

# **PROJECT MANUAL EPPS-MCGILL FARMHOUSE**

**General and Stabilization – Phase I**

**MEADORS, Inc.**

2811 Azalea Drive, Charleston SC, 29405

PHONE: 843-723-8585 | WEBSITE: [meadorsinc.com](http://meadorsinc.com)

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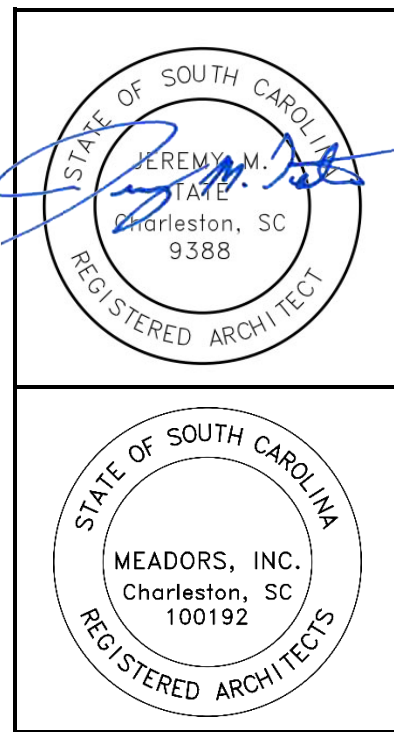
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DOCUMENT 000107 - SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

BUILDING  
ARCHITECT

**Jeremy M. Tate**  
**SC #9388**  
**Architectural Sections in**  
**Divisions 00 – 12 & 31**



1.2 Structural specifications are not included in this document; associated requirements are listed on the Structural sheets.

1.3 Mechanical, Electrical, and Plumbing specifications are not included in this document; associated requirements are listed on the Architectural sheets. Refer to Sheet G002 for associated notes along with other references throughout the drawings. **MEP is not part of Phase I services and not part of this set. MEP services will come at Phase II.**

**INVITATION TO BID (ITB)  
EPPS-MCGILL FARMHOUSE**

**General and Stabilization Phase I**

**MEADORS, Inc.**

2811 Azalea Drive, Charleston SC, 29405

**INVITATION TO BID (ITB)****EPPS-MCGILL FARMHOUSE****Owner and Project Location:**

Mrs. Lillie McGill & Ms. Lynn Richardson  
679 Eastland Ave., Kingstree, SC 29556  
404-272-6944 (Richardson)  
[lilliemcgill@gmail.com](mailto:lilliemcgill@gmail.com) & [lmvarich@yahoo.com](mailto:lmvarich@yahoo.com)

**Architect:**

Meadors Inc.  
Attn: Jeremy Tate, AIA  
2811 Azalea Drive  
N. Charleston, SC 29405  
843-723-8585  
[jeremy@meadorsinc.com](mailto:jeremy@meadorsinc.com)

**Introduction:**

Owners are accepting bids for performing restoration and renovation of the Epps-McGill Farmhouse in Kingstree, SC. This project is for Phase I stabilization services as noted below.

Bids will be received for a single contract including all work as specified.

Bidding documents are available from the owner listed above.

Questions regarding the drawings and specifications should be directed to Project Architect, Jeremy Tate, AIA, at 843-270-5589 or [jeremy@meadorsinc.com](mailto:jeremy@meadorsinc.com).

**Project Description:**

This project consists of renovating and restoring a two-story Folk Victorian farmhouse measuring approximately 5,596 sf. The house was constructed between 1905 and 1907 and is listed on the National Historical Registry. Construction is anticipated to start late August 2023 with required completion within a twelve-month timeline.

The project shall address the particular laws governing the development of the site in South Carolina, including but not limited to, building codes and codes relative to DHEC and SCDOT standards. Contractor will provide insurance and bonds, as required, and will renovate and stabilize the farmhouse in accordance with the Contract Documents provided by Meadors, Inc. and their consultants.

**Scope of Work:**

The scope of work includes but is not limited to: stabilize the structure per foundation structural drawings, stabilize and repair chimney foundations per structural drawings, first floor framing stabilization per structural drawings, second floor ceiling framing per structural drawings, repair roof framing per structural

drawings; repair lower-level porch roof framing and sheathing, repair second floor porch framing and sheathing, install new asphalt roof system, repair/repaint exterior cornice at roof lines (soffit and fascia only).

A future phase will include the complete restoration of the structure. The intent of the stabilization phase I is specific to foundation and roof work in accordance with the contract documents.

**See attached drawing set and specifications packet for further project details.**

**Requested Information from Contractor:**

Contractor submitting bid for this project is required to submit the following in order to be eligible for work on the project:

- Exhibit A – Prime Contractor Information (page 9)
- Exhibit B – Price Proposal Form (page 10)
- Exhibit C – Historic Specification Sections (page 12)
- Exhibit D – Subcontractors Qualification Forms (page 15)
- Schedule of Values AIA G703 breaking down the Bid
- Bonding Documents
  - Bid Bond 5% of the bid price
  - Performance and Payment Bond
- Copy of SC General Contractor License
- Contractor Safety Experience Modification Rate average over last 3 years
- Proof of insurance

**Submission Guidelines:**

Bids should be sent to Owner listed above.

Submissions should include:

- A brief overview of company, length of time in business, and location of office(s), including contact person for this Invitation to Bid.
- Describe company's experience in construction and preservation, including ability to meet completion schedules and performance standards.
- Detail which Subcontractors will be used for the project and their qualifications relative to working on historic wood framed structures.
- Work schedule including estimated time frame to complete the project, detailed by milestone or activity.
- Insurance Requirements.
- Agreement Requirements.

**Selection Criteria:**

One applicant will be selected using the following criteria:

- General quality and responsiveness of proposal
- Qualifications of key personnel
- Documented past performance conducting successful historic restoration projects



- Cost of services

**Terms and Conditions:**

- Proposals shall be valid for 30 (thirty) days from the proposal due date. Owners reserve the right to request an extension of time if needed.
- All proposals must be signed by a duly authorized individual.
- All submitted materials become the property of the Owners.
- No applicant will be compensated for submission of a proposal or for any times or services provided as part of the proposal, evaluation, or negotiation process.
- Should bid be accepted by Owner, Contractor to sign and return a completed copy of the AIA A101-2017, Standard Form of Agreement Between Owner and Contractor before work can begin.

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**GENERAL PROJECT INFORMATION****Project Description/Scope of Work:**

Reference Project Description on first page of this Invitation to Bid.

**Outcome and Performance Standards:**

Contract Documents produced by the Architecture and Engineering team are in compliance with current State of SC and Williamsburg County Regulations. In addition, the construction of the proposed facility shall comply with the following:

- 2021 IBC International Building Code with SC Modifications
- 2021 IEBC International Building Code
- 2021 IBC and ICC/ANSI A117.1 –2017 Standard for Accessible and Usable Buildings and Facilities
- 2021 International Fire Code with SC Modifications
- 2021 International Fuel Gas Code with SC Modifications
- 2021 International Mechanical Code with SC Modifications
- 2021 International Plumbing Code with SC Modifications
- 2020 National Electrical Code (NFPA 70) with SC Modifications
- 2009 South Carolina Energy Conservation Code
- SCDHEC SWPPP Requirements
- SCDOT Requirements

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**INSURANCE**

Successful proposer shall be required to provide insurance as stated below and as required by other provisions of the ITB. This insurance is to be on the comprehensive form, shall protect the Contractor, and shall be written to include the Owner against any/all claims arising from injuries to the public, or damage to property of others arising out of any act or omission of the Contractor, his agents, employees or subcontractors.

The Contractor and all Subcontractors shall carry Workman's Compensation and Employer's Liability Insurance with the statutory limits applying to employer's liability (\$100,000.00) covering all employees employed by him or Subcontractors while engaged under this Contract.

The Contractor shall carry comprehensive general liability insurance with limits of liability not less than:

<b>Bodily Injury:</b>	\$1,000,000.00 - Each Person
	\$1,000,000.00 - Each Accident
<b>Property Damage:</b>	\$1,000,000.00 - Each Accident
	\$1,000,000.00 - Aggregate

The liability coverage under this policy shall contain no exclusion relative to blasting, explosive, collapse of buildings or damage to underground property. Liability limits under this policy shall be not less than the following:

<b>Bodily Injury:</b>	\$1,000,000.00 Each Person
	\$1,000,000.00 Each Accident
<b>Property Damage:</b>	\$1,000,000.00 Each Accident
	\$1,000,000.00 Aggregate

The Contractor shall carry comprehensive fleet liability policy with limits of liability not less than:

<b>Bodily Injury:</b>	\$1,000,000.00 - Each Person
	\$1,000,000.00 - Each Accident
<b>Property Damage:</b>	\$1,000,000.00 - Each Accident

Fire, Windstorm and Vandalism insurance shall be carried and maintained by the Contractor in the name of the Owner and General Contractor as their interest may appear.

The Contractor and Subcontractors shall submit certificates of insurance to Owner at the same time as signed contracts and bonds.

**AGREEMENT REQUIREMENTS**

1. **S.C. Law Clause:** Upon award of an agreement for these services, the person, partnership, association, or corporation to whom the award is made must comply with local and State laws which require such person or entity to be authorized and/or licensed to do business in Williamsburg County. Notwithstanding the fact that applicable statutes may exempt or exclude the successful company from requirements excluding the company from being authorized and/or licensed to do business in Williamsburg County, these requirements are in effect. By submission of this signed qualification, the company agrees to subject itself to the jurisdiction and process of the Eighth Judicial Circuit Court of Williamsburg County, as to all matters and disputes arising or to arise under the agreement and the performance thereof including any questions as to the liability for taxes, licenses or fees levied by State or local government.
2. **Company Responsibility:** Each company shall fully acquaint itself with conditions relating to the scope and restrictions attending the execution of the work under the conditions of this qualification. The failure or omission of a company to acquaint itself with existing conditions shall in no way relieve them of any obligation with respect to this qualification or to the agreement.
3. **Prime Contractor Responsibilities:** The Company will be required to assume sole responsibility for the complete effort, as required by this ITB. The Owner will consider the company to be the sole point of contact with regard to contractual matters.
4. **Subcontracting:** If any part of the work covered by this ITB is to be subcontracted, the company shall identify the subcontracting organization and the contractual arrangements made with same. All subcontractors must be approved by the Owner. The successful company will also furnish the corporate or company name and the names of the officers of any subcontractors engaged by the vendor. The Owner reserves the right to reject any or all subcontractors and require substitution of a firm qualified to participate in the work as specified herein. Subcontractors will be bound by this agreement and this obligation must be included in Prime and Subcontractors agreements.
5. **Ownership of Material:** Ownership of all data, material, and documentation; including, but not limited to, architectural plans and drawings, originated and prepared for the Owner pursuant to this agreement shall belong exclusively to the Owner. The Owner has the ability to utilize all data, material, and documentation in any manner or format deemed in the best interest of the Owner in the Owner's sole discretion for this project and for any future project as determined in the best interest of Owner. The use and/or reuse shall be at no additional cost to Owner.
6. **Indemnity:** The Company hereby agrees to indemnify and save harmless the Owner from and against any and all liability, claims, demands, damages, fines, fees, expenses, penalties, suits, proceedings, actions and cost of actions, including attorney's fees for trial and on appeal of any kind and nature arising or growing out of or in any way connected with the performance of the Agreement, whether by act of omissions of the company, its agents, servants, employees or others, or because of or due to the mere existence of the Agreement between the parties.

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- 7. Termination for Default:** The Owner has the right to terminate for default if the company fails to perform the Work, if the company fails to perform the Work within the time specified in the Agreement, or if the company fails to perform any other provisions of the Agreement. If exercised, the Owner becomes the owner of documents that are paid for and may utilize them in any manner the Owner deems appropriate.
- 8. Termination for Convenience:** The Owner may without cause terminate this agreement in whole or in part at any time for its convenience. In such instance, an adjustment shall be made to the company for the reasonable costs of the work performed through the date of termination. Termination costs do not include lost profits, consequential damages, delay damages, unabsorbed or under absorbed overhead of the company or its subcontractors. The failure of the Company to include a termination for convenience clause into its subcontracts and material purchase orders shall not expose the Owner to liability for lost profits in conjunction with a termination for convenience settlement or equitable adjustment. The company expressly waives any claims for lost profit or consequential damages, delay damages, or indirect costs which may arise from the Owner's election to terminate this agreement in whole or in part for its convenience. The Owner has the ability to utilize all data, material, and documentation in any manner or format deemed in the best interest of the Owner in the Owner's sole discretion.

**Exhibit A – PRIME CONTRACTOR INFORMATION**

<p>You must submit a signed copy of exhibits A and B with your Bid. By submitting a bid or proposal, you agree to be bound by the terms of the solicitation. You agree to hold your Bid open for a minimum of ninety (90) calendar days after the Opening Date. You agree that your bid can be made public under the <b>Freedom of Information Act, 5 U.S.C § 552</b>. Owner reserves the right to reject any and all bids, and to waive any informalities or irregularities.</p>	
<p>NAME OF BIDDER (Full legal name of business submitting the bid)</p>	<p>BIDDER'S TYPE OF ENTITY: (Check one)</p> <p>Sole Proprietorship Partnership Corporation (tax-exempt) Corporate entity (not tax-exempt) Government entity (federal, state, or local) Other _____</p>
<p>PRINTED NAME (Printed name of person signing below)</p>	
<p>TITLE (Business title of person signing above)</p>	
<p>CONTACT PERSON NAME, PHONE NUMBER, AND EMAIL ADDRESS</p>	
<p>Instructions regarding Bidder's name: Any award issued will be issued to, and the contract will be formed with, the entity identified as the bidder above. A bid may be submitted by only one legal entity. The entity named as the bidder must be a single and distinct legal entity. Do not use the name of a branch office or a division of a larger entity if the branch or division is not a separate legal entity, <i>i.e.</i>, a separate corporation, partnership, sole proprietorship, etc.</p>	
<p>STATE OF INCORPORATION (If bidder is a corporation, identify the state of Incorporation.)</p>	
<p>TAXPAYER IDENTIFICATION NO.</p>	<p>STATE LICENSE NO.</p>
<p>HOME OFFICE ADDRESS (Address of principal place of business):</p>	<p>PAYMENT ADDRESS (Address to which payments will be sent.)</p>
<p>EMAIL:</p>	<p>PHONE:</p>
<p>By signing below, the bidder certifies they are qualified and hold all licenses, permits, and regulatory authority to perform the scope of work set forth in the bid description. Upon request, proof of licenses, permits, and regulatory authority must be provided to the owner prior to contract award.</p>	
<p>AUTHORIZED SIGNATURE (Person signing must be authorized to submit binding bid to enter contract on behalf of Bidder named above.)</p>	<p>DATE:</p>

**Exhibit B – PRICE PROPOSAL FORM**

**Epps-McGill Farmhouse - 2023**

\_\_\_\_\_  
(Date)

TO:

**Meadors, Inc.**

**Attn: Jeremy Tate**

**2811 Azalea Drive**

**North Charleston, SC 29405**

FROM: \_\_\_\_\_  
(Bidder)

\_\_\_\_\_

\_\_\_\_\_  
(Address)

The Undersigned, having carefully examined drawings, project details, specifications, and other documents bound in the Project Manual, for the Epps-McGill Farmhouse, and the following addenda:

Addendum No. \_\_\_ Dated \_\_\_\_\_ Addendum No. \_\_\_ Dated \_\_\_\_\_

Addendum No. \_\_\_ Dated \_\_\_\_\_ Addendum No. \_\_\_ Dated \_\_\_\_\_

as well as the premises and conditions affecting the work proposes to furnish all services, labor, materials and equipment called for by them for the entire work in accordance with said documents for the Stipulated Sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which sum is hereinafter called the "Base Bid".

**Unit Prices:** The attached unit prices, if accepted in the award of this Contract, shall be used in establishing adjustment of Contract Price for additions to or deductions from work in accordance with applicable requirements specified in the General Conditions. Unit Prices listed shall include all costs, profit and overhead, and no further surcharges are to be added to any unit price item of work that may be ordered done.

Unit prices, as submitted, may or may not be used in calculating additions or deductions from the Contract, at the option of Owner. Such unit prices as may be employed by Owner shall be written into the Contract and accepted and agreed upon by the respective parties to the Contract.

**Bid Holding Time:** The Undersigned hereby agrees that this bid may not be revoked or withdrawn after time set for opening bids but shall remain open for acceptance for a period of NINETY (90) days following such time.

**Contract Acceptance:** In case the Undersigned be notified in writing by mail, or hand delivery of acceptance of this bid within 90 days after the time set for opening of bids, they agree to execute, within ten days from notice, a contract (AIA Standard Form of Agreement Between Contractor and Owner When A Stipulated Sum Forms the Basis of a Payment, AIA Form A101) for the work for the above-stated amount and at the same time to furnish and deliver to Owner a Performance Bond and a Payment Bond, in the form issued by the

Meadors, Inc.

American Institute of Architects (AIA Form A312), each in an amount equal to 100 percent of the contract sum.

**Completion Time:** The Undersigned agrees to commence actual physical work at the site, with an adequate force and equipment, within ten calendar days from a date to be established in a "Notice to Proceed" and to substantially complete the work within **12 MONTHS** from such date.

**Liquidated Damages:** The Undersigned understands that should they fail to substantially complete work under this contract within the time specified hereinbefore, or such later date as may result from an authorized extension of time, they will pay to Owner, as liquidated damages, the sum of TWO-HUNDRED Dollars (\$200.00) for each succeeding calendar day, Saturdays, Sundays and Holidays included, that the terms of the contract remain unfulfilled, which sum is agreed upon as the proper measure of liquidated damages which Owner will sustain per diem by failure of Undersigned to complete the work by the time stipulated, and this sum is not to be construed as in any sense a penalty.

**Bid Security:** Enclosed is a Bid Bond or Certified Check in the amount of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) being not less than 5 percent of the Base Bid, payable to Owner. The Undersigned agrees that the above-stated amount is the proper measure of liquidated damages which Owner will sustain by failure of the undersigned to execute the Contract, and to furnish the Performance Bond within the ten-day period from notice, in case the Bid is accepted by Owner within 45 days after the date set for opening of Bids.

The Undersigned agrees that, if they are unwilling to execute the contract within the ten-day period from notice, or if they fail to furnish both Performance Bond and Payment Bond, the obligation of the Bid Bond will remain in full force and effect, and the moneys payable thereon shall be paid into the funds of Owner as liquidated damages for such failure.

**Contractor Resources:** It is understood that, before a proposal is considered for award, Bidder may be requested by Architect to submit a statement of facts in detail as to their previous experience in performing similar or comparable work, and of their business and technical organization and financial resources and plant available to be used in performing contemplated work.

Respectfully submitted,

Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_

South Carolina Contractor's License No.

By: \_\_\_\_\_

Title: \_\_\_\_\_



**Exhibit C – HISTORIC SPECIFICATION SECTIONS**

**Note: Items struck through are for future phase work beyond this initial phase I stabilization effort.**

## HISTORIC TREATMENT PROCEDURES

Section: 013591

## Required Experience

- Historic Treatment Specialist: Full-time supervisor with 5 years' experience in historic treatment work similar in nature, material, design, and extent to that indicated for this Project. They shall demonstrate a working knowledge of the **Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings**. Supervisors shall be on Project site during times that historic treatment work is in progress. Supervisors shall not be changed during the Project except for causes beyond the control of the specialist firm.

## Submittal:

- Historic Treatment Qualifications: Submit documentation of field supervisors past project experience that meet the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers.

## MORTARS FOR STRUCTURAL REPAIRS AND REPOINTING

Section: 040513

## Required Experience

- Work Experience: The masons to perform the work in this section shall have at least 5 years demonstrated experience working on projects of similar scope, that employed historic/hydraulic lime mortars. They shall demonstrate a working knowledge of the **Brick Institute of America Applied Standards** and the **Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings** including **Preservation Brief #2, Repointing Mortar Joints in Historic Buildings**.

## Submittal:

- Qualifications: Submit documentation of mason's past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers.

## HISTORIC WOOD REPAIR

Section: 060312

## Required Experience

- Work Experience: Wood restoration (includes significant work on the existing floors) shall be carried out by a crew of skilled craftspeople who are thoroughly experienced with 5 years' experience with materials and methods specified. Experience only in fabricating and installing new woodwork is insufficient experience for wood historic treatment work. They shall demonstrate a working knowledge of the **Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings** including **Preservation Brief #18, Rehabilitating Interiors in Historic Buildings: Identifying and Preserving Character Defining Elements**.

## Submittal:

- Qualifications: Submit documentation of wood worker's past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers.

~~STAIR RESTORATION~~~~Section: 064312~~~~Required Experience~~

- ~~Work Experience: Stair restoration shall be carried out by a crew of skilled craftspeople with a minimum of five years' experience with materials and methods specified. They shall demonstrate a working knowledge of the **Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings** including **Preservation Brief #18, Rehabilitating Interiors in Historic Buildings: Identifying and Preserving Character Defining Elements.**~~

~~Submittal:~~

- ~~Qualifications: Submit documentation of worker's past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers.~~

~~FIREPLACE RESTORATION~~~~Section: 064313~~~~Required Experience~~

- ~~Work Experience: Restoration shall be carried out by a crew of skilled craftspeople who are thoroughly experienced with 5 years' experience with materials and methods specified. They shall demonstrate a working knowledge of the **Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings** including **Preservation Brief #18, Rehabilitating Interiors in Historic Buildings: Identifying and Preserving Character Defining Elements.**~~

~~Submittal:~~

- ~~Qualifications: Submit documentation of worker's past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers.~~

~~HISTORIC TREATMENT OF WOOD DOORS~~~~Section: 080314~~~~Required Experience~~

- ~~Work Experience: Wood door restoration shall be carried out by a crew of skilled craftspeople who are thoroughly experienced with materials and methods specified and have at a minimum of five years' experience working on similar historic projects in nature. They shall demonstrate a working knowledge of the **Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.**~~

~~Submittal:~~

- ~~Qualifications: Submit documentation of subcontractors past project experience that meets the work experience outlined in the specification. Craftspeople and carpenters employed to carry out work must have a minimum of five years' experience working with historic~~

~~building materials. Furnish names and phone numbers of owners and architects of three buildings on which applicator has restored doors similar to type herein specified.~~

~~HISTORIC TREATMENT OF WOOD WINDOWS~~ ~~Section: 080352~~

~~Required Experience~~

- ~~• Work Experience: Window restoration shall be carried out by a crew of skilled craftspeople who are thoroughly experienced with 5 years' experience with materials and methods specified. They shall demonstrate a working knowledge of the **Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings including Preservation Brief #6, The Repair of Historic Wooden Windows.**~~

~~Submittal:~~

- ~~• Qualifications: Submit documentation of subcontractors past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers. Lead tradesman/carpenter shall submit a resume with a minimum of five (5) years demonstrated experience restoring historic windows.~~

~~HISTORIC TREATMENT OF PLASTER~~ ~~Section: 090320~~

~~Required Experience~~

- ~~• Work Experience: All work to be performed by skilled subcontractor having 5 years of experience in comparable plaster restoration projects. Only skilled plasterers that are familiar and experienced with the specified methods are to be used for the work. They shall demonstrate a working knowledge of the **Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.**~~

~~Submittal:~~

- ~~• Qualifications: Submit documentation of subcontractors past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years of experience in comparable plaster restoration projects, including contact names and phone numbers.~~

ARCHITECTURAL COATINGS Section: 099000

Required Experience

- Work Experience: A qualified painting specialist with five years' expertise in matching and touching up existing painting. They shall demonstrate a working knowledge of the **Secretary of the Interior's Standards for Rehabilitation, MPI Standards, and the Standard Terminology for Paint, Related Coatings, Materials, and Applications.** Experience only in new painting work is insufficient experience for work. **Painting specialist is required to have completed initial and annual OSHA compliant Lead Awareness Training.**

Submittal

- Qualifications: Submit documentation of painters past project experience that meet the

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workexperience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers. Submit documentation of required Lead Awareness Training.

**Exhibit D – SUB-CONTRACTORS QUALIFICATION FORMS****Answer the following as applicable for the appropriate trade:****ROOFING**

1. Does your firm have at least five years of experience installing metal flashing on historic buildings?  
 Yes  No

**MASONRY**

1. Does your firm have at least five years of experience repointing masonry mortar joints on historic buildings?  
 Yes  No
2. Does your firm have at least five years of experience working with historic mortar mixtures and curing requirements?  
 Yes  No

**CARPENTRY**

1. Does your firm have the capacity to reproduce, repair, restore, and preserve historic wooden elements?  
 Yes  No
2. Does your firm have at least five years of experience using specialized epoxies for the restoration and consolidation of damaged wood elements on historic buildings?  
 Yes  No
3. Does your firm have at least five years of experience using Dutchman techniques to repair damaged wooden elements on an historic building?  
 Yes  No
4. Does your firm have at least five years of experience performing structural repairs to historic wood framing?  
 Yes  No

**PAINTING**

1. Does your firm have at least five years of experience prepping and painting historic wood trim, windows, and doors?

Yes  No

2. Does your firm have at least five years of experience removing paint on historic wood?

Yes  No

3. Does your firm have at least five years of experience in the preparation of historic wood substrates?

Yes  No

SECTION 003126 – EXISTING HAZARDOUS MATERIAL INFORMATION

PART 1 - GENERAL

1.1 HAZARDOUS MATERIALS REPORTS

- A. Owner to provide inspection report on any existing hazardous material including asbestos and lead paint.
  - 1. Refer to Asbestos Inspection Report prepared by Asbestos Inspections, LLC dated January 2, 2024.
  - 2. Contractor to note that the project was not tested for lead paint, therefore the inspection report does not include any references to lead paint. Contractor to assume that lead paint is present and to treat surfaces accordingly.

END OF SECTION 003126





## SECTION 004373 - PROPOSED SCHEDULE OF VALUES FORM

## 1.1 BID FORM SUPPLEMENT

- A. A completed Proposed Schedule of Values form is required to be attached to the Bid Form.

## 1.2 PROPOSED SCHEDULE OF VALUES FORM

- A. Proposed Schedule of Values Form: Provide a breakdown of the bid amount, including alternates, in enough detail to facilitate continued evaluation of bid. Coordinate with the Project Manual table of contents. Provide multiple line items for principal material and subcontract amounts in excess of five percent of the Contract Sum.
- B. Arrange schedule of values using AIA Document G703-1992.
  - 1. Copies of AIA standard forms may be obtained from the American Institute of Architects; <https://www.aiacontracts.org/> library; (800) 942-7732.

END OF SECTION 004373

# AIA® Document G703® - 1992

## Continuation Sheet

AIA Document G702®, Application and Certification for Payment, or G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.  
 Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO:

20-0087

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
				General Requirements		0.00	0.00		
	Demolition	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
	Masonry	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
	Rough Carpentry	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
	Finish Carpentry	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
	Thermal and Moisture Protection / Roofing	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
	Finishes / Painting	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
	Closeout	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
		0.00	0.00	0.00	0.00	0.00%	0.00	0.00	
	<b>GRAND TOTAL</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>0.00%</b>	<b>\$0.00</b>	<b>\$0.00</b>

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 User Notes:

SECTION 005200 - AGREEMENT FORM

PART 1 - GENERAL

1.1 FORM

- A. Agreement form shall be AIA Document A101, "Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum, 2017 Edition, published by the American Institute of Architects, as supplemented and amended by the Owner for this project.

END OF SECTION 005200

# DRAFT AIA® Document A101® - 2017

## Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

**AGREEMENT** made as of the « » day of « » in the year « »  
(In words, indicate day, month and year.)

**BETWEEN** the Owner:  
(Name, legal status, address and other information)

« »« »  
« »  
« »  
« »

and the Contractor:  
(Name, legal status, address and other information)

« »« »  
« »  
« »  
« »

for the following Project:  
(Name, location and detailed description)

«Epps-McGill Farmhouse»  
« »  
« »

The Architect:  
(Name, legal status, address and other information)

« »« »  
« »  
« »  
« »

The Owner and Contractor agree as follows.

**ADDITIONS AND DELETIONS:**  
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

**ELECTRONIC COPYING** of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

## TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

### EXHIBIT A INSURANCE AND BONDS

#### ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

#### ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

#### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:  
(Check one of the following boxes.)

- The date of this Agreement.
- A date set forth in a notice to proceed issued by the Owner.
- Established as follows:  
(Insert a date or a means to determine the date of commencement of the Work.)
- 

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

#### § 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:  
(Check one of the following boxes and complete the necessary information.)

[ « » ] Not later than « » ( « » ) calendar days from the date of commencement of the Work.

[ « » ] By the following date: « »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

#### ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » (\$ « » ), subject to additions and deductions as provided in the Contract Documents.

#### § 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. *(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)*

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum: *(Identify each allowance.)*

Item	Price

§ 4.4 Unit prices, if any:

*(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)*

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

*(Insert terms and conditions for liquidated damages, if any.)*

« »

§ 4.6 Other:

*(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)*

« »

## ARTICLE 5 PAYMENTS

### § 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » ( « » ) days after the Architect receives the Application for Payment.

*(Federal, state or local laws may require payment within a certain period of time.)*

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

### § 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

*(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)*

« »

§ 5.1.7.1.1 The following items are not subject to retainage:  
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

<< >>

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:  
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

<< >>

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:  
(Insert any other conditions for release of retainage upon Substantial Completion.)

<< >>

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

## § 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

<< >>

## § 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

<< >> % << >>

## ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

<< >>

<< >>

<< >>

<< >>



**§ 6.2 Binding Dispute Resolution**

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

*(Check the appropriate box.)*

Arbitration pursuant to Section 15.4 of AIA Document A201–2017

Litigation in a court of competent jurisdiction

Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

**ARTICLE 7 TERMINATION OR SUSPENSION**

**§ 7.1** The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

**§ 7.1.1** If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

*(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)*

**§ 7.2** The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

**ARTICLE 8 MISCELLANEOUS PROVISIONS**

**§ 8.1** Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

**§ 8.2** The Owner’s representative:

*(Name, address, email address, and other information)*

**§ 8.3** The Contractor’s representative:

*(Name, address, email address, and other information)*

**§ 8.4** Neither the Owner’s nor the Contractor’s representative shall be changed without ten days’ prior notice to the other party.

**§ 8.5 Insurance and Bonds**

**§ 8.5.1** The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

**§ 8.5.2** The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

**§ 8.6** Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

*(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*

« »

**§ 8.7 Other provisions:**

« »

**ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS**

**§ 9.1** This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

*(Insert the date of the E203-2013 incorporated into this Agreement.)*

« »

**.5 Drawings**

Number	Title	Date

**.6 Specifications**

Section	Title	Date	Pages

**.7 Addenda, if any:**

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

**.8 Other Exhibits:**

*(Check all boxes that apply and include appropriate information identifying the exhibit where required.)*

[  ] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:  
*(Insert the date of the E204-2017 incorporated into this Agreement.)*

<< >>

[ << >> ] The Sustainability Plan:

Title	Date	Pages

[ << >> ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:

*(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)*

<< >>

This Agreement entered into as of the day and year first written above.

\_\_\_\_\_  
**OWNER** (Signature)

<< >><< >>

\_\_\_\_\_  
(Printed name and title)

\_\_\_\_\_  
**CONTRACTOR** (Signature)

<< >><< >>

\_\_\_\_\_  
(Printed name and title)

## SECTION 005400 - AGREEMENT FORM SUPPLEMENTS

## PART 1 - GENERAL

## 1.1 GENERAL

- A. These Standard Modifications amend or supplement the *Standard Form of Agreement Between Owner and Contractor* (AIA Document A101-2017 or Agreement). Compliance with these Standard Modifications is required by the Contractor. This document shall be attached to the Agreement upon execution of the Agreement. The following supplements modify, delete and/or add to the Agreement. Where any portion of the Agreement is modified or any paragraph, subparagraph or clause thereof is modified or deleted by these Standard Modifications, the unaltered provisions of the agreement shall remain in effect.

## 1.2 ARTICLE 1 GENERAL PROVISIONS

- A. Delete Article 1 The Contract Documents and substitute the following:

## “1.1 ARTICLE 1 THE CONTRACT DOCUMENTS

Contract Documents consist of the AIA A101-2017, Standard Modifications to AIA Document A101-2017, AIA A201 Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, invitation to bid, Instructions to Bidders, sample forms, the Contractor’s bid and Addenda relating to bidding requirements, and Modifications issued after execution of the Contract. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral.”

## 1.3 ARTICLE 2 THE WORK OF THIS CONTRACT

- A. Add the following Paragraph 2.1:

**2.1** The Contractor shall furnish only skilled and properly trained staff for the performance of the Work. During the performance of the Work, the Contractor shall keep a competent superintendent at the Project site, fully authorized to act on behalf of the Contractor with regard to the work included in the Contract Documents.”

## 1.4 ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

- A. Delete Paragraph 3.1 and substitute the following:

**"3.1** The Date of Commencement shall be fixed in a Notice to Proceed. The Notice to Proceed shall be issued to the Contractor in writing, no less than seven (7) days prior to the Date of Commencement. Contract times shall be expressed in calendar days."

- B. Add the following Paragraphs to the end of Article 3:

**"3.3** Substantial completion for the entire work will be no later than **TBD**.

**3.4** Time is of the essence in the performance of all duties of the Owner, Contractor and AE.

**3.5** Should the Contractor fail to substantially complete the work under this contract within the stipulated time as set forth in "Time of Completion" paragraph, plus any additional days that may result from extension of time granted by the AE, Contractor agrees that it shall pay to the Owner, not as a penalty, but as liquidated damages, the sum of \$200.00 per day for each succeeding calendar day that the Project is incomplete after the Time of Completion date."

#### 1.5 ARTICLE 4 CONTRACT SUM

- A. Add the following to Paragraph 4.3:

**"4.3.1** Prices are considered complete and include: (1) all materials, equipment, labor, delivery, installation, overhead, and profit; and, (2) any other costs or expenses in connection with, or incidental to, the performance of that portion of the Work to which such unit prices apply."

#### 1.6 ARTICLE 5 PAYMENTS

- A. Add the following sentence to Subparagraph 5.1.5:

**"5.1.5** Each Application for Payment shall include such other information, documentation, and materials as the Owner or the A/E may require to substantiate the Contractor's entitlement to payment. The Schedule of Values for the Project shall be submitted to the Owner and AE for approval prior to submission of the first application for payment for the Project."

- B. In the blank spaces set forth in Subparagraphs 5.1.6.1 and 5.1.6.2, insert the following:

"Ten Percent (10%)."

- C. Add the following Clauses to Subparagraph 5.1.8:

**"5.1.8.1** Subject to Subparagraph 9.8.5 of the General Conditions, upon Substantial Completion and completion of all punchlist items, the Owner will pay one-half of all retainage to the Contractor.

**5.1.8.2** If, in the Owner's reasonable discretion, Owner chooses to release said retainage prior to the events described in Subparagraph 5.1.8.1, such payment may be reduced by two hundred percent (200%) of the estimated dollar value of any uncorrected punchlist items as determined

by the Owner and/or the AE. Those amounts withheld as identified for uncompleted punchlist items shall be paid thirty (30) days after completion of all such items approved and acceptance of the Work by the Owner.

**5.1.8.3** At the sole discretion of the Owner, the Owner may choose to release all or a portion of retained percentages prior to the time of final payment. Release of all or some of retained percentages shall not release the Contractor of the obligation to provide the Owner with proper warranties of the Work, nor shall any reduction or release of retainage be a waiver of Owner's rights to retainage in connection with other payments to the Contractor, or any other right or remedy that the Owner has under the Contract Documents, at law or in equity."

D. Add the following Subparagraphs:

**5.1.10.1** Contractor shall not incur any expense chargeable to the Owner on or about the Work of this Agreement until the A101 document is executed by all parties.

**5.1.10.2** The Contractor represents and warrants the following to the Owner (in addition to any other representations and warranties contained in the Contract Documents), as an inducement to the Owner to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement, any termination of this Agreement, and the final completion of the Work.

**5.1.10.3** The Contractor and its Subcontractors are financially solvent, able to pay all debts as they mature, and possessed of sufficient working capital to complete the Work and perform all obligations hereunder;

**5.1.10.4** The Contractor and Subcontractors are able to furnish the plant, tools, materials, supplies, equipment, and labor required to complete the Work and perform its obligations hereunder;

**5.1.10.5** The Contractor and the Subcontractors are authorized to do business in the State of South Carolina and properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over it and over the Work and the Project;

**5.1.10.6** The execution of this Agreement and its performance thereof is authorized by the Contractor's governing body and/or rightful owners.

**5.1.10.7** The Contractor or his duly authorized representative has visited the site of the Project, familiarized himself with the local and special conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents; and that it possesses a high level of experience and expertise in the business administration, construction, construction management, and superintendence of projects of the size, complexity, and nature of this particular Project, and it will perform the Work with the care, skill, and diligence of such a contractor. The foregoing warranties are in addition to, and not in lieu of, any and all other liability imposed upon the Contractor by law with respect to the Contractor's duties, obligations, and performance hereunder. The Contractor acknowledges that the Owner is relying upon the Contractor's skill and experience in connection with the Work called for hereunder.

**5.1.10.8** The Owner reserves the right, pursuant to Article 7 of the General Conditions, to modify the Work of the Contractor.”

E. Add the following Clause to Subparagraph 5.2.1:

**“5.2.1.3** Contractor has delivered to the Owner all operating instructions, warranties, and guarantees applicable to the Work and as required by the Contract Documents.”

F. Delete Subparagraph 5.2.2 and insert the following:

**“5.2.2** Final payment shall be made within thirty (30) days from the date the Owner (or A/E) receives the final undisputed Application for Payment, including all supporting documentation, from the Contractor. All conditions stipulated in the Contract Documents shall have been met before final payment is made.”

G. Add the following paragraphs after Paragraph 5.2.2:

**“5.3** As a condition of Progress or Final Payment, the Contractor must provide with each month’s invoice 1) waivers of liens and/or releases from all subcontractors and materialmen associated with the Work as invoiced during the previous month and for which the Contractor has been compensated for by the Owner, and 2) verification to the reasonable satisfaction of the Owner that costs contained on any application for payment had been incurred by the Contractor. In the absence of such waivers/releases and verification, the Owner, at its sole option, may withhold all or any portion of funds otherwise due the Contractor to protect the Owner from loss.

**5.4** Partial or final payment will not be payable or due at the option of the Owner in the event that any of the following conditions exist.

**5.4.1** Any insurance or bonds required of the Contractor ceases to be effective and in force.

**5.4.2** Owner may delay any and all payments due Contractor until Contractor shall have submitted satisfactory evidence to Owner that all payrolls, material bills, and other indebtedness connected with the Work for which Contractor has been paid, have been paid by Contractor or its subcontractors, provided that Owner has performed its payment obligations, subject to rightful setoffs, as provided herein. If a lien is filed by any subcontractor, laborers, or materialmen and Owner has met all of its payment obligations hereunder, Contractor shall be solely responsible for the amount of any valid lien plus any and all incidental costs and shall cause the valid and undisputed lien to be extinguished and canceled, so that such lien shall not constitute a cloud, lien, or encumbrance, against the ownership of the Project by Owner.”

## 1.7 ARTICLE 6 DISPUTE RESOLUTION

A. Replace Paragraph 6.1 with the following:

**“6.1** The Owner’s representative will serve as initial decision maker where applicable.”

B. Replace Paragraph 6.2 with the following:

"6.2 If mediation fails, the claims, disputes, or other matters in question between the parties to this Agreement, arising out of or related to this Agreement, or the breach thereof, shall be tried before a Circuit Court. The Contractor and the Owner agree that the venue for this action will be in Sumter, South Carolina. Any legal proceeding arising out of or relating to this Agreement shall include, by consolidation, joinder, or joint filing, any additional person or entity not a party to this Agreement to the extent necessary to the final resolution of the matter in controversy."

1.8 ARTICLE 8 MISCELLANEOUS PROVISIONS

- A. In the blank spaces set forth in Subparagraph 8.2, insert the following:

"Three Percent (3%) per annum."

1.9 ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

- A. In Subparagraph 9.1.1 insert the following:

"9.1.1.1 Section 005400 "Agreement Form Supplements"

- B. In Subparagraph 9.1.3 insert the following:

9.1.3.1 Section 007300 "Supplemental Conditions"."

- C. In Subparagraph 9.1.4 insert the Project Manual issue date.

- D. In Subparagraph 9.1.5 insert the Title and Date of the Project Drawings.

- E. List the following Subparagraph 9.1.7.3:

"9.1.7.3

Invitation for Bids/Information for Bidders  
Bid Form  
Bid Bond  
Payment Bond  
Performance Bond  
Notice of Award  
Notice to Proceed  
AIA G701 Contract Administration Change Order  
Supplemental Conditions and/or Addenda

END OF SECTION 005400



SECTION 006113 - PERFORMANCE BOND AND PAYMENT BONDS

PART 1 - GENERAL

1.1 FORM

- A. The form of Performance and Payment Bonds required under this contract will be AIA Document A312, "Performance Bond and Payment Bond", December 2010 Edition, Published by the American Institute of Architects, copies of which are available from Architects upon written request.

END OF SECTION 006113

SECTION 007200 - GENERAL CONDITIONS OF THE CONTRACT

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- A. The "General Conditions of the Contract for Construction", AIA Document A201, 2017 Edition, a standard document of and published by the American Institute of Architects, is hereby made a part of these specifications, and, as modified by the Owner, are the general conditions on which all contracts for this work will be based.

END OF SECTION 007200

# DRAFT AIA® Document A201® - 2017

## General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

«Epps-McGill Farmhouse»

« »

THE OWNER:

(Name, legal status and address)

« »« »

« »

THE ARCHITECT:

(Name, legal status and address)

« »« »

« »

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#### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

#### **§ 1.1.2 The Contract**

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

#### **§ 1.1.3 The Work**

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

#### **§ 1.1.4 The Project**

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

#### **§ 1.1.5 The Drawings**

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

#### **§ 1.1.6 The Specifications**

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

#### **§ 1.1.7 Instruments of Service**

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

#### **§ 1.1.8 Initial Decision Maker**

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

### **§ 1.2 Correlation and Intent of the Contract Documents**

**§ 1.2.1** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

**§ 1.2.1.1** The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

**§ 1.2.2** Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

**§ 1.2.3** Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

### **§ 1.3 Capitalization**

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

### **§ 1.4 Interpretation**

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

### **§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service**

**§ 1.5.1** The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

**§ 1.5.2** The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

### **§ 1.6 Notice**

**§ 1.6.1** Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

**§ 1.6.2** Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

### **§ 1.7 Digital Data Use and Transmission**

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

### **§ 1.8 Building Information Models Use and Reliance**

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or

relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

**§ 2.1.1** The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

**§ 2.1.2** The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

### **§ 2.2 Evidence of the Owner's Financial Arrangements**

**§ 2.2.1** Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

**§ 2.2.2** Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

**§ 2.2.3** After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

**§ 2.2.4** Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

### **§ 2.3 Information and Services Required of the Owner**

**§ 2.3.1** Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

**§ 2.3.2** The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

#### § 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

#### § 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

### ARTICLE 3 CONTRACTOR

#### § 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

#### § 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as

the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

**§ 3.2.3** The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

**§ 3.2.4** If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

### **§ 3.3 Supervision and Construction Procedures**

**§ 3.3.1** The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

**§ 3.3.2** The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

**§ 3.3.3** The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

### **§ 3.4 Labor and Materials**

**§ 3.4.1** Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

**§ 3.4.2** Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

**§ 3.4.3** The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

### **§ 3.5 Warranty**

**§ 3.5.1** The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

**§ 3.5.2** All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

### **§ 3.6 Taxes**

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

### **§ 3.7 Permits, Fees, Notices and Compliance with Laws**

**§ 3.7.1** Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

**§ 3.7.2** The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

**§ 3.7.3** If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

### **§ 3.7.4 Concealed or Unknown Conditions**

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

**§ 3.7.5** If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.



### **§ 3.8 Allowances**

**§ 3.8.1** The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

**§ 3.8.2** Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

**§ 3.8.3** Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

### **§ 3.9 Superintendent**

**§ 3.9.1** The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

**§ 3.9.2** The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

**§ 3.9.3** The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

### **§ 3.10 Contractor's Construction and Submittal Schedules**

**§ 3.10.1** The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

**§ 3.10.2** The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

**§ 3.10.3** The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

### **§ 3.11 Documents and Samples at the Site**

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and

similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

### **§ 3.12 Shop Drawings, Product Data and Samples**

**§ 3.12.1** Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

**§ 3.12.2** Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

**§ 3.12.3** Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

**§ 3.12.4** Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

**§ 3.12.5** The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

**§ 3.12.6** By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

**§ 3.12.7** The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

**§ 3.12.8** The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

**§ 3.12.9** The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

**§ 3.12.10** The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

**§ 3.12.10.2** If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

### **§ 3.13 Use of Site**

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

### **§ 3.14 Cutting and Patching**

**§ 3.14.1** The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

**§ 3.14.2** The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

### **§ 3.15 Cleaning Up**

**§ 3.15.1** The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

**§ 3.15.2** If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

### **§ 3.16 Access to Work**

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

### **§ 3.17 Royalties, Patents and Copyrights**

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

### **§ 3.18 Indemnification**

**§ 3.18.1** To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

**§ 3.18.2** In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

## **ARTICLE 4 ARCHITECT**

### **§ 4.1 General**

**§ 4.1.1** The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

**§ 4.1.2** Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

### **§ 4.2 Administration of the Contract**

**§ 4.2.1** The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

**§ 4.2.2** The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

**§ 4.2.3** On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

### **§ 4.2.4 Communications**

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

## ARTICLE 5 SUBCONTRACTORS

### § 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in

number and means a Subcontractor or an authorized representative of the Subcontractor. The term “Subcontractor” does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term “Sub-subcontractor” is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

## § 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor’s Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

## § 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor’s Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

## § 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

## **ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

### **§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts**

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

### **§ 6.2 Mutual Responsibility**

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

### § 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

## ARTICLE 7 CHANGES IN THE WORK

### § 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

### § 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

### § 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;



- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

#### § 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

### ARTICLE 8 TIME

#### § 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

## § 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

## § 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

## ARTICLE 9 PAYMENTS AND COMPLETION

### § 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

### § 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

### § 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

**§ 9.3.2** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

**§ 9.3.3** The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

#### **§ 9.4 Certificates for Payment**

**§ 9.4.1** The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

**§ 9.4.2** The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

#### **§ 9.5 Decisions to Withhold Certification**

**§ 9.5.1** The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
  - .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
  - .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
  - .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
  - .5 damage to the Owner or a Separate Contractor;
  - .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

## § 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

## **§ 9.7 Failure of Payment**

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

## **§ 9.8 Substantial Completion**

**§ 9.8.1** Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

**§ 9.8.2** When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

**§ 9.8.3** Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

**§ 9.8.4** When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

**§ 9.8.5** The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

## **§ 9.9 Partial Occupancy or Use**

**§ 9.9.1** The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

**§ 9.9.2** Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

**§ 9.9.3** Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

## **§ 9.10 Final Completion and Final Payment**

**§ 9.10.1** Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

**§ 9.10.2** Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

**§ 9.10.3** If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

**§ 9.10.4** The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2** failure of the Work to comply with the requirements of the Contract Documents;
- .3** terms of special warranties required by the Contract Documents; or
- .4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

**§ 9.10.5** Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

## **ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

### **§ 10.1 Safety Precautions and Programs**

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

### **§ 10.2 Safety of Persons and Property**

**§ 10.2.1** The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1** employees on the Work and other persons who may be affected thereby;

- 2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- 3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

#### § 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

#### § 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed

by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

**§ 10.3.3** To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

**§ 10.3.4** The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

**§ 10.3.5** The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

**§ 10.3.6** If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

#### **§ 10.4 Emergencies**

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

### **ARTICLE 11 INSURANCE AND BONDS**

#### **§ 11.1 Contractor's Insurance and Bonds**

**§ 11.1.1** The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

**§ 11.1.2** The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

**§ 11.1.3** Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

**§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the



procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

## **§ 11.2 Owner's Insurance**

**§ 11.2.1** The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

**§ 11.2.2 Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

**§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

## **§ 11.3 Waivers of Subrogation**

**§ 11.3.1** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

**§ 11.3.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

## **§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance**

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

#### **§11.5 Adjustment and Settlement of Insured Loss**

**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

**§ 11.5.2** Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

### **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

#### **§ 12.1 Uncovering of Work**

**§ 12.1.1** If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

**§ 12.1.2** If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

#### **§ 12.2 Correction of Work**

##### **§ 12.2.1 Before Substantial Completion**

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

##### **§ 12.2.2 After Substantial Completion**

**§ 12.2.2.1** In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

### § 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## ARTICLE 13 MISCELLANEOUS PROVISIONS

### § 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

### § 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

### § 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

### § 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect

timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

### § 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract

Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

#### **§ 14.2 Termination by the Owner for Cause**

**§ 14.2.1** The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

**§ 14.2.2** When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

**§ 14.2.3** When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

**§ 14.2.4** If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

#### **§ 14.3 Suspension by the Owner for Convenience**

**§ 14.3.1** The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

**§ 14.3.2** The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

#### **§ 14.4 Termination by the Owner for Convenience**

**§ 14.4.1** The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

**§ 14.4.2** Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

**§ 14.4.3** In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work

properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

## **ARTICLE 15 CLAIMS AND DISPUTES**

### **§ 15.1 Claims**

#### **§ 15.1.1 Definition**

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

#### **§ 15.1.2 Time Limits on Claims**

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

#### **§ 15.1.3 Notice of Claims**

**§ 15.1.3.1** Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

**§ 15.1.3.2** Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

#### **§ 15.1.4 Continuing Contract Performance**

**§ 15.1.4.1** Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

**§ 15.1.4.2** The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

#### **§ 15.1.5 Claims for Additional Cost**

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

#### **§ 15.1.6 Claims for Additional Time**

**§ 15.1.6.1** If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

**§ 15.1.6.2** If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

#### **§ 15.1.7 Waiver of Claims for Consequential Damages**

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

## **§ 15.2 Initial Decision**

**§ 15.2.1** Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

**§ 15.2.2** The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

**§ 15.2.3** In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

**§ 15.2.4** If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

**§ 15.2.5** The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

**§ 15.2.6** Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

**§ 15.2.6.1** Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

### § 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

### § 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

### § 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party



provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.



## SECTION 007300 - SUPPLEMENTARY CONDITIONS

## PART 1 – GENERAL

The AIA Document A201 - 2017 “*General Conditions of the Contract for Construction*”, Articles 1 through 15 inclusive, is a part of this Contract and is incorporated as fully as if herein set forth. For brevity, AIA Document A201 is also referred to in the Contract Documents collectively as the "General Conditions." The following supplements modify, delete and/or add to the General Conditions. Where any portion of the General Conditions is modified or any paragraph, subparagraph or clause thereof is modified or deleted by these Standard Modifications, the unaltered provisions of the General Conditions shall remain in effect.

**ARTICLE 1 GENERAL PROVISIONS*****Delete Subparagraph 1.1.1 and substitute the following:***

**1.1.1** The Contract Documents are enumerated in the AIA A101-2017 (also the “A101”) and consist of the A101, AIA A201 Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, invitation to bid, Instructions to Bidders, sample forms, the Contractor’s bid and Addenda relating to bidding requirements, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the AE. The Contract Documents are intended to be complementary and interpreted in harmony so as to avoid conflict, with words and phrases interpreted in a manner consistent with construction and design industry standards. In the event inconsistencies, conflicts, or ambiguities between or among the Contract Documents are discovered after execution of the Agreement, Contractor and Owner shall attempt to resolve any ambiguity, conflict or inconsistency informally, recognizing that the Contract Documents shall take precedence in the order set forth in the Agreement, or if no order is set forth therein, as follows:

1. Addenda, Modifications or Change Orders to this Agreement
2. Supplemental conditions.
3. Construction Drawings and Specifications identified in the Contract Documents
4. Other Exhibits to the Agreement not listed in this Subparagraph 1.1.1
5. Invitation to bid and addenda
6. Notice to Proceed
7. Invitation for Bids/Information for Bidders
8. Contractor’s Bid

***Add the following Clause 1.1.5.1 to Subparagraph 1.1.5:***

**1.1.5.1** Where only part of the Work is indicated, similar parts are considered repetitive. Where any detail is shown and components thereof are fully described, similar details not fully described are deemed to incorporate similar material and construction.

***Add the following Subparagraph 1.1.9:***

**1.1.9 NOTICE TO PROCEED** A document issued by the Owner to the Contractor fixing the date on which the Contract time will commence for the Contractor to begin the prosecution of the Work in accordance with the requirements of the Contract Documents.

***Add the following Subparagraph 1.110:***

**1.1.10 AE** The appropriately licensed Design Professional retained by the Owner for the Project and identified in the Agreement. Wherever the word "Architect" is used in the Contract documents, it shall mean AE.

***Add the following to Subparagraphs 1.2.1 & 1.4.1:***

**1.2.1** In the event of inconsistencies between the Contract Documents and applicable standards, codes, and ordinances, the Contractor shall:

**1.2.1.1** provide the better quality or greater quantity of Work; or,

**1.2.1.2** comply with the more stringent requirement; either or both in accordance with the AE's interpretation.

**1.4.1** The Owner assumes no responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this Contract, unless that understanding or representation is expressly stated in this Contract.

***Add the following Subparagraph 1.5.3:***

**1.5.3** The Owner shall retain all common law, statutory and other reserved rights, in addition to the limited use copyright, in accordance with the contract between the Owner and the AE for this Project.

## **ARTICLE 2 OWNER**

***Delete the last sentence of paragraph 2.1.1 and substitute the following:***

***Delete Subparagraph 2.1.2 in its entirety:***

***Delete the second sentence of Subparagraph 2.2.3 and substitute the following:***

**2.2.3** Subject to the Contractor's obligations, including those in Subparagraphs 1.5.2 and 3.2.1, the Contractor shall be entitled to rely on the accuracy of information furnished by the Owner pursuant to this Subparagraph, but shall exercise proper precautions relating to the safe performance of the Work. Neither the Owner nor the AE shall be required to conduct investigations or to furnish the Contractor with any information concerning subsurface characteristics or other conditions of the areas where the Work is to be performed beyond that which is provided in the Contract Documents.

**Delete the word "...under..." in the last sentence of Subparagraph 2.2.4 and substitute "...which is within..."**

**Delete Subparagraph 2.2.5 and substitute the following:**

**2.2.5** The Contractor will be furnished, free of charge, five (5) sets of the Drawings and Project Manual and will be furnished, at actual cost to the Contractor, as many additional copies as he may require.

**Delete Subparagraph 2.4 and substitute the following:**

**2.4.1** If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails, within a seven-day period after receipt of written notice from the Owner, to provide the resources needed to achieve correction of such default or neglect with diligence and promptness, the Owner may, in addition to and without prejudice to other remedies the Owner may have, proceed to correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the AE's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor or its Surety shall pay the difference to the Owner. If the Contractor defaults on such payment or neglects to execute a Change Order, the Owner may, in addition to and without prejudice to other remedies the Owner may have, including but not limited to termination pursuant to Article 14 of the General Conditions, issue an appropriate Change Directive, and carry out the remaining work after giving the Contractor a seven-day written notice.

**Add the following Subparagraph 3.2.5:**

**3.2.5** The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the Agency.

**Add the following Subparagraph 3.2.5.1 to Paragraph 3.2:**

**3.2.5.1** The Owner shall be entitled to deduct from the Contract Sum amounts paid to the AE for the AE to evaluate and respond to the Contractor's unreasonable requests for information, where such information was available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

**3.3.1 Delete sentences 3, 4 and 5 and insert the following:**

If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give advance written notice to the Owner and AE, informing the Owner and the AE of the alternate means, methods, techniques, sequences or procedures the Contractor intends to utilize in the performance of the Work, and, unless the Owner or the AE takes exception to the proposed means, methods, techniques, sequences or procedures, the Contractor shall proceed with the Work.

**Add the following clauses to Subparagraph 3.4.1:**

**3.4.1.1** The Contractor shall not allow the use of asbestos containing products, whether temporary or permanent and whether or not incorporated or to be incorporated in the work, even if the products are nonfriable and/or contain minimal amounts of asbestos, and even though such products may still be legally installed.

**3.4.1.2** The Contractor shall not allow the use of lead materials in public water applications. Lead free solder, flux and pipe must be used in all public drinking water and waste water applications. Lead free solder and flux are defined as containing less than 0.2% lead, while valves, pipes and appurtenances must contain less than 8.0% lead.

**Add the following to the end of Subparagraph 3.4.2:**

By making requests for substitutions, the Contractor:

- .1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified, except as specifically indicated by the Contractor;
- .2 represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;
- .3 certifies that the cost data presented is complete and includes all related costs under this Contract except the AE's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent, and
- .4 will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

**Add the following Subparagraph 3.4.4 to Paragraph 3.4:**

**3.4.4** The Owner shall be entitled to deduct from the Contract Sum amounts paid to the AE to evaluate the Contractor's proposed substitutions and to make agreed-upon changes in the Drawings and Specifications made necessary by the Owner's acceptance of such substitutions.

**ARTICLE 3 CONTRACTOR****Add the following Subparagraph 3.6.1:**

**3.6.1** The Contractor's attention is directed to Title 12, Chapter 9, SC Code of Laws, as amended, concerning withholding tax for nonresidents, employees, contractors and subcontractors.

**Add the following two sentences to Subparagraph 3.7.1:**

The Owner shall pay fees for public or private water, gas, electrical, and other utility extensions at the site. The Contractor shall secure and arrange for all necessary utility connections.

***Add the following Clause to Subparagraph 3.7.4:***

**3.7.4.1** Any adjustment, including reasonable overhead and profit, in the Contract Sum, or to the Contract Time made pursuant to this Subparagraph shall be determined in accordance with Paragraph 7.5.

***Delete the last sentence of Clause 3.8.2.3 and substitute the following:***

**3.8.2.3** The amount of the Change Order shall reflect the difference between actual costs under Clause 3.8.2.1, as documented by invoices, and the allowance amounts.

***Delete 3.9.3 and replace with the following:***

**3.9.3** The Contractor's superintendent and necessary assistants shall be acceptable to the Owner. The Contractor shall notify the Owner, in writing, of any proposed change in superintendent, including the reason therefore, prior to making such change. The superintendent shall not be changed except with the consent of the Owner, unless the superintendent ceases to be in the Contractor's employ.

***Add the following Clauses to Subparagraph 3.10.1:***

This schedule shall:

**3.10.1.1** indicate the dates for the start and completion of the various elements of the Work.

**3.10.1.2** be affirmed or revised upon execution of a Change Order that affects time.

**3.10.1.3** provide a graphic representation of activities and events that will occur during performance of the Work in sufficient detail, and as acceptable to the Owner to show the sequencing of the various trades for each floor level, wing or work area;

**3.10.1.4** identify each phase of construction and occupancy; and,

**3.10.1.5** set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as "Milestone Dates").

***Add the following sentence to Subparagraph 3.11:***

**3.11** Prompt delivery to the AE of the materials and items specified above, in good order, shall be a condition precedent to the Contractor receiving a Certificate of Substantial Completion.

***Add the following Subparagraph 3.15.3 to Paragraph 3.15:***

3.15.3 Metals that are removed from the Project site that are deemed to be unusable by the Owner shall be removed from the project area and delivered to a site designated by the Owner. Such metals include but are not limited to copper pipe, copper pipe fittings, metal studs, stainless steel, voice and data cable, cast iron, and electrical wire.

***Add the following Subparagraph to Paragraph 3.18:***

**3.18.3** The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the AE, the AE's consultants, and agents and employees of any of them arising out of: (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications; or (2)

the giving of or the failure to give directions or instructions by the AE, the AE's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

#### **ARTICLE 4 AE**

***Insert the following after the last sentence of Subparagraph 4.2.1:***

**4.2.1** Notwithstanding these responsibilities, no act or omission by the AE shall be considered a waiver of any of the Owner's rights or interests.

***Add the following Clause to Subparagraph 4.2. 1:***

**4.2.1.1** Any reference in the Contract Documents to the AE's taking action or rendering a decision within a "reasonable time" is understood to mean no more than fourteen (14) days, unless otherwise specified in the Contract Documents or otherwise agreed to by the parties.

***Delete the first sentence of Subparagraph 4.2.2 and substitute the following:***

**4.2.2** The AE, as a representative of the Owner, shall visit the site as necessary to fulfill its obligations to the Owner for inspection services, if any, and, at a minimum, to assure conformance with the AE's design as shown in the Contract Documents and to observe the progress and quality of the various components of the Contractor's Work. The AE shall: (1) keep the Owner informed about the progress and quality of the Work completed; (2) endeavor to guard the Owner against defects and deficiencies in the Work; and (3) determine if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents.

***Add Clause 4.2.2.1 to Subparagraph 4.2.1:***

**4.2.2.1** The Contractor shall reimburse the Owner for compensation paid to the AE for additional site visits made necessary by the fault, neglect or request of the Contractor.

***In Subparagraph 4.2.5 after the word "...of..." insert the words "...the Work completed and correlated with..."***

***Delete Subparagraph 4.2.11 and substitute the following:***

**4.2.11** The AE will, in the first instance, interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. Upon receipt of such request, the AE shall promptly notify the non-requesting party in writing of the details of such request. The AE's response to such requests will be made in writing within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the AE shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the AE to furnish such interpretations until fourteen (14) days after written request is made for them. An instruction that the AE may issue to the Contractor shall constitute an interpretation of the Contract Documents and shall not be construed as an act of supervision.

***In the first sentence of Subparagraph 4.2.12 change "...intent of.." to "...design as Indicated in..."***

*Add the following Subparagraph 4.2.15:*

**4.2.15** In the Specifications or on the Drawings, where the words "as directed," "as required," "as approved," "as permitted" or words of like effect are used, it is to be understood that direction, requirement, approval or permission of the AE is intended. Similar words, such as "approved," "acceptable" "satisfactory," or words of like import mean approved by, acceptable to, or satisfactory to the AE.

## **ARTICLE 5 SUBCONTRACTORS**

*Add the following to Paragraph 5.1:*

**5.1.3** The Contractor shall not change a Subcontractor, person or entity previously selected except for reasonable cause and in agreement with the Owner. The request for substitution shall be made to the Owner in writing.

*In the first sentence of Subparagraph 5.2.1 change "...award of the Contract.." to "...posting of the 'Notice of Intent to Award' of the Contract, or a Request for Substitution pursuant to Subparagraph 5.2.4...". In the second sentence of Subparagraph 5.2.1, delete the words "...or the Architect".*

*In the third sentence of Subparagraph 5.2.1, delete the words "...or Architect..".*

*In the first sentence of Subparagraph 5.2.2, delete the words "...or Architect..".*

*In the first sentence of Subparagraph 5.2.3, delete the words "-or Architect.." in both instances where they appear. In the first sentence of Subparagraph 5.2.3 change the phrase: "If the proposed but rejected Subcontractor was reasonably capable of performing the Work . . ." to read as follows:*

*If the proposed but rejected Subcontractor met the specified qualifications and was demonstrably capable of performing the Work . . .*

*In Subparagraph 5.2.4, delete the words "...or Architect..".*

*Add the following sentence to Subparagraph 5.2.4:*

The Contractor's Request for Substitution must be made to the Owner in writing, accompanied by supporting information.

*Delete all words after "...prejudice such rights ... " in the second sentence of Subparagraph 5.3.*

*Add the following Subparagraph 5.3.1:*

**5.3.1** Without limitation on the generality of the foregoing, each Subcontract agreement and each Sub-subcontract agreement shall include, and shall be deemed to include, the following:

**5.3.1.1** An agreement that the Owner is a third-party beneficiary of the Subcontract (or Sub-subcontract), entitled to enforce any rights thereunder for its benefit, and that the Owner shall have the same rights and remedies against the Subcontractor (or Sub-subcontractor) as the Contractor (or Subcontractor) has, including but not limited to the right to be compensated for any loss, expense, or damage of any nature



whatsoever incurred by the Owner resulting from any breach of representations and warranties, expressed or implied, if any, arising out of the agreement and any error, omission, or negligence of the Subcontractor (or Sub-subcontractor) in the performance of any of its obligations under the agreement; and,

**5.3.1.2** A requirement that the Subcontractor (or Sub-subcontractor) promptly disclose to the Contractor (or Subcontractor) any defect, omission, error, or deficiency in the Contract Documents or in the Work of which it has, or should have had, knowledge; and,

**5.3.1.3** The following Paragraphs, or Subparagraphs as appropriate, of the Conditions of the Contract: 3.2, 3.18, 5.4, 13.1.1, 13.13, 14.3 and 14.4.

***Insert the following Subparagraph 5.3.2:***

**5.3.2** The Contractor shall assure the Owner, by affidavit or in such other manner as the Owner may approve, that all agreements between the Contractor and its Subcontractor incorporate the provisions of Subparagraph 5.3.1 as necessary to preserve and protect the rights of the Owner and the AE under the Contract Documents with respect to the work to be performed by Subcontractors so that the subcontracting thereof will not prejudice such rights.

***Insert the following Subparagraph 5.3.3:***

**5.3.3** Upon request, the Contractor shall provide to the Owner copies of all executed or issued subcontracts, purchase orders and other documents related to the Work.

***Delete the last sentence of Subparagraph 5.4.1 and replace with the following:***

Each subcontract shall specifically provide that the Owner shall only be responsible to the Subcontractor for those obligations of the Contractor that accrue subsequent to the Owner's exercise of any rights under this conditional assignment.

***Insert the following new Clause to Subparagraph 5.4.1:***

**5.4.1.3** Subcontractors assigned to the Owner agree to perform assigned portions of the Work in accordance with the Contract Documents.

***Add the following sentence to the end of Subparagraph 5.4.2:***

“The equitable adjustment shall be limited to direct costs.”

***Delete the last sentence of Subparagraph 5.4.3.***

**ARTICLE 7 CHANGES IN THE WORK**

***Add Subparagraph 7.2.2:***

**7.2.2** Agreement on any Change Order shall constitute a release by the Contractor of the Owner for any and all liability under this Contract attributable to such facts or circumstances giving rise to the Change Order.

***Add the following Subparagraph 7.2.3:***

**7.2.3** The Contractor shall not proceed with the Work of the Change Order until the Change Order is approved by the Owner in writing. All Change Orders shall be submitted on Form AIA G701 Contract Administration Change Order with appropriate documentation attached.

***Delete the first sentence of Subparagraph 7.3.1 and substitute the following:***

A Construction Change Directive is a written order which directs a change in the Work and states a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both, and which is prepared by the AE on Form AIA G701 Contract Administration Change Order, and signed by the AE, the Contractor, if it agrees with the terms of the Directive, and the Owner.

***Insert as the first sentence in Subparagraph 7.3.3 the following:***

**7.3.3** Any adjustment in the Contract Sum, including reasonable overhead and profit made pursuant to Paragraph 7.3 shall be determined in accordance with Paragraph 7.5 of this Contract.

***Delete Subparagraph 7.3.7 and substitute the following:***

**7.3.7** If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the AE as provided in Clause 7.5.1.5, on the basis of reasonable expenditures and savings to those performing the Work attributable to the change, including allowances for reasonable overhead and profit.

***Delete Subparagraph 7.3.8 in its entirety and insert the following:***

When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase or net decrease, if any, with respect to that change.

***Insert the following Subparagraph 7.3.11:***

**7.3.11** If the Contractor defaults or neglects to execute a Change Directive, the Owner may carry out the Work in accordance with Paragraph 2.4 and Article 6.

***Insert the following Paragraph 7.5:***

## **7.5 PRICE ADJUSTMENTS**

**7.5.1 METHODS OF ADJUSTMENT.** Any adjustment in the Contract Sum made pursuant to this Paragraph 7.5 shall be consistent with this Contract and shall be arrived at through whichever one of the following ways is the most valid approximation of the actual cost to the Contractor.

**7.5.1.1** by agreement on a fixed price adjustment;

**7.5.1.2** by unit prices specified in the Contract or subsequently agreed upon;

**7.5.1.3** by the costs attributable to the event or situation covered by the relevant clause, including profit if otherwise allowed, all as specified in the Contract; or subsequently agreed upon;

**7.5.1.4** in such other manner as the parties may mutually agree; or,

**7.5.1.5** in the absence of agreement by the parties, through a unilateral initial determination by the AE of the costs attributable to the event or situation covered by the clause, including profit if otherwise allowed, all as computed by the AE in accordance with Clause 7.5.3.2.

**7.5.2** Final Agreement. When any adjustment in the Contract Sum made pursuant to clauses in this Contract becomes final (e.g., by agreement or dispute resolution), the adjustment shall be computed and documented on Form AIA G701 Contract Administration Change Order.

### **7.5.3 DOCUMENTATION OF COST REASONABLENESS**

**7.5.3.1 CONTRACTOR'S CHANGE ORDER PROPOSAL.** The Contractor shall submit a written proposal for review by the AE and the Owner. The proposal shall be submitted to the Owner's representative within the time limits specified in Subparagraph 15.1.2. All costs claimed by the Contractor shall be justifiable compared with prevailing industry standards, as adjusted for local cost conditions. Costs shall be properly itemized and supported by substantiating data sufficient to permit evaluation before commencement of the pertinent performance or as soon thereafter as practicable.

**7.5.3.2 CONSTRUCTION CHANGE DIRECTIVES.** For a Construction Change Directive wherein the proposed method of compensation is actual costs, and pending the collection and evaluation of actual costs as required by Clause 7.5.1.3, the Contractor shall estimate the value of the changed work. The Contractor shall itemize the estimated cost into building components and shall use the labor, material and equipment unit direct costs as listed in the most current issue of the Construction Cost Data Book most applicable to the nature of the changed work, as published by R.S. Means, with a cost index adjusted for the project locale. The Contractor shall also be permitted to add overhead and profit as shown in Subparagraph 7.5.4. Where the Contractor does not properly itemize the proposed costs as requested, the AE shall provide the Owner with the itemization and this amount shall be the initial basis for compensation under Subparagraph 7.3.8. Upon conversion of the Construction Change Directive to a Change Order, the AE's cost for providing this itemization shall be deducted from the final adjustment in the Contract Sum as described in Clause 7.3.9.

### **7.5.4 AGREED OVERHEAD AND PROFIT RATES**

**7.5.4.1** For any adjustment to the Contract Sum for which overhead and profit may be recovered, the Contractor agrees to charge and accept, as full payment for overhead and profit, the following percentage of cost attributable to the change in the Work. The percentage cited below shall be considered to include all indirect costs including, but not limited to: field and office managers, supervisors and assistants, incidental job burdens, small tools, and general overhead allocations. "Commission" is defined as profit on work performed by others. The total allowable combined percentage for overhead, profit, and commission including all subcontractor and sub-subcontractor overhead, profit and commission shall not exceed 10% of the actual cost of work as defined in Subparagraph 7.3.3.

**7.5.4.2** Using the percentage stated, any adjustment to the Contract Sum for deleted work shall include any overhead, profit and/or commission attributable to the cost for the deleted Work.

**7.5.4.3** If the Contractor initiates a Change Order proposal and the Owner is not obligated to pay for all or any part of the proposal, then the Contractor shall be responsible for any AE's fees to evaluate and process that Change Order proposal. Compensation shall be based on the Owner's contract with the AE and the rates for Additional Services contained therein, and shall be withheld from the final payment to the Contractor.

## 7.5.5 COST OR PRICING DATA

**7.5.5.1** The Contractor shall submit cost or pricing data for all element of changed work (other than Unit Price Work), and shall certify that, to the best of its knowledge and belief, the cost or pricing data submitted is accurate, complete, and current as of a mutually determined specified date prior to the date of the pricing. This data shall be itemized and supported by substantiating data sufficient to permit evaluation before commencement of the pertinent Work, or as soon thereafter as practicable, and shall be justifiably compared with prevailing industry standards. As requested by the AE or the Owner, the Contractor's submittal shall provide an itemized breakdown of all increases and decreases in the Contract for the Contractor and each subcontractor (at any tier) in at least the following detail: material, equipment and supply quantities and costs; direct labor hours and rates for each trade; the associated FICA, FUTA, SUTA, and Worker's Compensation Insurance; equipment hours and rates, and costs of premiums for bonds and insurance, permit fees and sales, use or similar taxes related to the Work.

## ARTICLE 8 TIME

*Delete Subparagraph 8.1.2 and substitute the following:*

**8.1.2** The Date of Commencement of the Work is the date established in the Notice to Proceed. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for which the Contractor is responsible.

*Add the following to paragraph 8.2.3*

**8.2.3** Any time the project falls behind the projected schedule by more than ten (10) days, the Contractor shall provide a "recovery schedule" within five (5) days to the Owner. This "recovery schedule" shall be approved by the AE and the Owner.

*Add the following Subparagraph 8.2.4:*

**8.2.4** Failure by the Contractor to commence actual physical work on the project within seven (7) days from the Date of Commencement, as established in the Notice to Proceed, will entitle the Owner to consider the Contractor in substantial breach of its obligations under this Contract. In this event, the Owner may withdraw the Notice to Proceed and terminate the Contract in accordance with the Contract Documents.

*Add the following subparagraph 8.2.5:*

**8.2.5** Final Completion shall be achieved within 30 days of the established date of Substantial Completion, unless otherwise amended by Change Order.

*In Subparagraph 8.3.1 change "...mediation and arbitration..." to "...dispute resolution...".*

*Add the following Clauses to Subparagraph 8.3.2:*

.1 Claims for extensions of construction time due to adverse weather conditions shall include the U.S. Weather Bureau Climatological Reports for the months involved plus a report indicating the average precipitation, temperature, etc., for the past 5 years from the nearest reporting station. The 5-year average will determine the number of adverse weather days which the Contractor would normally expect to encounter. Extensions of time may be requested for any month of construction for days lost, which

affects the critical path of construction, due to adverse weather in excess of the expected lost time. It is responsibility of the Contractor to maintain a Project daily weather log and to obtain the verification and initials of the AE's representative on a monthly basis. The Contractor shall transmit these logs and 5-year weather data averages to the AE monthly. All claims for weather delay shall be reported within 30 days of the incident which effected the critical path. The AE will make weather delay determinations by comparing verified Contractor's logs with the 5-year averages over the duration of the Project. All approved weather delays will be reported to the Contractor and to the Owner and shall be accumulated and granted in 1 or more Change Order. Contract time shall not be shortened by weather conditions which are more advantageous than had been predicted.

.2 Extension of time shall be Contractor's sole remedy for delay except as noted in 8.3.2.5 below or unless the same shall have been caused by acts constituting intentional interference by the Owner with Contractor's performance of the work and where and to the extent that such acts continue after Contractor's notice to Owner of such interference. Owner's exercise of any of its rights under Article 12 CORRECTION OF WORK regardless of the extent of number of such changes, or Owner's exercise of any correction or re-execution of any defective work, shall not under any circumstances be construed as intentional interference with Contractor's performance of the Work.

.3 Extensions of Contract Time due to unusual adverse weather conditions shall not entitle the Contractor to claims for cost due to extended project overhead.

.4 No claims for extension of time will be considered when based on delays caused by conditions existing at the time bids or proposals were received, and of which the Contractor might be reasonably expected to have knowledge at the time of bidding or proposing, or upon delays caused by failure on the part of the Contractor to anticipate properly the reasonable requirements of the Work contracted for as to materials, labor and equipment. The parties acknowledge that the Contractor has performed no invasive or destructive testing of the conditions existing at the time bids or proposals were received, the Contractor has made a visual inspection of the existing conditions, and the Contractor acknowledges that it knows of no claims for extension of time, delay or additional costs that are due or pending as a result of any concealed or other site conditions existing as of the date of this Agreement.

.5 When Contractor shall be permitted an adjustment in the Contract Sum as set forth in this Paragraph 8.3.2 and as determined in accordance with Paragraph 7.5, Contractor's entitlement to such adjustment shall apply only if the Delays, either individually or taken in the aggregate, cause the Contract Time to be increased by more than seven (7) days.

## **ARTICLE 9 PAYMENTS AND COMPLETION**

### ***Add the following to Subparagraph 9.2.1:***

**9.2.1** If the project spans over two (2) fiscal years, a cash flow schedule shall be submitted.

### ***Insert the following new subparagraph 9.2.2:***

**9.2.2** As requested by the AE, the Contractor and each Subcontractor shall prepare a trade payment breakdown for the Work for which each is responsible, such breakdown being submitted on a uniform standardized format approved by the AE and Owner. The breakdown shall be divided in detail sufficient to exhibit areas, floors, and/or sections of the Work, and/or by convenient units and shall be updated as required by either the Owner or the AE as necessary to reflect:

**9.2.2.1** the description of Work (listing labor and material separately);

**9.2.2.2** the total value;

**9.2.2.3** the percent and value of the Work completed to date;

**9.2.2.4** the percent and value of previous amounts billed; the current percent completed and amount billed; and,

**9.2.2.5** the current percent completed and amount billed. Any schedule of values or trade breakdown that fails to include sufficient detail, is unbalanced, or exhibits "frontloading" of the value of the Work, shall be rejected. If either the schedule of values or trade breakdown had been initially approved and subsequently used, but later was found improper for any reason, then sufficient funds shall be withheld from future Applications for Payment to ensure an adequate reserve (exclusive of normal retainage) to complete the Work.

***Add the following sentence to Subparagraph 9.3.1:***

"The Contractor's Application for Payment shall be in a form acceptable to the Owner. The AE will authorize, as provided in Paragraph 9.4 and until the final pay request, monthly payments equal to ninety (90%) of the portion of the Contract Sum properly allocable to labor, material and equipment incorporated in the Work, and allocable to material and equipment suitably stored for the month."

***Add the following to Subparagraph 9.3.2:***

Rental equipment such as, but not limited to, mobile equipment, pans, forms, scaffolding, compressors, etc., shall not be considered material stored.

***Add the following Subparagraph 9.3.3.1:***

Contractor's Application and Certification for Payment shall be in the form of the AIA G702, "Application and Certification for Payment".

***Delete Subparagraph 9.6.7 in its entirety.***

***In Subparagraph 9.7 delete the words "...plus interest as provided in the contract documents..." in the last sentence and add the following:***

**9.7.** "which shall be accomplished as provided in Paragraph 7.5. As used in this Subparagraph, the phrase "dispute resolution order" includes any decision rendered pursuant to Paragraph 15.3. The Owner may pay interest on delayed certified progress payments to the Contractor in accordance with Paragraph 8.2 of the Agreement.

***Add the following Clauses to Subparagraph 9.8.3:***

**9.8.3.1** Inspection and testing shall take place at a time(s) mutually agreeable to the Contractor, AE, Owner and Building Official if applicable.

**9.8.3.2** The inspection shall include a demonstration by the Contractor that all equipment, systems and operable components of the Work function properly and in accordance with the Contract Documents. The Contractor shall furnish access for the inspection and testing as provided in this Contract. The inspection and testing shall determine whether Substantial Completion has been accomplished and shall result in the

AE's issuance of a written list of Unfinished Work and Defective Work, commonly referred to as a "punch list", each item of which must be finished and corrected prior to Final Completion.

**9.8.3.3** The AE and its Consultants shall conduct all Substantial Completion inspections. The Owner may elect to have other persons of their choosing also participate in the inspections. Representatives of the State Fire Marshal's Office, the Building Official and other authorities having jurisdiction may be present, at their sole discretion, at the Substantial Completion inspection or otherwise inspect the completed Work and advise the Owner whether the Work meets their respective requirements.

**9.8.3.4** If the inspection discloses any item which is not in accordance with the requirements of the Contract Documents and will prevent the Owner from occupying or utilizing the Work for its intended use, the Contractor shall complete or correct such item upon notification by the AE. The Contractor shall then submit a request for a follow-up inspection by the AE to determine Substantial Completion.

**9.8.3.5** The Contractor shall proceed promptly and diligently to complete and correct items on the list of Unfinished or Defective Work. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

**9.8.3.6** If more than one Substantial Completion inspection is required, the Contractor shall reimburse the Owner for all costs of reinspection or, at the Owner's option, the costs may be deducted from payments due to the Contractor.

***Delete the last sentence of Subparagraph 9.8.5 and add the following Clauses:***

“Upon such acceptance and consent of surety, if any, the Owner shall make payment sufficient to increase the total payments to ninety-eight percent (98%) of the Contract Sum, less such amounts as the AE shall determine for incomplete Work and unsettled claims.”

***Add the following Clauses to Subparagraph 9.10.1:***

**9.10.1.1** Final Completion shall be achieved no later than thirty (30) days after Substantial Completion unless otherwise stated in the Contract Documents or modified by a Change Order. Failure of the Contractor to achieve Final Completion within the time allowed under this Subparagraph shall entitle to Owner to consider the Contractor in substantial breach of its obligations under this Contract.

**9.10.1.2** Representatives of the State Fire Marshal's Office, the Building Official and other authorities having jurisdiction may be present at the Final Completion inspection or otherwise inspect the completed Work and advise the Owner whether the Work meets their respective requirements for the Project.

**9.10.1.3** The Contractor shall then submit a request for a follow-up inspection to determine Final Completion. If more than one Final Completion inspection is required, the Contractor shall reimburse the Owner for all costs of re-inspection or, at the Owner's option, the costs may be deducted from payments otherwise due to the Contractor.

**9.10.1.4** Approval of Work at or as a result of any inspection required herein shall not release the Contractor or its surety from responsibility for complying with the Contract.

***Add the following Clause to Subparagraph 9.10.4:***

**9.10.4.4** faulty or defective Work appearing after the date of Substantial Completion.

*In Subparagraph 9.10.5, after the word "...those.." insert the phrase "...specific claims in stated amounts that have been..."*.

## **ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

*Add the following clause 10.2.2.1:*

10.2.2.1 In the event that review, inspection or other action by regulatory agencies or other parties results in the imposition of fines, fees, or other costs due to the failure of the Contractor to comply with said applicable laws, ordinances, rules, regulations and lawful orders, the Contractor shall hold harmless the Owner from all consequences arising from the Contractor's noncompliance.

*Add the following clause 10.2.4.1:*

10.2.4.1 When use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall give the Owner reasonable advance notice.

*In Subparagraph 10.3.1 after the word "...persons ...", insert the words "...or serious losses to real or personal property..."*.

*Add the following Clause to Subparagraph 10.3. 1:*

**10.3.1.1** The Owner and Contractor hereby agree that this Paragraph shall apply only to hazardous, toxic or radioactive materials or substances subject to the regulations of agencies having jurisdiction, such as, but not limited to, the S.C. Department of Health and Environmental Control (SCDHEC), the U.S. Environmental Protection Agency (USEPA) and the U.S. Nuclear Regulatory Commission (USNRC).

*Add the following Clauses to Subparagraph 10.3.2:*

**10.3.2.1** Any adjustment in the Contract Sum, including reasonable overhead and profit, made pursuant to this Subparagraph shall be determined in accordance with Paragraph 7.5 of this Contract.

**10.3.2.2** The Work in the affected area shall be resumed immediately following the occurrence of any of the following events: (a) the Owner causes remedial work to be performed that results in the absence of materials or substances; or (b) the Owner and the Contractor, by written agreement, decide to resume performance of the Work; or (c) the Work may safely and lawfully proceed, as determined by an appropriate governmental Owner or as evidenced by a written report to both the Owner and the Contractor, which is prepared by an environmental engineer reasonably satisfactory to both the Owner and the Contractor.

**10.3.2.3** For the purposes of this Contract, the term "rendered harmless" shall be interpreted to mean that measured levels of verified hazardous, toxic or radioactive materials or substances are less than the applicable standards established by authorities having jurisdiction. In no event, however, shall the Owner have any responsibility for any substance or material that is brought to the Project site by the Contractor, any Subcontractor, any material supplier, or any entity for whom any of them is responsible, unless such materials or substances were expressly required by the Contract Documents. The Contractor agrees not to



use any fill or other materials to be incorporated into the Work that are hazardous, toxic, or radioactive, or made up of any items that are hazardous, toxic, or radioactive.

*Delete Subparagraph 10.3.3 in its entirety.*

## ARTICLE 11 INSURANCE AND BONDS

*Add the following Clauses 11.1.2.1 through 11.1.2.6 to Subparagraph 11.1.2:*

**11.1.2.1 Contractor's and Subcontractor's Insurance:** Before commencing the Work, and until completion and final acceptance of the Work, the Contractor shall procure and maintain, at its own expense, the insurance coverages described below. Before starting the Work, Contractor shall furnish a Certificate of Insurance, in a form acceptable to Owner, evidencing the Contractor's compliance with the Agreement's insurance requirements. All insurance policies are to be written through a company duly authorized to transact that class of insurance within the jurisdiction of the Project site and shall be with insurance companies acceptable to Owner and with A.M. Best Rating of A minus or better. The Certificates and policies for the Commercial General Liability and Business Automobile Liability Policy shall name Owner, and if requested, Owner's agents, as Additional Insureds for completed and ongoing operations on a primary and non-contributory basis. All Insurance Certificates shall state policy numbers, dates of expiration, policy limits, and provide that the insurance will not be cancelled or changed unless Owner has been given written notice at least thirty (30) days prior to the date of the proposed change or cancellation. If the Contractor fails to procure or maintain required insurance coverages, Owner shall have the right, but not the obligation, to procure and maintain the required insurance for and in the name of the Contractor, and Contractor shall pay the cost thereof and furnish all necessary information to make effective and maintain such insurance. Contractor shall not commence work until all insurance requirements are met.

**11.1.2.2 Required Insurance Coverages:** The insurance coverages to be provided include those as set forth below unless modified in an Insurance Exhibit attached to the Agreement:

**11.1.2.2.1 Commercial General Liability Insurance** with limits of \$1,000,000.00 per occurrence/\$1,000,000 aggregate Bodily Injury and Property Damage Liability. This coverage must, at a minimum, include coverage and/or endorsements for premises operations, products/completed operations, contractual liability assumed by Contractor under this Agreement, personal injury, advertising injury and broad form Property Damage (including coverage for explosion, collapse and underground hazards), and independent Contractor coverages. All liability policies must be written on an "occurrence" basis. Such policy shall not contain Endorsement, CG 22 94 10 01. The Commercial General Liability and Automobile Liability insurance required herein shall protect the Contractor and the Owner against liability from damages growing out of any Contractor operations (including the operation of all automobiles, trucks, and other vehicles owned or rented) in connection with the performance of this Agreement, as well as liability arising after the completion of the Contractor's operations.

**11.1.2.2.2 Motor Vehicle Liability Insurance** with bodily injury limits of \$1,000,000.00 and property damage limits of \$1,000,000.00 or a combined single limit of \$1,000,000.00.

**11.1.2.2.3 Worker's Compensation** in accordance with, and providing coverages meeting or exceeding the limits required by, the laws of the State of South Carolina jurisdiction, and Employer's Liability

Insurance with the following minimum limits: \$100,000 Per Accident, \$100,000 Per Disease for Each Employee, \$500,000 aggregate.

**11.1.2.2.4** Excess or Umbrella Liability Insurance with a policy limit of \$1,000,000.00 per occurrence and aggregate.

**11.1.2.5** Sub-Contractor Insurance: If Contractor elects, with Owner's approval, to subcontract any portion of the Work to another Contractor, Contractor shall require of such Subcontractor insurance coverage similar to that required of Contractor hereunder and shall furnish to Owner evidence that such insurance coverages are currently in effect. Moreover, Contractor shall require any such Subcontractor to name Contractor and Owner as additional insureds on Subcontractor's Commercial General Liability Insurance and will provide Contractor with a waiver of subrogation form from such sub-Contractors worker's compensation carrier. Failure of Contractor to require Subcontractor to obtain the coverages required herein or to furnish Owner evidence of such coverage shall be grounds for termination for default.

**11.1.2.6** The Contractor shall furnish one copy of each Certificate of Insurance herein required attached to each copy of the Agreement, plus three additional copies of each Certificate of Insurance herein required, which shall specifically set forth evidence of all coverages set forth above. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits.

*Delete Paragraph 11.3 and substitute the following:*

### **11.3 PROPERTY INSURANCE**

**11.3.1** Unless otherwise provided, the Owner shall purchase and maintain property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis. Such property insurance shall be maintained until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is earlier. This insurance shall only cover the work owned by the Owner at the time of loss.

**11.3.2** Property Insurance shall be written using a 'Builders Risk Coverage Form' with the following attached forms and endorsements:

**11.3.2.1** Causes of Loss - Special Form; (Risks of Direct Physical Loss unless the loss is excluded or limited by the Form)

**11.3.2.2** Causes of Loss - Earthquake Form; and

**11.3.2.3** Flood Insurance.

**11.3.3** Covered Property is the Building Under Construction described in the Policy Declarations owned by the Agency at the time of loss and includes:

**11.3.3.1** Foundations;

**11.3.3.2** If intended to become a permanent part of the building or structure described in the Declarations, the following property located in or on the building or structure or within 100 feet of its premises:

- (1) Fixtures, machinery and equipment used to service the building; and
- (2) Building materials and supplies used for construction;

**11.3.3.3** If not covered by other insurance, temporary structures built or assembled on site, including cribbing, scaffolding and construction forms.

**11.3.4** Replacement of insured damaged work shall be covered by an appropriate Change Order. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

**11.3.5** The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

**11.3.6** The Contractor shall provide adequate insurance to protect the interests of the Contractor, Subcontractor, and Sub-subcontractor in the work.

**11.3.7** The Contractor shall be responsible for the deductible in the Owner's policy. The policy is written with a deductible of \$1,000 for each occurrence.

***Delete Subparagraph 11.4.1 in its entirety and insert the following Subparagraphs 11.4.1 and 11.4.2:***

11.4.1 If the Contractor's work as set forth in the Scope of Work exceeds \$50,000.00, Contractor shall provide payment and performance bonds in the full amount of the Contract Sum. The payment and performance bonds, if any, shall name Owner as the obligee. Such bonds must be secured by cash or must be issued by a surety company licensed in the State of South Carolina with an "A" minimum rating of performance as stated in the most current publication of "Best Key Rating Guide, Property Liability". Upon execution of the Contract Documents, the Contractor shall furnish to the Owner a Performance Bond and a separate Labor and Material Payment Bond in a form acceptable to the Owner. The bonds shall guarantee the Contractor's faithful performance of the Contract and payment of all obligations arising thereunder. The bonds shall remain in force until the Work has been completed and accepted by the Owner, the provisions of all guarantees required by these Contract Documents have been fulfilled, and the warranty periods and period for correction of the Work as provided in the Contract Documents have expired, or the period for filing mechanics' liens has expired, whichever occur latest, after which time the bonds shall lapse. The Contractor shall bear all costs in connection with the bonds as a part of the Contract. One executed copy of each bond shall be attached to each executed copy of the Contract Documents prior to the execution of the Contract Documents by the Owner.

11.4.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

***Add Subparagraph 11.4.3 as follows:***

**11.4.3** The Contractor shall keep the Surety informed of the progress of the Work, and, where necessary, obtain the Surety's consent to, or waiver of:

11.4.3.1 notices of changes in the Work;

11.4.3.2 requests for reduction or release of retention;

11.4.4.3 requests for final payment; and

11.4.3.4 any other item required by the Surety.

The Owner may, in its sole discretion, inform the Surety of the progress of the Work and obtain consents as necessary to protect the Owner's rights, interest, privileges, and benefits under and pursuant to any bond issued in connection with the Work.

## ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

*Delete Subparagraph 12.1.1 and insert the following:*

**12.1.1** If a portion of the Work is covered contrary to the requirements specifically expressed in the Contract Documents, including inspections of work-in-progress required by all authorities having jurisdiction over the Project, then the portion of Work so covered shall, upon demand of the AE or the Owner having jurisdiction, be uncovered for observation and be replaced at the Contractor's expense without change in the Contract Time.

*Add the following Clause 12.2.1.1:*

If, prior to the date of Substantial Completion, the Contractor, a Subcontractor, or anyone for whom either is responsible, uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing, and other building systems, machinery, equipment, or other mechanical device, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner.

*In the third sentence of Clause 12.2.2.1, delete the phrase "...and to make a claim for breach of warranty..."*

*Add the following Clause 12.2.2.1.1 to Subparagraph 12.2.2.1:*

**12.2.2.1.1** Leakproof Envelope Provision: The one-year period for correction of Work shall be extended to a two-year period for all exterior envelope elements of the Work should one or more fail to serve as a leakproof water and/or air barrier due to Contractor's failure to conform the Work to the Contract Documents. The Contractor's responsibility under this Clause shall extend to the repair of all damage to the building and building contents resulting from such failure.

*Delete the words "one-year" from Subparagraphs 12.2.2.2, 12.2.2.3 and 12.2.5.*

*At the end of Clause 12.2.2.3, add the phrase '...unless otherwise provided in the Contract Documents.'*

Add the following Clause 12.2.2.4 to Subparagraph 12.2.2:

12.2.2.4 Upon request by the Owner and prior to the expiration of one year from the date of Substantial Completion, the AE will conduct and the Contractor shall attend a meeting with the Owner to review the facility operations and performance.

**ARTICLE 13 MISCELLANEOUS PROVISIONS**

*Delete Subparagraph 13.1.1 and substitute the following:*

**13.1.1** The Contract shall be governed by and construed in accordance with the laws of the State of South Carolina, and any suit, action or proceeding arising out of or relating to the Contract shall be governed by the laws of the State of South Carolina.

*In the second sentence of Subparagraph 13.2.1, delete the phrase "Except as provided in Subparagraph 13.2.2,..." and capitalize "...neither...".*

*Delete Subparagraph 13.2.2 in its entirety.*

*Add the following Subparagraphs to Paragraph 13.3:*

**13.3.1** Unless otherwise permitted herein, all notices contemplated by the Contract Documents shall be in writing and shall be deemed duly given:

**13.3.1.1** upon actual delivery to the person identified in the A101, if delivery by hand; or,

**13.3.1.2** upon receipt by the transmitting party of confirmation or reply, if delivery is by facsimile or

**13.3.1.3** upon receipt by the person identified in the Agreement, if delivery is by deposit into the United States mail, certified mail, return receipt **requested**.

**13.3.2** Each such notice shall be sent to the respective party at the address provided in the Agreement, or to any other address as the respective party may designate by notice delivered pursuant hereto.

*Add Subparagraph 13.4.3 as follows:*

**13.4.3** Notwithstanding Subparagraph 9.10.4, the following provisions (as amended) of the Contract Documents shall survive termination for whatever cause, expiration or completion:

1.5 Ownership and Use of Drawings, Specifications and Other Instruments of Service;

3.5 Warranty

3.17 Royalties, Patents and Copyrights

3.18 Indemnification

7.5.5 Cost or Pricing Data

10.2.2.1 Protection of Persons and Property

11.1 Contractor's Liability Insurance

11.4 Performance and Payment Bond

12.2 Correction of Work

13.1 Governing Law

13.4 Rights and Remedies

15 Claims & Disputes

*Add the following to Subparagraph 13.5.5:*

The Contractor shall give the AE timely notice in advance of tests, inspections or approvals.

*Add the following Subparagraph to Paragraph 13.6:*

**13.6.1** Payments made under the Contract Documents are subject to the requirements of Title 29, Chapter 6 of the South Carolina Code of Laws, as amended.

*Add the following Paragraph 13.8:*

**13.8 Drug Free Workplace and Drug Testing**

**13.8.1** Notice Of Requirement: Drug Free Workplace Act. The Contractor shall comply with the requirements of Title 44, Code of Laws of South Carolina, as amended; with the respect to maintaining a drug-free workplace, and shall provide such certifications of compliance as the Owner may require.

**13.8.2** The Contractor shall provide documentation to the Owner that all employees of the Contractor, a Subcontractor, anyone directly or indirectly employed by them nor anyone for whose acts they may be liable (also referred to herein as "Project Personnel"), shall have completed pre-employment drug screening consistent with the requirements of employees of the Owner or otherwise acceptable to the Owner.

**13.8.3** Any Project Personnel involved in an accident on the Project site involving property damage greater than \$10,000 in value or personal injury must complete at the Contractor's expense drug screening consistent with the requirements of employees of the Owner or otherwise acceptable to the Owner within twenty-four hours of the accident. The Contractor shall provide documentation to the Owner that such testing has occurred.

**13.8.4** The Contractor warrants and represents that all Project Personnel shall comply with drug testing for particularized suspicion of drug use consistent with the policy for Owner's employees or otherwise acceptable to the Owner, at the Contractor's expense.

*Add the following Paragraph 13.9:*

**13.9 CANCELLATION AFTER AWARD**

This Contract may be canceled after award, but prior to issuance of the Notice to Proceed. In such event, the Contractor shall recover, as its sole remedy, its reasonable bid preparation costs.

*Add the following Paragraph 13.10:*

**13.10 BANKRUPTCY**

In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish written notification of the bankruptcy to the Owner. This notification shall be furnished within five (5) days of the initiation of the proceedings relating to the bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of all State contracts against which final payment has not been made. This obligation remains in effect until final payment under this Contract.

*Add the following Paragraph 13.11:*

**13.11** Contractor certifies that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws and agrees to provide to the Owner upon request any documentation required to establish either: (a) that Title 8, Chapter 14 is inapplicable both to Contractor and its subcontractors or sub-subcontractors; or (b) that Contractor and its subcontractors or sub-subcontractors are in compliance with Title 8, Chapter 14. Pursuant to Section 8-14-60, "A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony, and, upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." Contractor agrees to include in any contracts with its subcontractors language requiring its subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 8, Chapter 14.

*Add the following Paragraph 13.12:*

### **13.12 UNIT PRICE WORK**

**13.12.1** Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, the initial Contract Sum will be deemed to include an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as identified in the Contract. The estimated quantity for each item of Work represents the Owner's best estimate of the amount of each item to be required of the Contractor, but the amounts are not guaranteed, and are solely for the purpose of comparison of Bids and determining an initial Contract Sum. Determinations of the actual quantities and classifications of Unit Price Work performed by the Contractor will be made by the AE as described below.

**13.12.2** Each unit price will be deemed to include an amount considered by the Contractor to be adequate to cover the Contractor's total costs, including overhead and profit, for each separately identified item.

**13.12.3** The AE will review with the Contractor its preliminary determinations on such matters before rendering a written decision or issuing a recommendation on the Contractor's Applications for Payment. The AE's written decisions or recommendations will be final and binding on the Agency and the Contractor, except as modified by the AE to reflect changed factual conditions or more accurate data. The AE's written decisions or recommendations shall serve as the AE's initial decision.

*Add the following Subparagraph 13.13:*

### **13.13 PROCUREMENT OF MATERIALS BY OWNER.**

The Contractor accepts assignment of, and liability for, all purchase orders and other agreements for procurement of materials and equipment that are identified as part of the Contract Documents. The Contractor shall be responsible for such pre-purchased items, if any, as if the Contractor were the original purchaser. The Contract Sum includes, without limitation, all costs and expenses in connection with delivery, storage, insurance, installation, and testing of items covered in any assigned purchase orders or agreements. All warranty and correction of the Work obligations under the Contract Documents shall also apply to any pre-purchased items, unless the Contract Documents specifically provide otherwise.

## **ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT**

*In Subparagraph 14.1.1, change "...30..." to "...sixty (60)". Delete Clause 14.1.1.4.*

***In Subparagraph 14.1.3, delete all words after "...Work executed..." and add:***

Any adjustment to the Contract Sum made pursuant to this Subparagraph shall be made in accordance with the requirements of Paragraph 7.5, provided, however, that in no event shall Contractor be entitled to payment related to those portions of the Work not executed.

***Delete Subparagraph 14.2.1 and substitute the following:***

**14.2.1** The Owner may terminate the Contract, or any separable part of it, if the Contractor.

**14.2.1.1** fails to complete the Work within the time specified in the Contract Documents, including any authorized adjustments; or,

**14.2.1.2** fails to prosecute the Work, or any separable part of the Work, with the diligence, resources and skill that will ensure its completion within the time specified in the Contract Documents, including any authorized adjustments; or,

**14.2.1.3** fails to make payment to Subcontractors for materials or labor in accordance with Title 29, Chapter 6 of the South Carolina Code of Laws, as amended, and the respective agreements between the Contractor and the subcontractors; or,

**14.2.1.4** persistently disregards laws, ordinances, or rules, regulations or orders of a public Owner having jurisdiction; or,

**14.2.1.5** fails to comply with any of the other material provisions of this Contract.

***Delete Subparagraph 14.2.2, but not the subordinate Clauses (14.2.2.1 -- 14.2.2.3) and substitute the following:***

**14.2.2** The Owner's right to terminate this Contract under Subparagraph 14.2.1 may be exercised if the Contractor does not cure such failure within seven (7) days (or more if authorized in writing by the Owner) after receipt of the notice from the Owner specifying the general nature of the failure. The Owner shall notify the Contractor's surety within a reasonable time. When terminating pursuant to Paragraph 14.2, the Owner may, without prejudice to any other rights or remedies of the Owner, and subject to any prior rights of the surety:

***Insert "...including Liquidated Damages, If any,..." after the phrase "...other damages..." in the first sentence of Subparagraph 14.2.4.***

***Insert the following to Subparagraph 14.3.2 after the second sentence:***

Any adjustment to the Contract Sum made pursuant to this Subparagraph shall be made in accordance with the requirements of Paragraph 7.5.

***Add after Paragraph 14.2.4 the following:***

**14.2.5** The rights of the Owner to suspend or terminate as herein provided shall be cumulative and not exclusive and shall be in addition to any other remedy provided by law.

***Delete Subparagraphs 14.4.1 and 14.4.2 and substitute the following:***



**14.4.1** The performance of Work under this contract may be terminated by the Owner in whole, or from time to time in part, whenever the Owner shall determine that such termination is in the best interest of the Owner. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of Work under the contract is terminated, and the date upon which such termination becomes effective.

**14.4.2** After receipt of Notice of Termination, the Contractor shall complete the performance of the Work not terminated, if any, and shall stop all other Work under the contract on the date and to the extent specified in the Notice of Termination.

***In Subparagraph 14.4.3 delete the phrase "...along with reasonable overhead and profit on the Work not executed".***

***Add the following Paragraph 14.5:***

If Owner improperly terminates the Agreement for cause, the termination for cause will be converted to a termination for convenience in accordance with the provisions of Paragraph 14.4.

## **ARTICLE 15 CLAIMS AND DISPUTES**

***Insert the following after the second sentence of Subparagraph 15.1.1:***

A voucher, invoice, payment application or other routine request for payment that is not in dispute when submitted is not a Claim under this definition.

***Add the following sentence to Subparagraph 15.1.2:***

Time Limits for Filing Claims. Claims by either party arising prior to the date final payment is due must be initiated within twenty-one (21) days after occurrence of the event giving rise to such Claim or within twenty-one (21) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later, except as stated for adverse weather days in Clause 15.1.5.2. By failing to give written notice of a Claim within the time required by this Subparagraph, a party expressly waives its claim.

***Add the following to Subparagraph 15.1.5.1:***

Claims for an increase in the Contract Time shall be based on one additional calendar day for each full calendar day that the Contractor is prevented from working.

***Add the following Clauses 15.1.5.3 and 15.1.5.4 to Subparagraph 15.1.5:***

15.1.5.3 Claims for increases in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

15.1.5.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due solely to the fault of the Contractor.

***Delete Subparagraph 15.1.6 in its entirety and substitute the following:***

**15.1.6 CLAIMS FOR LISTED DAMAGES.**

Notwithstanding any other provision of the Contract Documents, including Subparagraph 1.2.1, and subject to Paragraph 15.1.4, the Contractor and Owner waive Claims against each other for Listed Damages arising out of or relating to this Contract. The Listed Damages are:

**15.1.6.1** Damages incurred by the Owner for rental expenses, for losses of use prior to Final Completion, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and for attorney's fees, insurance and interest (excluding post judgment); and,

**15.1.6.2** Damages incurred by the Contractor for principal office expenses and overhead, including, but not limited to, the compensation of personnel stationed there, rent, utilities and office equipment; for losses of financing, business and reputation; for loss of profit except anticipated profit arising directly from the Work; and for attorney's fees, insurance and interest (excluding post judgment).

**15.1.6.3** This mutual waiver is applicable, without limitation, to all Listed Damages due to either party's termination in accordance with Article 14.

**15.1.6.4** This mutual waiver does not apply to the extent such Listed Damages are covered by any insurance provided pursuant to this Agreement and/or relating to the Project.

***Add the following to Subparagraph 15.1.7:***

**15.1.7** If a Claim has been resolved, the AE will prepare or obtain appropriate documentation and forward a copy of the documentation to the Owner.

***Insert the following Subparagraph 15.1.8:***

**15.1.8** Waiver of Claims Against the AE. Notwithstanding any other provision of the Contract Documents (including paragraph 1.2.1), but subject to a duty of good faith and fair dealing, the Contractor waives all claims against both the AE and any other design professionals who provide design and/or project management services to the Owner, either directly or as independent contractors/subcontractors to the AE, for Listed Damages arising out of or relating to this Contract. The Listed Damages are damages incurred by the Contractor for principal office expenses and overhead (including, but not limited to, the compensation of personnel stationed there, rent, utilities, and office equipment), for losses of financing, business and reputation, for loss of profit other than anticipated profits arising directly from the Work, and for attorney's fees, insurance, and interest (excluding post judgment).

***Insert the following Subparagraph 15.1.9:***

**15.1.9** DECISIONS OF THE AE. Claims, including those alleging an error or omission by the AE, shall be referred initially to the AE for decision. An initial decision by the AE shall be required as a condition precedent to resolution of all claims between the Contractor and Owner arising prior to the date Final Payment is due, unless thirty (30) days shall have passed after the Claim has been referred to the AE, with no decision by the AE. The AE will not decide disputes between the Contractor and persons or entities other than the Owner.

***Delete Paragraphs 15.2 through 15.4.4.3 and replace with the following:***

15.2 Contractor and Owner agree to attempt to resolve disputes in the first instance using a partnering approach.

15.2.1 Should disputes arise during the course of this Project, the representatives identified in Paragraphs 8.3 and 8.4 of the Agreement, along with the AE, shall attempt to resolve the dispute among themselves.

15.2.2 If the dispute is not resolved within seventy-two (72) hours, the Project Executive of the Contractor and the Owner's Director of Purchasing (or her designee) shall attempt to resolve the dispute.

15.3 Should the Contractor and Owner be unable to resolve a dispute, it will be referred to mediation per rules to be established by mutual agreement, or failing such agreement, the mediation shall be administered by the American Arbitration Association in accordance with its Construction Industry Procedures.

15.4 If mediation fails, then claims, disputes, or other matters in question between the parties to this Agreement arising out of or relating to this Agreement or breach thereof shall be tried before the Court of Common Pleas for Williamsburg County, South Carolina, which will preside without a jury. The Contractor and Owner expressly waive their right to a jury trial with respect to any claims, disputes, or other matters in question between the Contractor and Owner arising out of or relating to this Agreement or breach thereof. Any legal proceeding arising out of or relating to this Agreement shall include, by consolidation, joinder, or joint filing, any additional person or entity not a party to this Agreement to the extent necessary to the final resolution of the matter in controversy.

15.5 The Contractor shall include mediation provision identical to Paragraph 15.3 and a litigation provision identical to Paragraph 15.4 in its agreements with Subcontractors, Sub-Subcontractors, and suppliers.

END OF SECTION 007300

## 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. Regulatory requirements.
4. Access to site.
5. Work restrictions.
6. Specification and drawing conventions.

## B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

## 1.3 PROJECT INFORMATION

## A. Project Identification: Epps-McGill Farmhouse

1. Project Location: 679 Eastland Ave, Kingstree, South Carolina 29556.

## B. Owner: Mrs. McGill and Ms. Lynn Richardson, 699 Eastland Ave, Kingstree, South Carolina 29556.

## C. Architect: Meadors, Inc., PO Box 21758, Charleston, SC 29413.

## D. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. Structural: Michael H. Hance, PE LLC, 1133 Club Terrace, Mt. Pleasant, SC 29464

## 1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:

1. This project consists of renovating and restoring a two-story Folk Victorian farmhouse measuring approximately 5,596 sf. The house was constructed between 1905 and 1907 and is listed on the National Historical Registry. The scope of work includes, but is not limited to, stabilize the structure per foundation, first floor framing, second floor ceiling framing, and roof framing; verify lower-level roof framing, second floor framing and porch framing conditions prior to new construction and alterations; repair/repaint exterior cornice including soffit and fascia, and new roof covering system.
2. A future phase scope shall include but is not limited to, repair/repaint existing siding and replace modified/boarded up areas - to match existing; restore all windows to 6/6 lite sashes; side entry/steps; rear entry, porch and ADA compliant ramp; drive, parking and sidewalk; low density landscaping; restore interior finishes and millwork; new finishes or match existing in select areas; expand kitchen - new finishes, casework, and appliances; convert first floor bath into accessible restroom; update finishes and fixtures in half bath; reallocate space at second floor to create three bathrooms; remove existing electrical throughout and install new; and install a new mechanical system.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of all authorities having jurisdiction.
- B. Standards for Historic Properties: All work shall comply with the Secretary of the Interior's "Standards for the Treatment of Historic Properties."

1.6 ACCESS TO SITE

- A. General: 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. Use of Site: Limited 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 driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances 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.

## 1.7 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:30 a.m. to 5:30 p.m., Monday through Friday, unless otherwise indicated.
  - 1. Weekend Hours: Coordinate with Owner.
  - 2. Hours for Utility Shutdowns: Coordinate with Owner.
  - 3. Hours for Core Drilling and Other Noisy Activity: Coordinate with 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 providing temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
  - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  - 1. Notify Owner not less than two days in advance of proposed disruptive operations.
  - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

## 1.8 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.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

- C. 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.
  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 011000

## SECTION 012200 - UNIT PRICES

## 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 unit prices.
- B. Related Requirements:
  - 1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

## 1.3 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

## 1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.



PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Roof Sheathing/Decking Repair

END OF SECTION 012200

## 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 after award of Contract.
- B. Related Requirements:
  - 1. 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 and proposed by Contractor.
  - 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 in order to meet other Project requirements but may offer advantage to Contractor or Owner.

## 1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify 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 facsimile of form provided in Project Manual.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b. Coordination 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 substitution 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 and 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 substitution 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.

## 1.6 PROCEDURES

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

## PART 2 - PRODUCTS

## 2.1 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. Requested substitution provides sustainable design characteristics that specified product provided.
- c. Substitution request is fully documented and properly submitted.
- d. Requested substitution will not adversely affect Contractor's construction schedule.
- e. Requested substitution has received necessary approvals of authorities having jurisdiction.
- f. Requested substitution is compatible with other portions of the Work.
- g. Requested substitution has been coordinated with other portions of the Work.
- h. Requested substitution provides specified warranty.
- i. 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: Not allowed.

## PART 3 - EXECUTION (Not Used)

END OF SECTION 012500



E. Manufacturer's guarantees of proposed and specified items are:

Same

Different (Explain on Attachments)


The Undersigned states that the function, appearance, and quality are equivalent or superior to the specified item.

Submitted by:

\_\_\_\_\_  
Signature

For Use by Design Consultant

\_\_\_\_\_  
Firm

Accepted       Accepted as Noted  
 Not Accepted     Received Too Late

\_\_\_\_\_  
Address

By: \_\_\_\_\_

\_\_\_\_\_  
Date: \_\_\_\_\_ TEL/FAX: \_\_\_\_\_

Date: \_\_\_\_\_

Notes:

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ATTACHMENT TO SECTION 012500 – SUBSTITUTION PROCEDURES

## 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.

## 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 AIA Document G710, "Architect's Supplemental Instructions."

## 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 provided by Owner.
- 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 provided by Owner.

#### 1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

#### 1.6 CHANGE ORDER PROCEDURES

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

#### 1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Change Directive: Architect may issue a Change Directive on AIA Document G714. Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. 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 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 012600

## 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 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
  - 2. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
  - 3. 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. Gantt Chart may serve to satisfy requirements for the schedule of values.
  - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with continuation sheets.
    - b. Submittal schedule.
    - c. 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.

- 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.
    - b. Name of Architect.
    - c. Architect's project number (20-0087).
    - d. Contractor's name and address.
    - e. 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/supplier.
    - e. Change Orders (numbers) that affect value.
    - f. Dollar value of the percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
  4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. 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. If required, include evidence of insurance.
  6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
  7. Each item in the schedule of values and Applications for Payment shall be complete.
    - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
  8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

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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.
1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
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.
- 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.
  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 one signed and notarized PDF copy of each Application for Payment to Architect by a method ensuring receipt within 24 hours. Include waivers of lien and similar attachments if required.
1. Transmit each copy with PDF transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
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. 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).
  4. Certificates of insurance and insurance policies.
  5. Performance and payment bonds.
  6. Data needed to acquire Owner's insurance.
  7. Progress and preconstruction photographs.
- 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.
  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 (maintenance documents, warranties, etc.).
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  6. AIA Document G707, "Consent of Surety to Final Payment."

7. Evidence that claims have been settled.
8. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

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

1. Name, address, 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.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room, in temporary field office, in web-based Project software directory, and in prominent location in built facility. 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. Progress photographic documentation.
  7. Preinstallation conferences.
  8. Project closeout activities.
  9. Startup and adjustment of systems.



- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
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.

## 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, mechanical, and electrical systems.
    - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
    - f. Indicate required installation sequences.
    - g. 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 and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. 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, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.

4. Mechanical and Plumbing Work: Show the following:
    - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
    - c. Fire-rated enclosures around ductwork.
  5. Electrical Work: Show the following:
    - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
    - c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
    - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
  6. 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.
  7. 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:
1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
  2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
  3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
  4. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
  5. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
  6. Contractor shall perform the final coordination review. As each coordination drawing is 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.
    - b. DWG, DXF, Version , operating in Microsoft Windows operating system.

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 Revit 2022 and exportable to DWG.
  - c. Contractor shall execute a data licensing agreement in the form of AIA Document C106.

#### 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. Project number.
  3. Date.
  4. Name of Contractor.
  5. Name of Architect.
  6. RFI number, numbered sequentially.
  7. RFI subject.
  8. Specification Section number and title and related paragraphs, as appropriate.
  9. Drawing number and detail references, as appropriate.
  10. Field dimensions and conditions, as appropriate.
  11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  12. Contractor's signature.
  13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716.
  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. Use software log that is part of web-based Project management software. 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 three days if Contractor disagrees with response.

## 1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Use of Architect's 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 Revit 2022 or AutoCAD 2022, Windows Operating System.
  4. Contractor shall execute a data licensing agreement in the form of AIA Document C106 Digital Data Licensing Agreement.
- B. 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. Provide up to eight hours of software training at Architect's office for web-based Project software users.
  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.
- C. 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 Architect, and their consultants; 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. Trades
    - a. Roof and flashing.
    - b. Masonry repairs.
    - c. Historic wood repairs.
    - d. Architectural coatings.
    - e. Trimming vegetation.
  3. 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.
    - o. Use of the premises and existing building.
    - p. Work restrictions.
    - q. Working hours.
    - r. Responsibility for temporary facilities and controls.
    - s. Procedures for moisture and mold control.

- t. Procedures for disruptions and shutdowns.
  - u. Construction waste management and recycling.
  - v. Parking availability.
  - w. Office, work, and storage areas.
  - x. Equipment deliveries and priorities.
  - y. First aid.
  - z. Security.
  - aa. Progress cleaning.
4. 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. Required performance results.
    - w. Protection of adjacent work.
    - x. 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, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of Record Documents.
    - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    - c. 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. Requirements for delivery of material samples, attic stock, and spare parts.
    - g. Requirements for demonstration and training.
    - h. Preparation of Contractor's punch list.
    - i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    - j. Submittal procedures.
    - k. Installation of Owner's furniture, fixtures, and equipment.
    - l. 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 weekly 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.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule,



in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- 1) Review schedule for next period.
- b. Review present and future needs of each entity present, including the following:
- 1) Interface requirements.
  - 2) Sequence of operations.
  - 3) Resolution of BIM component conflicts.
  - 4) Status of submittals.
  - 5) Deliveries.
  - 6) Off-site fabrication.
  - 7) Access.
  - 8) Site use.
  - 9) Temporary facilities and controls.
  - 10) Progress cleaning.
  - 11) Quality and work standards.
  - 12) Status of correction of deficient items.
  - 13) Field observations.
  - 14) Status of RFIs.
  - 15) Status of Proposal Requests.
  - 16) Pending changes.
  - 17) Status of Change Orders.
  - 18) Pending claims and disputes.
  - 19) 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.
- F. Coordination Meetings: Conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. 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 meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

- a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
  - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
  - c. Review present and future needs of each contractor present, including the following:
    - 1) Interface requirements.
    - 2) Sequence of operations.
    - 3) Status of submittals.
    - 4) Deliveries.
    - 5) Off-site fabrication.
    - 6) Access.
    - 7) Site use.
    - 8) Temporary facilities and controls.
    - 9) Work hours.
    - 10) Hazards and risks.
    - 11) Progress cleaning.
    - 12) Quality and work standards.
    - 13) Status of RFIs.
    - 14) Proposal Requests.
    - 15) Change Orders.
    - 16) Pending changes.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

## SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Startup construction schedule.
  - 2. Contractor's Construction Schedule.
  - 3. Construction schedule updating reports.
  - 4. Daily construction reports.
  - 5. Material location reports.
  - 6. Site condition reports.
  - 7. Unusual event 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 013300 "Submittal Procedures" for submitting schedules and reports.
  - 3. Section 014000 "Quality Requirements" for schedule of tests and inspections.

## 1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
  - 1. Critical 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.
  - 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 manpower and equipment necessary for completing an activity as scheduled.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. Working electronic copy of schedule file.
  - 2. PDF file.
  - 3. Two paper copies, of sufficient size to display entire period or schedule, as required.
- B. Startup construction schedule.
  - 1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- 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. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
  - 1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
  - 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
  - 3. Total Float Report: List of activities sorted in ascending order of total float.
  - 4. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.

- E. Construction Schedule Updating Reports: Submit with Applications for Payment.
- F. Daily Construction Reports: Submit at weekly intervals.
- G. Material Location Reports: Submit at weekly intervals.
- H. Site Condition Reports: Submit at time of discovery of differing conditions.
- I. Unusual Event Reports: Submit at time of unusual event.
- J. Qualification Data: For scheduling consultant.

### 1.5 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:
  - 1. Review software limitations and content and format for reports.
  - 2. Verify availability of qualified personnel needed to develop and update schedule.
  - 3. Discuss constraints, including work stages area separations interim milestones and partial Owner occupancy.
  - 4. Review submittal requirements and procedures.
  - 5. Review time required for review of submittals and resubmittals.
  - 6. Review requirements for tests and inspections by independent testing and inspecting agencies.
  - 7. Review time required for Project closeout and Owner startup procedures.
  - 8. Review and finalize list of construction activities to be included in schedule.
  - 9. Review procedures for updating schedule.

### 1.6 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from entities involved.
  - 2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

### 1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
- B. Time Frame: Extend schedule from date established for commencement of the Work to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
  2. Temporary Facilities: Indicate start and completion dates for the following as applicable:
    - a. Securing of approvals and permits required for performance of the Work.
    - b. Temporary facilities.
    - c. Construction of mock-ups, prototypes and samples.
    - d. Regulatory agency approvals.
    - e. Punch list.
  3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
  5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
  6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
  7. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Coordination with existing construction.
    - b. Limitations of continued occupancies.
    - c. Uninterruptible services.
    - d. Partial occupancy before Substantial Completion.
    - e. Use-of-premises restrictions.
    - f. Provisions for future construction.
    - g. Seasonal variations.
    - h. Environmental control.
  2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    - a. Subcontract awards.
    - b. Submittals.
    - c. Purchases.

- d. Mockups.
  - e. Fabrication.
  - f. Sample testing.
  - g. Deliveries.
  - h. Installation.
  - i. Tests and inspections.
  - j. Adjusting.
  - k. Curing.
  - l. Startup and placement into final use and operation.
3. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
  - b. Temporary enclosure and space conditioning.
  - c. Permanent space enclosure.
  - d. Completion of mechanical installation.
  - e. Completion of electrical installation.
  - f. Substantial Completion.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
  2. Unanswered Requests for Information.
  3. Rejected or unreturned submittals.
  4. Notations on returned submittals.
  5. Pending modifications affecting the Work and the Contract Time.
- G. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  3. As the Work progresses, indicate Final Completion percentage for each activity.
- H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours,

working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

- I. Distribution: Distribute copies of approved schedule to Architect Owner, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
  1. Post copies in Project meeting rooms and temporary field offices.
  2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

#### 1.8 STARTUP CONSTRUCTION SCHEDULE

- A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for commencement of the Work.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

#### 1.9 GANTT-CHART SCHEDULE REQUIREMENTS

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

#### 1.10 CPM SCHEDULE REQUIREMENTS

- A. Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for commencement of the Work. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a cost- and resource-loaded, 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 commencement of the Work.
    - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.
  2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
  3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
  4. 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.
- D. 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.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
    - a. Preparation and processing of submittals.
    - b. Mobilization and demobilization.
    - c. Purchase of materials.
    - d. Delivery.
    - e. Fabrication.
    - f. Utility interruptions.
    - g. Installation.
    - h. Testing and inspection.
    - i. Punch list and Final Completion.
    - j. Activities occurring following Final Completion.
  2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
  3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
  4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
    - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
  5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing activities, operation and maintenance manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
    - a. Each activity cost shall reflect an appropriate value subject to approval by Architect.
    - b. Total cost assigned to activities shall equal the total Contract Sum.

- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.
- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
  2. Description of activity.
  3. Main events of activity.
  4. Immediate preceding and succeeding activities.
  5. Early and late start dates.
  6. Early and late finish dates.
  7. Activity duration in workdays.
  8. Total float or slack time.
  9. Average size of workforce.
  10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
  2. Changes in early and late start dates.
  3. Changes in early and late finish dates.
  4. Changes in activity durations in workdays.
  5. Changes in the critical path.
  6. Changes in total float or slack time.
  7. Changes in the Contract Time.
- H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
  2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
  3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
  4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
    - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
    - b. Submit value summary printouts one week before each regularly scheduled progress meeting.

## 1.11 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
  2. Approximate count of personnel at Project site.
  3. Equipment at Project site.
  4. Material deliveries.
  5. High and low temperatures and general weather conditions, including presence of rain or snow.
  6. Testing and inspection.
  7. Accidents.
  8. Meetings and significant decisions.
  9. Unusual events.
  10. Stoppages, delays, shortages, and losses.
  11. Meter readings and similar recordings.
  12. Emergency procedures.
  13. Orders and requests of authorities having jurisdiction.
  14. Change Orders received and implemented.
  15. Construction Change Directives received and implemented.
  16. Services connected and disconnected.
  17. Equipment or system tests and startups.
  18. Partial completions and occupancies.
  19. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
  2. Material stored prior to previous report and since removed from storage and installed.
  3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

## SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Preconstruction photographs.
  - 2. Concealed Work photographs.
  - 3. Periodic construction photographs.
  - 4. Final Completion construction photographs.
  - 5. Preconstruction video recordings.
  - 6. Periodic construction video recordings.
  - 7. Construction webcam.
  - 8. Skype/Facetime access
- B. Related Requirements:
  - 1. Section 013300 "Submittal Procedures" for submitting photographic documentation.
  - 2. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
  - 3. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
  - 4. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

## 1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph and video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.
  - 1. Submit photos by uploading to web-based Project management software site. Include copy of key plan indicating each photograph's location and direction.
  - 2. Identification: Provide the following information with each image description in web-based Project management software site:
    - a. Name of Project.

- b. Date photograph was taken.
  - c. Description of location, vantage point, and direction.
  - d. Unique sequential identifier keyed to accompanying key plan.
- C. Video Recordings: Submit video recordings within seven days of recording.
1. Submit video recordings by uploading to web-based Project management software site. Include copy of key plan indicating each video's location and direction.
  2. Identification: With each submittal, provide the following information on web-based Project management software site:
    - a. Name of Project.
    - b. Date video recording was recorded.
    - c. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

#### 1.4 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels, and with vibration-reduction technology. Use flash in low light levels or backlit conditions.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full high-definition mode with vibration-reduction technology. Provide supplemental lighting in low light levels or backlit conditions.
- C. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- D. Metadata: Record accurate date and time from camera.
- E. File Names: Name media files with date, Project area, and sequential numbering suffix.

#### 1.5 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs with maximum depth of field and in focus.
  1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
  1. Flag excavation areas before taking construction photographs.

2. Take a minimum of 100 to show existing conditions adjacent to property before starting the Work.
  3. Take a minimum of 20 photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of excavation, demolition, and construction.
  4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
  5. All preconstruction photographs must be submitted and approved by Architect before any work begins.
- C. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
1. Underground utilities.
  2. Underslab services.
  3. Piping.
  4. Electrical conduit.
  5. Waterproofing and weather-resistant barriers.
- D. Periodic Construction Photographs: Take a minimum of 50 photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Architect-Directed Construction Photographs: From time to time, Architect will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.
- F. Final Completion Construction Photographs: Take 100 photographs after date of Substantial Completion for submission as Project Record Documents. Architect will inform photographer of desired vantage points.
- G. Additional Photographs: Architect and Owner may issue requests for additional photographs, in addition to periodic photographs specified.
1. Three days' notice will be given, where feasible.
  2. In emergency situations, take additional photographs within 24 hours of request.
  3. Circumstances that could require additional photographs include, but are not limited to, the following:
    - a. Immediate follow-up when on-site events result in construction damage or losses.
    - a. Substantial Completion of a major phase or component of the Work.
    - b. Extra record photographs at time of final acceptance.
    - c. Owner's request for special publicity photographs.
- H. Skype/Facetime Sessions: Architect and Owner may request Skype/Facetime sessions, in addition to the specified photographs.

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## 1.6 CONSTRUCTION VIDEO RECORDINGS

- A. Preconstruction Video Recording: Before starting excavation, demolition, and construction record video recording of Project site and surrounding properties from different vantage points, as directed by Architect.
1. Flag excavation areas before recording construction video recordings.
  2. Show existing conditions adjacent to Project site before starting the Work.
  3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of excavation, demolition, and construction.
  4. Show protection efforts by Contractor.
- B. Periodic Construction Video Recordings: Record video recording monthly. Select vantage points to show status of construction and progress since last video recordings were recorded. Minimum recording time shall be 30 minutes(s).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233



## SECTION 013300 - SUBMITTAL 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:

1. Submittal schedule requirements.
2. 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 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
5. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
6. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
7. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
8. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

## 1.3 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."

#### 1.4 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
  3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
    - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
  4. Format: Arrange the following information in a tabular format:
    - a. Scheduled date for first submittal.
    - b. Specification Section number and title.
    - c. Submittal Category: Action; informational.
    - d. Name of subcontractor.
    - e. Description of the Work covered.
    - f. Scheduled date for Architect's final release or approval.
    - g. Scheduled dates for purchasing.
    - h. Scheduled date of fabrication.
    - i. Scheduled dates for installation.
    - j. Activity or event number.

#### 1.5 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.
  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. Paper Submittals:
1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
  2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
  3. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect will return two copies.
  4. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
  5. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
  6. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using AIA Document G810 transmittal form.
- E. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.
- F. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.
- 1.6 SUBMITTAL PROCEDURES
- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
    - a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

2. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.
  3. Paper: Prepare submittals in paper form and deliver to Architect.
- 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 all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. 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.
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 15 days for review of each resubmittal.
  4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
  5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
    - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
- 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.

## 1.7 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. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams that show factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  - 5. 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.
    - 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.
    - g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
  - a. Two opaque (bond) copies of each submittal. Architect will return one copy.
  - b. Three opaque copies of each submittal. Architect will retain two copies; remainder will be returned.
- 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(s) 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.

- 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.
  3. Number and name of room or space.
  4. Location within room or space.
- 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. Include load diagrams if applicable. 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 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.

1.8 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 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.



## 1.9 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.
  - 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.
  - 2. Paper Submittals: Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
  - 3. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.
- B. Informational Submittals: Architect will review each submittal and will not 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 013300

**CONSOLIDATED LIST OF SUBMITTALS****Note:**

\*This list is provided for the Contractor's benefit. This schedule does not negate any information listed in the individual sections of the Project Manual.

\*\*Items listed in grey text indicate sections in the Project Manual for which submittals are not required.

Division      Section Title

**DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS**

000107      Seals Page  
 001116      Invitation to Bid  
 003126      Existing Hazardous Materials Information  
 004373      Proposed Schedule of Values Form  
 005200      Agreement Form  
 005400      Agreement Form Supplements  
 006113      Performance Bond and Payment Bonds  
 007200      General Conditions of the Contract  
 007300      Supplementary Conditions

**SPECIFICATIONS GROUP****DIVISION 01 – GENERAL REQUIREMENTS**

011000      Summary  
 012200      Unit Prices  
 012500      Substitution Procedures
 

- Action Submittals
  - Substitution Requests (as needed)

 012600      Contract Modification Procedures  
 012900      Payment Procedures
 

- Schedule of Values
- Initial Application for Payment
- Application for Payment at Substantial Completion
- Final Payment Application

 013100      Project Management and Coordination
 

- Subcontract List
- Key Personnel Names
- Coordination Drawings
- RFI (as needed)
- RFI Log
- Agenda and Meeting Minutes (if responsible for conducting meeting)

 013200      Construction Progress Documentation
 

- Submittals
- Startup construction schedule
- Contractor's Construction Schedule

- CPM Reports
- Construction Schedule Updating Reports
- Daily Construction Reports
- Material Location Reports
- Site Condition Reports
- Unusual Event Reports
- Qualification Data
- 013233 Photographic Documentation
  - Key Plan
  - Digital Photographs
  - Video Recordings
- 013300 Submittal Procedures
  - Submittal Schedule
- 013591 Historic Treatment Procedures
  - Preconstruction Documentation
  - Historic Treatment Program
  - Fire-Prevention Plan
  - Inventory of Salvaged Items
- 014000 Quality Requirements
  - Informational Submittals
    - Contractor's Quality-Control Plan
    - Qualification Data
    - Testing Agency Qualifications
    - Schedule of Tests and Inspections
    - Reports
    - Permits, Licenses, and Certificates
- 014200 References
- 014339 Mockups
- 015000 Temporary Facilities and Controls
  - Informational Submittals
    - Implementation and Termination Schedule
    - Project Identification and Temporary Signs
    - Fire-Safety Program
    - Moisture- and Mold-Protection Plan
- 015639 Temporary Tree and Plant Protection
  - Action Submittals
    - Product Data
    - Tree Pruning Schedule
    - Maintenance Recommendations
  - Informational Submittals
    - Qualification Data
    - Certification
    - Maintenance Recommendations
    - Existing Conditions
    - Quality-Control Program

- 015723 Temporary Stormwater Pollution Control
  - Informational Submittals
    - Stormwater Pollution Prevention Plan (SWPP)
    - EPA Authorization
    - Stormwater Pollution Prevention (SWPP) Training Log
    - Inspection Reports
- 016000 Product Requirements
- 017300 Execution
  - Informational Submittals
    - Qualification Data
    - Certified Surveys
    - Certificates
    - Cutting and Patching Plan
    - Landfill Receipts
  - Closeout Submittals
    - Final Property Survey
- 017419 Construction Waste Management and Disposal
  - Action Submittals
    - Waste Management Plan
  - Informational Submittals
    - Recycling and Processing Facility Records
    - Landfill and Incinerator Disposal Records
    - Qualification Data
    - Statement of Refrigerant Recovery
    - Refrigerant Recovery
- 017700 Closeout Procedures
  - Action Submittals
    - Product Data
    - Contractor's List of Incomplete Items
    - Certified List of Incomplete Items
  - Closeout Submittals
    - Certificates of Release
    - Certificate of Insurance
    - Field Report
  - Maintenance Material Submittals
    - Schedule of Maintenance Material Items
  - **Submittals Prior to Substantial Completion:**
    - *Certificates of Release*
    - *Closeout submittals (Div 01)*
    - *Closeout submittals (individual sections)*
    - *Maintenance Material submittals (individual sections)*
    - *Schedule of Maintenance Material Items*
    - *Testing, Adjusting, and Balancing Records*
    - *Sustainable design submittals not previously submitted*

- *Changeover information related to Owner's occupancy, use, operation, and maintenance*
  - **Submittals Prior to Final Completion:**
    - *Final Pay Application*
    - *Certified List of Incomplete Items*
    - *Certificate of Insurance*
    - *Pest-Control Final Inspection Report*
    - *Final Completion Photographic Documentation*
  - Submittal of Project Warranties
- 017839 Project Record Documents
- Closeout Submittals
    - Record Drawings
      - Initial submittal
      - Final submittal
    - Record Specifications
    - Record Product Data
    - Miscellaneous Record submittals
    - Reports

**DIVISION 02 - EXISTING CONDITIONS**

- 021500 Bracing and Shoring
- Working drawings
  - Design calculations
- 024119 Selective Demolition
- Informational Submittals
    - Proposed Protection Measures
    - Schedule of Selective Demolition Activities
    - Inventory
    - Warranties
  - Closeout Submittals
    - Inventory
    - Landfill Records
- 028716.13 Bird Excrement Removal
- Informational Submittals
    - Qualification Data
    - Preconstruction Test Reports

**DIVISION 03 – NOT USED****DIVISION 04 - MASONRY**

- 040310 Historic Masonry Cleaning
- Submittals
    - Product Data (materials)
    - Product Data (equipment)
- 040323 Historic Brick Unit Masonry Repointing
- Submittals

- Product Data (materials)
- Mockups
- 040513 Mortars for Structural Repairs and Repointing
  - Submittals
    - Qualifications
    - Product Data and MSDS Sheets (materials)
    - Contractor Qualifications
    - Product Data (tools)
    - Sample Mockup
- 042000 Unit Masonry
  - Submittals
    - Product Data
    - Sample for Verification
    - Material Certificates
    - Mix Designs
    - Cold-Weather Procedures
- 042100 Clay Unit Masonry
  - Submittals
    - Product Data
    - Test Panels

**DIVISION 05 – METALS – NOT USED****DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

- 060312 Historic Wood Repair
  - Submittals
    - Product Data
    - Qualification Data
    - Product Certificates
    - Woodwork Quality Standard Compliance Certificates
    - Wood Historic Treatment Program
    - Samples for Verification
    - Mockups
- 061000 Rough Carpentry
  - Action Submittals
    - Product Data
    - Qualification Data
    - Fastener Patterns
- 061600 Sheathing
  - Action Submittals
    - Product Data
- 062012 Exterior Finish Carpentry
  - Action Submittals
    - Product Data

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

- 070150.19 Preparation for Reroofing
  - Action Submittals
    - Product Data
    - Shop Drawings
  - Informational Submittals
    - Fastener pull-out test report
    - Photographs
- 073113 Asphalt Roof Shingles
  - Action Submittals
    - Product Data
    - Shop Drawings
    - Samples
    - Samples for Initial Selection
    - Samples for Verification
  - Informational Submittals
    - Qualification Data
    - Product Test Reports
    - Research Reports
    - Sample Warranty
  - Closeout Submittals
    - Maintenance Data
    - Materials warranties.
    - Roofing Installer's warranty.
- 076200 Sheet Metal Flashing and Trim
  - Action Submittals
    - Product Data
    - Shop Drawings
    - Samples
  - Informational Submittals
    - Qualification Data
    - Product Test Reports
    - Sample Warranty
  - Closeout Submittals
    - Maintenance Data
    - Special Warranty
- 079200 Joint Sealants
  - Action Submittals
    - Product Data
    - Samples for Initial Selection
    - Samples for Verification
    - Joint-Sealant Schedule

**DIVISION 09 - FINISHES**

099000 Architectural Coatings for Historic Substrates

- Action Submittals
  - Product Data

- Product List
- Qualifications
- Samples
- Paint Color Schedule
- Closeout Documentation
- Mockups

**DIVISIONS 10-30 – NOT USED**

**DIVISION 31 - EARTHWORK**

313116 Termite Control

- Action Submittals
  - Product Data
- Informational Submittals
  - Qualification Data
  - Product Certificates
  - Soil Treatment Application Report
  - Wood Treatment Application Report
  - Sample Warranties

**DIVISIONS 32-33 – NOT USED**

END OF CONSOLIDATED LIST OF SUBMITTALS



## SECTION 013591 - HISTORIC TREATMENT 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. This project involves the rehabilitation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.
- B. Section includes general protection and treatment procedures for designated historic spaces, rooms, areas, and surfaces in the entire Project, including general project guidelines, selected historic preservation resources and the following specific work:
  - 1. General Historic Treatment Procedures.
  - 2. Procedures for Temporary Stabilization.
- C. Codes and standards set forth by:
  - 1. "Guide to Preserving Historic Buildings: Wood" "U.S. Department of the Interior, National Park Service, 1995"
  - 2. All work shall be performed in accordance with the "Secretary of the Interior's Standards for Rehabilitation, "U.S. Department of the Interior, National Park Service, 1995."

## 1.3 DEFINITIONS

- A. Consolidate: To strengthen loose or deteriorated materials in place.
- B. Dismantle: To disassemble and detach items by hand from existing construction to the limits indicated, using small hand tools and small one-hand power tools, so as to protect nearby historic surfaces; and legally dispose of dismantled items off-site, unless indicated to be salvaged or reinstalled.
- C. Existing to Remain: Existing items that are not to be removed or dismantled.
- D. Historic: Spaces, areas, rooms, surfaces, materials, finishes, and overall appearance which are important to the successful preservation, rehabilitation, restoration, and reconstruction as determined by Architect.

- E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.
- F. Reconstruct: To remove existing item, replicate damaged or missing components, and reinstall in original position.
- G. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.
- H. Reinstall: To protect removed or dismantled item, repair and clean it as indicated for reuse, and reinstall it in original position, or where indicated.
- I. Remove: Specifically for historic spaces, areas, rooms, and surfaces, the term means to detach an item from existing construction to the limits indicated, using hand tools and hand-operated power equipment, and legally dispose of it off-site, unless indicated to be salvaged or reinstalled.
- J. Repair: To correct damage and defects, retaining existing materials, features, and finishes while employing as little new material as possible. Includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.
- K. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.
- L. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.
- M. Reproduce: To fabricate a new item, accurate in detail to the original, and in either the same or a similar material as the original, unless otherwise indicated.
- N. Restore: To consolidate, replicate, reproduce, repair, and refinish as required to achieve the indicated results included in the Treatment Philosophy.
- O. Retain: To keep existing items that are not to be removed or dismantled.
- P. Reversible: New construction work, treatments, or processes that can be removed or undone in the future without damaging historic materials unless otherwise indicated.
- Q. Salvage: To protect removed or dismantled items and deliver them to Owner.
- R. Stabilize: To provide structural reinforcement of unsafe or deteriorated items while maintaining the essential form as it exists at present; also, to reestablish a weather-resistant enclosure.
- S. Strip: To remove existing finish down to base material unless otherwise indicated.

#### 1.4 PROJECT MEETINGS FOR HISTORIC TREATMENT

- A. Preliminary Historic Treatment Conference: Before starting historic treatment work, Construction manager will conduct conference at Project site.

1. Attendees: In addition to representatives of the Owner, Construction Manager, Architect and Contractor, historic treatment specialists, and installers who work interfaces with or affects historic treatment shall be represented at the meeting.
2. Agenda: Discuss items of significance that could affect progress of historic treatment work, including review of the following:
  - a. Historic Treatment Subschedule: Discuss and finalize; verify availability of materials, historic treatment specialists' personnel, equipment, and facilities needed to make progress and avoid delays.
  - b. Fire-prevention plan.
  - c. Governing regulations.
  - d. Areas where existing construction is to remain and the required protection.
  - e. Hauling routes.
  - f. Sequence of historic treatment work operations.
  - g. Storage, protection, and accounting for salvaged and specially fabricated items.
  - h. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
  - i. Qualifications of personnel assigned to historic treatment work and assigned duties.
  - j. Requirements for extent and quality of work, tolerances, and required clearances.
  - k. Methods and procedures related to historic treatments, including product manufacturers' written instructions and precautions regarding historic treatment procedures and their effects on materials, components, and vegetation.
  - l. Embedded work such as flashings and lintels, special details, collection of wastes, protection of occupants and the public, and condition of other construction that affect the Work or will affect the work.
3. Reporting: Construction Manager will record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.

## 1.5 MATERIALS OWNERSHIP

- A. Historic items, relics, and similar objects including, but not limited to, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain Owner's property.
  1. Carefully dismantle and salvage each item or object and protect it from damage, then promptly deliver it to Owner where directed.
  2. Coordinate with Owner's historical adviser, who will establish special procedures for dismantling and salvaging.

## 1.6 SUBMITTALS

- A. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by Contractor's historic treatment operations.

1. All areas should be photographed before historic preservation treatment begins and submitted to Owner and Architect of Record.
- B. Historic Treatment Program: Submit before work begins.
- C. Fire-Prevention Plan: Submit before work begins.
- D. Inventory of Salvaged Items: After removal or dismantling work is complete, submit a list of items that have been salvaged.

## 1.7 QUALITY ASSURANCE

- A. **Historic Treatment Specialist Qualifications: An experienced firm regularly engaged in historic treatments similar in nature, materials, design, and extent to this work as specified in each section, and that has completed a minimum of five recent projects with a record of successful in-service performance that demonstrate the firm's qualifications to perform this work.**
  1. **Field Supervisor Qualifications: Full-time supervisors with 10 years' experience in historic treatment work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on Project site during times that historic treatment work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of the specialist firm.**
  2. **Worker Qualification: Persons who are experienced in historic treatment work of types they will be performing with a minimum of 5 years' experience on similar projects of this nature.**
- B. Historic Removal and Dismantling Specialist Qualifications: A qualified historic treatment specialist with five (5) years' experience working on historic structures. General selective demolition experience is not sufficient experience for historic removal and dismantling work.
- C. Historic Treatment Program: Prepare a written plan for historic treatment for whole Project, including each phase or process and protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work. Show compliance with indicated methods and procedures specified in this and other Sections.
  1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
  2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.
- D. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-prevention devices during each phase or process. Coordinate plan with Architect's fire-protection equipment and requirements. Include each fire watch's training, duties, and authority to enforce fire safety.
- E. Mockups for removal and dismantling work can be used to establish cleanliness or standard-of-care requirements for an area of work considered typical or to prequalify individual workers; revise text and insert other mockups to suit Project.

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- F. Regulatory Requirements: Comply with notification regulations of authorities having jurisdiction before beginning removal and dismantling work. Comply with hauling and disposal regulations of authorities having jurisdiction.
- G. Standards: Comply with ANSI/ASSE A10.6.
- H. Historic Treatment Preconstruction Conference: Conduct conference at Project site.
1. General: Review methods and procedures related to historic treatment including, but not limited to, the following:
    - a. Review manufacturer's written instructions for precautions and effects of historic treatment procedures on materials, components, and vegetation.
    - b. Review and finalize historic treatment construction schedule; verify availability of materials, equipment, and facilities needed to make progress and avoid delays.
    - c. Review qualifications of personnel assigned to the work and assign duties.
    - d. Review material application, work sequencing, tolerances, and required clearances.
    - e. Review areas where existing construction is to remain and requires protection.
  2. Removal and Dismantling:
    - a. Inspect and discuss condition of construction to be removed or dismantled.
    - b. Review requirements of other work that relies on substrates exposed by removal and dismantling work.

## 1.8 STORAGE AND PROTECTION OF HISTORIC MATERIALS

- A. The historic importance of the material or feature shall be determined by the Architect before the start of Work. The item's merit, in terms of age, uniqueness of design, materials, size, technological developments, association with persons or events, exceptional workmanship or design qualities, must be understood before decisions regarding repair, maintenance, and preservation can be made.
- B. Salvaged Historic Materials:
1. Clean only loose debris from salvaged historic items unless more extensive cleaning is indicated.
  2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
  3. Store items in a secure area until delivery to Owner.
  4. Transport items to Owner's storage area designated by the Owner.
  5. Protect items from damage during transport and storage.
- C. Historic Materials for Reinstallation:
1. Repair and clean historic items as indicated and to functional condition for reuse.

2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label 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 unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make item functional for use indicated.

D. Existing Historic Materials to Remain:

1. Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after historic treatment and construction work in the vicinity is complete.
2. Protect with temporary protections and construction.
3. Do not deface or remove existing materials.
4. Do not attach temporary protection to historic surfaces except as indicated as part of the historic treatment program and approved by the Architect.

E. Storage and Protection: When taken from their existing locations, catalog and store historic items within a weathertight enclosure where they are protected from wetting by rain, snow, condensation, or ground water, and from freezing temperatures.

1. Identify each item with a nonpermanent mark to document its original location. Indicate original locations on plans elevations, sections, or photographs by annotating the identifying marks.
2. Secure stored materials to protect from theft.
3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 deg F or more above the dew point.

## 1.9 PROJECT CONDITIONS

- A. General Size Limitation in Historic Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches (300 mm) or more.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.
- C. Hazardous Materials: Hazardous materials are present in construction affected by removal and dismantling work.
  1. Hazardous material remediation is specified elsewhere in the Contract Documents.
  2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
  3. If unanticipated asbestos is suspected, stop work in the area of potential hazard, shut off fans and other air handlers ventilating the area, and rope off area until the questionable material is identified. Re-assign workers to continue work in unaffected areas. Resume work in the area of concern after safe working conditions are verified.

- D. Storage or sale of removed or dismantled items on-site is not permitted unless otherwise indicated.
- E. Owner's approval is required for any change, addition, or removal of historic structural fabric or historic property.
- F. Ensure that supervisory personnel are on-site and on duty when historic preservation treatment work begins and during its process.

#### 1.10 COORDINATION

- A. Coordinate historic treatment procedures in this Section with public circulation patterns at Project site. Some work is near public circulation patterns. Public circulation patterns cannot be closed off entirely, and in places can be only temporarily redirected around small areas of work. Plan and execute the Work accordingly.

#### 1.11 GENERAL HISTORIC TREATMENT PHILOSOPHY

- A. The principal aim of any work must be to halt the process of deterioration and stabilize the item's condition. Repair is a second option which becomes necessary only where preservation is not sufficient to ensure mid- to long-term survival. Repair should always be based on the fundamental principal of 'minimal disturbance'. Follow the procedures approved in the historic treatment program.
  - 1. Retain as much existing material as possible; repairing and consolidating rather than replacing.
  - 2. Use additional material or structure to reinforce, strengthen, prop, tie, and/or support existing material or structure.
  - 3. Use reversible processes wherever possible.
  - 4. Use of traditional materials and historically accurate repair and replacement techniques. New work should be distinguishable to the trained eye, on close inspection, from the old.
- B. Record existing work before each procedure (preconstruction) and progress during the work with digital preconstruction documentation photographs. Comply with requirements in Division 01 Section "Photographic Documentation."
- C. Ensure supervisory personnel are present when historic preservation treatment work begins and during its progress.
- D. Notify Architect of Record and Owner of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movements, or distortion.
- E. Where missing features are indicated to be repaired or replaced, provide features whose designs are based on accurate duplications rather than conjectural designs subject to the approval of the Owner and Architect of Record.
- F. Where work requires existing features to be removed or dismantled and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.

- G. New or replacement materials/features will be permanently marked in an unobtrusive manner to distinguish them from the original fabric. The manner of identification and location of these marks shall be recorded in permanent building records.

## PART 2 - PRODUCTS - (Not Used)

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

### 3.2 HISTORIC REMOVAL AND DISMANTLING EQUIPMENT

- A. Removal Equipment: Use only hand-held tools or unless otherwise approved by Architect on a case-by-case basis.
- B. Dismantling Equipment: Use manual, hand-held tools, except as follows or otherwise approved by Architect on a case-by-case basis.
  - 1. Hand-held power tools are permitted only as submitted in the historic treatment program. They must be adjustable so as to penetrate or cut only the thickness of material being removed.
  - 2. Pry bars more than 18 inches long and hammers weighing more than 2 lb. are not permitted for dismantling work.

### 3.3 EXAMINATION

- A. Preparation for Removal and Dismantling: Examine construction to be removed or dismantled to determine best methods to safely and effectively perform removal and dismantling work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed or dismantled and location of utilities and services to remain that may be hidden by construction that is to be removed or dismantled.
  - 1. Verify that affected utilities have been disconnected and capped.
  - 2. Inventory and record the condition of items to be removed and dismantled for reinstallation or salvage.
  - 3. Before removal or dismantling of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.
- B. Survey of Existing Conditions: Record existing conditions by use of Record existing conditions by use of preconstruction photographs.



1. Comply with requirements specified in Section 013233 "Photographic Documentation."
- C. Perform surveys as the Work progresses to detect hazards resulting from historic treatment procedures.

### 3.4 PROTECTION, GENERAL

- A. Comply with temporary barrier requirements in Section 015000 "Temporary Facilities and Controls."
- B. Ensure that supervisory personnel are on-site and on duty when historic treatment work begins and during its progress.
- C. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from historic treatment procedures.
1. Use only proven protection methods, appropriate to each area and surface being protected.
  2. Provide barricades, barriers, and temporary directional signage to exclude public from areas where historic treatment work is being performed.
  3. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of historic treatment work.
  4. Contain dust and debris generated by removal and dismantling work and prevent it from reaching the public or adjacent surfaces.
  5. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
  6. Protect floors and other surfaces along haul routes from damage, wear, and staining.
- D. Temporary Protection of Historic Materials:
1. Protect existing historic materials with temporary protections and construction. Do not deface or remove existing materials.
  2. Do not attach temporary protection to historic surfaces except as indicated as part of the historic treatment program and approved by Architect.
- E. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

### 3.5 PROTECTION DURING APPLICATION OF CHEMICALS

- A. Protect motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm or damage resulting from applications of chemical cleaners and paint removers.
- B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in historic treatment program. Use covering materials and masking agents that are waterproof, UV resistant, and will not stain or leave residue on surfaces to which they are applied. Apply

protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials staining.

- C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.
- D. Neutralize and collect alkaline and acid wastes and legally dispose of off Owner's property.
- E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

### 3.6 PROTECTION FROM FIRE

- A. General: Follow fire-prevention plan and the following.
  - 1. Comply with NFPA 241 requirements unless otherwise indicated. Perform duties entitled "Owner's Responsibility for Fire Protection."
  - 2. Remove and keep area free of combustibles including, rubbish, paper, waste, and chemicals, except to the degree necessary for the immediate work.
    - a. If combustible material cannot be removed, provide fire blankets to cover such materials.
  - 3. Prohibit smoking by all persons within Project work and staging areas.
- B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or highly combustible materials, including welding, torch-cutting, soldering, brazing, paint removal with heat, or other operations where open flames or implements utilizing high heat or combustible solvents and chemicals are anticipated:
  - 1. Open-flame, welding or other high-heat equipment shall not be used on site under any circumstances unless previously approved by Architect. Notify Architect before each occurrence, indicating location of such work.
  - 2. Restrict heat-generating equipment to shop areas or outside the building.
  - 3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
  - 4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
  - 5. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
  - 6. Fire Watch: Before working with heat-generating equipment or highly combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows.
    - a. Train each fire watch in the proper operation of fire-control equipment and alarms.

- b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
  - c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
  - d. Have fire watch perform final fire-safety inspection each day beginning no sooner than 30 minutes after conclusion of work at each area of Project site to detect hidden or smoldering fires and to ensure that proper fire-prevention is maintained.
  - e. Maintain fire-watch personnel at each area of Project site until 60 minutes after conclusion of daily work.
- C. Fire Extinguishers, Fire Blankets, and Rag Buckets: Maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire watch are trained in fire-extinguisher and blanket operation.

### 3.7 GENERAL HISTORIC TREATMENT

- A. Have historic treatment work performed only by qualified historic treatment specialists.
- B. Record existing work before each procedure (preconstruction), and record progress during the work. Use digital preconstruction documentation photographs. Comply with requirements in Project and Special Conditions.
- C. Ensure that supervisory personnel are present when historic treatment work begins and during its progress.
- D. The principle aim of preservation work is to halt the process of deterioration and stabilize the item's condition, unless otherwise indicated. Repair is required where specifically indicated. The following procedures shall be followed.
  - 1. Retain as much existing material as possible; repair and consolidate rather than replace.
  - 2. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure.
  - 3. Use reversible processes wherever possible.
  - 4. Use historically accurate repair and replacement materials and techniques unless otherwise indicated.
  - 5. Record existing work before each procedure (preconstruction) and progress during the work with digital preconstruction documentation photographs or video recordings. Comply with requirements in Section 013233 "Photographic Documentation."
- E. Prohibit smoking by personnel performing work on or near historic structures.
- F. Perform surveys of Project Site as the Work progresses to detect hazards resulting from historic treatment procedures.
- G. Notify Architect of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movement, or distortion.
  - 1. Do not proceed with the work in question until directed by Architect.

- H. Where missing features are indicated to be repaired or replaced, provide features whose designs are based on accurate duplications rather than on conjectural designs, subject to approval of Architect.
- I. Where Work requires existing features to be removed or dismantled and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.
- J. Identify new and replacement materials and features with permanent marks hidden in the completed work to distinguish them from original materials. Record a legend of identification marks and the locations of the items on record Drawings.

### 3.8 SECURING STAIR PRIOR TO FOUNDATION WORK

- A. Secure Stair, chimneys, 2<sup>nd</sup> floor bathroom enclosure, and other loose elements prior to lifting the structure for foundation work.
- B. Ensure building is temporary stabilized prior to commencing work.

### 3.9 STABILIZATION PROCEDURES

- A. Remove temporary stabilization as required to complete structural repairs.
- B. All stabilization elements to be removed prior to project completion.

END OF SECTION 013591

## SECTION 014000 - QUALITY REQUIREMENTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. 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.
  - 4. Specific test and inspection requirements are not specified in this Section.

## 1.3 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.
    - 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) according to 29 CFR 1910.7, by a testing agency accredited according to 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.
- 1.4 DELEGATED-DESIGN SERVICES
- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

- B. Delegated-Design Services Statement: Submit a statement, signed, and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

## 1.5 CONFLICTING REQUIREMENTS

- A. Document Interpretation: In the case of conflicts or discrepancies between Drawings and Divisions 02 - 49 of the Specifications, or within or among the Contract Documents and not clarified by Addendum, the most stringent requirement shall apply.
1. Note: None of the documents included in the drawing index are intended to be considered in isolation of one another.
  2. All bidders, sub-bidders, contractors, and sub-contractors, shall utilize complete sets of the bidding and/or construction documents in quantifying and constructing. Neither the owner nor architect assumes responsibility for errors, omissions, or misinterpretations resulting from the use of incomplete sets of bidding and/or construction documents.
- B. 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.
- C. 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.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. 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.
- D. 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.
- E. Reports: Prepare and submit certified written reports and documents as specified.
- F. 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.

## 1.7 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 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.
1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: 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.
  3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring 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.

## 1.8 REPORTS AND DOCUMENTS

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

## 1.9 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. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.
  - 1. Requirements of authorities having jurisdiction supersede requirements for specialists.
- G. Historic Preservation Treatment Specialist Qualification: An experienced firm regularly engaged in historic preservation treatments similar in nature, materials, design, and extent to this work as specified in each section, and that has completed a minimum of five recent projects and/or five years' experience in work similar to this procedure with a record of successful –in-service performance that demonstrate the firm's qualifications to perform this work. Additional personnel must also have experience.
  - 1. Field Supervisor Qualifications: Full-time supervisors with a minimum ten (10) years of experience in historic preservation treatment work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on Project site during times that historic preservation treatment work is in progress. Supervisors shall not be changed during the Project except for causes beyond the control of the specialist firm.
  - 2. Work Qualification: Persons who are experienced in historic preservation treatment work of types they will be performing and have at least five (5) years' documented experience.
- H. 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 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.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- I. 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.
- J. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- K. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following Contractor's responsibilities, including the following:
1. Provide test specimens representative of proposed products and construction.
  2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
  3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
  4. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.
  5. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.
  6. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
- L. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups 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. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
  5. Demonstrate the proposed range of aesthetic effects and workmanship.
  6. 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.
  7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.

8. 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.
  9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  10. Demolish and remove mockups when directed unless otherwise indicated.
- M. Specialty Mockups: See Section 014339 "Mockups" for additional construction requirements for integrated exterior mockups.

#### 1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  1. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
  - 2.
  3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. 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.
- C. 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.

- D. 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.
- E. 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."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. 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.
- H. 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.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-

control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. 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.

#### 1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
  2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
  4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
  6. Retesting and reinspecting corrected Work.

#### 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 and authorities' having jurisdiction reference during normal working hours.
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 014000

**CONSOLIDATED LIST OF INSPECTIONS****Note:**

\*This list is provided for the Contractor's benefit. This schedule does not negate any information listed in the individual sections of the Project Manual.

\*\*Items listed in grey text indicate sections in the Project Manual for which special inspections are not required.

\*\*\*Inspections are required to meet Chapter 17 of the 2021 International Building Code and Section 1704 Special Inspections and Tests.

- Special inspections shall identify the following:
  1. The materials, systems, components and work required to have special inspections or tests are listed below by the registered design professional responsible for each portion of the work.
  2. The type and extent of each special inspection is listed in the following table of contents and the corresponding specification sections.
  3. The type and extent of each test is listed in the following table of contents and the corresponding specification sections.
  4. No additional requirements for special inspections or tests for seismic or wind resistance are required for this project.
  5. The nature of each type of special inspection, identification as to whether it will be continuous special inspection, periodic special inspection or performed in accordance with the notation used in the referenced standard where the inspections are defined will be described further in the division specification and section listed.

Division      Section Title

**DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS**

000107      Seals Page  
 001116      Invitation to Bid  
 003126      Existing Hazardous Materials Information  
 004373      Proposed Schedule of Values Form  
 005200      Agreement Form  
 005400      Agreement Form Supplements  
 006113      Performance Bond and Payment Bonds  
 007200      General Conditions of the Contract  
 007300      Supplementary Conditions

**DIVISION 01 – GENERAL REQUIREMENTS**

011000      Summary  
 012200      Unit Prices  
 012500      Substitution Procedures  
 012600      Contract Modification Procedures  
 012900      Payment Procedures  
 013100      Project Management and Coordination  
 013200      Construction Progress Documentation

**CONSOLIDATED LIST OF INSPECTIONS**

207 Calhoun Street

014000 - 1  
 02/05/2024  
 Meadors, Inc.



013233	Photographic Documentation
013300	Submittal Procedures
013591	Historic Treatment Procedures
014000	Quality Requirements
014200	References
014339	Mockups
015000	Temporary Facilities and Controls
015639	Temporary Tree and Plant Protection
015723	Temporary Stormwater Pollution Control
016000	Product Requirements
017300	Execution
017419	Construction Waste Management and Disposal
017700	Closeout Procedures
017839	Project Record Documents

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**DIVISION 02 - EXISTING CONDITIONS**

021500	Bracing and Shoring	
	• Section 3.1A	
	▪ Design and Inspection: Contractor will engage.	
024119	Selective Demolition	
028716.13	Bird Excrement Removal	

**DIVISION 03 – NOT USED****DIVISION 04 - MASONRY**

040310	Historic Masonry Cleaning
040323	Historic Brick Unit Masonry Repointing
040513	Mortars for Structural Repairs and Repointing
042000	Unit Masonry
042100	Clay Unit Masonry

**DIVISION 05 – METALS – NOT USED****DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

060312	Historic Wood Repair	
061000	Rough Carpentry	
	• Section 4.8A	
	▪ Testing and Inspection: Owner will engage.	
061600	Sheathing	
062012	Exterior Finish Carpentry	

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

070150.19	Preparation for Reroofing
073113	Asphalt Roof Shingles
076200	Sheet Metal Flashing and Trim
079200	Joint Sealants

**DIVISION 08 – NOT USED**

**DIVISION 09 - FINISHES**

099000 Architectural Coatings for Historic Substrates

**DIVISIONS 10-30 – NOT USED**

**DIVISION 31 - EARTHWORK**

313116 Termite Control

**DIVISIONS 32-33 – NOT USED**

END OF CONSOLIDATED LIST OF INSPECTIONS

## 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.

- 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: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they 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."
- 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](http://www.din.de).
  2. IAPMO - International Association of Plumbing and Mechanical Officials; [www.iapmo.org](http://www.iapmo.org).
  3. ICC - International Code Council; [www.iccsafe.org](http://www.iccsafe.org).
  4. ICC-ES - ICC Evaluation Service, LLC; [www.icc-es.org](http://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](http://www.cpsc.gov).
  2. DOC - U.S. Department of Commerce; [www.commerce.gov](http://www.commerce.gov).
  3. DOD - U.S. Department of Defense; [www.defense.gov](http://www.defense.gov).
  4. DOE - U.S. Department of Energy; [www.energy.gov](http://www.energy.gov).
  5. DOJ - U.S. Department of Justice; [www.ojp.usdoj.gov](http://www.ojp.usdoj.gov).
  6. DOS - U.S. Department of State; [www.state.gov](http://www.state.gov).
  7. EPA - United States Environmental Protection Agency; [www.epa.gov](http://www.epa.gov).
  8. FAA - Federal Aviation Administration; [www.faa.gov](http://www.faa.gov).
  9. FG - Federal Government Publications; [www.gpo.gov/fdsys](http://www.gpo.gov/fdsys).
  10. GPO - U.S. Government Publishing Office; [www.gpo.gov](http://www.gpo.gov).
  11. GSA - U.S. General Services Administration; [www.gsa.gov](http://www.gsa.gov).
  12. HUD - U.S. Department of Housing and Urban Development; [www.hud.gov](http://www.hud.gov).
  13. LBNL - Lawrence Berkeley National Laboratory; Energy Technologies Area; [www.lbl.gov/](http://www.lbl.gov/).
  14. NIST - National Institute of Standards and Technology; [www.nist.gov](http://www.nist.gov).
  15. OSHA - Occupational Safety & Health Administration; [www.osha.gov](http://www.osha.gov).
  16. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; [www.trb.org](http://www.trb.org).
  17. USACE - U.S. Army Corps of Engineers; [www.usace.army.mil](http://www.usace.army.mil).
  18. USDA - U.S. Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; [www.ars.usda.gov](http://www.ars.usda.gov).
  19. USDA - U.S. Department of Agriculture; Rural Utilities Service; [www.usda.gov](http://www.usda.gov).

20. USP - U.S. Pharmacopeial Convention; [www.usp.org](http://www.usp.org).
  21. USPS - United States Postal Service; [www.usps.com](http://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](http://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/](http://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/](http://www.dsp.dla.mil/Specs-Standards/).
    - a. Available from Defense Standardization Program; [www.dsp.dla.mil](http://www.dsp.dla.mil).
    - b. Available from U.S. General Services Administration; [www.gsa.gov](http://www.gsa.gov).
    - c. Available from National Institute of Building Sciences/Whole Building Design Guide; [www.wbdg.org](http://www.wbdg.org).
  6. MILSPEC - Military Specification and Standards; (see DOD).
  7. USAB - United States Access Board; [www.access-board.gov](http://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.
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](http://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/](http://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](http://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Page.aspx).
  5. CPUC; California Public Utilities Commission; [www.cpuc.ca.gov](http://www.cpuc.ca.gov).
  6. SCAQMD; South Coast Air Quality Management District; [www.aqmd.gov](http://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 014200

## SECTION 014339 - MOCKUPS

## PART 1 - GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Integrated exterior mockups.

## B. Related Requirements:

1. Section 014000 "Quality Requirements" for quality assurance requirements for aesthetic and workmanship mockups specified in other Sections.

## 1.2 DEFINITIONS

- A. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as part of permanent construction, consisting of multiple products, assemblies, and subassemblies.
- B. Preconstruction Laboratory Mockups: Integrated exterior mockups constructed at testing facility to verify performance characteristics.
- C. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting as indicated.

## 1.3 PREINSTALLATION MEETINGS

## A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, testing and inspecting agency representative, and installers of major systems whose Work is included in integrated exterior mockups.
2. Review coordination of equipment and furnishings provided by the Owner for room mockups.
3. Review locations and extent of mockups.
4. Review and finalize schedule for mockups, and verify availability of materials, personnel, equipment, and facilities needed to complete mockups and maintain schedule for the Work.

## B. Qualification Data: For testing agency.

## C. Preconstruction Test Reports: For integrated exterior mockups.

#### 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025 and acceptable to Owner and Architect.
- B. Build mockups to do the following:
1. Verify selections made under Sample submittals.
  2. Demonstrate aesthetic effects.
  3. Demonstrate the qualities of products and workmanship.
  4. Demonstrate acceptable coordination between components and systems.
  5. Perform preconstruction testing, such as window air- and water-leakage testing.
- C. Fabrication: Before fabricating or installing portions of the Work requiring mockups, build mockups for each form of construction and finish required. Use materials and installation methods as required for the Work.
1. Build mockups of size indicated.
  2. Build mockups in location indicated or, if not indicated, as directed by Architect.
  3. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
  4. Demonstrate the proposed range of aesthetic effects and workmanship.
  5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  6. Demolish and remove mockups when directed unless otherwise indicated.
- D. Notifications:
1. Notify Architect seven days in advance of the dates and times when mockups will be constructed.
  2. Notify Architect 14 days in advance of the dates and times when mockups will be tested.
  3. Allow seven days for initial review and each re-review of each mockup.
- E. Approval: Obtain Architect's approval of mockups before starting fabrication or construction of corresponding Work.
1. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
  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 COORDINATION

- A. Coordinate schedule for construction of mockups, so construction, testing, and review of mockups do not impact Project schedule.



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**PART 2 - PRODUCTS****2.1 INTEGRATED EXTERIOR MOCKUPS**

- A. Construct integrated exterior mockups as indicated on Drawings. Construct mockups to demonstrate constructability, coordination of trades, and sequencing of Work; and to ensure materials, components, subassemblies, assemblies, and interfaces integrate into a system complying with indicated performance and aesthetic requirements.
- B. Design and construct foundation and superstructure to support free-standing integrated exterior mockups.
- C. Build integrated exterior mockups using installers and construction methods that will be used in completed construction.
- D. Use specified products that have been approved by Architect. Coordinate installation of materials and products specified in individual Specification Sections that include Work included in integrated exterior mockups.
- E. The Work of integrated exterior mockups includes, but is not limited to, the following:
  - 1. Air and weather barriers.
  - 2. Through-wall flashing.
  - 3. Flashing and sheet metal trim.
  - 4. Joint sealants.
- F. Photographic Documentation: Document construction of integrated exterior mockups with photographs in accordance with Section 013233 "Photographic Documentation." Provide photographs showing details of interface of different materials and assemblies.
  - 1. Document testing procedures, including water leakage and other deficiencies. Photograph modifications to component interfaces intended to correct deficiencies.
- G. Provide and document modifications to construction details and interfaces between components and systems required to properly sequence the Work, or to pass performance testing requirements. Obtain Architect's approval for modifications.
- H. Retain approved mockups constructed in place. Incorporate fully into the Work.

**PART 3 - EXECUTION**

END OF SECTION 014339

## SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

## 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 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.

## 1.3 USE CHARGES

- A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities 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 and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

## 1.4 INFORMATIONAL SUBMITTALS

- A. 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.
- B. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

- D. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold.
1. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
  2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
  3. Indicate sequencing of work that requires water, such as brick repointing, plastering, and concrete 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.
  4. Indicate methods to be used to avoid trapping water in finished work.

## 1.5 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.

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

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. 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.
- B. 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.
- C. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.
- D. 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: Small field offices are allowed on site. Location of field office to be coordinated with Owner and Architect.
- B. Location of dumpster to be coordinated with the Owner.
- C. Location of portable toilet to be coordinated with the Owner and Architect.
- D. Portable 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 and bottom rails. Provide galvanized-steel bases for supporting posts. Black privacy mesh to cover all fencing.

## 2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

## 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.
  - 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.

### 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. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
  1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: 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.
- D. 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.
  2. Contractor will provide temporary toilet facilities.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- G. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- H. 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.
- I. Telephone Service: Provide mobile telephone service for superintendent and office personnel.
  1. Post a list of important telephone numbers.
    - a. Police and fire departments.
    - b. Ambulance services.
    - c. Contractor's home office.
    - d. Contractor's emergency after-hours telephone number.

- e. Architect's office.
  - f. Engineer's offices.
  - g. Owner's office.
  - h. Principal Subcontractor's field and home offices.
- J. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by Architect and Owner.
- K. Project Computer: Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:
- 1. Processor: Intel Core i5 or i7.
  - 2. Memory: 16 gigabyte.
  - 3. Disk Storage: 1 -terabyte hard-disk drive and combination DVD-RW/CD-RW drive.
  - 4. Display: 24-inch LCD monitor with 256-Mb dedicated video RAM.
  - 5. Full-size keyboard and mouse.
  - 6. Network Connectivity: Gigabit.
  - 7. Operating System: Microsoft Windows 10 Professional.
  - 8. Productivity Software:
    - a. Microsoft Office Professional, 2013 or higher, including Word, Excel, and Outlook.
    - b. Adobe Reader DC.
    - c. WinZip 10.0 or higher.
  - 9. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
  - 10. Internet Service: Broadband modem, router, and ISP, equipped with hardware firewall, providing minimum 10.0 -Mbps upload and 15 -Mbps download speeds at each computer.
  - 11. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
  - 12. Backup: External hard drive, minimum 2 terrabytes, with automated backup software providing daily backups.

### 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. Traffic Controls: Comply with requirements of authorities having jurisdiction.
- 1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
  - 2. Maintain access for fire-fighting equipment and access to fire hydrants.

- C. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- D. Storage and Staging: Use designated areas of Project site for storage and staging needs.
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
  - 1. Identification Signs: Provide Project identification signs as indicated on Drawings.
  - 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.
- F. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- G. 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.
- H. Existing Stair Usage: Use of Owner's existing 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.
- I. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

### 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.
- 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: 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, according to requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
  2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  4. 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: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- G. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- 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.
1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- 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.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign, stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

### 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.
- C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
  1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
  2. Keep interior spaces reasonably clean and protected from water damage.
  3. Periodically collect and remove waste containing cellulose or other organic matter.
  4. Discard or replace water-damaged material.
  5. Do not install material that is wet.
  6. Discard and replace stored or installed material that begins to grow mold.
  7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.
- D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
  1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
  2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
  3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
    - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
    - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of

exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.

- c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

### 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, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. 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 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 015000

## 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".

## 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.
- 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.
    - 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. 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
- B. 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.
- C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Statements: For arborist and tree service firm.
- B. 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.
- C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
- D. 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.
- E. Quality-control program.

#### 1.6 QUALITY ASSURANCE

- A. Arborist Qualifications: Certified Arborist as certified by ISA 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. Foot traffic.
  4. Erection of sheds or structures.
  5. Impoundment of water.
  6. Excavation or other digging unless otherwise indicated.
  7. 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.
- D. Take precautions to protect plants from airborne contaminants, such as paint or fireproofing overspray.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Backfill Soil: 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.
- 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:

1. 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.
2. Gates: Single-swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones; leaf width 36 inches.

### 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.
  2. Install temporary root-protection matting over mulch to the extent indicated.

#### 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 a manner that will prevent people and animals 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 where necessary; 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 and locks engage accurately and securely without forcing or binding.
  3. Plastic Fencing: Stretch fabric taut and secure to posts without bows or sags.
- B. Maintain protection zones free of weeds and trash.
- C. Maintain hydration of plants to assure plant survival.
- D. Maintain protection-zone fencing 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.
- C. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.
- D. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

### 3.6 ROOT PRUNING

- A. Prune tree roots that are affected by temporary and permanent construction. Prune 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: Coat cut ends of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other coating formulated for use on damaged plant tissues and that is acceptable to arborist.
  - 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 12 inches inside 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 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 injured, 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 thinning where indicated.
- 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.



### 3.8 REGRADING

- A. 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.

### 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 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.
  - 1. Large Trees: Provide one new tree(s) 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.
- C. Excess Mulch: Rake mulched area within protection zones, being careful not to injure roots. Rake to loosen and remove mulch that exceeds a 2-inch uniform thickness to remain.
- D. 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.

### 3.11 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 015639

## SECTION 015723 - TEMPORARY STORMWATER POLLUTION CONTROL

PART 1 - GENERAL – NOT NECESSARY FOR PHASE I. THIS SECTION REQUIRED FOR FUTURE PHASE II.

## 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. Temporary stormwater pollution controls.

## 1.3 STORMWATER POLLUTION PREVENTION PLAN

- A. The Stormwater Pollution Prevention Plan (SWPPP) is part of the Contract Documents and is bound into this Project Manual.

## 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Meet with Owner, Architect, and earthwork subcontractor.
  - 2. Review requirements of the SWPPP, including permitting process, worker training, and inspection and maintenance requirements.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Stormwater Pollution Prevention Plan (SWPP): Within 15 days of date established for commencement of the Work, submit completed SWPPP.
- B. EPA authorization under the EPA's "2017 Construction General Permit (CGP)."
- C. Stormwater Pollution Prevention (SWPP) Training Log: For each individual performing Work under the SWPPP.
- D. Inspection reports.

## 1.6 QUALITY ASSURANCE

- A. Stormwater Pollution Prevention Plan (SWPPP) Coordinator: Experienced individual or firm with a record of successful water pollution control management coordination of projects with similar requirements.
  - 1. SWPPP Coordinator shall complete and finalize the SWPPP form.
  - 2. SWPPP Coordinator shall be responsible for inspections and maintaining of all requirements of the SWPPP.
- B. Installers: Trained as indicated in the SWPPP.

## PART 2 - PRODUCTS

## 2.1 TEMPORARY STORMWATER POLLUTION CONTROLS

- A. Provide temporary stormwater pollution controls as required by the SWPPP.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Comply with all best management practices, general requirements, performance requirements, reporting requirements, and all other requirements included in the SWPPP.
- B. Locate stormwater pollution controls in accordance with the SWPPP.
- C. Conduct construction as required to comply with the SWPPP and that minimize possible contamination or pollution or other undesirable effects.
  - 1. Inspect, repair, and maintain SWPPP controls during construction.
    - a. Inspect all SWPPP controls not less than every seven days, and after each occurrence of a storm event, as outlined in the SWPPP.
- D. Remove SWPPP controls at completion of construction and restore and stabilize areas disturbed during construction.

END OF SECTION 015723

## SECTION 016000 - PRODUCT REQUIREMENTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. 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 012500 "Substitution Procedures" for requests for substitutions.
  - 3. Section 014200 "References" for applicable industry standards for products specified.
  - 4. Section 01770 "Closeout Procedures" for submitting warranties.

## 1.3 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 indicated otherwise.
  - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "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. Evaluation of 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 Part 2 "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.
- 1.4 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 shall 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 not conspicuous.
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:
  - a. Name of product and manufacturer.
  - b. Model and serial number.
  - c. Capacity.
  - d. Speed.
  - e. Ratings.
3. See individual identification requirements within the Mechanical, Electrical, and Plumbing drawings for additional equipment identification requirements.

## 1.5 COORDINATION

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

## 1.6 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.

## 1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall 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 the 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 the 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 the 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.
  - 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 the 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 unless otherwise indicated.
  - 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.
    - 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, as specified in Section 013300 "Submittal Procedures."
1. Form of Approval of Submittal: As specified in 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, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.
- D. 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 the 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 016000

## 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 and surveying.
  3. Installation of the Work.
  4. Cutting and patching.
  5. Progress cleaning.
  6. Starting and adjusting.
  7. Protection of installed construction.
  8. Correction of the Work.
- B. Related Requirements:
1. Section 011000 "Summary" for coordination of Owner-furnished products, Owner-performed work, and limits on use of Project site.
  2. Section 013300 "Submittal Procedures" for submitting surveys.
  3. Section 013591 "Historic Treatment Procedures" for historic treatment.
  4. 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.
  5. 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 PREINSTALLATION MEETINGS

- A. Cutting and Patching Conference: Conduct conference at Project site.
1. Prior to submitting cutting and patching plan, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

- a. Contractor's superintendent.
  - b. Trade supervisor responsible for cutting operations.
  - c. Trade supervisor(s) responsible for patching of each type of substrate.
  - d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.
2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- B. Layout Conference: Conduct conference at Project site.
1. Prior to establishing layout of new and existing perimeter and structural column grid(s), review building location requirements. Review benchmark, control point, and layout and dimension requirements. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with Project layout to attend, including the following:
    - a. Contractor's superintendent.
    - b. Professional surveyor responsible for performing Project surveying and layout.
    - c. Professional surveyor responsible for performing site survey serving as basis for Project design.
  2. Review meanings and intent of dimensions, notes, terms, graphic symbols, and other layout information indicated on the Drawings.
  3. Review requirements for including layouts on Shop Drawings and other submittals.
  4. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor.
- B. Certified Surveys: Submit two copies signed by land surveyor.
- C. Certificates: Submit certificate signed by land surveyor, certifying that location and elevation of improvements comply with requirements.
- D. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
  1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
  2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
  3. Products: List products to be used for patching and firms or entities that will perform patching work.
  4. Dates: Indicate when cutting and patching will be performed.
  5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

- a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
- E. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

## 1.5 CLOSEOUT SUBMITTALS

- A. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

## 1.6 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. 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. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Plumbing piping systems.
    - f. Mechanical systems piping and ducts.
    - g. Control systems.
    - h. Communication systems.
    - i. Fire-detection and -alarm systems.
    - j. Conveying systems.
    - k. Electrical wiring systems.
    - l. Operating systems of special construction.
  - 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. Other construction elements include but are not limited to the following:

- a. Water, moisture, or vapor barriers.
  - b. Membranes and flashings.
  - c. Exterior curtain-wall construction.
  - d. Sprayed fire-resistive material.
  - e. Equipment supports.
  - f. Piping, ductwork, vessels, and equipment.
  - g. Noise- and vibration-control elements and systems.
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.
- C. 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.
1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.
- 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.
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.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## 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. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

1. Comply with requirements specified in Division 01 Section "Photographic Documentation."
2. Perform Surveys as the Work progresses as outlined in drawings to detect hazards resulting from historic treatment procedures.
1. Notify the Architect if existing conditions deviate from Construction Drawings.

C. 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 mechanical and 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.

D. 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.

E. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility 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 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.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 FIELD ENGINEERING

- A. 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.



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.
- B. 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.
- C. 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.
- D. 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.
  4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.
- 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.

- D. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- E. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- F. 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.
- G. 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.
- H. 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.
- E. 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 prevent interruption to occupied areas.

- F. 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. 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.
  5. Proceed with patching after construction operations requiring cutting are complete.
- G. 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.
  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.
- H. 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, according to 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 according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. 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."
- 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.
- 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 017300

## 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. Recycling nonhazardous demolition and construction waste.
- 3. Disposing of nonhazardous demolition and construction waste.

- B. Related Requirements:

- 1. Section 042000 "Unit Masonry" for disposal requirements for masonry waste.

## 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. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. 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.

- 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 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the Work.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- B. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- C. Qualification Data: For refrigerant recovery technician.
- D. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- E. Refrigerant Recovery: Comply with requirements in Section 024119 "Selective Demolition" for refrigerant recovery submittals.

#### 1.7 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. Refrigerant Recovery Technician Qualifications: Type I certified by EPA-approved certification program.
- C. Refrigerant Recovery Technician Qualifications: Comply with requirements in 024119 "Selective Demolition."
- D. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.



- E. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
  2. Review requirements for documenting quantities of each type of waste and its disposition.
  3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  5. Review waste management requirements for each trade.

## 1.8 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Use Form CWM-1 for construction waste and Form CWM-2 for demolition waste. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Form CWM-3 for construction waste and Form CWM-4 for demolition waste. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work in compliance with Section 024119 "Selective Demolition."
  2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
  3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
  4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
  5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
  6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.
- D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there were no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Use Form CWM-5 for construction waste and Form CWM-6 for demolition waste. Include the following:
1. Total quantity of waste.

2. Estimated cost of disposal (cost per unit). Include transportation and tipping fees and cost of collection containers and handling for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
6. Savings in transportation and tipping fees by donating materials.
7. Savings in transportation and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

## PART 2 - PRODUCTS

### 2.1 RECYCLING RECEIVERS AND PROCESSORS

- A. Subject to compliance with requirements, available recycling receivers and processors include, but are not limited to, the following:
  1. Double J Recycling, 509 Williamsburg County Hwy, Kingstree, SC 29556, 843-382-5300.
  2. ICE RECYLING, 431 Cedar St, Lake City, SC 29560, 843-374-0217.
  3. Florence Co. Recycling Center, 1228 E Main St, Lake City, SC 29560, 843-292-1603
  4. Juneburn Recycling Center, 1332 June Burn Rd, Manning, SC 29102, +18034733922

### 2.2 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:
  1. Demolition Waste:
    - a. Asphalt paving.
    - b. Concrete.
    - c. Concrete reinforcing steel.
    - d. Brick.
    - e. Concrete masonry units.
    - f. Wood studs.
    - g. Wood joists.
    - h. Plywood and oriented strand board.
    - i. Wood paneling.
    - j. Wood trim.
    - k. Structural and miscellaneous steel.
    - l. Rough hardware.
    - m. Roofing.
    - n. Insulation.
    - o. Doors and frames.
    - p. Door hardware.

- q. Windows.
- r. Glazing.
- s. Metal studs.
- t. Gypsum board.
- u. Acoustical tile and panels.
- v. Carpet.
- w. Carpet pad.
- x. Equipment.
- y. Cabinets.
- z. Plumbing fixtures.
- aa. Piping.
- bb. Supports and hangers.
- cc. Valves.
- dd. Mechanical equipment.
- ee. Refrigerants.
- ff. Electrical conduit.
- gg. Copper wiring.
- hh. Lighting fixtures.
- ii. Lamps.
- jj. Ballasts.
- kk. Electrical devices.
- ll. Switchgear and panelboards.
- mm. Transformers.
- 2. Construction Waste:
  - a. Masonry and CMU.
  - b. Lumber.
  - c. Wood sheet materials.
  - d. Wood trim.
  - e. Metals.
  - f. Roofing.
  - g. Insulation.
  - h. Carpet and pad.
  - i. Gypsum board.
  - j. Piping.
  - k. Electrical conduit.
  - l. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
    - 1) Paper.
    - 2) Cardboard.
    - 3) Boxes.
    - 4) Plastic sheet and film.
    - 5) Polystyrene packaging.
    - 6) Wood crates.
    - 7) Wood pallets.
    - 8) Plastic pails.
  - m. Construction Office Waste: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following construction office waste materials:

- 1) Paper.
- 2) Aluminum cans.
- 3) Glass containers.

## PART 3 - EXECUTION

### 3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
  1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
  1. Distribute waste management plan to everyone concerned within three days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. 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. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
  2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.
- E. 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 024119 "Selective Demolition" and Section "013591 Historic Treatment Procedure" 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.
  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 Sale and Donation: Not permitted on Project site.
- D. 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 designated by Owner.
  5. Protect items from damage during transport and storage.
- E. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- F. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- G. Plumbing Fixtures: Separate by type and size.
- H. Lighting Fixtures: Separate lamps by type and protect from breakage.
- I. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

### 3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

- a. Inspect containers and bins for contamination and remove contaminated materials if found.
  2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
  4. Store components off the ground and protect from the weather.
  5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.
- 3.4 RECYCLING DEMOLITION WASTE
- A. Asphalt Paving: Grind asphalt to maximum 1-1/2-inch size.
  - B. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.
  - C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
    1. Pulverize concrete to maximum 1-1/2-inch size.
  - D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
    1. Pulverize masonry to maximum 3/4-inch size.
    2. Clean and stack undamaged, whole masonry units on wood pallets.
  - E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
  - F. Metals: Separate metals by type.
    1. Structural Steel: Stack members according to size, type of member, and length.
    2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
  - G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
  - H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
  - I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
  - J. Metal Suspension System: Separate metal members, including trim and other metals from acoustical panels and tile, and sort with other metals.
  - K. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.

1. Store clean, dry carpet and pad in a closed container or trailer provided by carpet reclamation agency or carpet recycler.
- L. Carpet Tile: Remove debris, trash, and adhesive.
1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by carpet reclamation agency or carpet recycler.
- M. Piping: Reduce piping to straight lengths and store by material and size. Separate supports, hangers, valves, sprinklers, and other components by material and size.
- N. Conduit: Reduce conduit to straight lengths and store by material and size.
- O. Lamps: Separate lamps by type and store according to requirements in 40 CFR 273.

### 3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

D. Paint: Seal containers and store by type.

### 3.6 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.
    - D. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.

END OF SECTION 017419



## SECTION 017700 - CLOSEOUT 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 Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

- B. Related Requirements:

1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 013233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
3. Section 017300 "Execution" for progress cleaning of Project site.
4. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
5. Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

## 1.3 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.

## 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

### 1.5 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest-control inspection.

### 1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

### 1.7 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. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. 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.
  - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. 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.
    - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
  - 5. Submit testing, adjusting, and balancing records.
  - 6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- 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. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. 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.

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.

## 1.8 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." All closeout documents must be submitted before final payment will be processed.
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 shall 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.
4. Submit pest-control final inspection report.
5. Submit Final Completion photographic documentation.

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.

#### 1.9 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, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
  2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
  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. MS Excel Electronic File: Architect will return annotated file.
    - b. PDF Electronic File: Architect will return annotated file.
    - c. Web-Based Project Software Upload: Utilize software feature for creating and updating list of incomplete items (punch list).

#### 1.10 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.
  1. Submit by uploading to web-based project software site and by email to Architect.
- E. Warranties in Paper Form:

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

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## 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 or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.

- e. Remove snow and ice to provide safe access to building.
  - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - h. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
  - i. Vacuum and mop concrete.
  - j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations 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. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - p. Clean ducts, blowers, and coils.
    - 1) Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.
  - q. Clean light fixtures, luminaires, lamps, and globes to function with full efficiency.
  - r. Clean strainers.
  - s. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.
- D. 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 REPAIR OF THE WORK
- A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
  - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

## 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.

## 1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one set(s) 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(s) of marked-up record prints.
      - 2) Submit PDF electronic files of scanned record prints and one set(s) of file prints.
      - 3) Submit Record Digital Data Files and one set(s) of plots.
      - 4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    - b. Final Submittal:
      - 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.



- B. Record Specifications: Submit annotated PDF electronic files and 3 paper copies of Project's Specifications, including addenda and Contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories and 3 paper copies of each submittal.
  - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories and 3 paper copies of each submittal.
- E. Reports: Submit written report weekly indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

#### 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. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. 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.
  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: Same digital data software program, version, and operating system as for the original Contract Drawings.
  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, Record Product Data, and Record Drawings where applicable.

- B. Format: Submit record specifications as annotated PDF electronic file, paper copy, and scanned PDF electronic file(s) of marked-up paper copy of Specifications.

#### 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, Record Specifications, and Record Drawings where applicable.

- C. Format: Submit Record Product Data as annotated PDF electronic file, paper copy, and scanned PDF electronic file(s) of marked-up paper copy of Product Data.

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

#### 1.7 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

- B. Format: Submit miscellaneous record submittals as PDF electronic file, paper copy, and scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintenance of Record Documents and Samples: Store Record Documents and Samples 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 017839

## SECTION 021500 - BRACING AND SHORING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This section includes the following:
  - 1. Requirements for the bracing and shoring design.
  - 2. Selection of construction sequence.
  - 3. Temporary bracing and shoring of the structure or portions of the structure to prevent the structure from becoming unsafe during construction.
  - 4. Temporary shoring of excavations.
  - 5. Construction and removal of all posts, timbers, lagging, braces, etc. required in connection with bracing and shoring.
  - 6. Excavation, concrete placement and backfilling required in connection with underpinning foundations.
  - 7. Coordinate this work with the bracing and shoring requirements shown on the bracing and shoring drawings.

## 1.3 REFERENCES (LATEST EDITIONS)

- A. IRC/IBC 2018
- B. ASCE 7-05
- C. SEI / ASCE 37-02

## 1.4 SUBMITTALS

- A. Submit under provision of Section 01010, General Provisions.
- B. Working drawings showing layout, member sizes, connection details, and construction sequence for all bracing and shoring activity.
- C. Design calculations of bracing and shoring, showing all member stresses and connections due to imposed loads.
- D. No work related to bracing or shoring shall take place until seven (7) working days after the Engineer of Record has received the working drawings and design calculations.

## 1.5 QUALIFICATIONS

- A. Design calculations and working drawings of all proposed bracing and shoring of the structure shall be prepared, stamped, and signed by a Professional Engineer registered in the State of South Carolina.

## 1.6 DESIGN REQUIREMENTS

- A. The bracing and shoring systems required to provide temporary support of the structure or portions of the structure during construction shall be designed to support the dead, live, soil, earthquake and wind loads that may be imposed on the structure during construction in accordance with industry standards and generally accepted engineering principles, including SEI/ASCE 37-02 "Design Loads on Structures During Construction."
- B. The stability and integrity of the structure during construction shall be maintained at levels generally acceptable within the construction industry by the use of bracing and shoring. All shoring shall be stable under all loading conditions including tension, compression, and horizontal loads from the thrust of the arches. In no case shall the structure be allowed to become unsafe during construction, as defined by the local governing jurisdiction. Design stresses in bracing and shoring shall not exceed the stresses allowed by Code.
- C. The proposed shoring and bracing systems shall be designed for and shall have foundations designed for earth pressures and allowable soil bearing values as applicable.

## PART 2 - PRODUCTS

### 2.1 MATERIALS FOR SHORING AND BRACING

- A. Materials for shoring and bracing shall be undamaged, high quality materials.

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION

- A. The Contractor shall hire the Engineer responsible for the design of bracing and shoring and inspection of the work as detailed on the bracing and shoring and working drawings, prior to cutting or removing any portion of the structure.
- B. Construction of bracing and shoring shall be in accordance with the received drawings prepared by the Contractor's Engineer.
- C. The Engineer responsible for design of bracing and shoring shall inspect the bracing and shoring onsite and write a letter to the Engineer of Record certifying that construction of bracing and shoring was completed in accordance with the bracing and shoring working

drawings and meets his/her approval prior to cutting, removal, or modification of any portion of the structure.

- D. Construction of bracing and shoring shall be inspected and approved by Engineer of Record prior to cutting, removal, or modification of any portion of the structure. The Engineer of Record will provide written notification to the Contractor to proceed with the work within seven (7) days of the final inspection of the shoring.
- E. Bracing and shoring shall not be removed until all new portions of the work have sufficient strength to support their weight and the loads superimposed thereon safely. In no case may any bracing or shoring be removed until the work has been approved and reviewed by the Engineer of Record.
- F. Remove surplus excavated materials from site.

END OF SECTION 021500

## SECTION 024119 - SELECTIVE DEMOLITION

## 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. Demolition and removal of selected portions of building or structure.
2. Removal of hazardous materials.
3. Salvage of existing items to be reused or recycled.

## B. Related Requirements:

1. Section 011000 "Summary" for restrictions on the use of the premises.
2. Section 013591 "Historic Treatment Procedures" for historic treatment procedures.
3. Section 017300 "Execution" for cutting and patching procedures.
4. Section 028716.13 "Bird Excrement Removal" for requirements for removal of exterior and interior bird excrement.

## 1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove, Salvage and Store: Carefully detach from existing construction, in a manner to prevent damage, and store in Owner-designated location for use in Phase II.
- D. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- E. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

## 1.4 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.

#### 1.5 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site.
  - 1. Inspect and discuss condition of construction to be selectively demolished.
  - 2. Review structural load limitations of existing structure.
  - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
  - 5. Review areas where existing construction is to remain and requires protection.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. 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.
- B. 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. Interruption of utility services. Indicate how long utility services will be interrupted.
  - 3. Coordination for shutoff, capping, and continuation of utility services.
  - 4. Use of elevator and stairs.
  - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- D. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

## 1.8 FIELD CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
  - 1. Contractor is responsible for remediation of hazardous materials in accordance with applicable codes, regulations and safety requirements.
  - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
- D. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 4 feet or more.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

## 1.9 WARRANTY

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

## 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/ASSE A10.6 and NFPA 241.

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**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- D. 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.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
  - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
  - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

**3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS**

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary."

**3.3 PREPARATION**

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."

- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

### 3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the 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. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next 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, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. 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.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. See Section 073100 "Synthetic Roof Tiles " for new roofing requirements.

1. Remove existing roofing system down to substrate.

B. Siding: Ensure that building interior remains watertight and weathertight during siding replacement.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

### 3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

### 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.

### 3.8 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Construction to Be Removed: As indicated on Drawings.
- B. Existing Items to be Removed and Stored: As indicated on Drawings.
- C. Existing Items to Be Removed and Reinstalled: As indicated on Drawings.
- D. Existing Items to Remain: As indicated on Drawings.

END OF SECTION 024119

## SECTION 028716.13 - BIRD EXCREMENT REMOVAL

## 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 requirements for bird-excrement removal.
  - 1. Removal of bird excrement on interior and exterior of building.
  - 2. Removal of contaminated insulation in attic space.
- B. Related Requirements:
  - 1. Section 013591 "Historic Treatment Procedures" for general historic treatment requirements.
  - 2. Section 024119 "Selective Demolition" for requirements for demolition of adjacent surfaces.

## 1.3 PRECONSTRUCTION MEETINGS

- A. Preconstruction Conference: Conduct conference at Project site.
  - 1. Review minutes of Preliminary Historic Treatment Conference that pertain to protection of historic areas and surfaces.
  - 2. Review methods and procedures related to excrement removal, including, but not limited to, the following:
    - a. Bird-excrement-removal specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
    - b. Materials, material application, sequencing, tolerances, and required clearances.
    - c. Fire-protection plan.
    - d. Coordination with building occupants.

## 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For bird-excrement-removal specialist.
- B. Preconstruction Test Reports: For removal materials and methods.

## 1.5 QUALITY ASSURANCE

- A. Bird-Excrement-Removal Specialist Qualifications: A firm that employs personnel experienced and skilled in the processes and operations indicated.
- B. Regulatory Requirements: Comply with notification regulations of authorities having jurisdiction before beginning excrement-removal work. Comply with collection and disposal regulations of authorities having jurisdiction.

## 1.6 FIELD CONDITIONS

- A. Safety Precautions for Bird Excrement Removal:
  - 1. All personnel must wear a National Institute for Occupational Safety and Health (NIOSH) approved full face respirator with a high efficiency particulate air (HEPA) filter for screening particles of 0.3 micron size. Dust and particle masks are not appropriate.
  - 2. Respirators must be used in accordance with current OSHA regulations and GSA policy relevant to this condition and work. This includes fit-testing of respirators, maintenance, training, storage requirements, disposal of the debris, and other relevant topics.
  - 3. All personnel must wear protective coveralls, gloves, boots, and hat.
  - 4. Prior to removal, all excrement must be saturated with water under low pressure to prevent debris from becoming airborne.
  - 5. On historic structures, only non-metallic tools (such as plastic spatulas and brushes with natural fiber or nylon bristles, or their equivalent) must be used to remove the excrement.
  - 6. Removed excrement must be collected in plastic bags, sealed, and disposed at a sanitary landfill.
  - 7. Building occupants and the general public must be kept clear of the work site during all operations. It is the cleaning personnel's responsibility to provide all barricades, signage, etc. necessary for public protection.

## 1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified bird-excrement-removal specialist to perform preconstruction testing on surfaces with accumulations of bird excrement.
  - 1. Use test areas as indicated and representative of proposed materials and existing construction.
  - 2. Propose changes to materials and methods to suit Project.
- B. Preconstruction Testing: Performed by a qualified bird-excrement-removal specialist to demonstrate effects of removal work on substrate appearance and longevity and set quality standards for materials and execution.
  - 1. Bird-Excrement Removal: Remove excrement from an area approximately 25 sq. ft. for each type of cornice, floor and wall substrate material.
    - a. Test chemicals and methods on samples of adjacent building materials for possible adverse reactions. Do not use chemicals and methods known to have deleterious effect.



- b. Allow a waiting period of not less than seven days after completion of removal work to permit a study of test area for deleterious effects.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Select materials and methods of use based on the following, subject to preconstruction testing:
  1. Previous effectiveness in performing the work involved.
  2. Minimal possibility of damaging exposed surfaces.
  3. Consistency of each application.
  4. Uniformity of the resulting overall appearance.
  5. Do not use products or tools that could do the following:
    - a. Remove, alter, or harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in contract.
    - b. Leave residue on surfaces.
- B. Excrement Cleaner:
  1. Basis-of-Design Product: Subject to compliance with requirements, provide Poop-Off by Life's Good Products or Architect approved comparable product.
- C. Water: Clean, cold water.
- D. Equipment: Stiff bristle brush, wooden scraper and garden hose.

## PART 3 - EXECUTION

### 3.1 PROTECTION

- A. Comply with temporary barrier requirements in Section 015000 "Temporary Facilities and Controls."
- B. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from excrement-removal procedures.
  1. Use only proven protection methods, appropriate to each area and surface being protected.
  2. Provide barricades, dustproof barriers, and temporary directional signage to exclude public from work areas.
  3. Contain dust and debris generated by excrement-removal work and prevent it from reaching the public or adjacent surfaces.
- C. Protect ceiling finishes to prevent moisture damage and staining.

- D. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

### 3.2 PREPARATION

- A. Wood Surfaces: Prior to treatment with excrement removal chemicals, scrape wood surfaces to remove as much excrement as possible.

### 3.3 BIRD-EXCREMENT REMOVAL

- A. Removing Bird Excrement: Have bird-excrement-removal work performed by a qualified bird-excrement-removal specialist. Remove exterior bird-excrement accumulations with building windows and other openings in the building closed or sealed off. Remove interior bird excrement with other parts of the building sealed off from work area and with windows and other openings to exterior areas accessible to the public closed or sealed off.

1. Use materials and follow procedures as determined by preconstruction testing.
2. Before removal, treat bird excrement to kill pathogens; dampen excrement to prevent particles becoming airborne.
3. Use only nonmetallic tools, such as plastic spatulas and brushes with natural fiber or nylon bristles.
4. Collect excrement debris as it is removed, seal it in durable plastic bags, and legally dispose of it off-site.
5. Repeat removal procedure above where required to produce cleaning effect established by mockup.

- B. Bird Excrement Removal on Exterior Masonry:

1. Remove heavy crusts and build-up by rinsing the affected area with cold water from a garden hose and brushing with a stiff bristle, non-metallic brush or scraping with a wooden scraper. For excessive amounts of droppings, apply water pressure from a safe distance and do not attempt total removal.
2. For remaining residue, scrub the surface using a stiff bristle, non-metallic brush, a detergent or chelating agent (for acid-sensitive masonry) or acidic cleaner containing hydrofluoric acid (for non-acid-sensitive masonry) and clean, clear water.
3. Allow the cleaner to stand on the surface for approximately 1 hour or as recommended by manufacturer.
4. Thoroughly rinse the surface with clean, clear water and allow to dry.

- C. Removing Bird-Excrement Stain: Clean as required in Section pertaining to cleaning substrate material from which bird excrement was removed.

END OF SECTION 028716.13

## SECTION 040310 – HISTORIC MASONRY CLEANING

## 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.
- B. Section 013591 “Historic Treatment Procedures.”
- C. Codes and standards set forth by:
  - 1. Preservation Brief #1 “Cleaning and Water-Repellent Treatments for Historic Masonry Buildings” as published by the U.S. National Park Service.
  - 2. Preservation Brief #6 “Dangers of Abrasive Cleaning to Historic Buildings” as published by the U.S. National Park Service

## 1.2 SUMMARY

- A. Extent of masonry cleaning work is as specified herein, and as required for the proper performance of the work, on all the following masonry substrates:
  - 1. Brick detailing at foundations.
  - 2. CMU foundation.
  - 3. Brick chimneys.

## 1.3 DEFINITIONS

- A. Atmospheric Soiling: The dust, aerosols, and particulate matter deposited from the air directly on the material surface. Particulates can result from vehicle exhaust, sea salts and other contaminants.
- B. Biological soiling: Discolorations that include biological growth (biogrowth) and biological deposits. Biogrowth includes, but is not limited to microorganisms, including lichens, bacteria, algae, fungi, and molds that discolor the material surface. Factors influencing biogrowth include exposure, orientation, position, and the material’s surface texture. Deposited material, such as bird droppings, aphid “honey dew,” and others, are considered biological soiling.
- C. Chemical Cleaning: Cleaning methods that involve applying a substance to the material that interacts with the material and any discoloration on the surface. Chemical cleaning methods may include water, organic solvents, and alkaline or acidic chemicals.
- D. Cleaning Test Patch: A small unobtrusive area, usually less than 6 inch by 6 inch, in which the Contractor tests a particular cleaning method. Several cleaning test patches are usually performed side by side to directly compare methods.

- E. Detergent: any chemical substance, other than soap, that is an effective cleanser and functions equally well as a surface-active agent in hard or soft water.
- F. Non-ionic detergent: a detergent that does not ionize or carry a charge when dissolved in water. They are manufactured from alkalis and acids of equal strengths and are, therefore neither alkaline nor acidic with a pH of 7.
- G. Low pressure spray: 100 to 500 psi.
- H. Physical Cleaning: Physical cleaning methods generally involve the removal of material from the surface using abrasive methods. Physical methods include pressure washing at low and medium pressures, and mechanical or manual brushing.
- I. Staining: a penetrating discoloration or soiled spot found on the material.

#### 1.4 SCOPE

- A. General: Provide all labor, materials, equipment, and services required to complete the cleaning as specified herein, and required by existing conditions and authorities having jurisdiction.
- B. Cleaning shall include the following elements:
  - 1. Brick detailing at foundations.
  - 2. CMU foundation.
  - 3. Brick chimneys.
- C. Cleaning shall include but not limited to:
  - 1. Removal of atmospheric soiling and staining.
  - 2. Removal of plant growth and vegetation.
  - 3. Removal of bird droppings.
  - 4. Removal of paint and bituminous materials.
  - 5. Removal of residual chemicals.

#### 1.5 SUBMITTALS

- A. Product Data: Submit product data for all materials specified within this section.
- B. Submit product data sheets on equipment to be used in this section.

#### 1.6 PROJECT CONDITIONS

- A. Performance Requirements: The intent of this Specification is to provide for the cleaning of areas of the building indicated above so as to render a natural, uniform clean (but not like new appearance) for all façade materials. Use the gentlest means possible to obtain desired results as approved by the Architect.
- B. All exposed surfaces shall be cleaned using only the gentlest means as approved by the Architect on a location- by-location basis.

- C. The Contractor is responsible for protecting existing adjacent materials during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work of this Section. At a minimum, the Contractor shall:
  - 1. Protect woodwork, glass, and metal adjacent to masonry and stucco areas to be cleaned from overspray and possible chemical or water damage from cleaning operations. Cover all window openings with waterproof plastic to prevent leakage to the building interior.
- D. The Contractor shall coordinate cleaning operations with the other trades involved in exterior and restoration work, including but not limited to masonry restoration, sealing, and painting. Cleaning is to be completed prior to restoration of windows, doors, and metalwork, and prior to any exterior painting in the affected areas.
- E. All Contractor personnel performing cleaning operations shall be provided with gloves, respirators, protective clothing and any other personal protective equipment as recommended by the manufacturer of the cleaning products and required by local, state, and federal regulations.
- F. The Contractor shall prevent leakage to interior prior to starting cleaning operations

#### 1.7 ENVIRONMENTAL CONDITIONS

- A. Regulatory Requirements: Work of this section shall be carried out in accordance with Federal, State and local codes and requirements of any other agency having jurisdiction related to the transportation, handling, use and disposal of all cleaning materials deemed hazardous by the authority having jurisdiction. In all cases, the more restrictive limitation of any applicable requirement(s) shall be followed.
- B. The work of this Section shall be executed only when the air and surface temperatures are 40 degrees Fahrenheit and rising or less than 90 degrees F and falling. Minimum temperature for cleaning shall be 50 degrees F and above for at least two hours after completion and above freezing for at least 24 hours after completion. Work shall not commence when rain, snow, or below-freezing temperatures are expected within the next 24 hours. All surfaces shall be free of standing water, frost, and ice.
- C. No masonry cleaning shall be performed when winds are sufficiently strong to spread cleaning materials or rinsed cleaning materials to adjacent unprotected areas.

#### 1.8 QUALITY ASSURANCE

- A. Employ skilled workers that have experience dealing with cleaning historic building materials. Technicians employed to carry out work must have a minimum of five years' experience working with historic building materials as outlined in the prequalification documents.
- B. The Contractor shall conduct cleaning test patches, usually less than 6 inch by 6 inch, in unobtrusive locations on the areas to be cleaned. The purpose of the test patch is to determine the gentlest, most effective method to remove soiling. Several cleaning methods are generally tested side by side.

- C. The method of cleaning and the level of clean shall be approved by the Architect. The Contractor shall protect adjacent materials and openings.
- D. Ensure water source is clean, drinkable, and free of damaging materials that could create staining or cause damage from dissolved and re-crystallized minerals such as salts.
- E. Reference Standards: Cleaning shall be performed to match the level of cleanliness of approved cleaned test panels, as performed by the contractor as part of his mock-ups, prior to the start of work for each type of material to be cleaned. The approved test panels shall be maintained as the reference standard for all cleaning work specified herein.

## 1.9 PROTECTION

- A. Protect the general public and adjacent property from contact with cleaning materials by erecting properly constructed protection, positioned to confine and prevent any over-spray of water, abrasive media or chemicals. Provide complete details of such protection for approval by the Architect.
- B. Any materials that may be damaged by the effects of any of the cleaning operations shall be protected as described herein.
- C. Protect all other surrounding areas as recommended by the product manufacturer or as directed by the Architect. Such areas include adjacent shrubs and lawns, all non-masonry surfaces and particularly metal surfaces.
- D. Damage occurring to the building as a result of work of this section or Contractor's failure to protect against the occurrence of such damage shall be the Contractor's responsibility. The Contractor shall restore damaged areas to the complete satisfaction of the Architect at no expense to the Owner.
- E. Operatives shall be aware of potentially hazardous nature of cleaning operations and shall wear appropriate safety clothing at all times during cleaning operations.
- F. The Contractor shall inspect all masonry areas prior to performing cleaning to ensure that all repairs such as crack repair, patching, etc., intended to insure the water tightness of the building envelope have been allowed to dry thoroughly and be deemed properly and adequately cured prior to commencement of the cleaning operation. The Contractor shall perform any/all temporary measures necessary to make the building envelope watertight prior to beginning any cleaning work. Any/all questionable areas shall be reviewed with the Architect.
- G. Cleaning shall be performed in a manner which results in uniform coverage of all surfaces, including corners, interstices and which produces an even effect without streaking or damage to masonry surfaces.
- H. Rinse off chemical residue and soil by working downward from top to bottom of each treated area at each stage or scaffold setting.
- I. Clean-up: All work areas shall be cleaned at the end of each working day, particularly when the work will be interrupted by weekends, holidays and other extended periods of time.

## 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver restoration cleaning and testing materials and proprietary products to the project site in manufacturer's or distributor's packaging, undamaged, complete with application instructions and Material Safety Data Sheets.
- B. Deliver materials to the job ready for use. Delivered materials shall be identical to reviewed shop drawings and samples.
- C. Store and Deliver materials to the job ready for use. Transport cleaning agents, chemicals, and solvents within the temperature range recommended by the manufacturer and away from direct sunlight. Handle all materials according to manufacturer's instructions.

## PART 2 - PRODUCTS

### 2.1 CLEANING, General

- A. Water used for cleaning of historic materials shall be potable and free of injurious amounts of oil, soluble salts, alkali, acids, and other impurities that might stain or otherwise damage masonry, stucco, or metal.
- B. Where water has high iron or other metal content, pre-treat with complexing agents before use to reduce risk of staining.
- C. Brushes: Fiber bristle only. Use Tampico brushes for application of chemical solutions.
- D. Wire brushes or metal scrapers are strictly prohibited.
- E. VOC content: Product shall comply with VOC limits of authorities having jurisdiction.

### 2.2 CLEANING OF BIOGROWTH

- A. Cleaning methods: Cleaning shall be undertaken through the mildest, least abrasive method
  - 1. Water Washing: Cold water applied with a biodegradable cleaning solution that is pH neutral and does not contain salts, bleach, or hydrogen peroxide. Product shall be proven safely and effective at removing biogrowth and air pollutants on a variety of historic materials including brick, stone, stucco, metal and paint. Use lowest possible pressure to achieve desired results.
    - a. D/2 Biological Solution
    - b. An approved equal.

### 2.3 CLEANING OF SOOT, GRIME, AND ATMOSPHERIC STAINING WITH NON-IONIC DETERGENT

- A. Cleaning methods: Cleaning shall be undertaken through the mildest, least abrasive method

1. Wet stone with cold water applied by a low-pressure spray and a non-ionic detergent containing no soap, free alkali, solvents, abrasives, acids, caustics, or the like.
  - a. Ion-417 produced by Chemique
  - b. Tergitol produced by Ashland Chemical
  - c. Igepal 630 produced by GAF corporation
  - d. Triton X-114 available from Dow Chemical
  - e. An approved equal.
  
2. For stubborn soiled areas, careful spot cleaning, if necessary and approved by the Architects, shall be carried out with one of the following:
  - a. SafRestore produced by Prosoco
  - b. MASONRE B+ produced by Cathedral Stone
  - c. An approved equal

### PART 3 - EXECUTION

#### 3.1 SURFACE PREPARATION

- A. Examine the surfaces to be cleaned prior to commencing cleaning operations.
- B. Large cracks (one-eighth inch or larger) and open joints discovered shall be temporarily filled with removable sealant to prevent penetration of cleaning solutions into the core of the wall.
- C. Window and door openings shall be protected from leakage and damage from cleaning solutions by plastic sheeting or another waterproof membrane. Open joints around window frames and door frames shall be filled with temporary sealant to prevent leakage.

#### 3.2 REMOVAL OF SOILING, VEGETATION, ALGAL GROWTH, AND MOSS.

- A. Cut away or trim any vegetation than can easily be removed from the building. Cut back as close to the face as possible, without endangering the integrity of this historic material.
- B. Do not remove living mosses, lichens, and higher order plants without first killing them with a biocide, since roots and other attachments may penetrate deeply into the masonry. Allow time for the plant to detach before attempting removal. The Contractor may apply a biocidal product to colonies of moss, or other biological contaminants. After at least 24 hours, the Contractor may remove colonies of moss, and loose growth, from surfaces to be cleaned using wooden scrapers.
- C. The Contractor shall apply selected cleaning agent in accordance with manufacturer's instructions and approved test panel. Allow product to dwell on soiled surfaces to achieve optimal cleaning.
- D. Following required dwell time, agitate with a soft bristle brush to lift and remove embedded growth. The Contractor shall flush surfaces with low to medium-high pressure (not to exceed



500 psi) water rinse as required to remove staining. Repeat application as required to remove stains.

E. Spot clean for heavily soiled areas (biological growth):

1. Spot cleaning shall be performed only after general cleaning has been completed for approximately two weeks.
2. Thoroughly wet surfaces to be treated with spot cleaner. Apply the product using a synthetic brush, roller or low-pressure spray and allow it to dwell on the surface. Dwell time to be in accordance with the approved test panel.
3. After dwell time has elapsed, thoroughly rinse the surface with clean water at moderate pressure (500 psi or less), working from the bottom up.

### 3.3 REMOVAL OF SOOT, GRIME, AND ATMOSPHERIC STAINING ON MASONRY

- A. Wet stone with cold water applied at a low pressure spray (not to exceed 500 psi).
- B. Dilute detergent with 3 parts water to 1 part concentrate, or use appropriate dilution as determined by the manufacturer and field testing.
- C. Scrub stone with approved detergent using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing.
- D. Thoroughly rinse the surface with clean, clear water at low pressure (between 100 and 500 psi). Nozzle should be held between 18 and 30 inches from the surface. Stone should be left clean without streaking or staining.
- E. For areas not cleaned by detergent washing, follow manufacturer's recommendations for products specified in 2.3.

### 3.4 CLEANING OF GRANITE STEPS

- A. Dilute detergent with 3 parts water to 1 part concentrate, or use appropriate dilution as determined by the manufacturer and field testing.
- B. Brush apply detergent to granite, scrubbing for 10 minutes with stiff natural bristle brushes.
- C. Thoroughly rinse the surface with clean, clear water at low pressure (between 100 and 500 psi). Nozzle should be held between 18 and 30 inches from the surface. Stone should be left clean without streaking or staining.
- D. For areas not cleaned by detergent washing, follow manufacturer's recommendations for products specified in 2.3.

### 3.5 CLEAN UP

- A. Collect and dispose of waste material, packaging, debris, and effluent associated with the cleaning work in accordance with local, state, and federal environmental regulations.
- B. Upon completion of work, remove all protective coverings and coatings, and clean window glass and other spattered surfaces.
- C. Rinse treated areas to clean and remove all biological growth and chemicals.

END OF SECTION 040310

## SECTION 040323 – HISTORIC BRICK UNIT MASONRY REPOINTING

## 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.
- B. Section 040310 “Historic Masonry Cleaning.”
- C. Codes and Standards set forth by:
  - 1. Preservation Brief #2, "Repointing Mortar Joints in Historic Buildings" as published by the U. S. National Park Service.
  - 2. Brick Institute of America Applied Standards

## 1.2 SUMMARY

- A. Work includes all labor, materials, equipment, and services necessary to complete the work of repointing mortars as shown on the Drawings, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but is not necessarily limited to, the following:
  - 1. Removal of all inappropriate and/or defective mortar.
  - 2. On exposed masonry
    - a. Ream out joints to a depth 1.5 times the width of the joint where mortar has deteriorated.
    - b. Replacement of bricks as needed and approved by Architect.
    - c. Repointing of mortar with specified replication mix to match existing color and tooling.
  - 3. Work not included in this section:
    - a. Bedding mortars used for structural repairs. Refer to section 041000 “Mortars for Structural Repairs.”

## 1.3 SCOPE

- A. Provide all labor and materials to repair and restore brick masonry elements as specified herein and as detailed on the Drawings.

#### 1.4 SUBMITTALS

- A. Product Data: Submit product data for all material specified.

#### 1.5 QUALITY ASSURANCE

- A. This structure is an historic building. The mortar work on this project is critical to the appearance of the structure and to the satisfactory execution of the work. Work Experience: The Contractor and masons to perform the work in this section shall have a demonstrated experience with historic mortars. He/she shall demonstrate a working knowledge of the Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings including Preservation Brief #2, "Repointing Mortar Joints in Historic Buildings."
- B. Technicians employed to carry out work must have a minimum of five years' experience working with historic mortars as outlined in the prequalification documents
- C. Source of materials: The Contractor shall not change sources or manufacturers of mortar materials during the course of the work.
- D. Mockups
  - 1. Prepare field samples for restoration methods to demonstrate aesthetic effects and quality of materials and execution. Use materials and methods proposed for completed Work and prepare samples under same weather conditions to be expected during remainder of Work.
  - 2. Locate mockups on the building where directed by Architect.
  - 3. The Contractor shall prepare sample installations for each of the mortar restoration types indicated. Panels should be chosen in discrete locations to represent the conditions of the building as a whole. Sample installations will serve to determine the time required for project completion and the suitability of materials used. Architect shall approve locations of test panels for each type of finish and surface.
  - 4. Sample installations shall be installed by person(s) scheduled to perform the Work. If personnel changes during the progress of the Work, new sample installations shall be prepared by the responsible person(s).
  - 5. The final appearance of remainder of Work shall match approved Installations. Maintain mockups in an undisturbed condition during construction as a standard for judging the completed Work.
  - 6. Approved Sample Installations will become part of the Work, and serve as the quality standard for similar type work on this project. Additional sample installations, up to a maximum of 3 for each type of installation, shall be prepared if necessary to obtain satisfactory results at no additional cost to the Client. Rejected mockups must be removed prior to the construction of additional sample installations.

#### 1.6 PROJECT CONDITIONS

- A. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work

procedures to avoid damage to existing material assemblies not a part of the work in the Section.

- B. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.
- C. The Contractor shall coordinate masonry repointing with the other trades involved in exterior restoration work.

#### 1.7 ENVIRONMENTAL CONDITIONS

- A. General: Perform work only when temperature of products being used and air temperature and humidity comply with the manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.
- B. Cold Weather Limitations on Use of Mortars: Do not mix or use mortars when air or masonry temperature is below 40 deg F or when it is expected to drop below 40 deg F within 72 hours of mortar application.
- C. Hot Weather Limitations: Protect fresh mortar from rapid drying when temperature, humidity, and wind conditions might cause rapid drying of mortar.
  - 1. If the ambient air temperature exceeds 100 deg F or exceeds 90 deg F with a wind velocity greater than 8mph, flush mixer, transport container, and boards with cool water before they come into contact with the mortar ingredients. Maintain temperature of mortar below 120 deg F and use fresh mortar within 2 hours of initial mixing. Ensure substrate has been dampened prior to repointing.
  - 2. Limit spread of beds to 4ft when temperatures exceeds 100 deg F or exceeds 90 deg F with a wind velocity greater than 8mph.
- D. If masonry work must be done when ambient temperature is freezing, or below, all masonry material must be at temperature between 50 degrees Fahrenheit and 90 degrees Fahrenheit, and the mortar, when used, shall have a temperature between 60 and 80 degrees Fahrenheit. In addition, all masonry shall be protected from temperatures below 40 degrees Fahrenheit for at least 72 hours after being laid. Heat for heating materials and heating temporary enclosures will be provided by Contractor.
- E. Antifreeze admixtures will not be allowed in the mortar. No frozen work shall be built upon. No masonry unit having a film of frost on its surface shall be installed in the work. Any completed work found to be affected by frost shall be taken down and rebuilt.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site and store in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.

- B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials.
- C. Storage and Protection: All materials must be protected from rainwater and ground moisture, and from staining or intermixture with earth or other types of materials.
  - 1. Sand
    - a. Maintain sand at constant moisture content.
    - b. Cover pile when not in use.
    - c. Arrange pile for free drainage.
    - d. Do not use bottom portion of pile (wet or in contact with earth) in mortar.
  - 2. Lime
    - a. Do not tarp or wrap materials so as to trap moisture or permit condensation to form.
    - b. Allow air to circulate freely around units.
    - c. Do not use bags that have been broken or exposed to moisture.
  - 3. Cement
    - a. Do not tarp or wrap materials so as to trap moisture or permit condensation to form.
    - b. Allow air to circulate freely around units.
    - c. Do not use bags that have been broken or exposed to moisture.
  - 4. Discard and remove from site deteriorated, contaminated materials, and products that have exceeded their restoration dates. Replace with fresh materials.
  - 5. The contractor becomes responsible for the product at the time it is received.
- D. Laws, Codes, and Regulations: Work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Grade and Quality: Lime and aggregate shall conform to the requirements of this Section and shall be new, free from defects and of recent manufacture in date.
- B. Brick: Replacement brick shall be salvaged historic brick cleaned of all remaining mortar and shall match existing in size, shape, color, and texture. Replacement brick shall be approved by Architect.
- C. Prohibited materials: the following materials are strictly prohibited in all mortar specified in this section.
  - 1. Antifreeze compounds or other admixtures

2. Air entraining agents

D. Cement-Lime Based Bedding Mortar

1. Lime: Shall conform to ASTM C207, Type S hydrated lime.
2. Portland cement: Shall conform to ASTM C150, Type 1. It shall not have more than 0.60% Alkali and not more than 0.15% water soluble alkali.
3. Aggregate: Shall be a variable graded (coarse to fine) washed white sand matching the texture and range of sizes found in the original mortar. Natural or manufactured sharp sand, with at least four grades of sand forming a substantial part of the sand and no more than 1% of the particles smaller than grade 200. Clean, well-graded, sharp, angular crushed aggregate complying with the requirements for deleterious substances and soundness of ASTM C 144. Sand aggregate shall have a nominal top size of 2.36mm (No. 8 US sieve) with over 70% of the material having a diameter between 0.595mm (No. 30 US sieve) and 0.149mm (No. 100 US sieve).
4. Recommended Suppliers:
  - a. "Yard Sand" – Hughes Lumber, Charleston SC.
  - b. An approved alternate.
5. Water: Shall be clean and free of acids, alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.

E. Cement-Lime Based Pointing Mortar

1. Lime: Shall conform to ASTM C207, Type S hydrated lime.
2. Portland cement: Shall conform to ASTM C150, Type 1, white. It shall not have more than 0.60% Alkali and not more than 0.15% water soluble alkali.
3. Aggregate: Shall be a variable graded (coarse to fine) washed sand matching the texture and range of sizes found in the original mortar. Natural or manufactured sharp sand, with at least four grades of sand forming a substantial part of the sand and no more than 1% of the particles smaller than grade 200. Clean, well-graded, sharp, angular crushed aggregate complying with the requirements for deleterious substances and soundness of ASTM C 144. Sand aggregate shall have a nominal top size of 1.18mm (No. 16 US sieve) with over 70% of the material having a diameter between 1mm (No. 16 US sieve) and 0.149mm (No. 100 US sieve).
  - a. Recommended Suppliers:
    - 1) White Masons Sand
    - 2) An approved alternate.
4. Water: Shall be clean and free of acids, Alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.
5. New mortar shall match the color and texture of the original mortar as close as practical. Match aggregate to the original in content, color and gradation. The color of the new mortar ideally should be achieved through the color and texture of the sand only.

## 2.2 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 located.
- B. Bedding mortar for nonstructural historic brick and limestone unit masonry.
  - 1. 1 parts Portland cement
  - 2. 1 part lime
  - 3. 6 parts sand
  - 4. Enough water to form a workable consistency
- C. Repointing mortar for historic brick and limestone unit masonry
  - 1. 1 part white Portland cement
  - 2. 2 part lime
  - 3. 9 parts sand
  - 4. Enough water to form a workable consistency

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. On exposed masonry, remove all deteriorated mortar and designated Portland cement patches by hand with a chisel and mallet. Do not use power tools unless approved by Architect. Chisels are to be the appropriate size to fit cleanly into mortar joints without damage to surrounding surfaces.
- B. On all areas specified for repointing.
  - 1. Rake joints to a depth of 1.5 times the mortar joint width or to sound mortar.
- C. Brush, vacuum, or flush joints to remove all dirt and loose debris. Loose or disintegrated mortar beyond the minimum depth shall be removed.
- D. Removal of the mortar shall be done in a manner that does not score, chip, or otherwise damage masonry units or adjacent elements. Mortar should be removed cleanly from the masonry units, leaving square corners at the back of the cut.
  - 1. NOTE: In certain locations it is likely that several bricks have been laid without the use of a bedding mortar. In situations such as this, the Contractor must ensure removal of the mortar for repointing will not damage or compromise the surrounding masonry and wall system.
- E. In severe cases of deterioration, replace damaged masonry. Architect shall approve the replacement of all masonry.



- F. Remove all abandoned fasteners and electrical and mechanical accessories and abandoned plumbing pipes. Repair brickwork in a method approved by the Architect.

### 3.2 MIXING

- A. All ingredients shall be measured by volume using pre-established uniform measure, rather than a less uniform measure such as a shovel.
- B. Dry mix all dry materials.
- C. Mortar shall be mixed in an approved type power operated batch mixer. Mixing time shall be such as to produce a homogenous plastic mortar, but shall not be less than five minutes; approximately two minutes of which shall be for mixing the dry materials and not less than three minutes for continuing the mixing after water has been added.
- D. A minimum amount of water shall be used to produce a workable consistency for the mortar's intended purpose.
- E. Mortar for repointing shall be as dry a consistency as will produce a mortar sufficiently plastic to be worked into the joints and to hang onto a trowel. Record the amount of water used so that it may serve as a guide for future batches.
- F. After mixing, mortars shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within 2 ½ hours of mixing. Retempering of hardened material shall not be permitted.

### 3.3 INSTALLATION

- A. Repair of cracks in mortar joints
  1. Areas of significant structural cracking must be reported to the Architect prior to repair
  2. Rake out compromised and unsound mortar in masonry joint
  3. Use only clean tools and equipment, free from hardened or partially hardened materials.
  4. Dampen masonry prior to repointing to reduce suction of water from the mortar and shrinkage cracks. Do not fully saturate masonry. Substrate shall be glistening.
  5. Repoint localized areas to match existing profiles.
- B. Repair of cracks in masonry units
  1. Broken brick must be removed and replaced by replacement brick as directed by Architect. Areas of significant structural cracking must be reported to the Architect prior to repair.
  2. All structural cracks through masonry and mortar shall be repaired where specified on Drawings.
  3. Rake out compromised and unsound mortar in masonry joint
  4. Use only clean tools and equipment, free from hardened or partially hardened materials.
  5. Dampen masonry prior to repointing to reduce suction of water from the mortar and shrinkage cracks. Do not fully saturate masonry. Substrate shall be glistening.
  6. Repoint localized areas to match existing profiles.

## C. Repointing of Historic Brick Unit Masonry.

1. Use only clean tools and equipment, free from hardened or partially hardened materials.
2. Dampen masonry prior to repointing to reduce suction of water from the mortar and shrinkage cracks. Do not fully saturate masonry.
3. Pack joints with new mortar leaving no voids. Match existing depth of sound mortar. Care shall be taken not to over pack joints.
  - a. In situations where bedding mortar is not present behind the removed pointing mortar, pack joints with new mortar as deep as possible until voids are not present.
4. Use and place mortar in final position within 2-1/2 hours of mixing. Do not retemper or use material that has partially set, is caked or is lumpy.
5. Finish joints uniformly. Do not overwork. Leave the surface of the masonry clean
6. New mortar shall match the color and texture of the original mortar as close as practical.
7. Remove any portion of the work that does not comply with the specification and replace with proper materials and install in compliance with these specifications at no additional cost to the Owner.

## 3.4 CURING

## A. Curing: Protect mortar work from drying out for a period of 72 hours

1. If ambient the air temperature exceeds 100 deg F or exceeds 90 deg F with a wind velocity greater than 8mph, fog spray all newly applied mortar until damp, a minimum of three times a day for 3 days following application.

## 3.5 CLEAN UP

## A. Maintain clean surfaces on the face, sills, ledges, and projections of masonry on a daily basis.

END OF SECTION 040323

## SECTION 040513 – MORTARS FOR STRUCTURAL REPAIRS AND REPOINTING

## 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.
- B. Section 013591 "Historic Treatment Procedures."
- C. Codes and Standards set forth by:
  - 1. Preservation Brief #2, "Repointing Mortar Joints in Historic Buildings" as published by the U. S. National Park Service.
  - 2. Brick Institute of America Applied Standards.

## 1.2 SUMMARY

- A. Work includes all labor, materials, equipment, and services necessary to complete the work of repointing mortars as shown in the Drawings, and as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but is not necessarily limited to, the following:
  - 1. Repointing of historic brick masonry chimneys.
  - 2. Replacing damaged and missing historic brick masonry at chimneys.
  - 3. Repointing and replacing damaged and missing historic brick at foundations.

## 1.3 SCOPE

- A. Provide all labor and materials to repair and restore masonry elements as specified herein and as detailed on the Drawings.

## 1.4 PROJECT CONDITIONS

- A. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.
- B. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.
- C. The Contractor shall coordinate masonry repointing with the other trades involved in exterior restoration work.

## 1.5 ENVIRONMENTAL CONDITIONS

- A. General: Perform work only when temperature of products being used and air temperature and humidity comply with the manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.
- B. Take precautionary measures necessary to assure that excessive temperature changes do not occur.
- C. Cold Weather Limitations on Use of Mortars: Do not mix or use mortars when air or masonry temperature is below 45 deg F or when it is expected to drop below 45 deg F within 72 hours of mortar application.
- D. Hot Weather Limitations: Protect fresh mortar from rapid drying when temperature, humidity, and wind conditions might cause rapid drying of mortar.
  - 1. If ambient the air temperature exceeds 85 deg F or exceeds 80 deg F with a wind velocity greater than 8mph, flush mixer, transport container, and boards with cool water before they come into contact with the mortar ingredients.
  - 2. Limit spread of beds to 4ft when temperatures exceeds 85 deg F or exceeds 80 deg F with a wind velocity greater than 8mph.
  - 3. Protect work during hot weather, direct sun, or windy conditions from premature drying or too rapid curing by use of dampened fabric coverings or other methods as approved by Architect.
  - 4. Work only in temperatures between 45-85 degrees Fahrenheit when temperatures are not expected to fall below 45 degrees Fahrenheit or above 85 degrees Fahrenheit for 72 hours.
- E. Make sure that high suction materials are thoroughly dampened before application. Avoid rapid drying due to high temperatures or strong winds by curing with a light water mist several times a day if necessary.
- F. Antifreeze admixtures will not be allowed in the mortar. No frozen work shall be built upon. No masonry unit having a film of frost on its surface shall be installed in the work. Any completed work found to be affected by frost shall be taken down and rebuilt.

## 1.6 QUALITY ASSURANCE

- A. This structure is an historic building. The mortar work on this project is critical to the satisfactory execution of the work.
  - 1. Work Experience: Contractor must have a minimum of five (5) years demonstrated experience working on projects of similar scope, that employed hydraulic lime mortars. Contractor to have a working knowledge of the Secretary of the Interior's Standards for Treatment of Historic Properties.
  - 2. Source of materials: The Contractor shall not change sources or manufacturers of mortar materials during the course of the work.

## 1.7 SUBMITTALS

- A. Qualifications: Contractor Qualifications: Submit documentation of contractors past project experience that meets the work experience outlined in the specification. Provide two (2) references from an architect/engineer/owner who has worked on a similar project, using natural hydraulic lime repointing mortars, with the offeror in the last five years.
- B. Product Data and MSDS Sheets: For each type of product indicated, included material descriptions and all product labels for each product used. Include all MSDS and Material Specifications for all products used.
- C. Contractor Qualifications: Submit documentation of contractors past project experience that meets the work experience outlined in the specification. Must have a minimum of three (3) projects completed in the last five years that employed natural hydraulic lime repointing materials.
- D. Mortar removal tools used during course of work.
- E. Sample Mock-up:
  - 1. Repointing of a masonry joint in one section of brick masonry chimney approximately 30” x 30” in size will be required for approval by the Architect prior to commencement of the work at no additional cost. Size of mock can be adjusted based on field conditions.
    - a. Mock-up shall serve as the project standard for the mortar color, texture and joint profile and shall remain in place until the work is completed.
  - 2. Provide mortar samples for resetting hearth brick. Note: Multiple mortar colors may be required to match the appearance of the existing hearth mortar at various locations.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site and store in manufacturer’s original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.
- B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials
- C. Storage and Protection: All materials must be protected from rainwater and ground moisture, and from staining or intermixture with earth or other types of materials.
  - 1. Sand
    - a. Maintain sand at constant moisture content
    - b. Cover pile when not in use
    - c. Arrange pile for free drainage
    - d. Do not use bottom portion of pile (wet or in contact with earth) in mortar
  - 2. Lime

- a. Do not tarp or wrap materials so as to trap moisture or permit condensation to form
  - b. Allow air to circulate freely around units
  - c. Do not use bags that have been broken or exposed to moisture
3. Discard and remove from site deteriorated, contaminated materials, and products that have exceeded their restoration dates. Replace with fresh materials.
  4. The contractor becomes responsible for the product at the time it is received.
- D. Laws, Codes, and Regulations: Work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Grade and Quality: Lime and aggregate shall conform to the requirements of this Section and shall be new, free from defects and of recent manufacture in date.
- B. Prohibited materials: the following materials are strictly prohibited in all mortar specified in this section.
1. Antifreeze compounds or other admixtures
  2. Air entraining agents
- C. Hydraulic Lime Based Mortar
1. Natural Hydraulic Lime: NHL 3.5
    - a. All containers shall be marked including manufacturing date and batch number. Manufacturer is required to maintain production-sampling procedures for each batch for quality control purposes. Samples of proposed materials for mockup panels at the site provided by the manufacturer.
  2. Aggregate: Shall be a variable graded (coarse to fine) washed sand and shell matching the texture and range of sizes found in the original mortar. Natural or manufactured sharp sand, with at least four grades of sand forming a substantial part of the sand and no more than 1% of the particles smaller than grade 200. Clean, well-graded, sharp, angular crushed aggregate complying with the requirements for deleterious substances and soundness of ASTM C 144. Sand aggregate shall have a nominal top size of 2.38mm (No. 8 US sieve) with over 75% of the material having a diameter between 1mm (No. 16 US sieve) and 0.297mm (No. 50 US sieve).
  3. Water: Shall be clean and free of acids, Alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.
  4. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979/C 979M. Use only pigments with a record of satisfactory performance in masonry mortar.

## 2.2 MORTAR MIXES

### A. Repointing Mortar

1. 1 part NHL 3.5
2. 2.5 Parts aggregate
3. Mortar pigment to color match existing historic mortar.
4. Enough water to form a workable consistency.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. On exposed masonry, remove all deteriorated mortar by hand with a chisel and mallet. Do not use power tools. Chisels are to be the appropriate size to fit cleanly into mortar joints without damage to surrounding surfaces.
  1. Rake joints to a depth of 1.5 times the mortar joint width or to sound mortar.
- B. Brush, vacuum, or flush joints to remove all dirt and loose debris. Loose or disintegrated mortar beyond the minimum depth shall be removed.
- C. Removal of the mortar shall be done in a manner that does not score, chip, or otherwise damage masonry units or adjacent elements. Mortar should be removed cleanly from the masonry units, leaving square corners at the back of the cut. Mechanical tools must be approved by the Architect prior to use.
- D. Use a hand chisel to finish joints adjacent to woodwork to avoid damage to frames and trim.

### 3.2 MIXING

- A. All ingredients shall be measured by volume using pre-established uniform measure, rather than a less uniform measure such as a shovel.
- B. It is recommended that a dust mask be worn during mixing.
- C. Dry mix all dry materials.
- D. Mortar shall be mixed in an approved type power operated batch mixer. Mixing time shall be such as to produce a homogenous plastic mortar but shall not be less than five minutes; approximately two minutes of which shall be for mixing the dry materials and not less than three minutes for continuing the mixing after water has been added.
- E. A minimum amount of water shall be used to produce a workable consistency for the mortar's intended purpose. Keep water ratios consistent between batches to ensure consistency in material performance. All mixing boards and mechanical mixers are to be thoroughly cleaned between batches.

- F. Mortar for repointing shall be as dry a consistency as will produce a mortar sufficiently plastic to be worked into the joints and to hang onto a trowel. Record the amount of water used so that it may serve as a guide for future batches.
- G. After mixing, mortars shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within 2 ½ hours of mixing. Retempering of hardened material shall not be permitted.

### 3.3 INSTALLATION

- A. NHL mortar mixes to match historic mortar in color when installed. Mortar samples to be approved by Owner and Architect prior to installation on the building.
- B. Repointing of Masonry
  - 1. Rake out compromised and unsound mortar in masonry joint.
  - 2. Use only clean tools and equipment, free from hardened or partially hardened materials.
  - 3. Dampen masonry prior to repointing to reduce suction of water from the mortar and shrinkage cracks. Do not fully saturate masonry. Substrate shall be glistening.
  - 4. Maintain hand mister bottles or a garden sprayer with clean, clear, potable water immediately available to masons at all times during the repointing process. A very low-pressure spray (garden hose with nozzle adjusted to a fine, low-volume mist) may be used over large areas providing erosion of joints is prevented.
  - 5. Pack joints with new mortar leaving no voids. Match existing depth of sound mortar. Care shall be taken not to over pack joints. Joints shall be pointed in layers or "lifts" where the joints are deeper than 3/4 inch.
    - a. Joints greater than 3/4 inches deep shall be pointed with an initial lift to bring the joint depth to a uniform depth.
    - b. Compact each layer at the time it is placed in the joint by applying firm pressure with the pointing tool.
    - c. Allow each lift to become thumbprint hard before applying the next lift.
  - 6. Use and place mortar in final position within 2-1/2 hours of mixing. Do not retemper or use material that has partially set, is caked or is lumpy.
  - 7. Finish joints uniformly. Do not overwork. Leave the surface of the masonry clean.
  - 8. New mortar shall match the color and texture of the original mortar as close as practical.
  - 9. Remove any portion of the work that does not comply with the specification and replace with proper materials and install in compliance with these specifications at no additional cost to the Owner or the Architect.
  - 10. Clean all surfaces exposed above according to Section 040310 "Masonry Cleaning".
- C. Structural Repairs
  - 1. Damage observed during the completion of this work shall be brought to the attention of the Architect of Record when identified for resolution prior to continuing with work on the area involved only.



### 3.4 CURING

- A. Protect completed work from adverse weather, heavy rainfall, freezing, and drying by direct sunlight and winds until cured.
- B. Allow each lift to become thumbprint hard before applying the next lift. Temperature and relative humidity extend or reduce the time between consecutive layers. Cold or wet weather lengthens, and hot or dry weather shortens the time period for curing. Moderate changes in temperature and relative humidity can be overcome by providing additional heating materials during cold weather and by reducing the absorption of the base by pre-wetting during hot weather.
- C. Protect the work by covering it with burlap.
  - 1. Spring clamp burlap a few inches away from the work and keep the burlap wetted down a few times a day for the cure period of approximately three days. Burlap allows moisture to slowly escape and encourages a slow cure.
  - 2. Burlap should not come in contact with the wall to avoid staining. Tarps could be used on the outside of the scaffold to protect from driving rain and wind.
- D. Curing: Protect mortar work from drying out for a period of 72 hours. Contractor to monitor cure to ensure that the mortar maintains proper moisture content.
  - 1. Work only in temperatures between 45-85 degrees Fahrenheit when temperatures are not expected to fall below 45 degrees Fahrenheit or above 85 degrees Fahrenheit for 72 hours.
- E. Provide sufficient moisture in the mortar to permit continuous hydration of the mortar materials. The most effective procedure for curing shall be based on climactic and job conditions. The mortar must remain moist for 72 hours (three days) following installation.
- F. Some moisture must be retained in or added back to freshly installed mortar. If the relative humidity is relatively high (above 75%) the frequency for rewetting may be reduced. If it is hot, dry, and windy, the frequency for re-wetting must be increased.

### 3.5 CLEAN UP

- A. Maintain clean surfaces on the face, sills, ledges, and projections of masonry on a daily basis.
- B. With a trowel, strike off minor dabs of adherent mortar from face of masonry.
- C. Remove minor mortar marks from masonry by misting with water and brushing with a small, stiff-bristle brush.

### 3.6 MASONRY WASTE DISPOSAL

- A. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 040513

## SECTION 042000 - UNIT MASONRY

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
  - 1. Concrete masonry units (CMUs).
  - 2. Mortar and grout.
  - 3. Reinforcing steel.
  - 4. Masonry joint reinforcement.
  - 5. Ties and anchors.
  - 6. Miscellaneous masonry accessories.

## 1.3 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

## 1.4 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths ( $f'_m$ ) at 28 days.
- B. Determine net-area compressive strength ( $f'_m$ ) of masonry by testing masonry prisms according to ASTM C 1314.

## 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type and color of the following:
  - 1. Accessories embedded in masonry.
- C. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
  - 1. Masonry units.
  - 2. Cementitious materials. Include brand, type, and name of manufacturer.

3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
  4. Grout mixes. Include description of type and proportions of ingredients.
  5. Reinforcing bars.
  6. Joint reinforcement.
  7. Anchors, ties, and metal accessories.
- D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
  2. Include test reports, per ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- E. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

## 1.6 QUALITY ASSURANCE

- A. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

## 1.7 DELIVERY, STORAGE, AND HANDLING

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

## 1.8 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
- B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

## PART 2 - PRODUCTS

## 2.1 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.
- B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

## 2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows:
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. Concrete Masonry Units: ASTM C 90.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
  - 2. Weight Classification: Medium weight, unless otherwise indicated.
  - 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
  - 4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
  - 5. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.

## 2.3 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
- B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.
  - 1. Interior Walls: Hot-dip galvanized, carbon steel.
  - 2. Wire Size for Side Rods: W1.7 or 0.148-inch diameter.

3. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
  4. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units where indicated.
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.

#### 2.4 TIES AND ANCHORS, GENERAL

- A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, unless otherwise indicated.
- B. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.
- C. Galvanized Steel Sheet: ASTM A 653/A 653M, G60, commercial-quality, steel sheet zinc coated by hot-dip process on continuous lines before fabrication.
- D. Steel Sheet, Galvanized after Fabrication: ASTM A 366/A 366M cold-rolled, carbon-steel sheet hot-dip galvanized after fabrication to comply with ASTM A 153.
- E. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

#### 2.5 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
    - b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
    - c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
    - d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

## 2.6 MORTAR AND GROUT 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 in mortar or grout.
  2. Use portland cement-lime 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.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in 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 Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
1. For interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 5 of ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
  2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.
  3. All reinforced cells shall be filled with 3,000 psi grout, at a minimum.
  4. All lintels shall be filled with 3,000 psi grout.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
  2. Verify that foundations are within tolerances specified.
  3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

### 3.3 TOLERANCES

#### A. Dimensions and Locations of Elements:

- 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
- 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
- 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

#### B. Lines and Levels:

- 1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
- 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
- 3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
- 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
- 5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
- 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
- 7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

#### C. Joints:

- 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.



2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

### 3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
  1. Install compressible filler in joint between top of partition and underside of structure above.
  2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.

3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078413 "Penetration Firestopping" and 078443 "Joint Firestopping."

### 3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
  1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
  2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
  3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
  4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes, including epoxy paint.

### 3.6 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
  1. Space reinforcement not more than 16 inches o.c.
  2. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### 3.7 CONTROL JOINTS

- A. General: Install control joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
  - 1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
  - 2. Install preformed control-joint gaskets designed to fit standard sash block.
  - 3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
  - 4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.

### 3.8 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
  - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
  - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
  - 1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  - 2. Limit height of vertical grout pours to not more than 60 inches.

### 3.9 REPAIRING AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.
  - a. If necessary, only with written approval from masonry and mortar manufacturers, clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

### 3.10 MASONRY WASTE DISPOSAL

- A. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000

## SECTION 042100 – CLAY UNIT MASONRY

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This project involves the rehabilitation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.
- B. Work includes, all labor, materials, equipment, and services necessary to complete the work of unit masonry as shown on the Drawings, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but is not necessarily limited to, the following:
  - 1. Construction of Masonry Piers
  - 2. Ties and Anchors

## 1.3 SCOPE

- A. Provide all labor and materials to construct new masonry piers and stairs as specified herein and as detailed on the Drawings.

## 1.4 PROJECT CONDITIONS

- A. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work, and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.
- B. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.
- C. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

- D. The Contractor shall coordinate masonry repointing with the other trades involved in exterior restoration work.

## 1.5 ENVIRONMENTAL CONDITIONS

- A. General: Perform work only when temperature of products being used and air temperature and humidity comply with the manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.
- B. Cold Weather Limitations on Use of Mortars: Do not mix or use mortars when air or masonry temperature is below 40 deg F or when it is expected to drop below 40 deg F within 72 hours of mortar application.
- C. Hot Weather Limitations: Protect fresh mortar from rapid drying when temperature, humidity, and wind conditions might cause rapid drying of mortar.
  - 1. If ambient the air temperature exceeds 100 deg F or exceeds 90 deg F with a wind velocity greater than 8mph, flush mixer, transport container, and boards with cool water before they come into contact with the mortar ingredients. Maintain temperature of mortar below 120 deg F and use fresh mortar within 2 hours of initial mixing.
  - 2. Limit spread of beds to 4ft when temperatures exceeds 100 deg F or exceeds 90 deg F with a wind velocity greater than 8mph
- D. If masonry work must be done when ambient temperature is freezing, or below, all masonry material must be at temperature between 50 degrees Fahrenheit and 90 degrees Fahrenheit, and the mortar, when used, shall have a temperature between 60 and 80 degrees Fahrenheit. In addition, all masonry shall be protected from temperatures below 40 degrees Fahrenheit for at least 72 hours after being laid. Heat for heating materials and heating temporary enclosures will be provided by Contractor.
- E. Antifreeze admixtures will not be allowed in the mortar. No frozen work shall be built upon. No masonry unit having a film of frost on its surface shall be installed in the work. Any completed work found to be affected by frost shall be taken down and rebuilt.

## 1.6 SUBMITTALS

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

## 1.7 QUALITY ASSURANCE

- A. Source of Limitations for Masonry Units: Obtain exposed masonry units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

C. Submittals

1. Test panels 2' x 2' for each unique brick style not to exceed three panels will be required for approval by the Architect prior to commencement of the work at no additional cost.
2. Panel shall serve as the project standard for the brick and mortar color, texture and joint profile and shall remain in place until the work is completed.
3. Panel shall remain on site and will become property of the client.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site and store in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.
- B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials
- C. Storage and Protection: All materials must be protected from rainwater and ground moisture, and from staining or intermixture with earth or other types of materials.
  1. Sand
    - a. Maintain sand at constant moisture content
    - b. Cover pile when not in use
    - c. Arrange pile for free drainage
    - d. Do not use bottom portion of pile (wet or in contact with earth) in mortar
  2. Lime
    - a. Do not tarp or wrap materials so as to trap moisture or permit condensation to form
    - b. Allow air to circulate freely around units
    - c. Do not use bags that have been broken or exposed to moisture
  3. Discard and remove from site deteriorated, contaminated materials, and products that have exceeded their restoration dates. Replace with fresh materials.
  4. The contractor becomes responsible for the product at the time it is received.
- D. Laws, Codes, and Regulations: Work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

- B. Replacement Brick: Replacement brick shall be salvaged historic brick cleaned of all remaining mortar and shall match existing in size, shape, color, and texture. Replacement brick shall be approved by Architect.

## 2.2 BRICK

### A. Masonry Piers and Foundation

1. As Manufactured by Old Carolina Brick Company, Salisbury NC 704-636-8850.

## 2.3 MORTAR MATERIALS

### A. Type N Mortars

1. Portland Cement: ASTM C 150, Type I or II. Provide white cement as required to produce mortar color indicated.
2. Hydrated Lime: ASTM C207, Type S.
3. Aggregate for Type N Mortar: ASTM C144
  - a. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
4. Pigment: Non organic color fast yellow oxide mineral pigment- red shade.
  - a. Available from Edison Coatings in 1 lb. and 5 lb. containers as Dry Color Pak, 3 Northwest Drive, Plainville, CT 06062 (860-747-2220), <http://www.edisoncoatings.com/store/>
5. Water: Shall be clean and free of acids, Alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.

### B. Hydraulic Lime Based Mortar

1. Natural Hydraulic Lime: NHL 3.5
  - a. All containers shall be marked including manufacturing date and batch number. Manufacturer is required to maintain production-sampling procedures for each batch for quality control purposes. Samples of proposed materials for mockup panels at the site provided by the manufacturer.
2. Aggregate: Shall be a variable graded (coarse to fine) washed sand and shell matching the texture and range of sizes found in the original mortar. Natural or manufactured sharp sand, with at least four grades of sand forming a substantial part of the sand and no more than 1% of the particles smaller than grade 200. Clean, well-graded, sharp, angular crushed aggregate complying with the requirements for deleterious substances and soundness of ASTM C 144. Sand aggregate shall have a nominal top size of 2.38mm (No. 8 US sieve) with over 75% of the material having a diameter between 1mm (No. 16 US sieve) and 0.297mm (No. 50 US sieve).



3. Water: Shall be clean and free of acids, Alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.
4. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979/C 979M. Use only pigments with a record of satisfactory performance in masonry mortar.

## 2.4 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM a 615A 615M or ASTM A 996/A 996M, Grade 60.

## 2.5 MORTAR MIXES (Masonry Piers)

- A. Mortar for brick masonry on masonry piers and foundation, use as follows
  1. 1 part lime
  2. 1 part cement
  3. 6 parts sand
  4. Mortar pigment to color match existing historic mortar.
  5. Enough water to form a workable consistency

## PART 3 - EXECUTION

### 3.1 MIXING

- A. All ingredients shall be measured by volume using pre-established uniform measure, rather than a less uniform measure such as a shovel.
- B. Dry mix all dry materials
- C. Mortar shall be mixed in an approved type power operated batch mixer. Mixing time shall be such as to produce a homogenous plastic mortar, but shall not be less than five minutes; approximately two minutes of which shall be for mixing the dry materials and not less than three minutes for continuing the mixing after water has been added.
- D. A minimum amount of water shall be used to produce a workable consistency for the mortar's intended purpose.
- E. Mortar for repointing shall be as dry a consistency as will produce a mortar sufficiently plastic to be worked into the joints and to hang onto a trowel. Record the amount of water used so that it may serve as a guide for future batches.
- F. After mixing, mortars shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within 2 ½ hours of mixing. Retempering of hardened material shall not be permitted.

### 3.2 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. Verify that foundations are within tolerances specified.
  - 2. Verify that reinforcing dowels are properly placed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.3 INSTALLATION, GENERAL

- A. Mortar mixes to match historic mortar in color when installed. Mortar samples to be approved by Owner and Architect prior to installation on the building.
- B. Cap masonry piers with 16oz copper where in contact with structural wooden members as indicated on the Drawings.
- C. Type N and NHL mortar mixes to match in color when installed.
- D. Thickness: Build masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- E. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- F. Wetting of Brick and Block: Wet brick and/or block before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested according to ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
- G. Select and range units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

### 3.4 TOLERANCES

- A. Dimensions and Locations of Elements:
  - 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
  - 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
  - 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than  $\frac{1}{4}$  inch in 10 feet, or  $\frac{1}{2}$  inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than  $\frac{1}{8}$  inch in 10 feet,  $\frac{1}{4}$  inch in 20 feet, or  $\frac{1}{2}$  inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than  $\frac{1}{4}$  inch in 10 feet,  $\frac{3}{8}$  inch in 20 feet, or  $\frac{1}{2}$  inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than  $\frac{1}{8}$  inch in 10 feet,  $\frac{1}{4}$  inch in 20 feet, or  $\frac{1}{2}$  inch maximum.
5. For lines and surfaces do not vary from straight by more than  $\frac{1}{4}$  inch in 10 feet,  $\frac{3}{8}$  inch in 20 feet, or  $\frac{1}{2}$  inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than  $\frac{1}{4}$  inch in 10 feet, or  $\frac{1}{2}$  inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than  $\frac{1}{16}$  inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus  $\frac{1}{8}$  inch, with a maximum thickness limited to  $\frac{1}{2}$  inch; do not vary from bed-joint thickness of adjacent courses by more than  $\frac{1}{8}$  inch.
2. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than  $\frac{1}{16}$  inch from one masonry unit to the next.
3. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than  $\frac{1}{16}$  inch from one masonry unit to the next.

### 3.5 LAYING MASONRY

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

### 3.6 MORTAR BEDDING AND JOINTS

- A. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

### 3.7 REINFORCEMENTS

- A. Placing Reinforcements: Comply with requirements in ACI 530.1/ASCE 6/MS 602

### 3.8 REPAIRING AND CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrap hoes or chisels.
  - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
  - 3. Protect adjacent surfaces from contact with cleaner.
  - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
  - 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
  - 6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's instructions.

### 3.9 CURING (Portland Cement Mortar)

- A. Curing: Protect masonry work from drying out for a period of 72 hours
  - 1. If ambient the air temperature exceeds 100 deg F or exceeds 90 deg F with a wind velocity greater than 8mph, fog spray all newly applied mortar until damp, a minimum of three times a day for 3 days following application.

### 3.10 CURING (NHL Mortar)

- A. Protect completed work from adverse weather, heavy rainfall, freezing, and drying by direct sunlight and winds until cured.

- B. Allow each lift to become thumbprint hard before applying the next lift. Temperature and relative humidity extend or reduce the time between consecutive layers. Cold or wet weather lengthens, and hot or dry weather shortens the time period for curing. Moderate changes in temperature and relative humidity can be overcome by providing additional heating materials during cold weather and by reducing the absorption of the base by pre-wetting during hot weather.
- C. Protect the work by covering it with burlap.
  - 1. Spring clamp burlap a few inches away from the work and keep the burlap wetted down a few times a day for the cure period of approximately three days. Burlap allows moisture to slowly escape and encourages a slow cure.
  - 2. Burlap should not come in contact with the wall to avoid staining. Tarps could be used on the outside of the scaffold to protect from driving rain and wind.
- D. Curing: Protect mortar work from drying out for a period of 72 hours. Contractor to monitor cure to ensure that the mortar maintains proper moisture content.
  - 1. Work only in temperatures between 45-85 degrees Fahrenheit when temperatures are not expected to fall below 45 degrees Fahrenheit or above 85 degrees Fahrenheit for 72 hours.
- E. Provide sufficient moisture in the mortar to permit continuous hydration of the mortar materials. The most effective procedure for curing shall be based on climactic and job conditions. The mortar must remain moist for 72 hours (three days) following installation.
- F. Some moisture must be retained in or added back to freshly installed mortar. If the relative humidity is relatively high (above 75%) the frequency for rewetting may be reduced. If it is hot, dry, and windy, the frequency for re-wetting must be increased.

### 3.11 CLEAN UP

- A. Maintain clean surfaces on the face, sills, ledges, and projections of masonry on a daily basis.
- B. With a trowel, strike off minor dabs of adherent mortar from face of masonry.
- C. Remove minor mortar marks from masonry by misting with water and brushing with a small, stiff-bristle brush.

### 3.12 MASONRY WASTE DISPOSAL

- A. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042100

## SECTION 060312 – HISTORIC WOOD REPAIR

## 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.
- B. Codes and standards set forth by:
  - 1. Preservation Brief #18, "Rehabilitating Interiors in Historic Buildings: Identifying and Preserving Character Defining Elements" as published by the U. S. National Park Service.
  - 2. "Guide to Preserving Historic Buildings: Wood" "U.S. Department of the Interior, National Park Service, 1995."

## 1.2 SUMMARY

- A. This project involves the rehabilitation of a historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.
- B. This Section includes exterior and interior woodwork including, but not limited to the following applications:
  - 1. Repair and restoration of all existing interior and exterior wooden elements.
  - 2. Fabrication and installation of all new wooden elements to match existing.

## 1.3 DEFINITIONS

- A. Restoration: The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features, removal of inadequate and incongruous repairs, and the repair of existing features from the restoration period.
- B. Scarf joint: A joint made by notching and lapping two timbers such that the longitudinal axes of the timbers are collinear.

## 1.4 PREINSTALLATION MEETINGS

- A. Preconstruction Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to historic wood repair, including, but not limited to, the following:

- a. Historic treatment specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
- b. Materials, material application, sequencing, tolerances, and required clearances.
- c. Fire-protection plan.
- d. Wood historic treatment program.

## 1.5 SEQUENCING AND SCHEDULING

- A. Perform historic wood repair in the following sequence, which includes work specified in this and other Sections:
  1. Before removing wood components for on-site or off-site repair, tag each component with location-identification numbers. Indicate on tags and building plans the locations of each component, such as "Tongue and groove board on West Side of Room 100".
  2. Dismantle hardware and tag with location-identification numbers.
  3. Label each repaired component and whole or partial replacement with permanent location-identification number in inconspicuous location and remove site applied tags.
  4. Sort units by condition, separating those that need extensive repair.
  5. Clean surfaces.
  6. Repair wood as needed by consolidation, replacement, partial replacement, and patching.
  7. Repair, refinish, and replace hardware if required. Reinstall operating historic hardware.
  8. Apply finish coats.
  9. Install remaining hardware.

## 1.6 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For historic treatment specialists including field supervisors and workers.
- C. Product Certificates: For each type of product, signed by product manufacturer.
- D. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.
- E. Wood Historic Treatment Program: Submit before works begins.
- F. Samples for Verification:
  1. Samples are required for all replacement material.

## 1.7 QUALITY ASSURANCE

- A. Craftspeople: Wood restoration shall be carried out by a crew of skilled craftspeople who are thoroughly experienced with 5 years' experience with materials and methods specified. Experience only in fabricating and installing new woodwork is insufficient experience for wood historic treatment work.
- B. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction,

finishes, installation, and other requirements.

- C. Wood-Repair-Material Manufacturer Qualifications: A firm regularly engaged in producing wood consolidant and wood-patching compound that have been used for similar historic wood treatment applications with successful results, and with factory-authorized service representatives who are available for consultation, project-site inspection, and on-site assistance.
- D. Mock-Ups: Prior to start of wood restoration work, prepare the following samples in building where directed by the Architect. Obtain Architect's acceptance of sample before proceeding with the work. Retain acceptable panels in undisturbed condition, suitably marked, during construction as a standard for judging completed work.
  - 1. Wood Repair: Prepare sample panels for each type of repair specified including patch-type repair, component replacement, and dutchman repair. Prepare samples on existing historic woodwork to demonstrate quality of materials and workmanship.
  - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.
- B. Materials shall be stored indoors in such a manner so as not to interfere with other trades working in the building. Architect shall approve proposed material storage locations prior to material delivery.
  - 1. Storage procedures shall follow those specified in Section 015000 "Temporary Facilities and Controls."
- C. Protect wooden elements from exposure to moisture.

#### 1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete. Maintaining temperature, a minimum of 50 deg F during the construction period. Protect woodwork from excessive heat and humidity.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings and/or Project Construction Drawings located on site as indicated by Architect. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop



Drawings and/or Project Construction Drawings located on site as indicated by Architect.

2. Established Dimensions: Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

#### 1.10 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work to ensure that interior architectural woodwork can be supported and installed as indicated.
- B. Hardware Coordination: Distribute copies of approved hardware schedule to fabricator of architectural woodwork; coordinate Shop Drawings and fabrication with hardware requirements.

### PART 2 - PRODUCTS

#### 2.1 HISTORIC WOOD REPAIR, GENERAL

- A. Quality Standard: Comply with applicable requirements in Section 12, "Historic Restoration Work," and related requirements in AWI/AWMAC/WI's "Architectural Woodwork Standards" for construction, finishes, grade rules, and other requirements unless otherwise indicated.

#### 2.2 REPLICATED WOOD ITEMS

- A. Replicated Wood Paneling and Trim: Custom-fabricated replacement wood units and components.
  1. Joint Construction: Joints matching existing joints.
  2. Wood Species: Match existing species of existing wood.
  3. Wood Cut: Match cut of existing wood.
  4. Wood Member and Trim Profiles: Match profiles and detail of existing.

#### 2.3 WOOD-REPLACEMENT MATERIALS

- A. Wood, General: Clear fine-grained lumber; Southern Yellow Pine kiln dried to a moisture content of 6 to 12 percent at time of fabrication; no finger joints, glue stain, knots, pitch pockets, and surface checks larger than 1/32 inch deep by 2 inches wide.
  1. Species: Match species of each existing type of wood component or assembly unless otherwise indicated.
- B. Paneling: Match existing species.
- C. Exterior Trim: Match existing species.
- D. Interior Trim: Match existing species.

#### 2.4 WOOD-REPAIR MATERIALS

- A. Salvaged Material: Consult inventory log for a list of salvaged material. Priority should be given to repairing and reusing this material rather than full replacement.
  - B. Source Limitations: Obtain wood consolidant and wood-patching compound from single source single manufacturer.
  - C. Wood Consolidant: Ready-to-use product designed to penetrate, consolidate, and strengthen soft fibers of wood materials that have deteriorated due to weathering and decay and designed specifically to enhance the bond of wood-patching compound to existing wood.
  - D. Wood-Patching Compound: Two-part, epoxy-resin, wood-patching compound; knife grade formulation as recommended in writing by manufacturer for type of wood repair indicated, tooling time required for detail of work, and site conditions. Compound should be designed for filling voids in damaged wood materials that have deteriorated due to weathering and decay. Compound shall be capable of filling deep holes and spreading to featheredge.
    - 1. Use a Bisphenol A based low viscosity liquid epoxy resin with appropriate hardener that cures to a high strength plastic solid under room temperatures.
    - 2. Epoxy to hardener ratio shall not exceed 5:1.
    - 3. Product shall be specifically designed to bond with historic wood fiber and must be able to be sanded and shaped when cured.
  - E. Dutchman Repair Materials:
    - 1. Replacement Wood: Match species, grade, grain pattern, and other special characteristics of existing woodwork unless otherwise noted.
  - F. New or Replacement Materials:
    - 1. Replacement Wood: Match species, grade, grain pattern, and other special characteristics of existing woodwork unless otherwise noted.
  - G. Interior Trim:
    - 1. Replacement Wood: Match species, grade, grain pattern, and other special characteristics of existing woodwork unless otherwise noted.
- 2.5 HARDWARE
- A. As specified in Drawings.
- 2.6 MISCELLANEOUS MATERIALS
- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- 2.7 FABRICATION, GENERAL
- A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium-grade interior woodwork complying with referenced quality standard.

- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Fabricate woodwork to dimensions, profiles, and details indicated. Profiles of newly fabricated repair woodwork must match original historic profiles. Use existing profiles as a template.
- D. Complete fabrication, including assembly and finishing, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Protect adjacent materials from damage by historic wood repair.
- B. Clean wood of mildew algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. Scrub mildewed areas with mildewcide. After cleaning, rinse thoroughly with fresh water. Allow to dry before repairing or repainting.
- C. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- D. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and back priming.

#### 3.2 HISTORIC REPAIR, GENERAL

- A. If removing deteriorated woodwork, replace the entire length of the existing damaged piece to the next joint. Notify Architect if a large area of woodwork is to be removed.
- B. In all wood restoration work, fastener type and size will be appropriate for existing historic material receiving work.
- C. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use only the gentlest mechanical methods, such as scraping and natural-fiber bristle brushing, that will not abrade wood substrate, reducing clarity of detail. Do not use abrasive methods, such as sanding, wire brushing, or power tools, except as indicated as part of the historic treatment program and as approved by Architect.
- D. Repair and Refinish Existing Hardware: Dismantle hardware; strip paint, repair, and refinish it to match finish samples; and lubricate moving parts just enough to function smoothly.
- E. Repair Wood: Match existing materials and features, retaining as much original material as possible to perform repairs.

1. Unless otherwise indicated, repair wood by consolidating, patching, splicing, or otherwise reinforcing wood with new wood matching existing wood or with salvaged, sound, original wood.
  2. Where indicated, repair wood by limited replacement matching existing material.
- F. Replace Wood: Where indicated, duplicate and replace units with units made from salvaged, sound, original wood or with new wood matching existing wood. Use surviving prototypes to create patterns for duplicate replacements.
1. Do not use substitute materials unless otherwise indicated.
- G. Identify removed items with numbering system corresponding to item locations, to ensure reinstallation in same location. Key items to Drawings showing location of each removed unit. Permanently label units in a location that will be concealed after reinstallation.
- H. WOOD PATCH-TYPE REPAIR
1. Patch wood members that are damaged and exhibit depressions, holes, or similar voids, and that have limited rot or decayed wood.
  2. Verify all surfaces are sufficiently clean and free of paint residue prior to patching.
  3. Remove rotted or decayed wood down to sound wood.
  4. Apply wood-patching compound to fill depressions, nicks, cracks, and other voids created by removed or missing wood. Apply and cure according to manufacturer's specifications.
  5. Follow manufacturer's written instructions for applying wood patching compound.
  6. Mix only as much patching compound as can be applied according to the manufacturer's written instructions.
  7. Apply patching compound in layers as recommended by manufacturer until the void is completely filled.
  8. Finish patch surface to match contour of adjacent wood member. Sand patching compound smooth and flush, matching contour of existing wood member.
- I. COMPONENT REPLACEMENT
1. Match existing materials and features, retaining as much original material as possible to perform repairs.
  2. In kind replacement: Except as specifically indicated otherwise, provide replacement elements with configurations, profiles, dimensions and joinery exactly matching those of existing elements.
  3. Machining and Surfacing: Machine and surface all new and replacement wood elements to provide smooth even surfaces without saw marks or plane marks. Wood with surface irregularities, including but not limited to scratches, saw marks, and plane knife marks, visible after finish has been applied will be rejected and shall be replaced with properly finished wood elements at no additional cost.
- J. DUTCHMAN REPAIRS
1. General: Provide dutchman repairs where wood is structurally compromised. Dutchman repairs shall provide continuous smooth surfaces matching planes and profiles of wood members being repaired. Dutchman shall match wood being repaired in specie and cut. In wood for clear finish, grain pattern of dutchman shall match grain

- pattern of wood into which it is inserted.
2. Preparation: Neatly cut out existing opening as required to provide a prismatic void. Where possible create voids that will provide mechanical attachments as in dovetails. The amount of wood removed should be minimized but the amount should include all damaged wood and extend just past damaged wood to prevent spread of any fungus contained therein. Cut away area will provide ample glue surface.
  3. Dutchman: Cut dutchman to exactly fit void, with exposed portion matching original profile of woodwork and just slightly proud of original surface. Orient grain of dutchman parallel to grain of element being patched. Where deterioration or loss at end of component requires dutchman repair, use a diagonal scarf joint for end-to-end joint between dutchman and remaining portion of component.
  4. Installation: Clean glue surfaces with acetone or denatured alcohol. Insert dutchman using specified adhesive and clamp in place until glue is set. Where clamping is not feasible, use small brads; remove brads and fill holes after adhesive has set.
  5. Surfacing: Plane or scrape dutchman to provide smooth continuous surface coplanar with adjacent wood. Do not damage or alter profile or finish of adjacent wood.

#### K. SCARF JOINTS IN STRUCTURAL MEMBERS

1. Where the end of a member is deteriorated, and new material is to be added to the existing element, new material shall match existing in kind, grain, and species.
2. A structural scarf joint such as a halved scarf or equivalent should be used.
3. Scarfs in structural elements should be 4.5 times in length the depth of the material being repaired.
4. Scarf joint should be glued and mechanically fastened.

#### 3.3 INSTALLATION OF REPLACEMENT WOODWORK

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts. Install blocking as necessary to secure woodwork. Contractor is responsible for installing all blocking necessary to install woodwork, hardware, accessories, cabinets, and fixtures.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches (1500 mm) long, except where shorter single-length pieces are

necessary. Scarf running joints and stagger in adjacent and related members.

1. Fill gaps, if any, between top of base and wall with wood filler, sand smooth, and finish same as wood base if finished.
  2. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).
- G. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
- H. Remove all extraneous fasteners and hardware.
- I. Refer to Section 099000 "Architectural Coatings for Historic Substrates" for final finishing of installed wooden elements.

#### 3.4 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance. Take care to avoid damage to historic and protective coatings and finishes.
- B. Upon completion of this work, all floors, walls, and other adjacent surfaces that are stained, marred, or otherwise damaged by work under this section shall be repaired and all work and the adjacent areas shall be left in a clean condition.
- C. All completed work shall be adequately protected from damage by subsequent building operations and effects of weather. Protection shall be by methods recommended by the manufacturer of installed materials and as approved by the Architect.
- D. Clean woodwork: Dust and damp wipe woodwork with a soft cloth dampened in clean water; dry rub with soft cloth to maintain the polish, rubbing along the grain of the wood.

END OF SECTION 060312

## SECTION 061000 - ROUGH CARPENTRY

## PART 1 – GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 062012 “Exterior Finish Carpentry.”

## 1.2 SUMMARY

- A. This project involves the rehabilitation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.
- B. Section Includes:
  - 1. General carpentry work.
  - 2. Structural framing.

## 1.3 DEFINITIONS

- A. Exposed Framing: Framing not concealed by other construction.
- B. Rough Carpentry: Carpentry work not specified in other sections.
- C. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- D. Lumber grading agencies, and the abbreviations used to reference them, include the following:
  - 1. SPIB: The Southern Pine Inspection Bureau.

## 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
  - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
4. Fastener product data and schedule.

B. Qualification Data: For historic treatment specialists including field supervisors and workers.

C. Fastener Patterns: Full-size templates for fasteners in exposed framing.

## 1.5 QUALITY ASSURANCE

A. Lumber shall be graded by an agency certified by the Board of Review of the American Lumber Standards Committee. A grade stamp indicating the grading association, mill, species and grade shall be affixed to each full piece.

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

C. Plywood shall be graded under the rules of the American Plywood Association.

D. Carpenters employed for finish work such as installing hardware, millwork and trim shall be skilled craftsmen.

E. Wood framing shall conform to the National Design Specification for Wood Construction of the American Forest & Paper Association, unless most stringent requirements are established by this specification or Authorities having Jurisdiction (AHJ).

## 1.6 DELIVERY, STORAGE, AND HANDLING

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

B. Receive and inventory all finish hardware and store in secure area. Tag all keys showing location and key number. Maintain a record of all keys and store in a secure location until delivery to the Owner at the time of substantial completion.

## PART 2 - PRODUCTS

### 2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency. Coordinate with Architect's preference.



3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
4. Provide dressed lumber, S4S, unless otherwise indicated.

- B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

## 2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency. Coordinate with Architect's preference.

- D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches above the ground.

## 2.3 PLYWOOD, GENERAL

- A. Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559 and containing no urea formaldehyde.

- B. Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood," where plywood is indicated. Factory mark structural-use panels with APA trademark evidencing compliance with grade requirements. Certification: Provide certification that plywood, untreated with fire-retardant, meets Standard Building Code Congress requirements for a flame spread of 200 or less (Class C) when tested in accordance with ASTM E84.

- C. Thicknesses: Where nominal thicknesses are indicated, provide actual thickness to match existing, providing other project requirements such as grade, span rating, exposure, etc., are met:
1. 1/2 inch nominal: 7/16, 15/32, or 1/2 inch actual.
  2. 5/8 inch nominal: 19/32, 5/8, or 21/32 inch actual.
  3. 3/4 inch nominal: 11/16 or 3/4 actual.
  4. 1 inch nominal: 1 inch actual.
  5. 1-1/8 inch nominal: 1-1/8 inch actual.
  6. 1-1/4 inch nominal: 1-1/4 inch actual.

## 2.4 DIMENSION LUMBER FRAMING

- A. General: Provide dimensions of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
- B. General Structural framing, ledgers and blocking
1. Grade: No. 2
  2. Species: Mixed southern pine; SPIB.
- C. Lumber 2" shall be seasoned to a moisture content of 19% or less. *Surfaced framing lumber over 2" in thickness may be unseasoned.*
1. 2x2 through 4x4 lumber shall be Standard or better or stud grade in any commercial species having the following minimum design values:
    - a. Fb: 550 (Single)
    - b. Fb: 650 (Repetitive)
    - c. E: 1,200,000
  2. 2x6 and larger lumber shall be stud grade or standard and better in any commercial species having the following minimum design values:
    - a. Fb: 500 (Single)
    - b. Fb: 575 (Repetitive)
    - c. E: 1,200,000
  3. 2x6 and larger lumber, other than studs, shall exceed the following minimum design values:
    - a. Fb: 1450 (Single)
    - b. Fb: 1650 (Repetitive)
    - c. E: 1,700,000
  4. Boards and planks in non-exposed locations shall be 2 and better Spruce-Pine-Fir.
  5. Any wood members that will remain exposed to view shall be modified as necessary to match dimensional properties and surface appearance/finish as adjacent exposed members.
- D. Wood Blocking: Wood blocking shall be of proper sizes, shapes, and locations as necessary for the installation and attachment of wood and other items indicated or specified.

**E. Any wood members that will remain exposed to view shall be modified as necessary to match**

**dimensional properties and surface appearance/finish as adjacent exposed historic members.**

1. Areas exposed by first floor viewer.
  - a. Wooden members exposed to view on the first floor such as wall framing and floor joists and as noted in the Drawings shall be made out of reclaimed material matching the existing historic material in species, dimension, finish, and color.

## 2.5 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  1. Blocking.
  2. Nailers.
  3. Cants.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of the following species:
  1. Southern pine; SPIB.
- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. **Note: Any wood in direct contact with masonry to be wrapped in 16oz copper (piers, fireplace, and chimneys).**

## 2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  1. For all exterior rough carpentry, provide fasteners of Type 304 stainless steel.
  2. Stainless steel Simpson or equivalent screws should be used on all straps, clips, and hangers applied to historic material.
  3. Connectors which are in contact with preservative pressure treated lumber shall be stainless steel per ASTM A653
  4. For all interior rough carpentry, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.

- E. Lag Bolts: ASME B18.2.1.

## 2.7 METAL FRAMING ANCHORS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - 1. Simpson Strong-Tie Co., Inc.
  - 2. USP Structural Connectors.
- B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer that meet or exceed those indicated of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.
- D. Stainless-Steel Sheet: ASTM A 666, Type 304.

## 2.8 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

## PART 3 - FABRICATION

- 3.1 Preservative Pressure Treatment: Lumber for plates, curbs, nailers at roof edges, cants and that used in contact with exterior masonry or concrete materials shall be vacuum pressure treated with ammoniacal copper quaternary compound (ACQ). Treatment shall be in accordance with the Standard Specification of American Wood Preservers Association for treating structural timbers.
  - 1. Minimum retention shall be 0.4 lb./ft<sup>3</sup>

## PART 4 - EXECUTION

### 4.1 GENERAL CARPENTRY WORK

- A. Install all wood framing, blocking, plates, grounds, etc., as shown on the drawings or required. Nailing shall be well done in accordance with code requirements and industry standards in order to develop the full strength of the members. All joints shall be closely fitted and accurately set to required lines and levels.
- B. Provide all temporary shoring, bracing, blocking required for the installation of the work.
- C. The following items are included in general carpentry work. The work shall not be limited to these items:
  - 1. Cribbing for additional stabilization

2. Perimeter girder sill
3. Floor framing
4. Exterior wall studs
5. Wood furring
6. Ledger plate
7. Corner posts
8. Corner post diagonal bracing
9. Historic Roof Rafters
10. Historic Collar ties
11. Historic Roof purlins

#### 4.2 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.
- E. Do not splice structural members between supports unless otherwise indicated.
- F. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- G. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- H. Comply with AWWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
  1. Use inorganic boron for items that are continuously protected from liquid water.
  2. Use copper naphthenate for items not continuously protected from liquid water.
- I. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  1. NES NER-272 for power-driven fasteners.
  2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
- J. Use hot dip galvanized fasteners on interior work unless otherwise indicated. Select fasteners of

size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated. All treated wood shall be nailed with stainless steel.

- K. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
  - 1. Drive nails snug but do not countersink nail heads.
- L. Install diagonal bracing in stud framing of exterior walls, to match existing.

#### 4.3 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

#### 4.4 WALL FRAMING INSTALLATION, GENERAL

- A. General: Where applicable provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs. Fasten plates to supporting construction unless otherwise indicated.
  - 1. Provide continuous horizontal blocking at mid-height of partitions more than 96 inches high, using members of 2-inch nominal thickness and of same width as wall or partitions.
- B. Construct corners and intersections with three or more studs.
- C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.
  - 1. For load-bearing walls, provide double-jamb studs for openings 60 inches and less in width, and triple-jamb studs for wider openings unless noted otherwise. Provide headers of depth indicated.

#### 4.5 FLOOR JOIST FRAMING INSTALLATION

- A. Note: Any wood pocketed into masonry joist pockets should be wrapped in 16oz copper.
- B. General: Install floor joists with crown edge up and support ends of each member with not less than 2 inches of bearing on wood or metal, or 4 inches on masonry. Attach floor joists as follows:
  - 1. Where supported on wood members, by using metal framing anchors.
  - 2. Where framed into wood supporting members, by using metal joist hangers.

- C. Fire Cuts: At joists built into masonry, bevel cut ends 3 inches and do not embed more than 4 inches.
- D. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches unless noted otherwise
- E. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches from top or bottom.
- F. Provide solid blocking of 2-inch nominal thickness by depth of joist at ends of joists unless nailed to header or band.
- G. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches or securely tie opposing members together. Provide solid blocking of 2-inch nominal thickness by depth of joist over supports.
- H. Provide solid blocking between joists under jamb studs for openings.
- I. Provide bridging of type indicated below, at intervals of 96 inches o.c., between joists.
  - 1. Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal- size lumber, double- crossed and nailed at both ends to joists.

#### 4.6 CEILING JOIST AND RAFTER FRAMING INSTALLATION

- A. Ceiling Joists: Install ceiling joists with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.

#### 4.7 SHEATHING

- A. All sheathing shall comply with applicable recommendations contained in the Engineered Wood Association's Form No. E30U, Engineered Wood Construction Guide" for types of construction panels and applications indicated.
- B. Fasten panels with appropriately sized nails.
- C. Space roof sheathing with 1/8" space between 4 ft. x 8 ft. sheets. Stagger end joints of sheathing.

#### 4.8 FIELD QUALITY CONTROL

- A. Testing and Inspection: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports in accordance with the schedule of special inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

4.9 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000



## SECTION 061600 - SHEATHING

## PART 1 – GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This project involves the rehabilitation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.
- B. Section Includes:
  - 1. Wall sheathing
  - 2. Roof sheathing
- C. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for plywood backing panels.
  - 2. Section 072726 "Fluid Applied Air Barriers" for water-resistive barrier applied over wall sheathing.

## 1.3 ACTION SUBMITTALS

- A. Product Data: For all materials and fasteners. Provide list of where each material will be used.

## 1.4 DELIVERY, STORAGE, AND HANDLING

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

## PART 2 - PRODUCTS

## 2.1 WOOD PANEL PRODUCTS

- A. Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.
- B. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
- C. Factory mark panels to indicate compliance with applicable standard.

## 2.2 PRESERVATIVE-TREATED PLYWOOD

- A. Preservative Treatment by Pressure Process: AWWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- C. Application: Items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

## 2.6 WOOD SHEATHING

- A. Roof Sheathing
  - 1. Exterior OSB Sheathing, Exposure 1 under PS2
  - 2. Span Rating: 40/20 minimum span rating.
  - 3. Edges: Tongue and Groove.
  - 4. Thickness: 5/8" (can be substituted for 3/4" due to availability)
  - 5. Basis of Design: Advantech Sheathing by Huber Engineered Woods or comparable product approved by the Architect.
- B. Wall Sheathing
  - 1. Pressure Treated BCX Plywood
  - 2. Edges: square
  - 3. Thickness: 1/2"

## 2.7 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
  - 2. For exterior exposed surfaces, stainless steel fasteners must be used.
  - 3. For interior surface, galvanized fasteners must be used.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.

- D. Wood Screws: ASME B18.6.1.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
1. NES NER-272 for power-driven fasteners.
  2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
  3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's "International Residential Code for One- and Two-Family Dwellings."
- D. On exposed surfaces, use stainless steel nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

#### 3.2 INSTALLATION OF 5/8" EXTERIOR ROOF SHEATHING ON TOP OF HISTORIC SHEATHING BOARDS AND RAFTERS

- A. A layer of 5/8" exterior grade plywood roof sheathing is to be installed over the existing wood rafters.
- B. Nailing pattern of roof sheathing must correspond with the location of the existing historic roof rafters.
1. Plywood sheathing is to be fastened to the roof framing below.

- C. Care should be taken to fasten roof sheathing ONLY to the existing historic framing.
  - 1. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's "International Residential Code for One- and Two-Family Dwellings."

### 3.3 INSTALLATION OF 1/2" EXTERIOR WALL SHEATHING

- A. Remove existing siding.
- B. A layer of 1/2" exterior grade plywood wall sheathing is to be installed over the existing wood wall framing.
- C. Nailing pattern of wall sheathing must correspond with the location of the existing historic wall framing members.
- D. Care should be taken to fasten wall sheathing ONLY to the existing historic framing.
  - 1. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's "International Residential Code for One- and Two-Family Dwellings."

### 3.4 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
  - 1. Roof Sheathing (Existing Construction):
    - a. Nail to wood framing.
    - b. Space panels 1/8 inch apart at edges and ends.
  - 2. Wall Sheathing (Existing Construction):
    - a. Nail to wood framing.
    - b. Space panels 1/8" apart at edges and ends.

END OF SECTION 61600

## SECTION 062012 – EXTERIOR FINISH CARPENTRY

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 099000 “Architectural Coatings for Historic Substrates.”
- C. Codes and standards set forth by:
  - 1. Quality Standard: Architectural Woodwork Institute's "Architectural Woodwork Quality Standards."
  - 2. Preservation Brief #45 “Preserving Historic Wooden Porches” as published by the U.S. National Park Service.
  - 3. Architectural Woodwork Institute: AWI Quality Standards Illustrated.

## 1.2 SUMMARY

- A. Work includes, but is not necessarily limited to, the following:
  - 1. Preparation of existing wooden elements for new work.
  - 2. Repair of deteriorated wooden elements.
  - 3. Sealing of penetrations.
  - 4. Replacement of specified features as chosen by the Architect.

## 1.3 SCOPE

- A. Provide finish carpentry items as shown, as specified or as required to support finished work.

## 1.4 PROJECT CONDITIONS

- A. Keep carpentry materials dry during delivery. Store lumber and plywood in stacks with provision for air condition through stacks. Protect bottom of stacks against contact with damp or wet surfaces. Protect exposed materials against weather.
- B. Do not store dressed or treated lumber or plywood outdoors. Store materials for which a maximum moisture content is specified, only in areas where relative humidity has been reduced to a level where specified moisture content can be maintained with a tolerance of plus or minus 1%.
- C. Protect installed work from damage by work of other trades until Architect’s acceptance of work. Adhere to required protection procedures.
  - 1. Presence of mildew or dry rot on any wood surface will be grounds for rejection

## 1.5 ENVIRONMENTAL CONDITIONS

- A. Weather Limitations for Exterior Work: Proceed with installation of exterior wood trim 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.

## 1.6 QUALITY ASSURANCE

- A. Craftspeople: Exterior Finish Carpentry shall be carried out by a crew of skilled craftspeople who have at least five years of experience working with historic building materials and are thoroughly experienced with materials and methods specified.
- B. Action Submittals:
  - 1. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
    - a. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
    - b. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
    - c. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. It is the joint responsibility of the woodwork manufacturer and the Contractor to make certain that woodwork is not delivered until the building and storage areas are sufficiently dry and complete so that the woodwork will not be damaged. The Contractor will replace defective or damaged materials at no cost to the Own
- B. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.
- C. Protect all finished surfaces after installation and finishing from damage and soiling. Maintain protection during subsequent work operations and remove same upon Architect's acceptance or when instructed by Architect.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Use lumber bearing the official trademark and grade of the manufacturer's association or inspection bureau under which it was manufactured and graded, except as specified otherwise herein. Use seasoned lumber, surfaced four sides and kiln or air dried to moisture content specified in association's rules, except that moisture content is limited to a maximum of 11 percent.

- B. STANDARDS: American Softwood Lumber Standard PS20 American Plywood Association, American Wood Preservers Bureau Standards. AWI Architectural Woodwork Quality Standards

## 2.2 EXTERIOR FINISH CARPENTRY

- A. Wood Materials: Cornice & Pediment Trim
  1. Provide material that has been kiln dried after treatment, moisture content must be below 12 %. Pre-prime and apply a minimum of one coat of finish paint on all sides prior to installation.
  2. Species and Grade: C & Better pressure-preservative-treated southern pine; SPIB.
  3. Pattern: Overall dimensions and pattern to match existing and as specified in Drawings.

## 2.3 LUMBER SIDING

- A. Provide kiln-dried lumber siding complying with DOC PS 20, pre-primed with primer compatible with topcoats.
- B. Species and Grade: C & Better pressure-preservative-treated southern pine; SPIB.
- C. Pattern: Overall dimensions and pattern to match existing siding and as specified in Drawings.

## 2.4 MISCELLANEOUS MATERIALS

- A. Flashing: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim" for flashing materials installed in exterior finish carpentry.
- B. Caulking Materials: Sealant with 20-year life expectancy. Sealant to be paintable.
  1. Exterior
    - a. Sonneborn Sonolastic NP1 One component polyurethane
    - b. Sashco Big Stretch Sealant
    - c. An approved equal
  2. NOTE: Sealants must be primed
- C. Wood Filler
  1. Use a Bisphenol A based low viscosity liquid epoxy resin with appropriate hardener that cures to a high strength plastic solid under room temperatures.
  2. Epoxy to hardener ratio shall not exceed 5:1
  3. Product shall be specifically designed to bond with historic wood fiber and must be able to be sanded and shaped when cured.
- D. Fasteners for Exterior Finish Carpentry: All exterior fasteners shall be stainless steel grade 304 or better.

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**PART 3 - EXECUTION****3.1 PREPARATION**

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Verify adequacy of backing and support framing.
- C. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.
- E. Clean substrates of projections and substances detrimental to application.

**3.2 FABRICATION**

- A. Match existing detailing.
- B. In kind replacement: Except as specifically indicated otherwise, provide replacement elements with configurations, profiles, dimensions and joinery exactly matching those of existing elements.
- C. Machining and Surfacing: Machine and surface all new and replacement wood elements to provide smooth even surfaces without saw marks or plane marks. Wood with surface irregularities, including but not limited to scratches, saw marks, and plane knife marks, visible after finish has been applied will be rejected and shall be replaced with properly finished wood elements at no additional cost.

**3.3 INSTALLATION, GENERAL**

- A. Replace and repair woodwork as specified by Drawings.
- B. Provide all wood blocking and framing required to support items of finish carpentry. Use fastening materials of types appropriate for the conditions encountered, including wood to wood, wood to masonry, and wood to metal stud framing. Counterbore holes for nuts and bolt heads, and countersink for screws. Use concealed fasteners in exposed surfaces of finish carpentry
- C. Install woodwork to comply with referenced quality standard for grade specified.
- D. Install woodwork true and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).
- E. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- F. Dutchman Repairs



1. Dutchman repairs shall be undertaken using the same material as the original. Species and grain to match. Match existing detailing.
2. Substitutions in material must be approved by Architect.

#### 3.4 STANDING AND RUNNING TRIM INSTALLATION

- A. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 36 inches (900 mm) long, except where shorter single-length pieces are necessary. Scarf running joints and stagger joints in adjacent and related trim. Cope at returns and miter at corners.
- B. Timely delivery and installation of carpentry work to avoid delaying other trades whose work is dependent on or affected by the carpentry work, and to comply with protection and storage requirements.
- C. Examine all parts of the supporting structure and the conditions under which the carpentry work is to be installed, and notify the Architect, in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

#### 3.5 ADJUSTING

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

#### 3.6 CLEAN UP

- A. Clean interior and exterior finish carpentry on exposed and semi-exposed surfaces. Touch up finishes to restore damaged or soiled areas
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged as indicated by the Architect.
  1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape
  2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration

END OF SECTION 062012

## SECTION 070150.19 - PREPARATION FOR REROOFING

## 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. Full tear-off of existing roof.

- B. Related Requirements:

- 1. Section 011000 "Summary" for use of the premises and phasing requirements.
  - 2. Section 015000 "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.

## 1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.
- B. Roof Re-Cover Preparation: Existing roofing system is to remain and be prepared for new roof installed over it.
- C. Full Roof Tear-Off: Removal of existing roofing system from deck.

## 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, sections, and details.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Fastener pull-out test report.
- B. Photographs: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

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## 1.6 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Reroofing Conference: Conduct conference at Project site.
  - 1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; roofing Installer, including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing, including installers of roof deck, roof accessories, and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing system tear-off and replacement, including, but not limited to, the following:
    - a. Reroofing preparation, including roofing system manufacturer's written instructions.
    - b. Temporary protection requirements for existing roofing system components that are to remain.
    - c. Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.
    - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.
    - e. Existing roof deck conditions requiring notification of Architect.
    - f. Existing roof deck removal procedures and Owner notifications.
    - g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
    - h. Structural loading limitations of roof deck during reroofing.
    - i. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.
    - j. HVAC shutdown and sealing of air intakes.
    - k. Asbestos removal and discovery of asbestos-containing materials.
    - l. Governing regulations and requirements for insurance and certificates if applicable.
    - m. Existing conditions that may require notification of Architect before proceeding.

## 1.7 FIELD CONDITIONS

- A. Existing Roofing System: Metal roof over original wood shingles.
- B. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
  - 1. Coordinate work activities daily with Owner so Owner can place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.

2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below affected area. Verify that occupants below work area have been evacuated before proceeding with work over impaired deck area.
- C. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- E. Conditions existing at time of inspection for bidding are maintained by Owner as far as practical.
1. Construction Drawings for existing roofing system are provided for Contractor's convenience and information, but are not a warranty of existing conditions. They are intended to supplement rather than serve in lieu of Contractor's own investigations. Contractor is responsible for conclusions derived from existing documents.
- F. Limit construction loads on roof as directed by Structural Engineer for rooftop equipment wheel loads and uniformly distributed loads.
- G. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
1. Remove only as much roofing in one day as can be made watertight in the same day.
- H. Hazardous Materials: It is not expected that hazardous materials, such as asbestos-containing materials, will be encountered in the Work.
1. Hazardous materials will be removed by Owner before start of the Work. Existing roof will be left no less watertight than before removal.
  2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

## PART 2 - PRODUCTS

### 2.1 AUXILIARY REROOFING MATERIALS

- A. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing system.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Shut off rooftop utilities and service piping before beginning the Work.
- B. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

- C. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

### 3.2 ROOF REMOVAL

- A. General: Notify Owner each day of extent of roof tear-off proposed for that day.
- B. Full Roof Tear-Off: Remove existing roofing and other roofing system components down to the deck.

### 3.3 DECK PREPARATION

- A. Install new sheet roof sheathing on top of original framing (entire roof).

### 3.4 INFILL MATERIALS INSTALLATION

- A. Immediately after roof tear-off, fill in tear-off areas to match existing roofing system construction.
- B. Install new roofing patch over roof infill area. If new roofing is installed the same day tear-off is made, roofing patch is not required.

### 3.5 FLASHING REMOVAL

- A. Remove all existing flashings. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.
- B. Replace metal counter flashings with counter flashings of same metal, weight or thickness, and finish.

### 3.6 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
  - 1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 070150.19

## SECTION 073113 - ASPHALT SHINGLES

## PART 1 - GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Glass-fiber-reinforced asphalt shingles.
2. Underlayment materials.
3. Metal flashing and trim.

## B. Related Requirements:

1. Section 076200 Sheet Metal Flashing and Trim.

## 1.2 UNIT PRICES

- A. See Section 012200 "Unit Prices" for description of unit prices affecting items specified under this Section.

## 1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D1079 for definitions of terms related to roofing Work in this Section.

## 1.4 PREINSTALLATION MEETINGS

- ~~A.~~ Preinstallation Conference: Conduct conference at Project site.

## 1.5 ACTION SUBMITTALS

## A. Product Data: For the following:

1. Asphalt shingles.
2. Underlayment materials.
3. Asphalt roofing cement.
4. Elastomeric flashing sealant.

## B. Shop Drawings: For metal flashing and trim.

## C. Samples: For each exposed product and for each color and blend specified, in sizes indicated.

1. Asphalt Shingles: Full size.
2. Ridge and Hip Cap Shingles: Full size.

3. Exposed Valley Lining: 12 inches square.

D. Samples for Initial Selection:

1. For each type of asphalt shingle indicated.
2. For each type of accessory involving color selection.

E. Samples for Verification: For the following products, in sizes indicated:

1. Asphalt Shingles: Full size.
2. Ridge and Hip Cap Shingles: Full size.
3. Exposed Valley Lining: 12 inches square.

## 1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each type of asphalt shingle and underlayment product indicated, based on evaluation of comprehensive tests performed by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for asphalt shingles.

C. Research Reports: For synthetic underlayment, from an agency acceptable to authorities having jurisdiction indicating that product is suitable for intended use under applicable building codes.

D. Sample Warranty: For manufacturer's materials warranty.

## 1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For asphalt shingles to include in maintenance manuals.

B. Materials warranties.

C. Roofing Installer's warranty.

## 1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Asphalt Shingles: 100 sq. ft. of each type and in each color and blend, in unbroken bundles.

## 1.9 QUALITY ASSURANCE

A. Installer Qualifications: An authorized installer who is trained and approved by manufacturer.

## 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture in accordance with manufacturer's written instructions.
- B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double-stack rolls.
- C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing Work is not in progress.
- D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

## 1.11 FIELD CONDITIONS

- A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.
  - 1. Install self-adhering, polymer-modified bitumen sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

## 1.12 WARRANTY

- A. Materials Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Manufacturing defects.
  - 2. Materials Warranty Period: 40 years from date of Substantial Completion, prorated, with first five years nonprorated.
  - 3. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds of up to 135 mph for 15 years from date of Substantial Completion.
  - 4. Algae-Resistance Warranty Period: Asphalt shingles will not discolor for 10 years from date of Substantial Completion.
  - 5. Workmanship Warranty Period: Two years from date of Substantial Completion.
    - a. **Owner Option: GAF® WeatherStopper® Golden Pledge® Ltd Warranty.**
  - 6. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials or workmanship within specified warranty period. Materials failures include manufacturing defects and failure of asphalt shingles to self-seal after a reasonable time.
    - a. **CONTRACTOR TO USE A MINIMUM OF THREE (3) GAF ACCESSORY PRODUCTS TO QUALIFY FOR REQUIRED LIFETIME PRODUCT WARRANTY.**
- B. Roofing Installer's Warranty: On warranty form at end of this Section, signed by Installer, in which Installer agrees to repair or replace components of asphalt shingle roofing 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 SOURCE LIMITATIONS

- A. Obtain each type of product from single source from single manufacturer.

### 2.2 PERFORMANCE REQUIREMENTS

- A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance in accordance with ASTM E108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.
- B. Wind Resistance: Provide asphalt shingles that comply with requirements of ASTM D3161/D3161M, Class F, and with ASTM D7158/D7158M, Class H.
- C. Energy Performance, ENERGY STAR: Provide asphalt shingles that are listed on the DOE's "ENERGY STAR Roof Product List" for steep-slope roof products.

### 2.3 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Laminated-Strip Asphalt Shingles: ASTM D3462/D3462M, laminated, multi-ply overlay construction; glass-fiber reinforced, mineral-granule surfaced, and self-sealing.
  1. Basis-of-Design Product: Subject to compliance with requirements, provide GAF Timberline® NS or comparable product by one of the following:
    - a. CertainTeed; SAINT-GOBAIN.
  2. Butt Edge: Straight cut.
  3. Strip Size: Manufacturer's standard.
  4. Algae Resistance: Granules resist algae discoloration.
  5. Color and Blends: As selected by Architect from manufacturer's full range.
- B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

### 2.4 UNDERLAYMENT MATERIALS

- A. Synthetic Underlayment: UV-resistant polypropylene, polyolefin, or polyethylene polymer fabric with surface coatings or treatments to improve traction underfoot and abrasion resistance; evaluated and documented to be suitable for use as a roof underlayment under applicable codes by a testing and inspecting agency acceptable to authorities having jurisdiction.
  1. Basis-of-Design Product: Subject to compliance with requirements, provide GAF Tiger-Paw™ Roof Deck Protection.

## 2.5 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D4586/D4586M Type II, asbestos free.
- B. Elastomeric Flashing Sealant: ASTM C920, Type S, Grade NS, one-part, non-sag, elastomeric polymer sealant; of class and use classifications required to seal joints and remain watertight; recommended in writing by manufacturer for installation of flashing systems.
  - 1. Refer to Section 076200 "Sheet Metal Flashing and Trim."
- C. Roofing Nails: ASTM F1667, aluminum, stainless steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- diameter, sharp-pointed, with a 3/8- to 7/16-inch- diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through sheathing less than 3/4 inch thick.
  - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- D. Underlayment Nails: Aluminum, stainless steel, or hot-dip galvanized-steel wire nails with low-profile metal or plastic caps, 1-inch- minimum diameter.
  - 1. Provide with minimum 0.0134-inch- thick metal cap, 0.010-inch- thick power-driven metal cap, or 0.035-inch- thick plastic cap; and with minimum 0.083-inch- thick ring shank or 0.091-inch- thick smooth shank of length to penetrate at least 3/4 inch into roof sheathing or to penetrate through roof sheathing less than 3/4 inch thick.

## 2.6 METAL FLASHING AND TRIM

- A. Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
  - 1. Sheet Metal: Aluminum, mill finished.
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item unless otherwise specified in this Section or indicated on Drawings.
  - 1. Apron Flashings: Fabricate with lower flange a minimum of 5 inches over and 4 inches beyond each side of downslope asphalt shingles and 6 inches up the vertical surface.
  - 2. Step Flashings: Fabricate with a headlap of 2 inches and a minimum extension of 5 inches over the underlying asphalt shingle and up the vertical surface.
  - 3. Counterflashings: Fabricate to cover 4 inches of base flashing measured vertically; and in lengths required so that no step exceeds 8 inches and overall length is no more than 10 feet.
    - a. Provide metal reglets for installation.
  - 4. Open-Valley Flashings: Fabricate from metal sheet not less than 24 inches wide in lengths not exceeding 10 feet, with 1-inch- high, inverted-V profile water diverter at center of valley and equal flange widths of not less than 11 inches.
    - a. Hem flange edges for fastening with metal cleats.
    - b. Add stiffening ribs in flashings to promote drainage.
  - 5. Drip Edges: Fabricate in lengths not exceeding 10 feet with minimum 2-inch roof-deck flange and 1-1/2-inch fascia flange with 3/8-inch drip at lower edge.

6. Vent-Pipe Flashings: ASTM B749, Type L51121, at least 1/16 inch thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof, and extending at least 4 inches from pipe onto roof.

### 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.
  1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
  2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provisions have been made for flashings and penetrations through asphalt shingles.
  3. Verify that vent stacks and other penetrations through roofing are installed and securely fastened.
- 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 UNDERLAYMENT MATERIALS

- A. Comply with asphalt shingle and underlayment manufacturers' written installation instructions and with recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems" applicable to products and applications indicated unless more stringent requirements are specified in this Section or indicated on Drawings.
- B. Synthetic Underlayment:
  1. Install on roof deck parallel with and starting at the eaves.
    - a. Lap sides and ends as recommended in writing by manufacturer, but not less than 4 inches for side laps and 6 inches for end laps.
    - b. Stagger end laps between succeeding courses at interval recommended in writing by manufacturer, but not less than 72 inches.
    - c. Fasten with underlayment nails in accordance with manufacturer's written instructions.
    - d. Cover underlayment within period recommended in writing by manufacturer.
  2. Install in single layer on roofs sloped at 4:12 and greater.
  3. Install in double layer on roofs sloped at less than 4:12.
  4. Install synthetic underlayment over areas protected by self-adhering, polymer-modified bitumen sheet unless otherwise specified in this Section or indicated on Drawings.
    - a. Lap sides of underlayment over self-adhering sheet not less than 4 inches in direction to shed water.
    - b. Lap ends of underlayment not less than 6 inches over self-adhering sheet.

5. Install fasteners in a grid pattern of 12 inches between side laps with 6-inch spacing at side and end laps.
  6. Terminate synthetic underlayment extended up not less than 4 inches against sidewalls, curbs, chimneys, and other roof projections.
- C. Metal-Flashed, Open-Valley Underlayment: Install two layers of minimum 36-inch- wide underlayment centered in valley.
1. Use same underlayment as installed on field of roof.
  2. Stagger end laps between layers at least 72 inches.
  3. Lap ends of each layer at least 12 inches in direction that sheds water, and seal with asphalt roofing cement.
  4. Fasten each layer to roof deck with underlayment nails located as far from valley center as possible and only to extent necessary to hold underlayment in place until installation of valley flashing.
  5. Lap roof-deck underlayment over first layer of valley underlayment at least 6 inches.

### 3.3 INSTALLATION OF METAL FLASHING AND TRIM

- A. Install metal flashings and trim to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
1. Install metal flashings in accordance with recommendations in ARMA's "Asphalt Roofing Residential Manual - Design and Application Methods" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
  2. Bed flanges of metal flashings using asphalt roofing cement or elastomeric flashing sealant.
- B. Apron Flashings: Extend lower flange over and beyond each side of downslope asphalt shingles and up the vertical surface.
- C. Step Flashings: Install with a headlap of 2 inches and extend over underlying shingle and up the vertical face.
1. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying shingle.
  2. Fasten to roof deck only.
- D. Counterflashings: Coordinate with installation of base flashing and fit tightly to base flashing. Lap joints a minimum of 4 inches secured in a waterproof manner.
1. Install in reglets or receivers.
- E. Open-Valley Flashings: Install centered in valleys, lapping ends at least 8 inches in direction that sheds water. Fasten upper end of each length to roof deck beneath overlap.
1. Secure hemmed flange edges into metal cleats spaced 12 inches apart and fastened to roof deck.
  2. Adhere minimum 9-inch- wide strips of self-adhering, polymer-modified bitumen sheet to metal flanges and to underlying self-adhering sheet, polymer-modified bitumen sheet.

- a. Place strips parallel to and over flanges so that they will be just concealed by installed shingles.
  3. Provide a closure at the end of the inverted-V profile of the valley metal to minimize water and ice infiltration.
- F. Rake Drip Edges: Install over underlayment materials and fasten to roof deck.
- G. Eave Drip Edges: Install below underlayment materials and fasten to roof deck.
- H. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

### 3.4 INSTALLATION OF ASPHALT SHINGLES

- A. Install asphalt shingles in accordance with manufacturer's written instructions and recommendations in ARMA's "Asphalt Roofing Residential Manual - Design and Application Methods" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches wide with self-sealing strip face up at roof edge.
1. Extend asphalt shingles 1/2 inch over fasciae at eaves and rakes.
  2. Install starter strip along rake edge.
- C. Install first and remaining courses of laminated asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Fasten asphalt shingle strips with a minimum of six roofing nails, but not less than the number indicated in manufacturer's written instructions for roof slope and design wind speed indicated on Drawings and for warranty requirements specified in this Section.
1. Locate fasteners in accordance with manufacturer's written instructions.
  2. When ambient temperature during installation is below 50 deg F, hand seal self-sealing asphalt shingles by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
- E. Open Valleys: Cut and fit asphalt shingles at open valleys, trimming upper concealed corners of shingle strips.
1. Maintain uniform width of exposed open valley from highest to lowest point.
  2. Extend shingle a minimum of 4 inches over valley metal.
  3. Set valley edge of asphalt shingles in a 3-inch- wide bed of asphalt roofing cement.
  4. Do not nail asphalt shingles to metal open-valley flashings.
- F. Hip and Ridge Shingles: Maintain same exposure of cap shingles as roofing-shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds.
1. Fasten with roofing nails of sufficient length to penetrate sheathing.
  2. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

## 3.5 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS **<Insert name>** of **<Insert address>**, herein called the "Roofing Installer," has performed roofing and associated work ("the work") on the following project:
1. Owner: **<Insert name of Owner>**.
  2. Owner Address: **<Insert address>**.
  3. Building Name/Type: **<Insert information>**.
  4. Building Address: **<Insert address>**.
  5. Area of the Work: **<Insert information>**.
  6. Acceptance Date: **<Insert date>**.
  7. Warranty Period: **<Insert time>**.
  8. Expiration Date: **<Insert date>**.
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant the work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that, during Warranty Period, Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of the work as are necessary to correct faulty and defective work and as are necessary to maintain the work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
1. Specifically excluded from this Warranty are damages to the work and other parts of the building, and to building contents, caused by:
    - a. Lightning;
    - b. Peak gust wind speed exceeding 134 mph;
    - c. Fire;
    - d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    - e. Faulty construction of copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    - f. Vapor condensation on bottom of roofing; and
    - g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
  2. When the work has been damaged by any of foregoing causes, Warranty is to be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
  3. Roofing Installer is responsible for damage to the work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of the work.
  4. During Warranty Period, if Owner allows alteration of the work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty becomes null and void on date of the alterations, but only to the extent the alterations affect the work covered by this Warranty. If Owner engages Roofing Installer to perform the alterations, Warranty does not become null and void unless Roofing Installer, before

starting the alterations, notified Owner in writing, showing reasonable cause for claim, that the alterations would likely damage or deteriorate the work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a use or service more severe than originally specified, this Warranty becomes null and void on date of the change, but only to the extent the change affects the work covered by this Warranty.
6. Owner promptly notifies Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and affords reasonable opportunity for Roofing Installer to inspect the work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on the work and does not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty does not operate to relieve Roofing Installer of responsibility for performance of the work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this **<Insert day>** day of **<Insert month>**, **<Insert year>**.

1. Authorized Signature: **<Insert signature>**.
2. Name: **<Insert name>**.
3. Title: **<Insert title>**.

END OF SECTION 073113

## SECTION 076200 - SHEET METAL FLASHING AND TRIM

## 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. Formed roof-drainage sheet metal fabrications.
2. Formed low-slope roof sheet metal fabrications.
3. Formed steep-slope roof sheet metal fabrications.

## B. Related Requirements:

1. Section 061000 " Rough Carpentry" for wood nailers and blocking.

## 1.3 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

## 1.4 PREINSTALLATION MEETINGS

## A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.



## 1.5 ACTION SUBMITTALS

### A. Product Data: For each of the following

1. Underlayment materials.
2. Elastomeric sealant.
3. Butyl sealant.
4. Epoxy seam sealer.

### B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.
12. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.

### C. Samples: For each type of exposed finish.

1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.

## 1.6 INFORMATIONAL SUBMITTALS

### A. Qualification Data: For fabricator.

### B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

### C. Sample Warranty: For special warranty.

## 1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.
- B. Special warranty.

## 1.8 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

## 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.
  - 1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
  - 2. Protect stored sheet metal flashing and trim from contact with water.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

## 1.10 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to

weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F (100 deg C), material surfaces.

## 2.2 SHEET METALS

- A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
  - 1. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    - 2. Color: As selected by Architect from manufacturer's full range.
    - 3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.
  - C. Lead Sheet: ASTM B749 lead sheet.

## 2.3 UNDERLAYMENT MATERIALS

- A. Source Limitations: Obtain underlayment from single source from single manufacturer.
- B. Comply with requirements in Section 073113 "Asphalt Shingles."

## 2.1 MISCELLANEOUS MATERIALS

- A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended

by manufacturer of primary sheet metal unless otherwise indicated.

- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
  - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    - b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
    - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  - 2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- D. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- G. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

## 2.2 FABRICATION, GENERAL

- A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.
  - 1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  - 2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  - 3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
  - 4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  - 5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners

on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
2. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
3. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

### 2.3 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof-Penetration Flashing: Fabricate from the following materials:

1. Lead: 4 lb.

### 2.4 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS

A. Valley Flashing: Fabricate from the following materials:

1. Aluminum: 0.032 inch thick.

- B. Drip Edges: Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- C. Eave, Rake Flashing: Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- D. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- E. Flashing Receivers: Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- F. Roof-Penetration Flashing: Fabricate from the following materials:
  - 1. Lead: 4 lb.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
  - 1. Verify compliance with requirements for installation tolerances of substrates.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
  - 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION OF UNDERLAYMENT

- A. Comply with requirements in Section 073113 "Asphalt Shingles."

#### 3.3 INSTALLATION, GENERAL

- A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.
  - 1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat

- seams with minimum exposure of sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
  4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
  5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
  6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
  7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
  8. Do not field cut sheet metal flashing and trim by torch.
  9. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of uncoated-aluminum sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.
1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
  2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
  3. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance. Fastener size to be the same as fasteners used on shingles as recommended by manufacturer.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
1. Use sealant-filled joints unless otherwise indicated.
    - a. Embed hooked flanges of joint members not less than 1 inch into sealant.
    - b. Form joints to completely conceal sealant.
    - c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
    - d. Adjust setting proportionately for installation at higher ambient temperatures.
  - 1) Do not install sealant-type joints at temperatures below 40 deg F.

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

### 3.4 INSTALLATION OF ROOF FLASHINGS

A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless steel draw band and tighten.

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
2. Extend counterflashing 4 inches over base flashing.
3. Lap counterflashing joints minimum of 4 inches.
4. Secure in waterproof manner by means of sealant or wedges.

D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

### 3.5 INSTALLATION OF WALL FLASHINGS

A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

### 3.6 INSTALLATION OF MISCELLANEOUS FLASHING

A. Equipment Support Flashing:

1. Coordinate installation of equipment support flashing with installation of roofing and equipment.
2. Weld or seal flashing with elastomeric sealant to equipment support member.

### 3.7 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

### 3.8 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and



weathering.

- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.

### 3.9 PROTECTION

- A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.
- C. Maintain sheet metal flashing and trim in clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

## SECTION 079200 - JOINT SEALANTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Silicone joint sealants.
  - 2. Non-staining silicone joint sealants.
  - 3. Urethane joint sealants.
  - 4. Mildew-resistant joint sealants.
  - 5. Butyl joint sealants.
  - 6. Latex joint sealants.
  - 7. Acoustical joint sealants.

## 1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - 3. Joint-sealant formulation.
  - 4. Joint-sealant color.
- E. Warranties

## 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 (5 deg C).
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.

## 1.5 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 Manufacturer's Non-staining 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: 20 years from date of Substantial Completion.
- D. 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.
  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 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. VOC Content: Sealants and sealant primers shall comply with the following:

1. Architectural sealants shall have a VOC content of 250 g/L or less.
  2. Sealants and sealant primers for nonporous substrates shall have a VOC content of 250 g/L or less.
  3. Sealants and sealant primers for porous substrates shall have a VOC content of 775 g/L or less.
- C. Provide acoustical joint-sealant products that effectively reduce airborne sound transmission through perimeter joints and openings in building construction, as demonstrated by testing representative assemblies according to ASTM E90.

## 2.2 NONSTAINING SILICONE JOINT SEALANTS

- A. Non-staining Joint Sealants: No staining of substrates when tested according to ASTM C1248.
- B. Silicone, Non-staining: Non-staining, single-component, non-sag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Pecora Corporation; Pecora 890FTS/TXTR.
    - b. Sika Corporation; Joint Sealants; Sikasil WS-290.
    - c. Tremco Incorporated; Spectrem 1.
    - d. The Dow Chemical Company; Dow Corning® 790 Silicone Building Sealant.
- C. Silicone, Non-staining Stone Sealants: Specifically formulated to be non-staining to stone substrates. ASTM C920, Type S, Grade NS, Class 50, Use NT. Provide factory or field tinting.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Henkel; Ceresit.
    - b. Pecora Corporation; 890 FTS.
    - c. Sika Corporation; Joint Sealants; Sikasil WS-290.
    - d. Tremco Incorporated; Spectrum 3.
    - e. The Dow Chemical Company; Dowsil 756 SMS Building Sealant.

## 2.3 URETHANE JOINT SEALANTS

- A. Medius Modulus, Pourable, Traffic Grade, fuel-resistant Urethane
1. Urethane, M, P, 35, T: Subject to compliance with requirements, provide the following:
    - a. Tremco; Vulkem 445SSL.
- B. Low- and Medium Modulus, Non-Sag, Traffic Grade Urethane: Provide one of the following:
1. Urethane, M, NS, 50, T, NT: Multicomponent, non-sag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant;

- ASTM C920, Type M, Grade NS, Class 50, Uses T and NT. Products: Subject to compliance with requirements, provide the following:
- a. Tremco Incorporated; Dymeric 240.
2. Urethane, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Uses T and NT. Products: Subject to compliance with requirements, provide the following:
- a. Sika; Sikaflex, 15 LM.
3. Urethane, M, NS, 50, T, NT: Multicomponent, non-sag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade NS, Class 50, Uses T and NT. Products: Subject to compliance with requirements, provide the following:
- a. Tremco Incorporated; Dymeric 240.
- C. Low- and Medium Modulus, Non-sag, Non-Traffic Grade Urethane: Provide one of the following:
1. Urethane, S, NS, 100/50, T, NT: Single-component, non-sag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Uses T and NT. Products: Subject to compliance with requirements, provide the following:
    - a. Sika; Sikaflex, 15 LM.
  2. Urethane, S, NS, 50, NT: Single-component, non-sag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 50, Uses NT. Products: Subject to compliance with requirements, provide the following:
    - a. Tremco, Dymonic 100.
  3. Urethane, M, NS, 50, T, NT: Multicomponent, non-sag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade NS, Class 50, Uses T and NT. Products: Subject to compliance with requirements, provide the following:
    - a. Tremco Incorporated; Dymeric 240.
  4. Urethane, M, NS, 50, NT: Multicomponent, non-sag, plus 50 percent and minus 50 percent movement capability nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade NS, Class 50, Use NT. Products: Subject to compliance with requirements, provide the following:
    - a. Pecora Corporation; Dynatrol II.

- D. Medium Modulus, Pourable Traffic Grade: Provide one of the following:
1. Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 25, Uses T and NT. Products: Subject to compliance with requirements, provide one of the following:
    - a. BASF Corporation; MasterSeal SL 2 (Pre-2014: Sonolastic SL2).
    - b. Bostik, Inc; Chem-Calk 555-SL.
    - c. Pecora Corporation; Dynatrol II SG.
    - d. Sherwin-Williams Company (The); Stampede-2SL.
    - e. Sika Corporation Joint Sealants; Sikaflex 2c SL.
    - f. Tremco Incorporated; THC 900/901.
- E. Medium Modulus, Non-Sag and Pourable, Traffic Grade, Fuel-Resistant Urethane
1. Urethane, S, P, 25, T: Subject to compliance with requirements, provide the following:
    - a. BASF Corporation; MasterSeal CR 125.
    - b. Euclid Chemical Company; Tammsflex SL.
  2. Urethane, S, NS, 35, T: Subject to compliance with requirements, provide the following:
    - a. Sika Corporation; Sikaflex 1A.
  3. Urethane, M, P, 35, T: Subject to compliance with requirements, provide the following:
    - a. Tremco; Vulkem 445SSL or Dynamic 100.

## 2.4 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, non-sag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. GE Construction Sealants; Momentive Performance Materials Inc.; SCS1700 Sanitary.
    - b. Pecora Corporation; Pecora 860.
    - c. The Dow Chemical Company; DOW CORNING® 786 SILICONE SEALANT -.
    - d. Tremco Incorporated; Tremsil 200.

## 2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard non-sag, paintable, non-staining latex acoustical sealant complying with ASTM C834.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Owens Corning; Quiet Zone Acoustic Sealant.
    - b. Pecora; AC-20 FTR.
    - c. St. Gobain Green Glue Noiseproofing Sealant.
    - d. Tremco; Acoustical Curtainwall Sealant.
    - e. USG; sheetrock Brand Acoustical Sealant.
  2. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.

## 2.6 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Bostik, Inc; Chem-Calk 300.
    - b. Tremco; Butyl Sealant.
    - c. Pecora Corporation; BC-158.

## 2.7 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex 600.
    - b. Pecora Corporation; AC-20.
    - c. Sherwin-Williams Company (The); 850A Siliconized Acrylic Latex Caulk.
    - d. Tremco Incorporated; Tremflex 834.

## 2.8 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Non-staining; 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.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) , 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.

## 2.9 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: Non-staining, 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. Remove existing deteriorated caulk, grout or sealant.
- B. 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.
- 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. 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.
- D. 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 kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

- F. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
  2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Provide concave joint profile per Figure 8A in ASTM 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 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.

### 3.6 JOINT-SEALANT SCHEDULE

- A. Exterior joints in vertical surfaces and horizontal nontraffic surfaces: Low Modulus, non-staining, non-sag Silicone.
1. Joint Locations:
    - a. Construction joints in cast-in-place concrete.
    - b. Control and expansion joints in unit masonry.
    - c. Joints between different materials listed above.
    - d. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
    - e. Control and expansion joints in ceilings and other overhead surfaces.
    - f. Other joints as indicated on Drawings.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Exterior joints in horizontal traffic surfaces: Low- or Medium-Modulus, Non-sag Urethane.
1. Joint Locations:
    - a. Isolation and contraction joints in cast-in-place concrete slabs.
    - b. Other joints as indicated on Drawings.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- C. Interior joints in vertical surfaces and horizontal nontraffic surfaces: Low or medium modulus, Non-sag, Non-Traffic Grade Urethane.
1. Joint Locations:
    - a. Control and expansion joints on exposed interior surfaces of exterior walls.
    - b. Tile control and expansion joints.
    - c. Vertical joints on exposed surfaces of unit masonry.
    - d. Other joints as indicated on Drawings.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Interior joints in horizontal traffic surfaces: Medium modulus pourable Urethane.
1. Joint Locations:
    - a. Isolation joints in cast-in-place concrete slabs.
    - b. Other joints as indicated on Drawings.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- E. Joints in unconditioned spaces subject to vehicular traffic: Medium Modulus, Pourable or Non-sag, Traffic Grade, fuel-resistant Urethane
1. Joint Locations:
    - a. Construction joints in cast-in-place concrete.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- F. Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement: Acrylic latex.
1. Joint Locations:
    - a. Control joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints between interior wall surfaces and frames of interior doors windows entrances.
    - c. Joints between interior wall surfaces and cabinets.
    - d. Other joints as indicated on Drawings.
  2. Joint-Sealant Color: Paintable white.
- G. Interior joints in vertical surfaces and horizontal nontraffic surfaces subject to excess moisture: Mildew-resistant Silicone.
1. Joint Locations:
    - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    - b. Tile control and expansion joints in wet areas.
    - c. Other joints as indicated on Drawings.

- 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- H. Joints in sound-rated assemblies: Acoustical Sealant.
  - 1. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- I. Concealed mastics: Butyl-rubber based.
  - 1. Joint Locations:
    - a. Metal thresholds.
    - b. Sill plates.
    - c. Other joints as indicated on Drawings.

END OF SECTION 079200

## SECTION 099000 – ARCHITECTURAL COATINGS FOR HISTORIC SUBSTRATES

## 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.
- B. Section 013959 “Historic Treatment Procedures.”
- C. Section 040310 Historic Masonry Cleaning.”
- D. Codes and standards set forth by:
  - 1. "Standard (Type 1)" as defined by the Painting and Decorating Contractors of America in their "Modern Guide to Paint Specifications", current edition.
  - 2. MPI Standards:
    - a. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
    - b. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.
  - 3. ASTM D16-03 “Standard Terminology for Paint, Related Coatings, Materials, and Applications”.
  - 4. **In addition to complying with all pertinent codes and standards, it shall be assumed that the existing painted surfaces are lead based. Painting contractor shall be responsible for complying with all EPA, DHEC and OSHA standards concerning the safe removal, disposal and cleanup of any lead-based paint and the safety of the workers and people outside the work areas. All dust, debris and residue shall be contained within the work area. Painting contractor shall be certified by the EPA.**

## 1.2 SUMMARY

- A. This project involves the rehabilitation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.

- B. Section includes historic treatment of plain painting as follows:

Paint building exterior and interior complete: Including but not limited to the following:

- 1. Preparing substrates.
- 2. Plain painting of exterior historic and non-historic surfaces.
- 3. Plain painting of metal railings and misc. metal elements.

4. Plain painting of interior historic and non-historic surfaces.

C. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.

1. Do not paint prefinished items, finished metal surfaces, operating parts, and labels.

### 1.3 DEFINITIONS

A. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats

### 1.4 SCOPE

A. This Section includes all labor, materials, equipment, and services required to furnish and apply all of the painting materials indicated on the Drawings and as specified herein.

1. Different colors shall be utilized as specified by Architect and illustrated in Drawings.

B. It is the intent of this Specification to require that all exposed surfaces, unless otherwise specified or indicated to receive a factory finish shall receive the painter's finish as outlined herein.

### 1.5 SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.

1. Provide manufacturers' technical information, label analysis, and application instructions for each material proposed for use.

B. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

C. Qualifications: Submit documentation of painters past project experience that meet the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers. Submit documentation of required Lead Awareness Training.

D. Samples. Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.

1. Define each separate coat, including block fillers and primers. Use representative colors when preparing samples for review. Resubmit until required sheen, color, and texture is achieved.

2. Provide a list of materials and application for each coat of each sample. Label each sample as to location and application.

- E. Paint Color Schedule: Prior to requesting inspection for Substantial Completion, submit schedule indicating all paint manufacturers, product numbers and colors for all painted surfaces.
- F. Closeout Documentation: Contractor shall leave one can of each product used appropriately marked with details of location on the building. Provide list of color names, numbers, and formulas.

#### 1.6 QUALITY ASSURANCE

- 1. Work Experience: A qualified painting specialist with five years' expertise in matching and touching up existing painting. Experience only in new painting work is insufficient experience for work. **For manual lead paint disturbance, the painting specialist is required to have completed initial and annual OSHA compliant Lead Awareness Training. For mechanical lead paint disturbance, the painting specialist is required to have completed Renovation, Repair, and Painting Training.**
- B. Mockups: Prepare mockups for each type of coating system and substrate indicated and each color and finish required to demonstrate aesthetic effects and to set quality standards for materials and execution. Duplicate appearance of approved Sample submittals.
  - 1. Surface-preparation mockups using applicable specified methods of cleaning and other surface preparation.
  - 2. Coating mockups to represent surfaces and conditions for application of each type of coating system.
- C. Lead Based Paint: The areas to be prepared for repainting may contain paint from the late nineteenth - early twentieth century. Based on coatings of similar age, there will be lead in the existing paint when encountered:
  - 1. Take all necessary actions and precautions to assure safety of the public, property and the environment, and workers in scraping, sanding, removing and disposing of any existing paint;
  - 2. Comply with applicable health, safety and environmental regulations of the government agencies having jurisdiction.
  - 3. See Hazardous Material Testing Report at included in the Project Manual.

#### 1.7 PROJECT CONDITIONS

- A. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.
- B. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

## 1.8 ENVIRONMENTAL CONDITIONS

- A. The coating manufacturer's requirements for ambient temperature, humidity, and ventilation during painting operations, and temperature of surfaces to receive a coating shall be strictly followed.
- B. Comply with the manufacturer's recommendations as to environmental conditions under which the coating systems may be applied.
- C. Do not paint exterior when temperature is below 50° F when the surface is damp, or when temperature is likely to drop to freezing within 24 hours. Avoid painting when surface is exposed to hot sun or early morning dew.
  - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.
- D. Do not apply paint in areas where dust is being generated.
- E. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

## 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all coating materials to site and store in manufacturer's original unopened containers and packaging, bearing manufacturer's name and label and the following information:
  - 1. Product name or title of material
  - 2. Product description (generic classification or binder type).
  - 3. Manufacturer's stock number and date of manufacture.
  - 4. Contents by volume, for pigment and vehicle constituents.
  - 5. Thinning instructions.
  - 6. Application instructions.
  - 7. Color name and number.
- B. Protection
  - 1. Store only the approved materials on the job site and store only in a suitable and designated area restricted to the storage of paint materials. Space shall comply with the paint manufacturer's requirements for storage temperature. Protect from freezing.
  - 2. Use all means necessary to ensure the safe storage and use of paint materials and the prompt and safe disposal of waste.
  - 3. Use all means necessary to protect paint materials before, during, and after application and to protect the installed work and materials of all other Trades.
  - 4. Keep storage area neat and orderly. Remove oily rags and waste daily.
- C. Replacements: In the event of damage to the products, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.
  - 1. Order replacement materials at the earliest possible date, to avoid delaying completion of the Work.



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**PART 2 - PRODUCTS****2.1 MATERIALS, GENERAL****A. Material Compatibility:**

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 manufacturers of topcoat for use in paint system and on substrate indicated.

**2.2 MODERN PAINT MATERIALS, GENERAL**

- A. Transition Coat: Paint manufacturer's recommended coating for use where a residual existing coating is incompatible with the paint system.
- B. Products listed below represent materials that will likely be used for painting elements. This section assures quality of Work by listing regulatory language and by setting standards of quality for materials. Information from the testing shall guide product selection.

**2.3 MANUFACTURERS**

- A. Manufactures: Provide best quality grade of paint as regularly manufactured by specified manufacturer. Primer coats must be produced by the same manufacturer as the topcoats unless otherwise specified. Subject to compliance with requirements, provide products by one of the following or equivalent MPI listed manufacturer:
  1. Benjamin Moore & Co.
  2. Sherwin-Williams Co.
  3. PPG Industries, Inc.
- B. Substitutions must be approved by Architect.

**2.4 PREPARATORY MATERIALS**

- A. Pigments, thinners, and solvents used with any coating material shall be as recommended by the paint manufacturer for the particular product.

**2.5 PAINT MATERIALS, GENERAL****A. Material Compatibility:**

1. All paint and finishing materials shall be lead free.
2. 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.

3. For each coat in a paint system, provide products recommended in writing by manufactures of topcoat for use in paint system and on substrate indicated.
4. Colors: As selected by Architect from manufacture's full range.

## 2.6 EXTERIOR METAL PRIMER & PAINT

- A. Rust Inhibitor
  1. Ospho Rust Treatment
  2. Or an Approved Equal
- B. Exterior Metal Primer
  1. Marine Grade Direct to Rust Epoxy Primer
- C. Exterior Metal Paint
  1. Marine Grade Epoxy- 2 coats

## 2.7 EXTERIOR WOOD PRIMER & PAINT (EXCEPT PORCH FLOOR)

- A. Exterior Wood Primer [bare wood] (1 coat)
  1. Sherwin Williams Exterior Oil Based Penetrating Primer
  2. Or an Approved Equal.
- B. Exterior Wood Primer (over all exterior wood surfaces [1 coat])
  1. Sherwin Williams Exterior Oil Based Wood Primer
  2. Or an Approved Equal.
- C. Exterior Wood Paint (2 coats)
  1. Sherwin Williams Emerald Rain Refresh Latex Paint
  2. Or an Approved Equal

## 2.8 EXTERIOR WOOD PRIMER & PAINT (PORCH FLOOR)

- A. Exterior Wood Primer (1 coat)
  1. Sherwin Williams Industrial Alkyd Enamel Oil Based Finish B54 W 10 (thin down for use as primer)
  2. Or an Approved Equal.
- B. Exterior Wood Paint (2 coats)
  1. Sherwin Williams Industrial Alkyd Enamel Oil Based Finish B54 W 10
  2. Or an Approved Equal

## 2.9 INTERIOR WOOD PAINT (CASINGS, TRIM, DOORS, WINDOWS)

- A. Interior Wood Primer (1 coat)
  1. Sherwin Williams Premium Wall and Wood Primer
- B. Interior Wood Paint (2 coats)
  1. Sherwin Williams Emerald Interior Latex, Semi-gloss
  2. Or an Approved Equal.

## 2.10 INTERIOR PLASTER AND GYPSUM BOARD PAINT

- A. Interior Drywall Primer (1 coat)
  - 1. Sherwin Williams Premium Wall and Wood Primer
- B. Interior Drywall Paint (2 coats)
  - 1. Sherwin Williams Emerald Interior Latex, Satin
  - 2. Or an Approved Equal.

## PART 3 - EXECUTION

## 3.1 PAINTING, GENERAL

- A. Execution of the Work:
  - 1. Remove failed coatings and corrosion and repaint.
  - 2. Verify that substrate surface conditions are suitable for painting.
  - 3. Allow other trades to repair items in place and retain as much original material as possible before repainting.
  - 4. Install temporary protective measures to protect historic painted surfaces that shall be treated later.
- B. Matching Existing Painted Surfaces:
  - 1. Color match existing painted surfaces to ensure new painting visually matches the existing coatings in color and sheen.
- C. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use only the gentlest mechanical methods, such as scraping and lightly hand sanding, that will not abrade softer substrates, reducing clarity of detail. Do not use abrasive methods such as rotary sanding, rotary wire brushing, or power tools except as indicated as part of the historic treatment program and as approved by Architect.
- D. Heat Processes: Do not use torches, heat guns, or heat plates.

## 3.2 EXAMINATION:

- A. Before commencement of work, carefully examine all surfaces to be painted and notify the Architect in writing of any conditions detrimental to the performance of this work. Do not proceed until unsatisfactory or deteriorated conditions have been inspected, corrected and are acceptable to the Architect and the applicator. Commencement of work will be construed as the applicator's acceptance of all surfaces. Commencement of the work prior to the Architect's inspection and acceptance is done at the applicator's risk.
- B. Maximum Moisture Content of Substrates: Do not begin application of coatings unless moisture content of exposed surface is below the maximum value recommended in writing by paint manufacturer and not greater than the following maximum values when measured with an electronic moisture meter appropriate to the substrate material:
  - 1. Masonry (Clay and CMU): 12 percent.

### 3.3 INSPECTION:

- A. Prior to all work of this Section, carefully inspect the installed work of all other Trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Verify that paint finishes may be applied in strict accordance with all pertinent codes and regulations and the requirements of these Specifications.

### 3.4 DISCREPANCIES

- A. In the event of discrepancy, immediately notify the Architect.
- B. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved. Commencement of work shall be construed as acceptance of the surfaces and, therefore, the Contractor shall be fully responsible for satisfactory work as required herein.

### 3.5 SURFACE PREPARATION

- A. General: For application of approved removal products, use only such equipment as is recommended for application of the paint removal product by the manufacturer, and as approved by the Architect.
  - 1. General: Use only the gentlest, appropriate method necessary to clean surfaces in preparation for painting. Clean all surfaces, corners, contours, and interstices.
- B. Compatibility: Prior to actual use of the application equipment, use all means necessary to verify that the proposed equipment is actually compatible with the material to be applied and that the integrity of the finish will not be jeopardized by use of the proposed application equipment. Contractor to coordinate with manufacturer's representatives on appropriate tools and equipment.
- C. Prior to all surface preparation and paint operations, completely mask, remove, or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items in contact with painted surfaces but not scheduled to receive paint.
- D. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease and incompatible paint and encapsulates.
  - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- E. Do not proceed with treatment until proper protection has been installed for adjacent materials.
- F. Detergent Cleaning: Wash surfaces by hand using clean rags, sponges, and bristle brushes. Scrub surface with detergent solution and bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet. Rinse with water applied by clean rags or sponges.
- G. Solvent Cleaning: Use solvent cleaning to remove oil, grease, smoke, tar, and asphalt from painted or unpainted surfaces before other preparation work. Wipe surfaces with solvent using clean rags

and sponges. If necessary, spot-solvent cleaning may be employed just prior to commencement of paint application, provided enough time is allowed for complete evaporation.

- H. Mildew: Clean off existing mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. Scrub mildewed areas with mildewcide. Rinse with water applied by clean rags or sponges. Apply bioicide according to Section 040310 Historic Masonry Cleaning.”
- I. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- J. 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.
- K. Contractor shall reclaim and dispose of all spent media used in conjunction with this project in accordance with applicable laws.
- L. **All loose, brittle, and detached painted to be removed complete. Feather edges of paint in areas of uneven surfaces. No hard paint edges to be visible following application of new paint system.**

### 3.6 PAINT REMOVAL

#### A. Ferrous Metal Substrates

- 1. Mechanical Rust Removal
  - a. Remove rust with approved abrasives for ferrous-metal cleaning. Clean to bright metal.
  - b. Wipe off residue with mineral spirits and either steel wool or soft rags.
  - c. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
  - d. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.
  - e. Coat with rust inhibitive primer as soon as possible (preferably the same day) to discourage rust bloom.
    - 1) On existing metal surfaces apply one coat of Ospho rust inhibitor primer to bare metal
  - f. Allow to dry thoroughly before application of paint.
- 2. Chemical Rust Removal
  - a. Thoroughly clean all surfaces until they are completely free from dirt, oil, grease, and rust. Notify the Architect of any severe corrosion or delaminating members.
  - b. Remove loose rust scale with approved abrasives for ferrous-metal cleaning.
  - c. Apply rust remover with brushes or as recommended in writing by manufacturer.

- d. Allow rust remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing. Do not allow extended dwell time.
  - e. Wipe off residue with mineral spirits and either steel wool or soft rags, or clean with method recommended in writing by manufacturer to remove residue.
  - f. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
  - g. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed
  - h. Coat with rust inhibitive primer as soon as possible (preferably the same day)
  - i. to discourage rust bloom
    - 1) On existing metal surfaces apply one coat of Ospho rust inhibitor primer to bare metal
  - j. Allow to dry thoroughly before application of paint.
- B. Schedule all cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Adequate illumination shall be provided in all areas where painting and staining operations are in progress.
- D. Efflorescence on any area that is scheduled to be painted shall be removed.

### 3.7 MATERIAL PREPARATION OF PAINT

- A. Mix and prepare materials in accordance with manufacturer's directions or those specified herein, whichever is more stringent.
- B. Stir materials before application to produce a mixture of uniform density and stir as required during application of the materials. Do not stir into the material any foreign materials, residue or surface film. Remove any such deleterious material and strain coating materials before using if necessary.
- C. Add minimum amount of solvents or thinners to coating materials as necessary to achieve proper consistency for method of application.

### 3.8 PAINT APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
  - 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. 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.
  - 4. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
  - 5. Paint entire exposed surface of window frames and sashes.

6. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  7. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint undercoats same color as topcoat but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply a transition coat over incompatible existing coatings.
- E. General Finish Application for Paint
1. All materials shall be applied under adequate illumination, evenly spread, and smoothly flowed on with the proper type and size of brushes, roller covers, and bucket grids, to avoid run, sags, holidays, brush marks, air bubbles, and excessive roller stipple.
  2. The number of coats and film thickness shall be the same regardless of the method of application. Do not apply succeeding coats until previous coat has dried or cured as recommended by paint manufacturer. Give special attention to ensure that surfaces, including edges, corners, and crevices receive a dry film thickness equivalent to that of flat surfaces.
  3. Apply each coat at not less than recommended spreading rate to provide the dry film millimeter thickness specified by the manufacturer for each paint coating.
  4. Coverage and hiding shall be complete. When color, stain, mark of any kind, dirt or undercoats show through the final schedule coat of paint to the surface, it shall be covered by additional coats until the paint film is of uniform finish, color, appearance and coverage at no additional cost to the Owner.
  5. Back prime any new material before installation unless specified to receive a transparent finish.
  6. Touch-up painting as required to provide smooth, even finish prior to final acceptance of work.
- F. Iron
1. Newly cleaned iron should be painted immediately with a corrosion-inhibiting primer before new rust begins to form.
  2. Prior to applying paint, ensure surface is dry.
  3. Follow manufacturer's recommendations for application of primer and finish coats.
- G. All materials must be inspected by Architect prior to application of finish coat.
- 3.9 CLEAN UP
- A. General
1. Provide daily cleanup

2. During progress of the Work, do not allow the accumulation of empty containers or other excess items except in area specifically set aside for that purpose. Do not store paint materials uncovered.
  3. Prevent accidental spilling or splashing of paint materials, and in the event of such spill, immediately remove all spilled material and the waste or other equipment used to clean up the spill, and wash the surfaces to their original undamaged condition, all at no additional cost to the Owner.
- B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.
  - C. Upon completion of the painting or finishing, remove excess paint materials, tools and equipment, drop cloths and other protective materials, and debris from the site.
  - D. Prior to final acceptance: Upon completion of this portion of the Work, visually inspect the surfaces. Clean paint spots or spatters from surfaces not scheduled to receive paint, such as landings, adjacent masonry, and fixtures, leaving surfaces in a satisfactory condition.

### 3.10 EXTERIOR PAINTING SCHEDULE

- A. All materials for a given finishing system shall be the products of a single manufacturer.
- B. Exterior Painting Color Schedule to Be Determined by Architect and the Owner.

END OF SECTION 099000



## SECTION 313116 - TERMITE CONTROL

## 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. Soil treatment.
- 2. Wood treatment.

- B. Related Requirements:

- 1. Section 061000 "Rough Carpentry" for wood preservative treatment by pressure process.

## 1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

## 1.4 ACTION SUBMITTALS

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

- 1. Include construction details, material descriptions, dimensions of individual components, and profiles for termite control products.
- 2. Include the EPA-Registered Label for termiticide products.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

- B. Product Certificates: For each type of termite control product.

- C. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's records and include the following:

- 1. Date and time of application.
- 2. Moisture content of soil before application.
- 3. Termiticide brand name and manufacturer.
- 4. Quantity of undiluted termiticide used.

5. Dilutions, methods, volumes used, and rates of application.
  6. Areas of application.
  7. Water source for application.
- D. Wood Treatment Application Report: After application of termiticide is completed, submit report for Owner's records and include the following:
1. Date and time of application.
  2. Termiticide brand name and manufacturer.
  3. Quantity of undiluted termiticide used.
  4. Dilutions, methods, volumes used, and rates of application.
  5. Areas of application.
- E. Sample Warranties: For special warranties.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located and who employs workers trained and approved by manufacturer to install manufacturer's products] [ and who is accredited by manufacturer.

## 1.7 FIELD CONDITIONS

- A. Soil Treatment:
1. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.
  2. Related Work: Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.

## 1.8 WARRANTY

- A. Soil Treatment Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor, certifying that termite control work consisting of applied soil termiticide treatment will prevent infestation of subterranean termites, including Formosan termites (*Coptotermes formosanus*). If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.
1. Warranty Period: Five years from date of Substantial Completion.
- B. Wood Treatment Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor, certifying that termite control work consisting of applied wood termiticide treatment will prevent infestation of subterranean termites, including Formosan termites (*Coptotermes formosanus*). If subterranean termite damage is discovered during warranty period, repair or replace damage caused by termite infestation and treat replacement wood.

1. Warranty Period: 12 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Source Limitations: Obtain termite control products from single source from single manufacturer.

### 2.2 SOIL TREATMENT

- A. Termiticide: EPA-Registered termiticide acceptable to authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Bayer Environmental Science.
    - b. Ensystem, Inc.
    - c. Master Builders Solutions.
    - d. Syngenta Crop Protection, LLC.
  2. Service Life of Treatment: Soil treatment termiticide that is effective for not less than five years against infestation of subterranean termites.

### 2.3 WOOD TREATMENT

- A. Borate: EPA-Registered borate termiticide acceptable to authorities having jurisdiction, in an aqueous solution for spray application and a gel solution for pressure injection, formulated to prevent termite infestation in wood.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Ensystem, Inc.
    - b. Nisus Corporation.
    - c. NovaGuard Technologies, Inc.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for interfaces with earthwork, slab and foundation work, landscaping, utility installation, and other conditions affecting performance of termite control.
- B. Proceed with application only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. General: Prepare work areas according to the requirements of authorities having jurisdiction and according to manufacturer's written instructions before beginning application and installation of termite control treatment(s). Remove extraneous sources of wood cellulose and other edible materials, such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.
- B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.
  - 1. Fit filling hose connected to water source at the site with a backflow preventer, according to requirements of authorities having jurisdiction.

### 3.3 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Distribute treatment uniformly. Apply treatment at the product's EPA-Registered Label volume and rate for maximum specified concentration of termiticide to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction.
  - 1. Foundations: Soil adjacent to and along the entire inside perimeter of foundation walls; along both sides of interior partition walls; around plumbing pipes and electric conduit penetrating the slab; around interior column footers, piers, and chimney bases; and along the entire outside perimeter, from grade to bottom of footing.
  - 2. Crawlspace: Soil under and adjacent to foundations. Treat adjacent areas, including around entrance platform, porches, and equipment bases. Apply overall treatment only where attached concrete platform and porches are on fill or ground.
  - 3. Masonry: Treat voids.
  - 4. Penetrations: At expansion joints, control joints, and areas where slabs and below-grade walls will be penetrated.
- B. Post warning signs in areas of application.
- C. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

### 3.4 APPLYING WOOD TREATMENT

- A. Wood Treatment: Apply wood treatment after framing, sheathing, and exterior weather protection is completed but before electrical and mechanical systems are installed.
- B. Application: Mix borate wood treatment solution to a uniform consistency. Apply treatment at the product's EPA-Registered Label volume and rate for the maximum borate concentration

allowed for each specific use so that wood framing, sheathing, siding, and structural members subject to infestation receive treatment.

1. Framing and Sheathing: Apply termiticide solution by spray to bare wood and with complete coverage.
2. Heavy Wood Members: For wood greater than 4 inches thick, inject termiticide gel solution under pressure into holes of size and spacing required by manufacturer for treatment.
3. Exterior Uncoated Wood Trim and Siding: Apply termiticide solution to bare wood only when forecasted weather conditions indicate no precipitation or fog before application of seal coat. After 48 hours, verify that surface is sufficiently dry for seal coat and apply seal coat of paint as specified in 099000 "Architectural Coatings for Historic Substrates."

### 3.5 PROTECTION

- A. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- B. Protect termiticide solution dispersed in treated soils and fills from being diluted by exposure to water spillage or weather until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

### 3.6 MAINTENANCE SERVICE

- A. Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of termite-control-treatment Installer or manufacturer's authorized service representative. Include annual maintenance as required for proper performance according to the product's EPA-Registered Label and manufacturer's written instructions. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
- B. Continuing Maintenance Proposal: Provide from termite-control-treatment Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.
  1. Include annual inspection for termite activity and effectiveness of termite treatment according to manufacturer's written instructions.

END OF SECTION 313116