Builders Solutions, brand of MBCC Group, a Sika company.](#)
- j. [Metalcrete Industries.](#)
- k. [Nox-Crete Products Group.](#)
- l. [Sika Corporation.](#)
- m. [SpecChem, LLC.](#)
- n. [TK Products Construction Coatings, a Fenix Group SPC Company.](#)
- o. [Vexcon Chemicals Inc.](#)
- p. [W. R. Meadows, Inc.](#)

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.

- 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. [Anti-Hydro International, Inc.](#)
- b. [ChemMasters, Inc.](#)
- c. [Dayton Superior Corporation.](#)
- d. [Euclid Chemical Company \(The\); a subsidiary of RPM International, Inc.](#)
- e. [Kaufman Products, Inc.](#)
- f. [Lambert Corporation.](#)
- g. [Laticrete International, Inc.](#)
- h. [Nox-Crete Products Group.](#)
- i. [Right Pointe.](#)
- j. [SpecChem, LLC.](#)
- k. [TK Products Construction Coatings, a Fenix Group SPC Company.](#)
- l. [Unitex; a Brand of Dayton Superior Corporation.](#)
- m. [Vexcon Chemicals Inc.](#)
- n. [W. R. Meadows, Inc.](#)

2.6 RELATED MATERIALS

- A. Joint Fillers: ASTM D1751, asphalt-saturated cellulosic fiber, ASTM D1752, cork or self-expanding cork or ASTM D8139, semirigid, closed-cell polypropylene foam in preformed strips.
- B. Bonding Agent: ASTM C1059/C1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy-Bonding Adhesive: ASTM C881/C881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:
 - 1. Types I and II, nonload bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.7 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
 - 2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - 1. Fly Ash or Pozzolan: 25 percent.
 - 2. Slag Cement: 50 percent.
 - 3. Combined Fly Ash or Pozzolan, and Slag Cement: 50 percent, with fly ash or pozzolan not exceeding 25 percent.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
 - 1. Air Content, 3/4-inch Nominal Maximum Aggregate Size: 5-1/2 percent plus or minus 1-1/2 percent.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing admixture high-range, water-reducing admixture plasticizing and retarding admixture in concrete as required for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- F. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd..
- G. Concrete Mixtures: Normal-weight concrete. Exposure Class F1.
 - 1. Compressive Strength (28 Days): 4000 psi.
 - 2. Maximum W/C Ratio at Point of Placement: 0.45.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M and ASTM C1116/C1116M. Furnish batch certificates for each batch discharged and used in the Work.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 INSTALLATION OF STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D3963/D3963M.

3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
 - 1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
 - 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
 - 2. Provide tie bars at sides of paving strips where indicated.
 - 3. Butt Joints: Use epoxy-bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 4. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
 - 1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
 - 2. Extend joint fillers full width and depth of joint.
 - 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
 - 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 - 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 - 6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 3/8-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
 - a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 3/8-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
- B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.
- H. Screed paving surface with a straightedge and strike off.
- I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.9 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
 - 1. Elevation: 3/4 inch.
 - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 - 3. Surface: Gap below 10-feet-long; unleveled straightedge not to exceed 1/2 inch.
 - 4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
 - 5. Lateral Alignment and Spacing of Dowels: 1 inch.
 - 6. Vertical Alignment of Dowels: 1/4 inch.
 - 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
 - 8. Joint Spacing: 3 inches.
 - 9. Contraction Joint Depth: Plus 1/4 inch, no minus.
 - 10. Joint Width: Plus 1/8 inch, no minus.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.
- B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C172/C172M will be performed according to the following requirements:
 - 1. Testing Frequency: Obtain at least one composite sample for each 50 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C231/C231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
 - 5. Compression Test Specimens: ASTM C31/C31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
 - 6. Compressive-Strength Tests: ASTM C39/C39M; test one specimen at seven days and two specimens at 28 days.
 - a. A compressive-strength test to be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results to be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests to contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency will make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Concrete paving will be considered defective if it does not pass tests and inspections.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- I. Prepare test and inspection reports.

3.11 REPAIR AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 321373 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cold-applied joint sealants.
2. Joint-sealant backer materials.
3. Primers.

B. Related Requirements:

1. Section 079200 "Joint Sealants" for sealing nontraffic and traffic joints in locations not specified in this Section.
2. Section 321313 "Concrete Paving" for constructing joints in concrete paving.

1.2 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Concrete pavement joint sealants.
2. Joint-sealant backer materials.

C. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of joint sealant.

D. Samples for Verification: Actual sample of finished products for each kind and color of joint sealant required.

1. Size: Joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

E. Paving-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.

1.3 QUALITY ASSURANCE

A. Qualifications:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Installers: Entity that employs installers and supervisors who are trained and approved by manufacturer.

1.4 FIELD 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.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain joint sealants from single manufacturer for each sealant type.

2.2 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backer materials, 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.

2.3 COLD-APPLIED JOINT SEALANTS

- A. Single-Component, Nonsag, Silicone Joint Sealant: ASTM D5893/D5893M, Type NS.

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. Crafco Inc.
 - b. Pecora Corporation.
 - c. The Dow Chemical Company.

- B. Single-Component, Self-Leveling, Silicone Joint Sealant: ASTM D5893/D5893M, Type SL.

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. Crafco Inc.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- b. [Pecora Corporation.](#)
 - c. [The Dow Chemical Company.](#)
- C. Multicomponent, Nonsag, Urethane, Elastomeric Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, for Use T.
 - 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. [W. R. Meadows, Inc.](#)
- D. Single Component, Pourable, Urethane, Elastomeric Joint Sealant: ASTM C920, Type S, Grade P, Class 25, for Use T.
 - 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. [W. R. Meadows, Inc.](#)
- E. Multicomponent, Pourable, Urethane, Elastomeric Joint Sealant: ASTM C920, Type M, Grade P, Class 25, for Use T.
 - 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. [Pecora Corporation.](#)

2.4 JOINT-SEALANT BACKER MATERIALS

- A. Joint-Sealant Backer Materials: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by joint-sealant manufacturer, based on field experience and laboratory testing.
- B. Round Backer Rods for Cold- and Hot-Applied Joint Sealants: ASTM D5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- C. Round Backer Rods for Cold-Applied Joint Sealants: ASTM D5249, Type 3, of diameter and density required to control joint-sealant depth and prevent bottom-side adhesion of sealant.
- D. Backer Strips for Cold- and Hot-Applied Joint Sealants: ASTM D5249; Type 2; of thickness and width required to control joint-sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.

2.5 PRIMERS

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints 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: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on 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.

3.3 INSTALLATION OF JOINT SEALANTS

- A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions.
- C. Install joint-sealant backers to support joint 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 joint-sealant backer materials.
 - 2. Do not stretch, twist, puncture, or tear joint-sealant backer materials.
 - 3. Remove absorbent joint-sealant backer materials that have become wet before sealant application and replace them with dry materials.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Install joint sealants immediately following backer material installation, using proven techniques that comply with the following:
 - 1. Place joint sealants so they fully contact 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.
- E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants in accordance with the following requirements 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 joint sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING AND PROTECTION

- A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.
- B. 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 and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

3.5 PAVING-JOINT-SEALANT SCHEDULE

- A. Joints within concrete paving:
 - 1. Joint Location:
 - a. Expansion and isolation joints in concrete paving.
 - b. Contraction joints in concrete paving.
 - c. Other joints as indicated.
 - 2. Joint Sealant: Single-component, self-leveling, silicone joint sealant, multicomponent, nonsag, urethane, elastomeric joint sealant, single component, pourable, urethane, elastomeric joint sealant, or multicomponent, pourable, urethane, elastomeric joint sealant.
 - 3. Joint-Sealant Color: Manufacturer's standard to match color of concrete.

END OF SECTION

SECTION 323119 - DECORATIVE METAL FENCES AND GATES

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. Decorative steel fences.
 - 2. Swing gates.
 - 3. Gate operators, including controls.

- B. Related Requirements:

- 1. Division 31 for site removals and earthwork.
 - 2. Section 033000 "Cast-in-Place Concrete" for concrete bases for gate operators, drives, and controls and post concrete fill.
 - 3. Section 087111 "Door Hardware" for door hardware.
 - 4. Section 281500 "Integrated Access Control Hardware Devices" for access control devices installed at gates and provided as part of a security system.
 - 5. Division 26 Sections for electrical service and connections for system disconnect switches and powered devices including, but not limited to, motor operators, controls, and limit switches.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
- C. Shop Drawings: For fencing and gates.
 - 1. Submit shop drawings showing location of fence and gates, including each post, details of post installation, hardware, hinges, and accessories. Show sizes and thicknesses of all members, types of materials, methods of connection and assembly, complete dimensions,

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- clearances, anchorage, relationship to surrounding work, and other pertinent details of fabrication and installation.
- 2. Gate Operator: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.
- 3. Wiring Diagrams: Include diagrams for power, signal, and control wiring.
- D. Samples for Verification: Submit samples for each profile and pattern of fabricated metal and for each type of metal finish required, prepared on metal of same thickness and alloy indicated for the Work. Include samples of the following:
 - 1. Post cap including 12 inch long section of post.
 - 2. Full-size sample of fence, 2 feet wide by full height.
 - 3. Gate hardware including hinges and latch.
- E. Qualification Data: Submit qualification data for fabricator.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Field quality-control reports.
- C. Product Test Reports: For decorative metallic-coated-steel tubular picket fences, including finish, indicating compliance with referenced standard and other specified requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Maintenance Data: For gate operators to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Arrange for installation of ornamental metal fences specified in this Section by the same firm that fabricated it.
- B. Fabricator Qualifications: A firm experienced in producing ornamental metal fences and gates similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. UL Standard: Provide gate operators that comply with UL 325.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code-Steel."
- F. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
 - 1. Include one section of fence complying with requirements.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Wind Loading:
 - 1. Fence Height: 0 to 20 feet.
 - 2. Wind Exposure Category: B.
 - 3. Design Wind Speed: 110.
- B. Lightning-Protection System: Maximum grounding-resistance value of 25 ohms under normal dry conditions.

2.2 DECORATIVE STEEL FENCES

- A. Decorative Steel Fences: Fences made from steel bars and shapes.
 - 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. Cassidy Bros. Forge, Inc., U.S. Route 1, Rowley, MA 01969 (telephone: 978-948-7303).
- B. Posts: Square steel tubing.
 - 1. Line Posts: 3 by 3 inches with 3/16-inch wall thickness.
 - 2. End and Corner Posts: 3 by 3 inches with 3/16-inch wall thickness.
 - 3. Pedestrian Swing Gate Posts: 3 by 3 inches with 1/4-inch wall thickness.
 - 4. Vehicle Swing Gate Posts: 6 by 6 inches with 1/4-inch wall thickness.
- C. Post Caps:
 - 1. Basis-of-Design: Pinecone Finial 651-2 by Architectural Iron Designs, Inc., Round Brook, NJ 08805, 908-757-2323.
- D. Horizontal Rails:
 - 1. Steel Bars: Steel bars 2-inch by 1/4-inch.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Pickets: 3/4-inch-square solid steel bars.
 - 1. Extend pickets beyond top rail as indicated and cap with metal spear point finial as indicated on Drawings.
 - 2. Picket Spacing: 4 inches clear, maximum.
- F. Fabrication: Assemble fences into sections by welding pickets to rails.
 - 1. Fabricate sections with clips welded to rails for field fastening to posts.
 - 2. Drill posts and clips for fasteners before finishing to maximum extent possible.
- G. Fabrication: Fabricate bar grating infill into sections of size indicated.
 - 1. Fabricate rails with clips welded to rails for field fastening to posts.
 - 2. Drill posts, clips, and bar grating for fasteners before finishing to maximum extent possible.
- H. Finish exposed welds to comply with NOMMA Guideline 1, Finish #3 - partially dressed weld with splatter removed.

2.3 SWING GATES

- A. Gate Configuration: Single leaf or double leaf as indicated.
- B. Gate Frame Height: As indicated.
- C. Gate Opening Width: As indicated.
- D. Automated vehicular gates shall comply with ASTM F2200, Class II.
- E. Steel Frames and Bracing: Fabricate members from steel tubing 1-1/2 by 3 inches with 3/16-inch wall thickness.
- F. Frame Corner Construction: Welded and 5/16-inch-diameter, adjustable truss rods for panels 5 feet wide or wider.
- G. Picket Size, Configuration, and Spacing: Comply with requirements for adjacent fence.
- H. Hardware: Latches permitting operation from both sides of gate, hinges, and keepers for each gate leaf more than 5 feet wide. Provide center gate stops and cane bolts for pairs of gates.
- I. Hinges: BHMA A156.1, Grade 1, suitable for exterior use.
 - 1. Function: 39 - Full surface, triple weight, antifriction bearing.
 - 2. Material: Wrought steel, forged steel, cast steel, or malleable iron; galvanized.
- J. Cane Bolts: Provide for inactive leaf of pairs of gates. Fabricated from 3/4-inch-diameter, round steel bars, hot-dip galvanized after fabrication. Finish to match gates. Provide galvanized-steel pipe strikes to receive cane bolts in open positions.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- K. Finish exposed welds to comply with NOMMA Guideline 1, Finish #3 - partially dressed weld with splatter removed.

2.4 GATE OPERATORS

A. Gate Operators:

- 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. Amazing Gates of America LLC.
- b. AutoGate, Inc.
- c. Begley Automated Gate Systems.
- d. Bryan Systems, Inc.
- e. CAME Americas Automation LLC.
- f. Chamberlain Group, Inc. (The).
- g. DoorKing, Inc.
- h. Eagle Access Control Systems, Inc.
- i. FAAC USA.
- j. Gates That Open, LLC.
- k. Hy-Security Gate, Inc.; Nice North America; Nice group.
- l. Nice USA; Nice North America; Nice group.
- m. TORXUN Inc.
- n. Tymetal Corp.; The Fort Miller Group, Inc.
- o. USAutomatic Inc.
- p. Viking Access Systems LLC; FAAC International Inc.; FAAC SpA.

- B. Provide factory-assembled automatic operating system designed for gate size, type, weight, and operation frequency. Provide operation control system with characteristics suitable for Project conditions, with remote-control stations, safety devices, and weatherproof enclosures; coordinate electrical requirements with building electrical system.

- 1. Provide operator designed so motor may be removed without disturbing limit-switch adjustment and without affecting auxiliary emergency operator.
- 2. Provide operator with UL approval.
- 3. Provide electronic components with built-in troubleshooting diagnostic feature.
- 4. Provide unit designed and wired for both right-hand/left-hand opening, permitting universal installation.
- 5. Basis-of-Design: FAAC Model 400C BAC with Arctic package.

- C. Comply with NFPA 70.

- D. UL Standard: Manufacturer and label gate operators to comply with UL 325.

- E. Emergency Access Requirements: Comply with requirements of authorities having jurisdiction for automatic gate operators on gates that must provide emergency access.

- F. Motor Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, within installed environment, with indicated operating sequence, and without exceeding nameplate rating or considering service factor. Comply with NEMA MG 1 and the following:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Voltage: 120 V or NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected.
 2. Horsepower: Not less than 1.
 3. Enclosure: Manufacturer's standard.
 4. Duty: Continuous duty at ambient temperature of 105 deg F and at altitude of 3300 feet above sea level.
 5. Service Factor: 1.15 for open dripproof motors; 1.0 for totally enclosed motors.
 6. Phase: One.
- G. Gate Operators: Gate mounted and as follows:
1. Hydraulic Swing Gate Operators:
 - a. Duty: Heavy duty, commercial/industrial.
 - b. Gate Speed: 90 degrees opening time 18 seconds.
 - c. Maximum Gate Weight: 1300 lb.
 - d. Frequency of Use: 25 cycles per hour.
 - e. Operating Type: Hydraulic swing gate.
 - f. Hydraulic Fluid: Of viscosity required for gate operation at ambient temperature range for Project.
 - g. Locking: Hydraulic in both directions.
 - h. Heater: Manufacturer's standard track and roller heater with thermostatic control.
- H. Vehicle Loop Detector: System includes automatic closing timer with adjustable time delay, timer cutoff switch, and loop detector designed to hold gate open until traffic clears. System includes electronic detector with adjustable detection patterns, adjustable sensitivity and frequency settings, and panel indicator light designed to detect presence or transit of a vehicle over an embedded loop of wire and to emit a signal activating the gate operator. System includes number of loops consisting of multiple strands of wire, number of turns, loop size, and method of placement, as recommended in writing by detection system manufacturer for function indicated, at location indicated on Drawings.
- I. Vehicle Presence Detector: System includes automatic closing timer with adjustable time delay, timer cutoff switch, and presence detector designed to hold gate open until traffic clears. System includes retroreflective or emitter/receiver detector with adjustable detection zone pattern and sensitivity, designed to detect the presence or transit of a vehicle in gate pathway when infrared beam in zone pattern is interrupted, and to emit a signal activating the gate operator.
- J. Obstruction Detection Devices: Provide each motorized gate with automatic safety sensor(s). Activation of sensor(s) causes operator to immediately function as follows:
1. Action: Reverse gate in both opening and closing cycles, and hold until clear of obstruction.
 2. Internal Sensor: Built-in torque or current monitor senses gate is obstructed.
 3. Photoelectric/Infrared Sensor System: Designed to detect an obstruction in gate's path when infrared beam in the zone pattern is interrupted.
- K. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop gate at fully retracted and fully extended positions.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- L. Emergency Release Mechanism: Quick-disconnect release of operator drive system of the following type, permitting manual operation if operator fails. Design system so control-circuit power is disconnected during manual operation.
 - 1. Type: Mechanical device, key, or crank-activated release.
- M. Operating Features:
 - 1. Digital Microprocessor Control: Electronic programmable means for setting, changing, and adjusting control features with capability for monitoring and auditing gate activity. Provide unit that is isolated from voltage spikes and surges.
 - 2. System Integration: With controlling circuit board capable of accepting any type of input from external devices.
 - 3. Master/Slave Capability: Control stations designed and wired for gate pair operation.
 - 4. Automatic Closing Timer: With adjustable time delay before closing and timer cutoff switch.
 - 5. Open Override Circuit: Designed to override closing commands.
 - 6. Reversal Time Delay: Designed to protect gate system from shock load on reversal in both directions.
 - 7. Maximum Run Timer: Designed to prevent damage to gate system by shutting down system if normal time to open gate is exceeded.
 - 8. Clock Timer: 24-hour, seven-day programmable for regular events.
- N. Accessories:
 - 1. Warning Module: Audio Visual, strobe-light alarm sounding three to five seconds in advance of gate operation and continuing until gate stops moving; compliant with the United States Access Board's ADA-ABA Accessibility Guidelines.
 - 2. Battery Backup System: Battery-powered drive and access-control system, independent of primary drive system.
 - a. Fail-Safe: Gate opens and remains open until power is restored.
 - b. Fail-Secure: Gate cycles on battery power, then fail-safe when battery is discharged.
 - 3. External electric-powered magnetic lock with delay timer allowing time for lock to release before gate operates.
 - 4. Instructional, Safety, and Warning Labels and Signs: According to UL 325 Manufacturer's standard for components and features specified.

2.5 STEEL AND IRON

- A. Plates, Shapes, and Bars: ASTM A36/A36M.
- B. Bars (Pickets): Hot-rolled, carbon steel complying with ASTM A29/A29M, Grade 1010.
- C. Tubing: ASTM A500/A500M, cold-formed steel tubing.
- D. Bar Grating: NAAMM MBG 531.
 - 1. Bars: Hot-rolled steel strip, ASTM A1011/A1011M, Commercial Steel, Type B.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Wire Rods: ASTM A510/A510M.

E. Uncoated Steel Sheet: Hot-rolled steel sheet, ASTM A1011/A1011M, Structural Steel, Grade 45 or cold-rolled steel sheet, ASTM A1008/A1008M, Structural Steel, Grade 50.

F. Castings: Either gray or malleable iron unless otherwise indicated.

1. Gray Iron: ASTM A48/A48M, Class 30.

2. Malleable Iron: ASTM A47/A47M.

G. Stainless Steel:

1. Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 304.

2. Bars and Shapes: ASTM A 276, Type 304.

H. Fasteners: Type 304 stainless-steel. Select fasteners for type, grade, and class required.

I. Exterior Erosion-Resistant Anchoring Cement: Super Por-Rok by Minwax Construction Products, Montvale, NJ.

2.6 COATING MATERIALS

A. Primer: Intertuf (modified epoxy, high build, high solids) primer by International Coatings Ltd.

B. Topcoat: Interthane 990HS (polyurethane) by International Coating Ltd.

2.7 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Section 033000 "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 4000 psi.

C. Nonshrink Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M and specifically recommended by manufacturer for exterior applications.

2.8 GROUNDING MATERIALS

A. Comply with requirements of Section 260526 "Grounding and Bonding for Electrical Systems."

B. Grounding Conductors: Size as indicated on Drawings. Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.

1. Material above Finished Grade: Copper.

2. Material on or below Finished Grade: Copper.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Bonding Jumpers: Braided copper tape, 1-5/8 inch wide and 1/16 inch thick, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.

C. Grounding Connectors and Grounding Rods: Comply with UL 467.

1. Connectors for Below-Grade Use: Exothermic-welded type.
2. Grounding Rods: Copper-clad steel.
 - a. Size: 5/8 by 96 inches.

2.9 STEEL FINISHES

A. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below and SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning" for surface preparation specifications and environmental exposure conditions of installed metal fabrications.

1. Remove all loose scale by blasting in accordance with SSPC-SP6. Perform blasting with an air compressor having a minimum capacity of 200 C.F.M. and an air dryer with a minimum capacity of 250 C.F.M. Use cast steel grit blast media G50 in accordance with SAE J1933.
2. Apply coating system within four hours of blasting, in a suitable designed spray booth capable of controlling environmental conditions. Do not apply paint when the air, steel or paint materials are below 50 degrees F, or the humidity is above 80 percent.
 - a. Do not apply paint when the relative humidity exceeds 80 percent or when the temperature is less than 5 degrees above the dew point. The temperature of the material to be coated must be within 5 degrees of the ambient temperature with minimum material temperature to be above 50 degrees. Monitor and record temperature and relative humidity on a daily basis during each application.

B. Shop Priming: Shop apply epoxy primer, *within four hours of blasting*, to uncoated surfaces of metal at 4.0 to 6.0 mils DFT. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Prime surfaces prior to application of finish coat. Surfaces to be painted shall be clean and free of oil and dirt. Fill cracks and crevices at scrolls, circles, and at sandwiched components, with Dymonic polyurethane caulking after priming has cured and prior to application of the finish paint coat.
2. Stripe paint corners, crevices, bolts, welds, and sharp edges.

C. Finish Coat: Shop apply two finish coats of polyurethane applied at 2.0 to 3.0 mils DFT.

1. Color: Black, high gloss.

D. Provide finished product free of runs, sags, pinholes and holidays. Allow paint to fully cure before installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.
- B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.
 - 1. Construction layout and field engineering are specified in Section 017300 "Execution."

3.3 DECORATIVE FENCE INSTALLATION

- A. Install ornamental metal fences and gates in accordance with approved shop drawings. Do not begin installation and erection before final grading is established.
- B. Install fences according to manufacturer's written instructions.
- C. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches plus 3 inches for each foot or fraction of a foot that fence height exceeds 4 feet.
- D. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts and sleeves and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Concealed Concrete: Top 2 inches below grade to allow covering with surface material. Slope top surface of concrete to drain water away from post.
 - 3. Posts Set in Concrete: Extend post to within 6 inches of specified excavation depth, but not closer than 3 inches to bottom of concrete.
 - 4. Posts Set into Voids in Concrete: Form or core drill holes not less than 3/4 inch larger than outside diagonal dimension of post.
 - a. Extend posts at least 8 inches into concrete.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- b. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink grout, mixed and placed to comply with grout manufacturer's written instructions. Finish and slope top surface of grout to drain water away from post.
- 5. Space posts uniformly at 7 feet o.c. maximum.
- E. Setting Posts in Stone of Existing Concrete:
 - 1. Core drill holes 9 inches deep.
 - 2. Clean holes of loose material, insert posts, and fill space around post with exterior erosion-resistant anchoring cement, mixed and placed to comply with manufacturer's written instructions.
 - 3. Leave anchorage joint exposed; wipe off surplus anchoring material; and leave 1/8 inch buildup, sloped away from post.

3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.5 GATE OPERATOR INSTALLATION

- A. General: Install gate operators according to manufacturer's written instructions, aligned and true to fence line and grade.
- B. Excavation for Support Posts, Pedestals, and Concrete Bases: Hand-excavate holes for bases in firm, undisturbed soil to dimensions and depths and at locations as required by gate operator component manufacturer's written instructions and as indicated.
- C. Concrete Bases: Cast-in-place or precast concrete, depth not less than 12 inches, dimensioned and reinforced according to gate operator component manufacturer's written instructions and as indicated on Drawings.
- D. Vehicle Loop Detector System: Cut grooves in pavement and bury and seal wire loop according to manufacturer's written instructions. Connect to equipment operated by detector.
- E. Comply with NFPA 70 and manufacturer's written instructions for grounding of electric-powered motors, controls, and other devices.

3.6 GROUNDING AND BONDING

- A. Comply with Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Fence Grounding: Install at maximum intervals of 1500 feet except as follows:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Fences within 100 Feet of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.
 - a. Gates and Other Fence Openings: Ground fence on each side of opening.
 - 1) Bond metal gates to gate posts.
 - 2) Bond across openings, with and without gates, except at openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches below finished grade.
- C. Protection at Crossings of Overhead Electrical Power Lines: Ground fence at location of crossing and at a maximum distance of 150 feet on each side of crossing.
- D. Fences Enclosing Electrical Power Distribution Equipment: Ground as required by IEEE C2 unless otherwise indicated.
- E. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.
- F. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.
- G. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.
 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
 2. Make connections with clean, bare metal at points of contact.
 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- H. Bonding to Lightning-Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning-protection down conductor or lightning-protection grounding conductor, complying with NFPA 780.

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.
 1. Grounding-Resistance Tests: Subject completed grounding system to a megger test at each grounding location. Measure grounding resistance not less than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural grounding resistance. Perform tests by two-point method according to IEEE 81.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Excessive Grounding Resistance: If resistance to grounding exceeds specified value, notify Architect promptly. Include recommendations for reducing grounding resistance and a proposal to accomplish recommended work.
3. Report: Prepare test reports of grounding resistance at each test location certified by a testing agency. Include observations of weather and other phenomena that may affect test results.

3.8 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Automatic Gate Operators: Energize circuits to electrical equipment and devices. Adjust operators, controls, safety devices, alarms, and limit switches.
 1. Hydraulic Operators: Purge operating system, adjust pressure and fluid levels, and check for leaks.
 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 3. Test and adjust controls, alarms, and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Lubricate hardware, gate operators, and other moving parts.

3.9 CLEANING AND PROTECTION

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work.

3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain gates.

END OF SECTION

SECTION 323300 - SITE FURNISHINGS

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. Bollards.

- B. Related Requirements:

- 1. Section 033000 "Cast-in-Place Concrete" for installing pipe sleeves cast in concrete footings.
 - 2. Section 312000 "Earth Moving" for excavation for installing concrete footings.

1.3 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
- C. Samples: For each exposed product and for each color and texture specified.

1.4 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Maintenance Data: For site furnishings to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 BOLLARDS

- A. Manufacturers: The Basis-of-Design product is the "Vestil BOL-CI-40-8 Cast Iron Bollard" by HoF Equipment Company. Subject to compliance with requirements, provide products by one of the following:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. [1-800-Bollards.](#)
2. CAME Americas Automation LLC.
3. [Canterbury Design.](#)
4. [Columbia Cascade Company.](#)
5. [Dero; a PlayCore company.](#)
6. [DuMor Inc.](#)
7. HoF Equipment Company (888.990.1150), [www.hofequipment.com.](http://www.hofequipment.com)
8. [Huntco Supply, LLC.](#)
9. [L.A. Steelcraft, a brand of Americana Outdoor.](#)
10. [Maglin Site Furniture Inc.](#)
11. [Neenah Foundry Company.](#)
12. Petersen Manufacturing Co. Inc.
13. Reliance Foundry Co. Ltd.
14. [Thomas Steele; Graber Manufacturing, Inc.](#)
15. [Tournesol Siteworks LLC.](#)
16. [Urban Accessories, Inc.](#)
17. [Victor Stanley, Inc.](#)
18. [brp by bison.](#)

B. Bollard Construction:

1. Cast Iron OD: Not less than 8 inches.
 - a. Cast Iron: As indicated by manufacturer.
2. Style: Vestil BOL-CI-40-8 Cast Iron Bollard.
3. Overall Height: 40 inches.
4. Overall Width: As indicated.
5. Overall Depth: As indicated.
6. Installation Method: Cast in concrete.

C. Cast-Iron Finish: Color powder coated.

1. Color: Black.

2.2 MATERIALS

A. Steel and Iron: Free of surface blemishes and complying with the following:

1. Malleable-Iron Castings: ASTM A47/A47M, grade as recommended by fabricator for type of use intended.
2. Gray-Iron Castings: ASTM A48/A48M, Class 200.

2.3 FABRICATION

A. Metal Components: Factory assembled.

B. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Factory Assembly: Factory assemble components to eliminate field assembly.

2.4 GENERAL FINISH REQUIREMENTS

- A. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.5 IRON FINISHES

- A. Powder-Coat Finish: Manufacturer's standard polyester powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.
- D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

END OF SECTION

SECTION 329115 - SOIL PREPARATION (PERFORMANCE SPECIFICATION)

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 planting soils specified according to performance requirements of the mixes.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for topsoil stripping and stockpiling.
 - 2. Section 329200 "Turf and Grasses" for placing planting soil for turf and grasses.
 - 3. Section 329300 "Plants" for placing planting soil for plantings.

1.3 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- B. CEC: Cation exchange capacity.
- C. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- D. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- E. Imported Soil: Soil that is transported to Project site for use.
- F. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- G. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- H. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- I. SSSA: Soil Science Society of America.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- J. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- K. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- L. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- M. USCC: U.S. Composting Council.

1.4 ACTION SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Product Data: For each type of product.
 - 1. Include recommendations for application and use.
 - 2. Include test data substantiating that products comply with requirements.
 - 3. Include sieve analyses for aggregate materials.
 - 4. Material Certificates: For each type of imported soil and soil amendment and fertilizer before delivery to the site, according to the following:
 - a. Manufacturer's qualified testing agency's certified analysis of standard products.
 - b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
 - c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For each testing agency.
- C. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.
- D. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Laboratories: Subject to compliance with requirements, provide testing by the following:
 - a. Maine Soil Testing Service and Analytical Lab.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on existing, on-site soil and imported soil.
- B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
 1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.8 SOIL-SAMPLING REQUIREMENTS

- A. General: Extract soil samples according to requirements in this article.
- B. Sample Collection and Labeling: Have samples taken and labeled by Contractor under the direction of the testing agency.
 1. Number and Location of Samples: Minimum of eight representative soil samples where directed by Architect for each soil to be used or amended for landscaping purposes.
 2. Procedures and Depth of Samples: According to USDA-NRCS's "Field Book for Describing and Sampling Soils."
 3. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.9 TESTING REQUIREMENTS

- A. General: Perform tests on soil samples according to requirements in this article.
- B. Provide "Soil Health/Quality Package" by Maine Soil Testing Service.
 1. A penetrometer will be required for readings taken at sampling times.
 2. Add soluble salts test.
- C. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
 1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inch depth of soil.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.
- B. Bulk Materials:
 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 3. Do not move or handle materials when they are wet or frozen.
 4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 - PRODUCTS

2.1 PLANTING SOILS SPECIFIED ACCORDING TO PERFORMANCE REQUIREMENTS

- A. Planting-Soil Type: Existing, on-site surface soil, with the duff layer, if any, retained; and stockpiled on-site; modified to produce viable planting soil. Using preconstruction soil analyses and materials specified in other articles of this Section, amend existing, on-site surface soil to become planting soil complying with the following requirements:
 1. Particle Size Distribution by USDA Textures: Classified as sandy loam or loam soil according to USDA textures.
 2. Percentage of Organic Matter: Minimum 6 percent by volume.
 3. Soil Reaction: pH of 6 to 7.
 4. CEC of Total Soil: Minimum 10 meq/100 mL at pH of 7.0.
 5. Soluble-Salt Content: 5 to 10 dS/m measured by electrical conductivity.
- B. Planting-Soil Type: Imported, naturally formed soil from off-site sources and consisting of sandy loam or loam soil according to USDA textures; and modified to produce viable planting soil. Amend imported soil with materials specified in other articles of this Section to become planting soil complying with the following requirements:
 1. Sources: Take imported, unamended soil from sources that are naturally well-drained sites where topsoil occurs at least 4 inches deep, not from bogs, or marshes; and that do not contain undesirable organisms; disease-causing plant pathogens; or obnoxious weeds and invasive plants including, but not limited to, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and brome grass.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2. Additional Properties of Imported Soil before Amending: Minimum of 4 percent organic-matter content, friable, and with sufficient structure to give good tilth and aeration. Clean soil to be of the following:
 - a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
 - b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 8 percent by dry weight of the imported soil.
 - c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 2 inches in any dimension.
3. Percentage of Organic Matter: Minimum 6 percent by volume.
4. Soil Reaction: pH of 6 to 7.
5. CEC of Total Soil: Minimum 10 meq/100 mL at pH of 7.0.
6. Soluble-Salt Content: 5 to 10 dS/m measured by electrical conductivity.

2.2 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
 1. Class: O, with a minimum of 95 percent passing through No. 8 sieve and a minimum of 55 percent passing through a No. 60 sieve.
 2. Form: Provide lime in form of ground mollusk shells.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 sieve.
- E. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C33/C33M.

2.3 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
 1. Reaction: pH of 5.5 to 8.
 2. Soluble-Salt Concentration: Less than 4 dS/m.
 3. Moisture Content: 35 to 55 percent by weight.
 4. Organic-Matter Content: 30 to 60 percent of dry weight.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

5. Particle Size: Minimum of 98 percent passing through a 1-inch sieve.

- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture with 100 percent passing through a 1/2-inch sieve, a pH of 3.4 to 4.8, and a soluble-salt content measured by electrical conductivity of maximum 5 dS/m.
- C. Wood Derivatives: Shredded and composted, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
- D. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

2.4 FERTILIZERS

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.
- B. Chelated Iron: Commercial-grade FeEDDHA for dicots and woody plants, and commercial-grade FeDTPA for ornamental grasses and monocots.

PART 3 - EXECUTION

3.1 GENERAL

- A. Place planting soil and fertilizers according to requirements in other Specification Sections.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.
- C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

- A. Excavation: Excavate soil from designated area(s) to a depth of 6 inches and stockpile until amended.
- B. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
- C. Unsuitable Materials: Clean soil to contain a combined maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Screening: Pass unamended soil through a 2-inch sieve to remove large materials.

3.3 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 6 inches. Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil.
- C. Mixing: Spread unamended soil to total depth of 6 inches, but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
 - 1. Amendments: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
 - a. Mix lime and sulfur with dry soil before mixing fertilizer.
 - b. Mix fertilizer with planting soil no more than seven days before planting.
 - 2. Lifts: Apply and mix unamended soil and amendments in lifts not exceeding 8 inches in loose depth for material compacted by compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- D. Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D698.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.4 BLENDING PLANTING SOIL IN PLACE

- A. General: Mix amendments with in-place, unamended soil to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Preparation: Till unamended, existing soil in planting areas to a minimum depth of 6 inches. Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- C. Mixing: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them into full depth of unamended, in-place soil to produce planting soil.
 - 1. Mix lime and sulfur with dry soil before mixing fertilizer.
 - 2. Mix fertilizer with planting soil no more than seven days before planting.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Compaction: Compact blended planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D698.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests:
 - 1. Performance Testing: For each amended planting-soil type, demonstrating compliance with specified performance requirements. Perform testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
- C. Soil will be considered defective if it does not pass tests.
- D. Prepare test reports.
- E. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

3.6 PROTECTION

- A. Protection Zone: Identify protection zones according to Section 015639 "Temporary Tree and Plant Protection."
- B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Vehicle traffic.
 - 4. Foot traffic.
 - 5. Erection of sheds or structures.
 - 6. Impoundment of water.
 - 7. Excavation or other digging unless otherwise indicated.
- C. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Architect and replace contaminated planting soil with new planting soil.

3.7 CLEANING

- A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
 - 1. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

END OF SECTION

SECTION 329200 - TURF AND GRASSES

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. Seeding.
 - 2. Hydroseeding.
 - 3. Sodding.
 - 4. Turf renovation.

- B. Related Requirements:

- 1. Section 329300 "Plants" for trees, shrubs, ground covers, and other plants as well as border edgings and mow strips.

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329115 "Soil Preparation (Performance Specification)" and drawing designations for planting soils.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Data: For landscape Installer.
- C. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.
- D. Product Certificates: For fertilizers, from manufacturer.
- E. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.5 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
 - 1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or AmericanHort.
 - 2. Experience: Ten years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 4. Pesticide Applicator: State licensed, commercial.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation"

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.8 FIELD CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of planting completion.

1. Spring Planting: 4/30 – 7/15.
2. Fall Planting: 8/15 – 10/1.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species:

1. Quality, Non-State Certified: Seed of grass species as listed below for solar exposure, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
2. Sun and Partial Shade, Cool-Season Grass: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*).
 - b. 30 percent chewings red fescue (*Festuca rubra* variety).
 - c. 10 percent perennial ryegrass (*Lolium perenne*).
 - d. 10 percent redtop (*Agrostis alba*).

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

2.2 TURFGRASS SOD

- A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.
- B. Turfgrass Species, Cool-Season Grass: Sod of grass species as follows, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
 - 1. Sun and Partial Shade: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*).
 - b. 50 percent chewings red fescue (*Festuca rubra* variety).

2.3 FERTILIZERS

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition:
 - a. Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.4 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- C. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.
- D. Asphalt Emulsion: ASTM D977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.5 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329115 "Soil Preparation (Performance Specification)."
- B. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade or blend planting soil in place.
 - 1. Reduce elevation of planting soil to allow for soil thickness of sod.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
 - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 3 to 4 lb/1000 sq. ft.
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
 - 1. Bond straw mulch by spraying with asphalt emulsion at a rate of 10 to 13 gal./1000 sq. ft. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, slow-release fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
 - 2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.6 SODDING

- A. Lay sod within 24 hours of harvesting unless a suitable preservation method is accepted by Architect prior to delivery time. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Lay sod across slopes exceeding 1:3.
 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.7 TURF RENOVATION

- A. Renovate existing turf where indicated.
- B. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
 2. Install new planting soil as required.
- C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
- D. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- E. Mow, dethatch, core aerate, and rake existing turf.
- F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
- I. Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
1. Soil Amendment(s): According to requirements of Section 329115 "Soil Preparation (Performance Specification)."
 2. Initial Fertilizer: Slow-release fertilizer applied according to manufacturer's recommendations.
- J. Apply seed and protect with straw mulch or sod as required for new turf.
- K. Water newly planted areas and keep moist until new turf is established.

3.8 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 - 1. Mow Kentucky bluegrass, annual ryegrass, and chewings red fescue to a height of 1-1/2 to 2 inches.

3.9 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
 - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
 - 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.10 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.11 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

3.12 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
 - 1. Seeded Turf: 60 days from date of Substantial Completion.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season if Owner requires.
 - 2. Sodded Turf: 30 days from date of Substantial Completion.

END OF SECTION

SECTION 329300 - PLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plant materials.
2. Fertilizers.
3. Mulches.
4. Herbicides and pesticides.
5. Tree-stabilization materials.
6. Tree-watering devices.

B. Related Requirements:

1. Section 015639 "Temporary Tree and Plant Protection" for protecting, trimming, pruning, repairing, and replacing existing trees to remain that interfere with, or are affected by, execution of the Work.
2. Section 329200 "Turf and Grasses" for turf (lawn) and meadow planting, hydroseeding, and erosion-control materials.

1.2 COORDINATION

A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.

B. Product Data:

1. Plant materials.
2. Fertilizers.
3. Mulches.
4. Herbicides and pesticides.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

5. Tree-stabilization materials.
6. Tree-watering devices.

C. Product Data Submittals: For each product.

1. Plant Materials: Include quantities, sizes, quality, and verified sources for plant materials.

D. Samples for Verification: Actual sample of finished products for each of the following:

1. Organic Mulch: 1-pint volume of each organic mulch required; typical of the lot of material to be furnished, in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Provide an accurate representation of color, texture, and organic makeup.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Qualification Statements: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
- C. Product Certificates: For each type of manufactured product, from manufacturer, and complying with manufacturer's certified analysis of standard products.
- D. Pesticides and Herbicides: Product label and manufacturer's written application instructions specific to Project.
- E. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Submittals must comply with the requirements of the Construction Contract Clauses, Section 013300 "Submittal Procedures" and the individual Sections specifying the work.
- B. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.
 1. Professional Membership: Member in good standing of either the National Association of Landscape Professionals or AmericanHort.
 2. Experience: 15 years' experience in landscape installation in addition to requirements in Section 014000 "Quality Requirements."

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Installer's Field Supervision: Maintain an experienced full-time supervisor on Project site when work is in progress.
 4. Pesticide Applicator: State licensed, commercial.
- B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.
- C. Measurements: Measure in accordance with ANSI Z60.1. Do not prune to obtain required sizes.
1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.
 2. Other Plants: Measure with stems, petioles, and foliage in their normal position.
- D. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.
- B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, or walkways and pavements; or on existing turf areas or plants.
 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 3. Accompany each delivery of bulk materials with appropriate certificates.
- C. Deliver bare-root stock plants within 24 hours of digging. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting. Transport in covered, temperature-controlled vehicles, and keep plants cool and protected from sun and wind at all times.
- D. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- E. Handle planting stock by root ball.
- F. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.
- G. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
 - 1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.
- H. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.
- I. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
 - 1. Heel-in bare-root stock. Soak roots that are in less than moist condition in water for two hours. Reject plants with dry roots.
 - 2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
 - 3. Do not remove container-grown stock from containers before time of planting.
 - 4. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.
- B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Spring Planting: 4/15 – 7/1.
 - 2. Fall Planting: 8/30 – 10/15.
- C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions in accordance with manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Failures include, but are not limited to, the following:
 - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
 - b. Structural failures, including plantings falling or blowing over.
 - c. Faulty performance of tree stabilization.
 - d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Periods: From date of Substantial Completion.
 - a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
 - b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
 - c. Annuals: Two months.
3. Include the following remedial actions as a minimum:
 - a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
 - b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
 - c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
 - d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

PART 2 - PRODUCTS

2.1 PLANT MATERIALS

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
 1. Trees with damaged, crooked, or multiple leaders; with tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); with crossing trunks; with cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots are unacceptable.
 2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
- B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.
- C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare in accordance with ANSI Z60.1.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- D. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for plant.
- E. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to ensure symmetry in planting.
- F. Annuals and Biennials: Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but are not yet in bloom.

2.2 FERTILIZERS

- A. Granular Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition:
 - a. Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.3 MULCHES

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
 - 1. Type: Ground or shredded bark.
 - 2. Size Range: 3 inches maximum, 1/2 inch minimum.
 - 3. Color: Natural (dark brown).

2.4 HERBICIDES AND PESTICIDES

- A. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- B. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.
- C. Pesticides: Registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended in writing by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

2.5 TREE-STABILIZATION MATERIALS

- A. Trunk-Stabilization Materials:

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
2. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
3. Guys and Tie Wires: ASTM A641/A641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch in diameter.
4. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
5. Guy Cables: Five-strand, 3/16-inch-diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3 inches long, with two 3/8-inch galvanized eyebolts.
6. Flags: Standard surveyor's plastic flagging tape, white, 6 inches long.

2.6 TREE-WATERING DEVICES

- A. Slow-Release Watering Device: Standard product manufactured for drip irrigation of plants and emptying its water contents over an extended time period; manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.
 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. BIO-PLEX.
 - b. Engineered Watering Solutions; PQ Partners, LLC.
 - c. Spectrum Products, Inc.
 2. Color: As selected by Architect from manufacturer's full range.

2.7 MISCELLANEOUS PRODUCTS

- A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix in accordance with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
 3. Suspend planting operations during periods of excessive soil moisture until moisture content reaches acceptable levels to attain required results.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

4. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove soil and contamination as directed by Architect and replace with new planting soil.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.
- D. Lay out plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

3.3 PLANTING AREA ESTABLISHMENT

- A. General: Prepare planting area for soil placement and mix planting soil in accordance with Section 329115 "Soil Preparation (Performance Specification)."
- B. Placing Planting Soil: Place and mix planting soil in-place over exposed subgrade or blend planting soil in place.
- C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 EXCAVATION FOR TREES AND SHRUBS

- A. Planting Pits and Trenches: Excavate circular planting pits.
 1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
 2. Excavate approximately three times as wide as ball diameter for balled and burlapped and container-grown stock.
 3. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
 4. Do not excavate deeper than depth of root ball, measured from the root flare to the bottom of root ball.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

5. If area under the plant was initially dug too deep, add soil to raise it to correct level and thoroughly tamp the added soil to prevent settling.
 6. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
 7. Maintain supervision of excavations during working hours.
 8. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.
- C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

3.5 TREE, SHRUB, AND VINE PLANTING

- A. Inspection: At time of planting, verify that root flare is visible at top of root ball in accordance with ANSI Z60.1. If root flare is not visible, remove soil in a level manner from root ball to where the top-most root emerges from the trunk. After soil removal to expose root flare, verify that root ball still meets size requirements.
- B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- C. Balled and Burlapped Stock: Set each plant plumb and in center of planting pit or trench with root flare 2 inches above adjacent finish grades.
1. Backfill: Planting soil. For trees, use excavated soil for backfill.
 2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 4. Distribute granular fertilizer around each planting pit when pit is approximately one-half filled. Do not place in bottom of the hole.
 - a. Quantity: Two per plant.
 5. Continue backfilling process. Water again after placing and tamping final layer of soil.
- D. Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 2 inches above adjacent finish grades.
1. Backfill: Planting soil. For trees, use excavated soil for backfill.
 2. Carefully remove root ball from container without damaging root ball or plant.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 4. Distribute granular fertilizer around each planting pit when pit is approximately one-half filled. Do not place in bottom of the hole.
 5. Continue backfilling process. Water again after placing and tamping final layer of soil.
- E. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of root ball.

3.6 MECHANIZED TREE-SPADE PLANTING

- A. Plant trees with approved mechanized tree spade at designated locations. Do not use tree spade to move trees larger than maximum size allowed for similar field-grown, balled-and-burlapped, root-ball diameter in accordance with ANSI Z60.1, or trees larger than manufacturer's maximum size recommendation for tree spade being used, whichever is smaller.
- B. Use same tree spade to excavate the planting hole as will be used to extract and transport the tree.
- C. When extracting tree, center the trunk within the tree spade and move tree with solid ball of earth.
- D. Cut exposed roots cleanly during transplanting operations.
- E. Plant trees following procedures in "Tree, Shrub, and Vine Planting" Article.
- F. Where possible, orient the tree in same direction as in its original location.

3.7 TREE, SHRUB, AND VINE PRUNING

- A. Prune, thin, and shape trees, shrubs, and vines in accordance with standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.
- B. Do not apply pruning paint to wounds.

3.8 INSTALLATION OF TREE-STABILIZATION MATERIALS

- A. Trunk Stabilization by Staking and Guying: Install trunk stabilization as follows unless otherwise indicated on Drawings. Stake and guy trees more than 14 ft. in height and more than 3 inches in caliper unless otherwise indicated.
 1. Site-Fabricated, Staking-and-Guying Method: Install no fewer than three guys spaced equally around tree.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

- a. Securely attach guys to stakes 30 inches long, driven to grade. Adjust spacing to avoid penetrating root balls or root masses. Provide turnbuckle for each guy wire and tighten securely.
- b. For trees more than 6 inches in caliper, anchor guys to wood deadmen buried at least 36 inches below grade. Provide turnbuckle for each guy wire and tighten securely.
- c. Support trees with bands of flexible ties at contact points with tree trunk and reaching to turnbuckle. Allow enough slack to avoid rigid restraint of tree.
- d. Support trees with guy cable or multiple strands of tie wire, connected to brass grommets of tree-tie webbing at contact points with tree trunk and reaching to turnbuckle. Allow enough slack to avoid rigid restraint of tree.
- e. Attach flags to each guy wire, 30 inches above finish grade.
- f. Paint turnbuckles with luminescent white paint.

3.9 GROUND COVER AND PLANT PLANTING

- A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.
- B. Use planting soil for backfill.
- C. Dig holes large enough to allow spreading of roots.
- D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to depth not less than two nodes.
- E. Work soil around roots to eliminate air pockets and leave slight saucer indentation around plants to hold water.
- F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.10 INSTALLATION OF MULCHES

- A. Mulch backfilled surfaces of planting areas and other areas indicated.
 1. Trees and Treelike Shrubs in Turf Areas: Apply organic mulch ring of 3-inch average thickness, with 24-inch radius around trunks or stems. Do not create a mulch cone or place mulch within 3 inches of trunks or stems.
 2. Organic Mulch in Planting Areas: Apply 3-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.11 INSTALLATION OF LANDSCAPE EDGINGS

- A. Shovel-Cut Edging: Separate mulched areas from turf areas, curbs, and paving with 45-degree, 4- to 6-inch-deep, shovel-cut edge as indicated on Drawings.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

3.12 INSTALLATION OF TREE-WATERING DEVICES

- A. Provide one device for each tree.
- B. Place device on top of the mulch at base of tree stem and fill with water in accordance with manufacturer's written instructions.

3.13 APPLICATION OF HERBICIDES AND PESTICIDES

- A. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written instructions. Do not apply to seeded areas.
- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written instructions.
- C. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and in accordance with manufacturer's written instructions. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

3.14 PLANT MAINTENANCE

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.
- B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.15 REPAIR AND REPLACEMENT

- A. Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.
 - 1. Submit details of proposed pruning and repairs.
 - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
 - 3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.
- B. Remove and replace trees that are more than 25 percent dead or in unhealthy condition before end of corrections period or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.

BLAINE HOUSE - SITE AND SECURITY UPGRADES
BUREAU OF GENERAL SERVICES
AUGUSTA, MAINE

1. Provide new trees of same size as those being replaced for each tree of 6 inches or smaller in caliper size.
2. Provide one new tree of 6-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.
3. Species of Replacement Trees: Species selected by Architect.

3.16 CLEANING AND PROTECTION

- A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.
- C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
- D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.
- E. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

END OF SECTION

