Renovations to

Aldrich Free Public Library

299 Main Street Moosup, CT

100% Construction Drawings December 15, 2022



Owner:	By: <u>Aldrich Free Public Library</u>
Architect:	By: <u>Crosskey Architects</u> , LLC
Contractor:	By:
Bonding Company:	By:

Crosskey Architects LLC

Architecture, Preservation and Planning

SECTION 00 01 02

PROJECT DIRECTORY

PROJECT:	Aldrich Free Public Library 299 Main Street Moosup, CT
OWNER:	Aldrich Free Public Library 299 Main Street Moosup, CT Phone: 860-564-8760
ARCHITECT:	Crosskey Architects LLC 750 Main Street Suite 150 Hartford, CT 06103 Phone: 860-724-3000
STRUCTURAL ENGINEER:	James K. Grant Associates PO Box 235 Collinsville, CT Phone: 860-680-0553
MECHANICAL/ ELECTRICAL ENGINEER:	Acorn Consulting Engineers, Inc. 244 Farms Village West Simsbury, CT 06092 Phone: 860-651-1949

SECTION 00 01 10

TABLE OF CONTENTS

GENERAL INFORMATION AND FORMS

00 01 01	Title Page
00 01 02	Project Directory
00 01 10	Table of Contents
00 01 15	List of Drawings
00 11 16	Invitation to Bidders
00 21 13	Instructions to Bidders
00 41 13	Bid Form – Stipulated Sum
00 43 20	Supplements to Bid Form
00 43 21	Appendix A – List of Allowances
00 43 22	Appendix B – Unit Prices
00 43 23	Appendix C – Alternates
00 43 24	Appendix D – List of Subcontractors
00 43 25	Appendix E – Section 3 Requirements
00 43 26	Appendix F – Equal Opportunity Employer
00 43 73	Appendix G – Schedule of Values
00 60 01.1	Agreement – AIA
00 60 01.2	A101 with exhibits
00 60 10.1	Performance Bond & Payment Bond
00 60 10.2	Draft AIA Documents A312–2010 Performance Bond
00 60 10.3	Draft AIA Documents A312–2010 Payment Bond
00 60 20.1	General Conditions - AIA A201
00 60 20.2	General Conditions of the Contract for Construction A201-2007
00 60 50.1	Supplementary General Conditions
00 60 50.3	Architectural Supplementary Conditions
00 60 50.5	AA Policy Statement Material
00 60 50.8	Insurance Requirements
00 60 50.9	Notification to Bidders

DIVISION 1 - GENERAL REQUIREMENTS

Summary for Site work
General Preservation Project Guidelines
Summary
Allowances
Contract Modification Procedures
Project Management & Coordination
Meeting Supplements
Photographic Documentation
Submittal Procedures
Alteration Project Procedures
Quality Control
Construction Facilities & Temporary Controls
Product Requirement
Startup Procedures
Contract Closeout
Sustainable Design Requirements
Testing for Indoor Air Quality

01 91 00

Commissioning

DIVISION 2 – SITEWORK

Division Not Included

DIVISION 3 - CONCRETE

03 30 00

Cast in Place Concrete

DIVISION 4 - MASONRY

04 01 20	Unit Masonry Restoration
04 01 20.53	General Cleaning of Exterior Brick Masonry
04 01 20.54	Removing & Replacing Deteriorated Brick Masonry
04 01 20.55	Repointing Masonry Using Lime Mortar

DIVISION 5 - METALS

Division Not Included

DIVISION 6 - CARPENTRY

06 01 40	Maintenance of Architectural Woodwork
06 10 00	Rough Carpentry
06 10 53	Miscellaneous Rough Carpentry
06 20 00	Finish Carpentry

DIVISION 7 - THERMAL & MOISTURE PROTECTION

07 71 23	Gutters & Downspouts
07 92 00	Joint Sealers

DIVISION 8 - DOORS & WINDOWS

08 14 33	Stile & Rail Wood Doors
08 80 00	Glazing

DIVISION 9 – FINISHES

09 01 90.51	Paint Cleaning
09 01 90.91	Paint Restoration
09 21 16	Gypsum Board Assemblies
09 91 00	Painting
09 93 13	Wood Stains and Transparent Finishes

DIVISION 10 - SPECIALTIES

Division Not Included

DIVISION 11 - EQUIPMENT

Division Not Included

DIVISION 12 - FURNISHINGS

Division Not Included

DIVISION 13 – SPECIAL CONSTRUCTION

Division Not Included

DIVISION 14 – CONVEYING EQUIPMENT

Division Not Included

DIVISION 21 – FIRE SUPPRESSION Division Not Included

DIVISION 22 – PLUMBING Division Not Included

DIVISION 23 – MECHANICAL Refer to Mechanical Drawings

DIVISION 26 – ELECTRICAL Refer to Electrical Drawings

DIVISION 27 – COMMUNICATIONS Division Not Included

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY (ESS) Division Not Included

DIVISION 31 – EARTHWORK

Division Not Included

DIVISION 32 – EXTERIOR IMPROVEMENTS

Cement Concrete Pavement

DIVISION 33 – UTILITIES

32 13 13

Division Not Included

EXHIBITS

Not included

SECTION 00 10 15

LIST OF DRAWINGS

GENERAL INFORMATION SHEETS

- G-0 Cover Sheet
- G-1 General Information & Drawing List

ARCHITECTURAL DRAWINGS

- D-1 Demolition Floor Plans
- A-1 Basement & First Floor Construction Plans
- A-2 Second Floor Construction Plan
- A-3 Exterior Elevations
- A-4 Window Schedule & Details
- A-5 Bid Alternates

MECHANICAL DRAWINGS

- M-110 Basement & First Floor Plan- Mechanical
- M-120 Second Floor Plan- Mechanical
- M-200 Detail Plan- Mechanical
- M-300 Specification Plan- Mechanical

ELECTRICAL DRAWINGS

E-110Basement & First Floor Plan – ElectricalE-120Second Floor Plan – ElectricalE-200Electrical DetailsE-300Electrical Specifications

DOCUMENT 00 11 16

INVITATION TO BID

OWNER:	Aldrich Free Public Library 299 Main Street Moosup, CT 06354
ARCHITECT:	Crosskey Architects, LLC. 750 Main Street Suite 150 Hartford, CT 06103

TO ALL BIDDERS

- 1. The Architect will receive bids in triplicate on or before 3:00 p.m., _____ 2022 at the Crosskey Architects, LLC office, 750 Main Street, Suite 150, Hartford, CT 06103.
- 2. Bids will be received for furnishing all labor, materials, tools and equipment necessary for the project scope of work consisting of the rehabilitation of the existing structure, exterior finishes, mechanical equipment and associated site work.
- 3. The Contract will include selective demolition, general construction work, masonry rehabilitation, minor site improvements, interior construction, mechanical, plumbing, and electrical work, and all other work necessary for or incidental to the completion of the project.
- 4. The successful bidder will be required to furnish 100% Performance and Payment Bond or Bonds, in the forms included in the Specifications, as well as a certified statement of financial condition, as of a date not exceeding ninety (90) days prior to the date thereof.
- 5. Proposed form of Contract Documents, including Plans and Specifications, are on file at the office of the above mentioned Architect.
- 6. General contractors may obtain a copy of the Plans and Specifications by depositing One Hundred Fifty Dollars (\$150.00) per set with said Architect. The amount of the deposit will be refunded to each bidder who returns the Plans and Specifications in good condition within fifteen (15) days after the bid due date.
- 7. The Owner reserves the right to reject any or all bids and to waive any informalities in bidding. All Bid Documents must be completely filled in when submitted.
- 8. No bid shall be withdrawn for a period of ninety (90) days subsequent to the opening of bids or until the next work day immediately following said period, if such period ends on a weekend or a State holiday, without the consent of the above mentioned Owner.

9. General Information:

Readiness to Proceed

The bidder selected to perform the work described herein shall apply for building permits immediately after entering into a construction contract with the owner. The duration of construction will be no greater than [9 months].

Permits and Certificates of Occupancy

The General Contractor selected to perform the construction activities will be responsible for obtaining and paying for all building permits. Also, it is the express responsibility of the Contractor to obtain Certificates of Occupancy and present them to the owner at the conclusion of construction.

Utilities

The Contractor will coordinate and perform all connection of utilities including gas, water and electric. The cost of the utility connections is the responsibility of the Contractor. During the construction period, the owner will provide electric, and water services. All utilities required by the Contractor during construction will be provided by the Contractor. The Contractor will be responsible for provision of temporary heat.

Payment

The Contractor will present a request for payment together with the appropriate original lien waivers. Payment will be made within 30 calendar days after the Owner receives all appropriate documentation including the City of Hartford submissions outlined above.

Insurance Requirements

As part of the response to this request for proposals and upon request by the owner at any time, evidence of the following must be provided to the owner. The bidder shall submit a statement indicating awareness and acceptance of CHFA insurance requirements for G.C's.

A. Comprehensive General Liability

\$2,000,000 Aggregate Limit
\$1,000,000 Products/Completed Operations Aggregate
\$1,000,000 Personal and Advertising Injury
\$1,000,000 Each Occurrence
\$50,000 Fire Damages
\$5,000 Medical Expense
No Deductible or Retention
Broad Form CGL Endorsement
Premises-Operation Coverage

B. Contractual Insurance

Independent Contractors Coverage Owners and Contractors Protective X.C.U. (Explosion/Collapse/Underground) Non-owned and hired auto Umbrella Liability as required by contract Partnership named as additional Insured and others as required 1986 Occurrence Form

C. Certificate of Insurance for Subcontractor's Workers Compensation Statutory Employer's Liability \$1,000,000 Bodily Injury by Accident \$1,000,000 Bodily Injury by Disease \$1,000,000 Bodily Injury by Each Employee

- **D.** Business Automobile liability Insurance: on an occurrence basis, covering owned, scheduled, hired, and non-owned automobiles used by or on behalf of the G.C., and providing insurance for bodily injury, property damage, and contractual liability.
 Limits of Liability: \$1,000,000 each accident combined single limit of bodily injury and property damage.
- E. 100% Payment and Performance Bond (In lieu of a payment and performance bond, a letter of credit may be accepted for some projects amount equal to 25% of the cost of construction.) Umbrella or Excess Liability Insurance: beyond the general liability, automotive liability, and employer's liability: written on an occurrence basis; coverage may be written on an excess or following form basis, but in any event, it shall be no less broad than the underlying liability policies; the Authority's interest as an additional insured as for General Liability coverage shall also extend to the Umbrella or Excess Liability Coverage.

Limits of Liability: \$5,000,000 (however, the Authority reserves the right to require additional limit of liability coverage).

Contractor Environmental Impairment liability Insurance (pollution Insurance: Contractors involved in pollution remediation (including but not limited to the removal of lead or asbestos containing materials) and mold coverage.

Limits of Liability: the greater of fifty percent (50%) of the contract cost or \$3,000,000 (however, the Authority reserves the right to require additional limits of liability coverage).

F. Certificate holders will be the Aldrich Free Public Library and other interested parties that may or may not be named at a later date.

Crosskey Architects LLC

per:

Laura J. Crosskey, AIA President

enc.

END OF DOCUMENT

DOCUMENT 00 21 13

INSTRUCTIONS TO BIDDERS

PART 1. SUMMARY

1.01 DOCUMENT INCLUDES

- A. Invitation
 - 1. Bid Submission
 - 2. Intent
 - 3. Work Identified in the Contract Documents
 - 4. Contract Time
- B. Bid Documents and Contract Documents
 - 1. Definitions
 - 2. Contract Documents Identification
 - 3. Availability
 - 4. Examination
 - 5. Queries/Addenda
 - 6. Product/System Substitutions
- C. Site Assessment
 - 1. Site Examination
 - 2. Preview of the site
- D. Qualifications
 - 1. Qualifications
 - 2. Subcontractors/Suppliers/Others
- E. Bid Submission
 - 1. Submission Procedure
 - 2. Bid Ineligibility
- F. Bid Enclosures/Requirements
 - 1. Security Deposit
 - 2. Performance Assurance
 - 3. Bid Form Requirements
 - 4. Fees for Changes in the Work
 - 5. Bid Form Signature
 - 6. Additional Bid Information
- G. Offer Acceptance/Rejection
 - 1. Duration of Offer
 - 2. Acceptance of Offer

1.02 RELATED DOCUMENTS

- A. Document 00 11 16 Invitation To Bid.
- C. Document 00 41 13 Bid Form.
- D. Document 00 43 20 Supplements to Bid Form.
- E. Document 00 60 51.1 Supplementary General Conditions: Contract Time identification rebate procedures, Bond types and values.

PART 2. INVITATION

2.01 BID SUBMISSION

A. Bids signed and under seal, executed, and dated will be received by the Owner at the Crosskey Architects, LLC office, 750 Main Street, Suite 150, Hartford, CT 06103 before

3:00 p.m. local time on the <u>day of</u>, 2022.

- B. Offers submitted after the above time may be returned to the Bidder unopened.
- C. Offers will be opened publicly immediately after the time for receipt of Bids.
- D. Amendments to the submitted offer will be permitted if received in writing prior to Bid closing and if endorsed by the same party or parties who signed and sealed the offer.
- E. Owner reserves the right to reject any or all bids and waive any bid procedures or formalities.

2.02 INTENT

A. Contract in accordance with the Contract Documents.

2.03 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

- A. Work of this proposed Contract comprises general construction & renovation, site development, selective demolition, structural, mechanical, electrical Work.
- B. Location: 299 Main Street, Moosup, CT

2.04 CONTRACT TIME

A. Perform the Work in [90] calendar days.

B. The Bidder may suggest a revision to the Contract Time with a specific adjustment to the Bid Price.

PART 3. BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 DEFINITIONS

- A. Bid Documents: Contract Documents supplemented with Invitation to Bid, Instructions to Bidders, Bid Form and Appendix A, Bid securities, identified herein.
- B. Contract Documents: Defined in AIA A201 Article 1 including issued Addenda.
- C. Bid, Offer, or Bidding: Act of submitting an offer under seal.
- D. Bid Price: Monetary sum identified by the Bidder in the Bid Form.

3.02 CONTRACT DOCUMENTS IDENTIFICATION

A. The Contract Documents are identified as Renovations to Aldrich Free Public Library, 299 Main Street, Moosup, CT; prepared by the Architect, Crosskey Architects LLC, located at 750 Main Street, Suite 150, Hartford, CT and identified in the Project Manual.

3.03 AVAILABILITY

A. Bid Documents may be obtained at _____p: 860.724.3000.

B. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

3.04 EXAMINATION

A. Bid Documents may be viewed at the office of the Architect.

- B. Upon receipt of Bid Documents verify that documents are complete. Notify Architect should the documents be incomplete.
- C. Immediately notify the Architect upon finding discrepancies or omissions in the Bid Documents.

3.05 QUERIES/ADDENDA

- A. Direct questions in writing to Laura Crosskey, email lcrosskey@crosskey.com.
- B. Addenda may be issued during the Bidding period. All Addenda become part of the Contract Documents. Include resultant costs in the Bid Price.
- C. Verbal answers are not binding on any party.
- D. Clarifications requested by Bidders must be in writing not less than 7 days before date set for receipt of Bids. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients.

3.06 PRODUCT/SYSTEM SUBSTITUTIONS

- A. Substitute products will be considered if submitted as an attachment to the Bid Form.
- B. The submission shall provide sufficient information to determine acceptability of such products.
- C. Provide complete information on required revisions to other Work to accommodate each substitution, the value of additions to or reductions from the Bid Price, including revisions to other Work.
- D. Provide Products as specified unless substitutions are submitted in this manner and subsequently accepted.
- E. Approval to submit substitutions prior to submission of Bids is not required.

F. <u>Contractor shall reimburse Owner for Architect's time spent reviewing</u> <u>substitutions.</u>

PART 4. SITE ASSESSMENT

4.01 SITE EXAMINATION

- A. Examine the project site before submitting a bid.
- B. The Bidder is required to contact the Architect at the following address and phone number in order to arrange a date and time to visit the project site: Laura Crosskey Crosskey Architects LLC 750 Main Street, Suite 150, Hartford, CT 06103 Phone: 860.724.3000

4.02 PREBID CONFERENCE

A. A mandatory pre-bid walk-thru of the site will be conducted on _____, 2022 at 9:00

AM at the project site.

- B. All general contract and major subcontract Bidders are invited.
- C. Representatives of the Owner and Architect will be in attendance.
- D. Information relevant to the Bid Documents will be recorded in an Addendum, issued to Bid Document recipients.

PART 5. QUALIFICATIONS

5.01 SUBCONTRACTORS/SUPPLIERS/OTHERS

- A. The Owner reserves the right to reject a proposed Subcontractor for reasonable cause.
- B. Refer to AIA Article 5 of General Conditions.

PART 6. BID SUBMISSION

6.01 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for the delivery of their Bids in the manner and time prescribed.
- B. Submit two copies of the executed offer on the Bid Forms provided, signed and sealed with the required security in a closed opaque envelope, clearly identified with Bidder's name, project name and Owner's name on the outside.
- C. Improperly completed information, irregularities in security deposit or bid bond, may be cause not to open the Bid Form envelope and declare the Bid invalid or informal.
- D. An abstract summary of submitted Bids will be made available to all Bidders following Bid opening.

6.02 BID INELIGIBILITY

- A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.
- B. Bid Forms, Appendices, and enclosures which are improperly prepared may at the discretion of the Owner, be declared unacceptable.
- C. Failure to provide security deposit, bonding or insurance requirements may at the discretion of the Owner, invalidate the Bid.

PART 7. BID ENCLOSURES/REQUIREMENTS

7.01 SECURITY DEPOSIT

- A. Bids shall be accompanied by a security deposit as follows:
 - 1. Bid Bond of a sum no less than 5 percent of the Bid Price/Sum on AIA A310 Bid Bond Form.
 - OR
 - 2. Certified check in the amount of 5% of the Bid Price.

B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the Contractor as principal and the Surety.

OR

- C. Endorse the certified check in the name of the Owner.
- D. The security deposit will be returned after delivery to the Owner of the required Performance and Labor and Materials Payment Bond(s) by the accepted Bidder.
- E. Do not include the cost of Bid Security in the Bid Price.
- F. After a Bid has been accepted, all securities will be returned to the respective Bidders.
- G. If no contract is awarded, all security deposits will be returned.
- H. Bonding Company be listed on the most recent IRS Circular 570.

7.02 PERFORMANCE ASSURANCE

- A. Accepted Bidder: Provide a Performance and Payment bond as described in Document 00 60 50.1 Supplementary General Conditions.
- B. Include the cost of performance assurance bonds in the Bid Price and identify the cost when requested by the Owner.

7.03 BID FORM REQUIREMENTS

A. Complete all requested information in the Bid Form and Appendices.

7.04 FEES FOR CHANGES IN THE WORK

- A. Include in the Bid Form, the overhead and profit fees on own Work and Work by Subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Price is based.
- B. Include in the Bid Form, the fees proposed for subcontract work for changes (both additions and deductions) in the Work. The Contractor shall apply fees as noted, to the Subcontractor's gross (net plus fee) costs on additional work.

7.05 BID FORM SIGNATURE

- A. The Bid Form shall be signed by the Bidder, as follows:
 - 1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.
 - 2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.
 - 3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the Bid is signed by officials other than the President and Secretary of the company, or the President/Secretary/Treasurer of the company, a copy of the by-law resolution of the Board of Directors authorizing them to do so, must also be submitted with the Bid Form in the Bid envelope.
 - 4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above,

similar to the requirements of a Partnership.

7.06 ADDITIONAL BID INFORMATION

- A. Appendix A List of Allowances
- B. Appendix B List of Unit Prices
- C. Appendix C List of Alternates
- D. Appendix D List of Subcontractors
- E. Appendix E Section 3 Requirements
- F. Appendix F Equal Opportuity Empolyer
- G. Appendix G Schedule of Values
- H. Appendix H Trade Cost Breakdown
- I. Appendix I CHRO Form
- J. Appendix J Notification to Bidders DOH

PART 8. OFFER ACCEPTANCE/REJECTION

8.01 DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of ninety (90) days after the Bid closing date.

8.02 ACCEPTANCE OF OFFER

- A. The Owner reserves the right to accept or reject any or all offers.
- B. The Owner will select the lowest responsible bid from a qualified bidder. Lowest bid means the lowest price offered in section 00 41 13, 1. Offer.

END OF DOCUMENT

DOCUMENT 00 41 13

BID FORM

TO:	Aldrich Free Public Library 299 Main Street Moosup, CT 06354
PROJECT:	Aldrich Free Public Library 299 Main Street Moosup, CT
Date:	
Submitted by: (full name)	

(full address)

1. OFFER

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Crosskey Architects LLC, Architect for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Price of:

C	n.	
	κ.	
x.)	
- 14	~	

(\$_____) dollars.

We have included herewith, the required security deposit/Bid Bond as required by the Instruction to Bidders.

Sales tax is not included in the Bid Price, as the Owner is tax exempt.

All Cash Allowances described in Section 01 26 00 - Contract Considerations are included in the Bid Price.

2. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for 90 days from the Bid closing date.

If this Bid is accepted by the Owner within the time period stated above, we will: Execute the Agreement within 15 days of receipt of acceptance of this Bid. Furnish the required Performance and Labor & Material Bonds within 7 days of receipt of acceptance of this Bid.

Commence work within 15 days after executing the agreement.

If this Bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which the Contract is signed.

In the event our Bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

3. CONTRACT TIME

If this Bid is accepted, we will:

Complete the Work in **two hundred Seventy (270)** calendar days from acceptance of this Bid.

4. CHANGES TO THE WORK

When the Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, our percentage fee will be:

_____percent overhead and profit on the net cost of our own Work;

_____percent on the cost of work done by any Subcontractor.

On work deleted from the Contract, our credit to the Owner shall be the Architect approved net cost plus

_____of the overhead and profit percentage noted above.

5. ADDENDA

The following Addenda have been received. The modifications to the Bid Documents noted therein have been considered and all costs thereto are included in the Bid Price.

Addendum #_____Dated_____

Addendum #_____Dated_____

Addendum #_____Dated_____

6. APPENDICES

Submit Appendices in Document 00 43 20 - Supplements to Bid Forms as directed in Document 00 11 16 – Instructions to Bidders.

7. BID FORM SIGNATURE(S)

The Corporate Seal of

				~						• •
1	Diddon	planca	mint the	full nom	of your	Drommin	torchin I	Dontnorchin	or Com	acrotion)
l	Diadei -	Diease	DI III UIE	iun name	s of voui	FIODILE	LOISHID, I	raitheisind.	. 01 COH	JOIALION
			F		,			r ;		

was hereunto affixed in the presence of:

(Authorized signing officer

(Seal)

(Authorized signing officer

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

END OF DOCUMENT

Moosup, CT

00 41 13 - 3

(Title)

(Title)

DOCUMENT 00 43 20

SUPPLEMENTS TO BID FORM

TO:	Aldrich Free Public Library 299 Main Street Moosup, CT 06354
PROJECT:	Aldrich Public Library 299 Main Street Moosup, CT
Date:	
Submitted by: (full name)	
(full address)	

In accordance with Document 00 21 13 - Instructions to Bidders and Document 00 41 13 - Bid Form, we include the Supplements To Bid Form Appendices listed below. The information provided shall be considered an integral part of the Bid Form.

These Appendices are as follows:

Document 00 43 21 – Appendix A – List of Allowances: Include the listing of allowances
specifically requested in the Contract Documents.

- **Document 00 43 22 Appendix B List of Unit Prices**: Include a listing of unit prices specifically requested by the Contract Documents.
- **Document 00 43 23 Appendix C List of Alternatives:** Include the cost variation to the Bid Price applicable to the Work described in Section 01 26 00.
- **Document 00 43 24 Appendix D List of Subcontractors**: Include the names of all Subcontractors and the portions of the Work they will perform.
- Document 00 43 25 Appendix E Section 3 Requirements: Provide an executed "Certification of Bidder regarding Section 3 & Segregated Facilities" & "Section 3 Plan Format" with bid.
- **Document 00 43 26 Appendix F Equal Opportunity Employer**: Provide completed dorms included herein.
- **Document 00 43 73 Appendix G Schedule of Values**: Include an itemized list of the Bid Price applicable to the Work

SUPPLEMENTS TO BID FORM SIGNATURE(S)

The Corporate Seal of

(Bidder - please print the full name of your Proprietorship, Partnership, or Corporation)

Title)

was hereunto affixed in the presence of:

(Authorized signing officer

(Seal)

(Authorized signing officer Title)

(Seal)

END OF SUPPLEMENTS TO BID FORM

DOCUMENT 00 43 21

APPENDIX A - LIST OF ALLOWANCES

The following is the list of Allowances referenced in the bid submitted by:

 (Bidder)
 TO:
 Aldrich Free Public Library 299 Main Street Moosup, CT 06354

 PROJECT:
 Aldrich Free Public Library 299 Main Street Moosup, CT

 Dated ______ and which is an integral part of the Bid Form.

Each allowance includes all equipment, tools, labor, permits, fees, overhead and profit, etc. incidental to completion of the work involved and the disposal of surplus or unsuitable material in accordance with the Plans and Specifications or as directed by the Architect.

UNIT PRICES:

To be determined at a later date

\$ 0.00

ALLOWANCE

DOCUMENT 00 43 22

APPENDIX B - LIST OF UNIT PRICES

The following is the list of Unit Prices referenced in the bid submitted by:

(Bidder)		
TO:	Aldrich Free Public Library 299 Main Street Moosup, CT 06354	
PROJECT:	Aldrich Free Public Library 299 Main Street Moosup, CT	

Dated _____ and which is an integral part of the Bid Form.

We propose and agree that, should the amount of work required be increased or decreased, by a request of the Owner, the following Unit Prices will be the basic price for computing extra cost or credit. It is understood that the right is reserved by the above mentioned Owner to reject or negotiate any or all of the Unit Prices.

Each Unit Price includes all equipment, tools, labor, permits, fees, overhead and profit, etc. incidental to completion of the work involved and the disposal of surplus or unsuitable material in accordance with the Plans and Specifications or as directed by the Architect. Unit Prices will be decreased ten percent (10%) if change requested is a reduction in work.

UNIT PRICES:

II LINI DESCIUL II OII

PRICE/UNIT

To be determined at later date.

DOCUMENT 00 43 23

APPENDIX C - LIST OF ALTERNATES

The following is the list of Alternates referenced in the bid submitted by:

(Bidder)		
TO:	Aldrich Free Public Library 299 Main Street Moosup, CT 06354	
PROJECT:	Aldrich Free Public Library 299 Main Street Moosup, CT	
Dated and which is an	n integral part of the Bid Form.	
The following amounts shall be added to Contract Modification Procedures Part 1 adding to or deducting from the base bid	o or deducted from the Bid Price. Re .9 Alternates. This form requests a "d l price using the Alternates listed belo	fer to Section 01 26 00 – difference" in bid price by ow.
<u>Alternate # 1</u> Remove existing carpet in Baseme finish flooring; prepare and install	ent & First Floor down to new carpeting	<u>(Add) \$</u>
Alternate # 2 Remove existing flooring & baseb and install new VCT flooring and	ooard within existing Basement Toile vinyl cove base. Replace mirror	t, (Add) \$
<u>Alternate # 3</u> Remove existing wallboard ceiling Librarian's office; repair existing new GWB; install new crown more	g & crown moulding within plaster or remove & replace with ılding	<u>(Add) \$</u>
<u>Alternate #4</u> Sand and refinish woodwork		<u>(Add) \$</u>
<u>Alternate #5</u> Remove existing carpet at Second finish flooring; prepare and install	Floor down to new carpeting	<u>(Add) \$</u>
<u>Alternate #6</u> Along wall separating the Baseme under the stairs, replace the bottom	ent Hall from the oil tank area n (2) existing courses of	

brick with Chemical-Resistant Brick as by the Belden Brick Company

<u>(Add)</u> \$

DOCUMENT 00 43 24

APPENDIX D - LIST OF SUBCONTRACTORS

Herewith is the list of Subcontractors referenced in the bid submitted by:

(Bidder)		
TO:	Aldrich Free Public Library 299 Main Street Moosup, CT 06354	
PROJECT:	Aldrich Free Public Library 299 Main Street Moosup, CT	
Dated and which is an	integral part of the Bid Form.	
In accordance with the bid document reserves the right to reject a proposed General Conditions.	ts, we hereby submit a completed L I Subcontractor for reasonable caus	ist of Subcontractors. The Owner e. Refer to AIA Article 5 of
The following work will be performed comprises the all of the subcontractor	ed (or provided) by Subcontractors rs to be employed on this project:	and coordinated by us. This list
WORK SUBJECT	SUBCONTRACTOR	CONTRACT VALUE

DOCUMENT 00 43 26

APPENDIX F – EQUAL OPPORTUNITY EMPLOYER

Attached are the completed Equal Employment Opportunity forms referenced in the bid submitted by:

(Bidder)_____

TO:	Aldrich Free Public Library 299 Main Street Moosup, CT 06354	
PROJECT:	Aldrich Free Public Library 299 Main Street Moosup, CT	
Dated	and which is an integral part of the Bid Form.	

Each bid submitted must be accompanied by "Certification of Bidder Regarding Equal Employment Opportunity" and "Notification to Bidder/Grantees" completed forms.
DOCUMENT 00 43 73

APPENDIX G – SCHEDULE OF VALUES

Herewith is the Schedule of Values Itemization of the base bid submitted by:

Schedule of Values Itemization shall be based on the attached CHFA DOH Consolidated Application Exhibit 4.9c – Exploded Trade Payment Breakdown.

The paper copy of the Consolidated Application enclosed within the Project Manual is for reference only. Bidders are to contact the Architect for an excel format for their use.

A hard copy and digital copy of the CHFA DOH Consolidated Application Exhibit 4.9c – Exploded Trade Payment Breakdown is to be submitted with the Bidder's submission.

END OF SECTION

This page intentionally left blank

DOCUMENT 00 60 01.1

AGREEMENT - AIA

1 AGREEMENT

AIA Document A101 Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum (1997 Edition), forms the basis of Contract between the Owner and Contractor.

END OF SECTION

RAFT AIA Document A101[™] - 2007

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)

« Mutual Housing Association of Greater Hartford Aldrich Free Public Library»« » «95 Niles Street 299 Main Street Hartford, CT 06105» «<u>Moosup, CT 06354</u>--» « »

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

« »« » « » « » « »

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

«New Construction at 929-981 Park Street Aldrich Free Public Library» «929-981 Park Street299 Main Street, Hartfford, CT 06106Moosup, CT 06354» « Renovation and rehabilitation of existing Library building »

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

«Crosskey Architects LLC»« » «750 Main Street; Suite 150 Hartford, CT 06103» «Telephone Number: 86-724-3000» « »

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.

AIA Document A201™-2007, 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
- DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION 3
- CONTRACT SUM Δ
- PAYMENTS 5
- 6 **DISPUTE RESOLUTION**
- 7 **TERMINATION OR SUSPENSION**
- **MISCELLANEOUS PROVISIONS** 8
- 9 **ENUMERATION OF CONTRACT DOCUMENTS**
- 10 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 the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner. (Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

« »

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

« »

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

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than « » (« ») days from the date of commencement, or as follows:

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

« »



	Portion of Work	Substantial Completion Date	
, subject (Insert p bonus po	to adjustments of this Contract Time as prov rovisions, if any, for liquidated damages rela syments for early completion of the Work.)	rided in the Contract Docum uting to failure to achieve Su	ents. bstantial Completion on time or for
« »			
ARTICLE § 4.1 The Contract Docume § 4.2 The Docume (State th Owner to alternate	4 CONTRACT SUM e Owner shall pay the Contractor the Contractor. The Contract Sum shall be « » (\$ « »), such that the contract Sum is based upon the following a not such as the state of	t Sum in current funds for the bject to additions and deduct alternates, if any, which are c alternates. If the bidding of execution of this Agreement, a when that amount expires.)	ne Contractor's performance of the tions as provided in the Contract described in the Contract r proposal documents permit the attach a schedule of such other
« »			
§ 4.3 Uni (Identify	it prices, if any: and state the unit price; state quantity limite	tions, if any, to which the ur	nit price will be applicable.)
	ltem	Units and Limitations	Price Per Unit (\$0.00)
§ 4.4 All (Identify	owances included in the Contract Sum, if any allowance and state exclusions, if any, from	y: the allowance price.)	
		- ·	

Item Price

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 certified amount 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 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, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

AIA Document A101[™] - 2007. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:05 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1699106883)

§ 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 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- Take that portion of the Contract Sum properly allocable to completed Work as determined by .1 multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of « » percent (« » %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201TM-2007, General Conditions of the Contract for Construction;
- .2 Add 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), less retainage of « » percent (« » %);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment .4 as provided in Section 9.5 of AIA Document A201-2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and (Section 9.8.5 of AIA Document A201–2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201-2007.

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:

(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

« »

§ 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

- the Contractor has fully performed the Contract except for the Contractor's responsibility to correct .1 Work as provided in Section 12.2.2 of AIA Document A201-2007, and to satisfy other requirements, if any, which extend beyond final payment; and
- a final Certificate for Payment has been issued by the Architect. .2

§ 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:

« »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

AIA Document A101[™] - 2007. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:05 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1699106883) User Notes:

Δ

(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 Section 15.3 of AIA Document A201–2007, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, 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.)

[« »] Arbitration pursuant to Section 15.4 of AIA Document A201–2007

[« »] Litigation in a court of competent jurisdiction

[« »] Other (Specify)

« »

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 A201–2007.

§7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 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.)

« » % « »

§ 8.3 The Owner's representative: (*Name, address and other information*)

«	<u>Catherine MacKinnon</u> »
~	<u>95 Niles Street</u>
Ħ	artford, CT 06105 »
~	»
«	»
«	»
	**

§ 8.4 The Contractor's representative: (*Name, address and other information*)

« » « »

« »

AIA Document A101[™] - 2007. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA[®] Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA[®] Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:05 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes: (1699106883)

~	»
«	»

« »

§ 8.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

	Document	Title		Date		Pages
§ 9.1.4 T (Either) « »	The Specifications: list the Specifications here	or refer to an exhi	ibit attach	ed to this Agreeme	ent.)	
	Section	Title		Date		Pages
§ 9.1.5 T (Either) « »	The Drawings: list the Drawings here or re	efer to an exhibit c	attached to	o this Agreement.)		
	Number		Title		Date	
§ 9.1.6 T	The Addenda, if any:		Date		Pages	
			Dale		rayes	

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

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

.1 AIA Document E201[™]–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

11	Ň
"	

.2 Other documents, if any, listed below: (List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid,

AIA Document A101[™] - 2007. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:05 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1699106883)

Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

« »

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

Type of insurance or bond

Limit of liability or bond amount (\$0.00)

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

OWNER (Signature)

«_Catherine MacKinnon»« »

(Printed name and title)

CONTRACTOR (Signature)

« »« »

(Printed name and title)





AIA Document A101[™] - 2007. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:05 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1699106883)

DOCUMENT 00 60 10.1

PERFORMANCE BOND & PAYMENT BOND - AIA

1. GENERAL CONDITIONS

AIA Document A312 PERFORMANCE BOND & PAYMENT BOND (2010 Edition), are the Bond Forms to be provided for this project.

Bonding company for Performance & Payment bond to possess a rating of 'A' or better and be listed on the most recent IRS Circular 570.

END OF SECTION

This page intentionally left blank.



RAFT AIA[®] Document A312[™] - 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

(Name, legal status and principal place of business) « »« » « »

SURETY:

« »« » « »

OWNER:

(Name, legal status and address) «Mutual Housing Association of Greater HartfordAldrich Free Public Library» «-299 Main Street» «95 Niles Street Hartford, CT 06105 Moosup, CT 06354»

CONSTRUCTION CONTRACT

Date: « » Amount: \$ « » Description: (Name and location) «New Construction at 929_981 Park StreetAldrich Free Public Library» «929 981 Park Street 299 Main Street. Hartfford, CT 06106Moosup, CT 06354»

BOND

Date: (Not earlier than Construction Contract Date) « » Amount: \$ « » Modifications to this Bond: None

«»

(Corporate Seal)

See Section 16 «»

CONTRACTOR AS PRINCIPAL

Company:

SURETY Company:

(Corporate Seal)

Signature:		Signature:	
Name and	« »« »	Name and	« »« »
Title:		Title:	

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY – Name, address and telephone)

AGENT or BROKER:

«	»		
~	»		
~	»		



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.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.





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.

AIA Document A312TM - 2010 Performance Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:36 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale User Notes: (1313304683)

§1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- the Owner declares a Contractor Default, terminates the Construction Contract and notifies the .2 Surety: and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to

AIA Document A312^{7M} - 2010 Performance Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this ATA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:36 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes: (1313304683)

the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- the responsibilities of the Contractor for correction of defective work and completion of the .1 Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Suretv under Section 5: and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

AIA Document A312^{7M} - 2010 Performance Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this ATA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:36 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes:

§ 16 Modifications to this bond are as follows:

« »

(Space is provided CONTRACTOR AS	d below for addii S PRINCIPAL	tional signatures of add	ded parties, other than those appearing on the cover page.) SURETY			
Company:		(Corporate Seal)	Company:		(Corporate Seal)	
Signature:			Signature:			
Name and Title: Address:	« »« » « »		Name and Title: Address:	« »« » « »	-	

AIA DOCUMENT A312" - 2010 Performance Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:36 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. AIA Document A312^{7M} - 2010 Performance Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is User Notes:



RAFT AIA° Document A312[™] - 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

(Name, legal status and principal place of business) « »« » « »

OWNER:

« »« »

« »

(Name, legal status and address) «Mutual Housing Association of Greater HartfordAldrich Free Public Library» «299 Main Street -» «95 Niles Street Hartford, CT 06105 Moosup, CT 06354»

SURETY:

CONSTRUCTION CONTRACT

Date: « » Amount: \$ « » Description: (Name and location) «New Construction at 929 981 Park StreetAldrich Free Public Library» «929 981 Park Street Hartfford, CT 06106299 Main Street, Moosup, CT 06354»

«»

BOND

Date: (Not earlier than Construction Contract Date) « » Amount: \$ « »

Modifications to this Bond:

CONTRACTOR AS PRINCIPAL

Company:

SURETY Company:

«»

None

(Corporate Seal)

See Section 18

Signature:		Signature:	
Name and	« »« »	Name and	« »« »
Title:		Title:	

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY – Name, address and telephone)

(Corporate Seal)

AGENT or BROKER:

~	»		
«	»		
~	»		

л	
	OWNER'S REPRESENTATIVE:
	(Architect, Engineer or other party:)
	«Catherine MacKinnon»
	« 95 Niles Street
	Hartford, CT 06105»
	« »
	« »
	« »
	« »



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.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.





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.

AIA Document A312TM - 2010 Payment Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:55 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale User Notes: (1447635825)

§1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lieh or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy .1 the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

AIA Document A312^m - 2010 Payment Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:55 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes:

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of. Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- the name of the Claimant; .1
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- a brief description of the labor, materials or equipment furnished; .4
- the date on which the Claimant last performed labor or last furnished materials or equipment for use .5 in the performance of the Construction Contract;
- the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of .6 the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

AIA Document A312^m - 2010 Payment Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:55 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes:

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

« »						
(Space is provide	d below for add S PRINCIPAL	litional signatures of ad	lded parties, other than those appea SURETY		tring on the cover page.)	
Company:		(Corporate Seal)	Company:	Γ	(Corporate Seal)	
Signature: Name and Title: Address:			Signature:			
	« »« » « »		Name and Title: Address:	« »« » « »		
				ſ		
				Ĺ		
					() /	

AIA Document A312^M - 2010 Payment Bond. The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this ATA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:09:55 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes:

DOCUMENT 00 60 20.1

GENERAL CONDITIONS – AIA A201

1. GENERAL CONDITIONS

AIA Document A201 General Conditions of the Contract for Construction (2007 Edition) are the General Conditions between the Owner and Contractor.

END OF SECTION

This page intentionally left blank.

DRAFT AIA Document A201[™] - 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address) «New Construction at 929-981 Park Street Aldrich Free Public Library» «929-981 Park Street Hartford, CT 06106299 Main Street, Moosup, CT 06354»

THE OWNER:

(Name, legal status and address) «Mutual Housing Association of Greater HartfordAldrich Free Public Library» «-<u>299 Main Street</u>--» «95 Niles Street Hartford, CT 06105Moosup, CT 06354»

THE ARCHITECT:

(Name, legal status and address) «Crosskey Architects LLC»« » «750 Main Street; Suite 150 Hartford, CT 06103»

TABLE OF ARTICLES

- 1 GENERAL PROVISIONS
- 2 OWNER
- 3 CONTRACTOR
- 4 ARCHITECT
- 5 SUBCONTRACTORS
- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
- 7 CHANGES IN THE WORK
- 8 TIME
- 9 PAYMENTS AND COMPLETION
- 10 PROTECTION OF PERSONS AND PROPERTY
- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES

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.





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.

INDEX

(Topics and numbers in **bold** are section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, 12.3 Acceptance of Work 9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3 Access to Work 3.16, 6.2.1, 12.1 Accident Prevention 10 Acts and Omissions 3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5, 10.2.8, 13.4.2, 13.7, 14.1, 15.2 Addenda 1.1.1.3.11 Additional Costs, Claims for 3.7.4, 3.7.5, 6.1.1, 7.3.7.5, 10.3, 15.1.4 **Additional Inspections and Testing** 9.4.2, 9.8.3, 12.2.1, 13.5 Additional Insured 1114 Additional Time, Claims for 3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, 15.1.5 Administration of the Contract 3.1.3, 4.2, 9.4, 9.5 Advertisement or Invitation to Bid 1.1.1 Aesthetic Effect 4213 Allowances 3.8. 7.3.8 All-risk Insurance 11.3.1, 11.3.1.1 **Applications for Payment** 4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5.1, 9.6.3, 9.7, 9.10, 11.1.3 Approvals 2.1.1, 2.2.2, 2.4, 3.1.3, 3.10.2, 3.12.8, 3.12.9, 3.12.10, 4.2.7, 9.3.2, 13.5.1 Arbitration 8.3.1, 11.3.10, 13.1, 15.3.2, 15.4 ARCHITECT 4 Architect, Definition of 4.1.1 Architect, Extent of Authority 2.4, 3.12.7, 4.1, 4.2, 5.2, 6.3, 7.1.2, 7.3.7, 7.4, 9.2, 9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1, 13.5.1, 13.5.2, 14.2.2, 14.2.4, 15.1.3, 15.2.1 Architect, Limitations of Authority and Responsibility 2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4, 9.4.2, 9.5.3, 9.6.4, 15.1.3, 15.2

Architect's Additional Services and Expenses 2.4, 11.3, 1.1, 12.2, 1, 13.5, 2, 13.5, 3, 14.2, 4 Architect's Administration of the Contract 3.1.3, 4.2, 3.7.4, 15.2, 9.4.1, 9.5 Architect's Approvals 2.4, 3.1.3, 3.5, 3.10.2, 4.2.7 Architect's Authority to Reject Work 3.5, 4.2.6, 12.1.2, 12.2.1 Architect's Copyright 1.1.7, 1.5 Architect's Decisions 3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3, 7.3.7, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1, 13.5.2, 15.2, 15.3 Architect's Inspections 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.5 Architect's Instructions 3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.5.2 Architect's Interpretations 4.2.11, 4.2.12 Architect's Project Representative 4.2.10 Architect's Relationship with Contractor 1.1.2, 1.5, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.2, 4.1.3, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.4.2, 13.5, 15.2Architect's Relationship with Subcontractors 1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3.7 Architect's Representations 9.4.2, 9.5.1, 9.10.1 Architect's Site Visits 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.5 Asbestos 10.3.1 Attorneys' Fees 3.18.1, 9.10.2, 10.3.3 Award of Separate Contracts 6.1.1, 6.1.2 Award of Subcontracts and Other Contracts for Portions of the Work 5.2 **Basic Definitions** 1.1 **Bidding Requirements** 1.1.1, 5.2.1, 11.4.1 Binding Dispute Resolution 9.7, 11.3.9, 11.3.10, 13.1, 15.2.5, 15.2.6.1, 15.3.1, 15.3.2. 15.4.1 **Boiler and Machinery Insurance** 11.3.2 Bonds, Lien 7.3.7.4, 9.10.2, 9.10.3 **Bonds, Performance, and Payment** 7.3.7.4, 9.6.7, 9.10.3, 11.3.9, 11.4

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA[®] Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA[®] Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268) User Notes:

Building Permit 3.7.1 Capitalization 1.3 Certificate of Substantial Completion 9.8.3, 9.8.4, 9.8.5 **Certificates for Payment** 4.2.1, 4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.3 Certificates of Inspection, Testing or Approval 13.5.4 Certificates of Insurance 9.10.2, 11.1.3 **Change Orders** 1.1.1, 2.4, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3, 7.1.2, 7.1.3, 7.2, 7.3.2, 7.3.6, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.3.1.2, 11.3.4, 11.3.9, 12.1.2, 15.1.3 Change Orders, Definition of 7.2.1 **CHANGES IN THE WORK** 2.2.1, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1, 11.3.9 Claims, Definition of 15.1.1 **CLAIMS AND DISPUTES** 3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, 15, 15.4 Claims and Timely Assertion of Claims 15.4.1 **Claims for Additional Cost** 3.2.4, 3.7.4, 6.1.1, 7.3.9, 10.3.2, 15.1.4 **Claims for Additional Time** 3.2.4, 3.7.4, 6.1.1, 8.3.2, 10.3.2, 15.1.5 Concealed or Unknown Conditions, Claims for 3.7.4 Claims for Damages 3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.1.1, 11.3.5, 11.3.7, 14.1.3, 14.2.4, 15.1.6 Claims Subject to Arbitration 15.3.1, 15.4.1 **Cleaning Up** 3.15.6.3 Commencement of the Work, Conditions Relating to 2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3, 6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.3.1, 11.3.6, 11.4.1, 15.1.4 Commencement of the Work, Definition of 8.1.2 **Communications Facilitating Contract** Administration 3.9.1. 4.2.4 Completion, Conditions Relating to 3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1, 9.10, 12.2, 13.7, 14.1.2 **COMPLETION, PAYMENTS AND** 9

Completion, Substantial 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2. 13.7 Compliance with Laws 1.6, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 10.2.2, 11.1, 11.3, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3 Concealed or Unknown Conditions 3.7.4, 4.2.8, 8.3.1, 10.3 Conditions of the Contract 1.1.1, 6.1.1, 6.1.4 Consent. Written 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 11.3.1, 13.2, 13.4.2, 15.4.4.2 **Consolidation or Joinder** 15.4.4 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS 1.1.4.6 **Construction Change Directive**, Definition of 7.3.1 **Construction Change Directives** 1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, 7.3, 9.3.1.1 Construction Schedules, Contractor's 3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2 **Contingent Assignment of Subcontracts** 5.4, 14.2.2.2 **Continuing Contract Performance** 15.1.3 Contract. Definition of 1.1.2 **CONTRACT, TERMINATION OR** SUSPENSION OF THE 5.4.1.1, 11.3.9, 14 Contract Administration 3.1.3, 4, 9.4, 9.5 Contract Award and Execution, Conditions Relating to 3.7.1, 3.10, 5.2, 6.1, 11.1.3, 11.3.6, 11.4.1 Contract Documents, Copies Furnished and Use of 1.5.2, 2.2.5, 5.3 Contract Documents. Definition of 1.1.1 **Contract Sum** 3.7.4, 3.8, 5.2.3, 7.2, 7.3, 7.4, 9.1, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.3.1, 14.2.4, 14.3.2, 15.1.4, 15.2.5 Contract Sum, Definition of 9.1 Contract Time 3.7.4, 3.7.5, 3.10.2, 5.2.3, 7.2.1.3, 7.3.1, 7.3.5, 7.4, 8.1.1, 8.2.1, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 14.3.2, 15.1.5.1, 15.2.5 Contract Time, Definition of 8.1.1 **CONTRACTOR** 3

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA[®] Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA[®] Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes: (1852785268)

З

Contractor, Definition of 3.1, 6.1.2 **Contractor's Construction Schedules** 3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2 Contractor's Employees 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1 **Contractor's Liability Insurance** 11.1 Contractor's Relationship with Separate Contractors and Owner's Forces 3.12.5, 3.14.2, 4.2.4, 6, 11.3.7, 12.1.2, 12.2.4 Contractor's Relationship with Subcontractors 1.2.2, 3.3.2, 3.18.1, 3.18.2, 5, 9.6.2, 9.6.7, 9.10.2, 11.3.1.2, 11.3.7, 11.3.8 Contractor's Relationship with the Architect 1.1.2, 1.5, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.3, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3.7, 12, 13.5, 15.1.2, 15.2.1 Contractor's Representations 3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2 Contractor's Responsibility for Those Performing the Work 3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8 Contractor's Review of Contract Documents 3.2 Contractor's Right to Stop the Work 9.7 Contractor's Right to Terminate the Contract 14.1.15.1.6 Contractor's Submittals 3.10, 3.11, 3.12.4, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3, 11.1.3, 11.4.2 Contractor's Superintendent 3.9, 10.2.6 Contractor's Supervision and Construction Procedures 1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.5, 7.3.7, 8.2, 10, 12, 14, 15.1.3 Contractual Liability Insurance 11.1.1.8. 11.2 Coordination and Correlation 1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1 Copies Furnished of Drawings and Specifications 1.5, 2.2.5, 3.11 Copyrights 1.5, 3.17 Correction of Work 2.3, 2.4, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, 12.2 **Correlation and Intent of the Contract Documents** 1.2 Cost, Definition of 7.3.7 Costs 2.4, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.7, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.3, 12.1.2, 12.2.1, 12.2.4, 13.5, 14

Cutting and Patching 3.14, 6.2.5 Damage to Construction of Owner or Separate Contractors 3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 11.1.1, 11.3, 12.2.4 Damage to the Work 3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 11.3.1, 12.2.4 Damages, Claims for 3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9, 6.7, 10.3.3, 11.1.1, 11.3.5, 11.3.7, 14.1.3, 14.2.4, 15.1.6 Damages for Delay 6.1.1, 8.3.3, 9.5.1.6, 9.7, 10.3.2 Date of Commencement of the Work, Definition of 8.1.2 Date of Substantial Completion, Definition of 8.1.3 Day. Definition of 8.1.4 Decisions of the Architect 3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 15.2, 6.3, 7.3.7, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.5.2, 14.2.2, 14.2.4, 15.1, 15.2 **Decisions to Withhold Certification** 9.4.1, 9.5, 9.7, 14.1.1.3 Defective or Nonconforming Work, Acceptance, Rejection and Correction of 2.3, 2.4, 3.5, 4.2.6, 6.2.5, 9.5.1, 9.5.2, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1 Definitions 1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 15.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1 **Delays and Extensions of Time** 3.2, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.5, 15.2.5 Disputes 6.3, 7.3.9, 15.1, 15.2 **Documents and Samples at the Site** 3.11 Drawings, Definition of 1.1.5 Drawings and Specifications, Use and Ownership of 3.11 Effective Date of Insurance 8.2.2. 11.1.2 Emergencies 10.4, 14.1.1.2, 15.1.4 Employees, Contractor's 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4,2.3, 4.2.6, 10.2, 10.3.3, 11.1.1, 11.3.7, 14.1, 14.2.1.1 Equipment, Labor, Materials or 1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3, 7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2 Execution and Progress of the Work 1.1.3, 1.2.1, 1.2.2, 2.2.3, 2.2 5, 3.1, 3.3.1, 3.4.1, 3.5, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.5, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.2, 14.2, 14.3.1, 15.1.3

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA[®] Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA[®] Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268) User Notes:

Δ

Extensions of Time 3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.5, 15.2.5 **Failure of Payment** 9.5.1.3, 9.7, 9.10.2, 13.6, 14.1.1.3, 14.2.1.2 Faulty Work (See Defective or Nonconforming Work) **Final Completion and Final Payment** 4.2.1, 4.2.9, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.3.1, 11.3.5, 12.3, 14.2.4, 14.4.3 Financial Arrangements, Owner's 2.2.1, 13.2.2, 14.1.1.4 Fire and Extended Coverage Insurance 11.3.1.1 **GENERAL PROVISIONS** 1 **Governing Law** 13.1 Guarantees (See Warranty) **Hazardous Materials** 10.2.4. 10.3 Identification of Subcontractors and Suppliers 5.2.1 Indemnification 3.17, 3.18, 9.10.2, 10.3.3, 10.3.5, 10.3.6, 11.3.1.2, 11.3.7 Information and Services Required of the Owner 2.1.2, 2.2, 3.2.2, 3.12.4, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.4, 13.5.1, 13.5.2, 14.1.1.4, 14.1.4, 15.1.3 **Initial Decision** 15.2 Initial Decision Maker, Definition of 1.1.8 Initial Decision Maker, Decisions 14.2.2, 14.2.4, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5 Initial Decision Maker, Extent of Authority 14.2.2, 14.2.4, 15.1.3, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5 Injury or Damage to Person or Property 10.2.8, 10.4 Inspections 3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 12.2.1, 13.5 Instructions to Bidders 1.1.1 Instructions to the Contractor 3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.5.2 Instruments of Service, Definition of 1.1.7 Insurance 3.18.1, 6.1.1, 7.3.7, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 11 **Insurance, Boiler and Machinery** 11.3.2 **Insurance, Contractor's Liability** 11.1 Insurance, Effective Date of 8.2.2, 11.1.2

Insurance, Loss of Use 11.3.3 **Insurance, Owner's Liability** 11.2 **Insurance**, **Property** 10.2.5. 11.3 Insurance, Stored Materials 9.3.2 **INSURANCE AND BONDS** 11 Insurance Companies, Consent to Partial Occupancy 9.9.1 Intent of the Contract Documents 1.2.1, 4.2.7, 4.2.12, 4.2.13, 7.4 Interest 13.6 Interpretation 1.2.3, 1.4, 4.1.1, 5.1, 6.1.2, 15.1.1 Interpretations, Written 4.2.11, 4.2.12, 15,1.4 Judgment on Final Award 15.4.2 Labor and Materials, Equipment 1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, **3.8.3**, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2 Labor Disputes 8.3.1 Laws and Regulations 1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 9.9.1. 10.2.2, 11.1.1, 11.3, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14, 15.2.8, 15.4 Liens 2.1.2, 9.3.3, 9.10.2, 9.10.4, 15.2.8 Limitations, Statutes of 12.2.5, 13.7, 15.4.1.1 Limitations of Liability 2.3, 3.2.2, 3.5, 3.12.10, 3.17, 3.18.1, 4.2.6, 4.2.7, 4.2.12, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 10.2.5, 10.3.3, 11.1.2, 11.2, 11.3.7, 12.2.5, 13.4.2 Limitations of Time 2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7, 5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 11.3.1.5, 11.3.6, 11.3.10, 12.2, 13.5, 13.7, 14, 15 Loss of Use Insurance 11.3.3 Material Suppliers 1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.6, 9.10.5 Materials, Hazardous 10.2.4, 10.3 Materials, Labor, Equipment and 1.1.3, 1.1.6, 1.5.1, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.7, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2 Means, Methods, Techniques, Sequences and Procedures of Construction 3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA[®] Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA[®] Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268) User Notes:

Mechanic's Lien 2.1.2, 15.2.8 Mediation 8.3.1, 10.3.5, 10.3.6, 15.2.1, 15.2.5, 15.2.6, 15.3, 15.4.1**Minor Changes in the Work** 1.1.1, 3.12.8, 4.2.8, 7.1, 7.4 **MISCELLANEOUS PROVISIONS** 13 Modifications, Definition of 1.1.1 Modifications to the Contract 1.1.1, 1.1.2, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2, 11.3.1 **Mutual Responsibility** 6.2 Nonconforming Work, Acceptance of 9.6.6. 9.9.3. 12.3 Nonconforming Work, Rejection and Correction of 2.3, 2.4, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2.1 Notice 2.2.1, 2.3, 2.4, 3.2.4, 3.3.1, 3.7.2, 3.12.9, 5.2.1, 9.7, 9.10, 10.2.2, 11.1.3, 12.2.2.1, 13.3, 13.5.1, 13.5.2, 14.1, 14.2, 15.2.8, 15.4.1 Notice, Written 2.3, 2.4, 3.3.1, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 11.3.6, 12.2.2.1, 13.3, 14, 15.2.8, 15.4.1 Notice of Claims 3.7.4. 10.2.8. 15.1.2. 15.4 Notice of Testing and Inspections 13.5.1. 13.5.2 Observations, Contractor's 3.2, 3.7.4 Occupancy 2.2.2, 9.6.6, 9.8, 11.3.1.5 Orders, Written 1.1.1, 2.3, 3.9.2, 7, 8.2.2, 11.3.9, 12.1, 12.2.2.1, 13.5.2, 14.3.1 **OWNER** 2 **Owner**. Definition of 2.1.1 **Owner, Information and Services Required of the** 2.1.2, 2.2, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 11.3, 13.5.1, 13.5.2, 14.1.1.4, 14.1.4, 15.1.3 Owner's Authority 1.5, 2.1.1, 2.3, 2.4, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.1.3, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.1.3, 11.3.3, 11.3.10, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7 Owner's Financial Capability 2.2.1, 13.2.2, 14.1.1.4 **Owner's Liability Insurance** 11.2

Owner's Relationship with Subcontractors 1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2 **Owner's Right to Carry Out the Work** 2.4. 14.2.2 **Owner's Right to Clean Up** 6.3 **Owner's Right to Perform Construction and to Award Separate Contracts** 6.1 **Owner's Right to Stop the Work** 2.3 Owner's Right to Suspend the Work 14.3 Owner's Right to Terminate the Contract 14.2 **Ownership and Use of Drawings, Specifications** and Other Instruments of Service 1.1.1, 1.1.6, 1.1.7, 1.5, 2.2.5, 3.2.2, 3.11, 3.17, 4.2.12, 5.3 **Partial Occupancy or Use** 9.6.6, 9.9, 11.3.1.5 Patching, Cutting and 3.14. 6.2.5 Patents 3.17 Payment, Applications for 4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3 Payment, Certificates for 4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 13.7, 14.1.1.3, 14.2.4 Payment, Failure of 9.5.1.3, 9.7, 9.10.2, 13.6, 14.1.1.3, 14.2.1.2 Pavment, Final 4.2.1, 4.2.9, 9.8.2, 9.10, 11.1.2, 11.1.3, 11.4.1, 12.3, 13.7, 14.2.4, 14.4.3 Payment Bond, Performance Bond and 7.3.7.4, 9.6.7, 9.10.3, 11.4 **Payments**, **Progress** 9.3, 9.6, 9.8.5, 9.10.3, 13.6, 14.2.3, 15.1.3 **PAYMENTS AND COMPLETION** 9 Payments to Subcontractors 5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2 PCB 10.3.1 **Performance Bond and Payment Bond** 7.3.7.4, 9.6.7, 9.10.3, 11.4 Permits, Fees, Notices and Compliance with Laws 2.2.2, 3.7, 3.13, 7.3.7.4, 10.2.2 PERSONS AND PROPERTY, PROTECTION OF 10 Polychlorinated Biphenyl 10.3.1 Product Data, Definition of

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA[®] Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA[®] Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268) User Notes:

3.12.2

Product Data and Samples, Shop Drawings 3.11, 3.12, 4.2.7 **Progress and Completion** 4.2.2, 8.2, 9.8, 9.9.1, 14.1.4, 15.1.3 **Progress Payments** 9.3, 9.6, 9.8.5, 9.10.3, 13.6, 14.2.3, 15.1.3 Project, Definition of 1.1.4 **Project Representatives** 4.2.10 **Property Insurance** 10.2.5. 11.3 **PROTECTION OF PERSONS AND PROPERTY** 10 **Regulations and Laws** 1.5, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 4.1.1, 9.6.4, 9.9.1, 10.2.2, 11.1, 11.4, 13.1, 13.4, 13.5.1, 13.5.2, 13.6, 14, 15.2.8, 15.4 Rejection of Work 3.5. 4.2.6. 12.2.1 Releases and Waivers of Liens 9.10.2 Representations 3.2.1, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.8.2, 9.10.1 Representatives 2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.1, 4.2.2, 4.2.10, 5.1.1, 5.1.2, 13.2.1 Responsibility for Those Performing the Work 3.3.2, 3.18, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10 Retainage 9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3 **Review of Contract Documents and Field Conditions by Contractor** 3.2, 3.12.7, 6.1.3 Review of Contractor's Submittals by Owner and Architect 3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2 Review of Shop Drawings, Product Data and Samples by Contractor 3.12 **Rights and Remedies** 1.1.2, 2.3, 2.4, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.2, 12.2.4, 13.4. 14. 15.4 **Royalties, Patents and Copyrights** 3.17 Rules and Notices for Arbitration 15.4.1 Safety of Persons and Property 10.2, 10.4 **Safety Precautions and Programs** 3.3.1, 4.2.2, 4.2.7, 5.3, 10.1, 10.2, 10.4 Samples, Definition of 3.12.3 Samples, Shop Drawings, Product Data and 3.11, 3.12, 4.2.7

Samples at the Site, Documents and 3.11 Schedule of Values 9.2. 9.3.1 Schedules, Construction 3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.5.2 Separate Contracts and Contractors 1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2 Shop Drawings, Definition of 3.12.1 Shop Drawings, Product Data and Samples 3.11. 3.12. 4.2.7 Site, Use of 3.13, 6.1.1, 6.2.1 Site Inspections 3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.4.2, 9.10.1, 13.5 Site Visits. Architect's 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5, 1, 9.9.2, 9.10.1, 13.5 Special Inspections and Testing 4.2.6, 12.2.1, 13.5 Specifications, Definition of 1.1.6 **Specifications** 1.1.1, 1.1.6, 1.2.2, 1.5, 3.11, 3.12.10, 3.17, 4.2.14 Statute of Limitations 13.7, 15.4.1.1 Stopping the Work 2.3, 9.7, 10.3, 14.1 Stored Materials 6.2.1. 9.3.2, 10.2.1.2, 10.2.4 Subcontractor, Definition of 5.1.1 **SUBCONTRACTORS** 5 Subcontractors, Work by 1.2.2, 3.3.2, 3.12.1, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7 **Subcontractual Relations** 5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1 Submittals 3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.7, 9.2, 9.3, 9.8, 9.9.1, 9.10.2, 9.10.3, 11.1.3 Submittal Schedule 3.10.2, 3.12.5, 4.2.7 Subrogation, Waivers of 6.1.1, 11.3.7 **Substantial Completion** 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 13.7 Substantial Completion, Definition of 9.8.1 Substitution of Subcontractors 5.2.3, 5.2.4 Substitution of Architect 4.1.3 Substitutions of Materials

3.4.2. 3.5. 7.3.8

Sub-subcontractor, Definition of 5.1.2 Subsurface Conditions 3.7.4 Successors and Assigns 13.2 **Superintendent** 3.9, 10.2.6 **Supervision and Construction Procedures** 1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.7, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.3 Suretv 5.4.1.2, 9.8.5, 9.10.2, 9.10.3, 14.2.2, 15.2.7 Surety, Consent of 9.10.2, 9.10.3 Surveys 2.2.3 Suspension by the Owner for Convenience 143 Suspension of the Work 5.4.2, 14.3 Suspension or Termination of the Contract 5.4.1.1.14 Taxes 3.6, 3.8.2.1, 7.3.7.4 Termination by the Contractor 14.1, 15.1.6 Termination by the Owner for Cause 5.4.1.1, 14.2, 15.1.6 Termination by the Owner for Convenience 14.4 Termination of the Architect 4.1.3 Termination of the Contractor 1422 **TERMINATION OR SUSPENSION OF THE CONTRACT** 14 **Tests and Inspections** 3.1.3, 3.3.3, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 11.4.1, 12.2.1, 13.5 TIME 8 Time, Delays and Extensions of 3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.5, 15.2.5 **Time Limits** 2.1.2, 2.2, 2.4, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 11.1.3, 12.2, 13.5, 13.7, 14, 15.1.2, 15.4

Time Limits on Claims 3.7.4, 10.2.8, 13.7, 15.1.2 Title to Work 9.3.2. 9.3.3 **Transmission of Data in Digital Form** 1.6 UNCOVERING AND CORRECTION OF WORK 12 **Uncovering of Work** 12.1 Unforeseen Conditions, Concealed or Unknown 3.7.4, 8.3.1, 10.3 Unit Prices 7.3.3.2, 7.3.4 Use of Documents 1.1.1, 1.5, 2.2.5, 3.12.6, 5.3 Use of Site 3.13. 6.1.1. 6.2.1 Values, Schedule of 9.2. 9.3.1 Waiver of Claims by the Architect 13.4.2 Waiver of Claims by the Contractor 9.10.5, 13.4.2, 15.1.6 Waiver of Claims by the Owner 9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.4.2, 14.2.4, 15.1.6 Waiver of Consequential Damages 14.2.4, 15.1.6 Waiver of Liens 9.10.2, 9.10.4 Waivers of Subrogation 6.1.1, 11.3.7 Warrantv 3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.4, 12.2.2, 13.7 Weather Delays 15.1.5.2 Work, Definition of 1.1.3 Written Consent 1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 11.4.1, 13.2, 13.4.2, 15.4.4.2 Written Interpretations 4.2.11, 4.2.12 Written Notice 2.3, 2.4, 3.3.1, 3.9, 3.12.9, 3.12.10, 5.2.1, 8.2.2, 9.7, 9.10, 10.2.2, 10.3, 11.1.3, 12.2.2, 12.2.4, 13.3, 14, 15.4.1 Written Orders 1.1.1, 2.3, 3.9, 7, 8.2.2, 12.1, 12.2, 13.5.2, 14.3.1, 15.1.2

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 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 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 and certify termination of the Agreement under Section 14.2.2.

§ 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.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes: (1852785268)

§ 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 will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment 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 this 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 material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them 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 material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

§ 2.2.2 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.

§ 2.2.3 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.

§ 2.2.4 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.

§ 2.2.5 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.

§ 2.3 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.

§ 2.4 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 written 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 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 Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

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 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.

AIA Document A201^M - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International preaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes: (1852785268) **§ 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 2.2.3, 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 make 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 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, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instruction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and 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 shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required 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 authorized by the Architect in accordance with Sections 3.12.8 or 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.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

§ 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

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.

§ 3.6 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 21 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 an equitable adjustment 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 in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed 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,

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

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,

- Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and .1 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 furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply 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 SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be 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, 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 maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268) User Notes:
§ 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 the way by which 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 requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing 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 written 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. 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 cause such services or certifications to be provided by a properly 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 prepared 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

AIA Document A201^M - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, 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. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 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, and 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 and patching shall be restored to the condition existing prior to the cutting, fitting and 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 such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's 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 or 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 Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect 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 such 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 the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such 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

AIA Document A201^M - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International prealties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. User Notes: (1852785268) 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 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.

§ 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.

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

§ 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, except as provided in Section 3.3.1.

§ 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 report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) 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 FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 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

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such 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, material and equipment 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 review 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, unless otherwise specifically stated by the Architect, 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 authorize 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 duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 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 subcontractors of a separate contractor.

AIA Document A201TM - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

§ 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 Subsubcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply 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 previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, 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, which the Contractor, by these 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

- assignment is effective only after termination of the Contract by the Owner for cause pursuant to .1 Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; 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 such 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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 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 other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the 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, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor 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 report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report 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, except as to defects not then reasonably discoverable.

§ 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 the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors 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, and the Contractor shall proceed promptly, 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 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 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.

§ 7.3.6 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.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and 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 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .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 related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 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 has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

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, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 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 an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order 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

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.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's 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. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material 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 material 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

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

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, material suppliers, or other persons or entities making a claim by reason of having 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 issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part 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 comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. 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. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous onsite 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 material 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 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 the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 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 material or equipment suppliers 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 Architect will reflect such payment on the next Certificate 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 material and equipment 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 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, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment 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 and 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, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 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' written 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.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

§ 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, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall 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 such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such 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 as required under Section 11.3.1.5 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 written 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 and, 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 terms and conditions of 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 and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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 and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, 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. If such lien 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 such lien, including all costs and reasonable attorneys' fees.

AIA Document A201™ - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA[®] Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA[®] Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268) User Notes:

§ 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 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 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; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that pavee except those previously made in writing and identified by that pavee 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

- employees on the Work and other persons who may be affected thereby; .1
- the Work and materials and equipment to be incorporated therein, whether in storage on or off the .2 site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Subsubcontractors; 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 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 owners and users of adjacent sites and utilities.

§ 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, except damage or loss 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.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268) User Notes:

§ 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, written notice of such 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

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. 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 report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written 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 such material or substance or who are to perform the task of removal or safe containment of such 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 in the amount of the Contractor's reasonable additional costs of shut-down, 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 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 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 indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance 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 indemnify 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 LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's negligent

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Subsubcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. 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.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 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, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, subsubcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, 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 covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, subsubcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance 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 11.3.10. 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.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 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.

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.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

§ 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, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after 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 an 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 written 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 2.4.

§ 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.

§ 12.2.3 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, whether completed or partially completed, of the Owner or separate contractors 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.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268) User Notes:

ARTICLE 13 MISCELLANEOUS PROVISIONS § 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, 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 such 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 such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 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.

§ 13.4.2 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 there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 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 (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 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 13.5.1, 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 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 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.

§ 13.5.4 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.

§ 13.5.5 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.

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

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may 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.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time 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 13.7.

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 or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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 promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor 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' written 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 for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

AIA Document A201TM - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, 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' written 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 as described in 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 written 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 Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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, 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.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written 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 must 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 CONTINUING CONTRACT PERFORMANCE

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. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

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

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein 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.

§ 15.1.5.2 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.

§ 15.1.6 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 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, 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 arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no 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.

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

§ 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 such 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 an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, 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 15.1.6 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 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. 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

AIA Document A201[™] - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

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 Either party, at its sole discretion, 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 Either party, at its sole discretion, 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 the Owner and Contractor under this Agreement.



AIA Document A201TM - 2007. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997 and 2007 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 16:37:37 on 11/05/2016 under Order No.8736712331_1 which expires on 06/23/2017, and is not for resale. (1852785268)

DOCUMENT 00 60 50.1

SUPPLEMENTARY GENERAL CONDITIONS

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the General Conditions of the Contract for Construction (AIA A201 - 2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions which are defined in the General Conditions of the Contract for Construction (AIA A201 2007 Edition) have the meanings assigned to them in the General Conditions.

CONTRACTOR INSURANCE COVERAGE

Name of Contractor:

A.	Commercial General Liability	Company:		
	Form: Minimum Limit:	1986 Occurrence:\$ 2,000,000Aggregate Limit\$ 1,000,000Products/completed operations aggregate\$ 1,000,000Personal & Advertising Injury\$ 1,000,000Each Occurrence\$ 50,000Fire Damage\$ 5,000Medical Expense		
	No Deductible or Retention OCP-Owners & Contractors Protective XCU (explosion/collapse/underground) Additional insureds as required; include	e The Partnership		
B.	Workers' Compensation	Company:		
	Limits:	(A) Workers' Compensation Statutory (B) Employer's Liability \$ 100,000 Each Acc. \$ 500,000 Disease- Policy \$ 100,000 Disease-per Employee		
C.	<u>Automobile/Hired & Non-</u> <u>Owned Liability</u>	Company:		
	Limit:	\$ 1,000,000 per accident Combined Single Limit ("CSL")		
D.	<u>Umbrella Liability</u> Minimum Limit: Additional Insureds as required	As required by contract		

The work to be performed under the contract is being assisted by the State of Connecticut through the Department of Economic and Community Development (DECD). As such, the project is subject to the following State requirements.

EQUAL OPPORTUNITY EMPLOYMENT, NON-DISCRIMINATION AND AFFIRMATIVE ACTION

In accordance with Connecticut General Statutes 4a-60 and 4a-60a, the following provisions apply to the contract:

A. The Contractor agrees and warrants that in the performance of the contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, sexual orientation or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States and of the State of Connecticut. The aforesaid provision shall include, but not be limited to, the following: advertising, recruitment, layoff, termination, rates of pay or other forms of compensation, conditions or privileges of employment, selection for apprenticeship, selection or retention of Subcontractors, or in the procurement of materials, equipment or services.

B. The Contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, sexual orientation or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved.

C. The Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action - equal opportunity employer" in accordance with regulations adopted by the Commission on Human Rights and Opportunities (CHRO).

D. The Contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the CHRO, advising the labor union or workers' representative of the Contractor's commitments under these provisions, and to post copies of the notice in conspicuous places available to employees and applicants for employment, including posting on the project site.

E. The Contractor agrees to comply with each of these provisions, sections 46a-68d and 46a-68f of the Connecticut General Statutes and with each regulation or relevant order issued by the CHRO pursuant to Connecticut General Statutes Sections 46a-56, 46a-68d and 46a-68f.

F. The Contractor agrees to provide the CHRO with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor as relate to these provisions and section 46a-56 of the Connecticut General Statutes. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Owner, the DECD and the CHRO and shall set forth what efforts he has made to obtain the information.

G. The Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as Subcontractors and suppliers of materials under this Contract. The contractor shall develop and maintain adequate documentation, in a manner prescribed by the CHRO, of its good faith efforts.

H. In all pre-contractual contacts between Contractor and any Subcontractor or Supplier either for work to be performed under a subcontract or for the procurement of materials, equipment or services, each Subcontractor or Supplier shall be notified in writing by the Contractor of the Contractor's obligations under this Contract relative to non-discrimination and each Subcontractor or Supplier, by his contracting agent, shall agree to and be bound by the terms of this Contract.

I. The contractor shall include the provisions of paragraphs A through G in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a Subcontractor, vendor or manufacturer unless exempted by regulations or orders of the CHRO. The contractor shall take such action with respect to any such subcontract or purchase order as the CHRO may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with section 46a-56 of the Connecticut General Statutes.

EXECUTIVE ORDERS

The parties to this Contract, as part of the consideration hereof, agree that Executive Orders No. Three, No. Sixteen and No. Seventeen are incorporated herein by reference and made a part hereof.

Executive Orders Number Three and Seventeen

This Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill promulgated June 16, 1971, and as such, this Contract may be cancelled, terminated or suspended by the DECD or the State Labor Commissioner for violation of, or non-compliance with said Executive Order, or any State or Federal law concerning non-discrimination, notwithstanding that the State Labor Commissioner is not a party to this Contract.

This contract is subject to the provisions of Executive Order No. Seventeen of Governor Thomas J. Meskill promulgated February 15, 1973, and as such, this contact may be cancelled, terminated or suspended by the DECD or the State Labor Commissioner for violation of, or noncompliance with said Executive Order in regard to listing all employment openings with the Connecticut State Employment Service, notwithstanding that the State Labor Commissioner is not a party to this contract.

The parties agree to abide by said Executive Orders and agree that the DECD and the State Labor Commissioner shall have joint and several continuing jurisdiction in respect to contract performance in regard to non-discrimination and listing all employment openings with the Connecticut State Employment Service, until the Contract is completed or terminated prior to completion.

Executive Order Number Sixteen

This contract is subject to the provisions of Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, entitled "Violence in the Workplace Prevention", and as such, this contact may be cancelled, terminated or suspended by the DECD for violation of, or noncompliance with said Executive Order in regard to prevention of violence in the workplace.

The parties agree to abide by said Executive Order and agree that the State of Connecticut shall have continuing jurisdiction in respect to contract performance in regard to prevention of violence in the workplace, until the Contract is completed or terminated prior to completion.

SET-ASIDE REQUIREMENTS

A. Definitions - Wherever used in any of the Contract Documents, the following meanings shall be given to the terms to be found.

1. The term "Small Contractor (SC)" means any Contractor, Subcontractor, manufacturer or service company: (A) which has been doing business under the same ownership and management and has maintained its principal place of business in the state for a period of at least one year prior to the date of application for certification as a Small contractor; (B) which had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year prior to such application; and (C) at least fifty-one percent (51%) of the ownership of which is held by a person or persons who exercise operational authority over the daily affairs of the business and have the power to direct the management and policies and receive the beneficial interests of the business.

2. The term "Minority Business Enterprise (MBE)" means any Small Contractor (A) fifty-one per cent or more of the capital stock, if any, or assets of which are owned by a person or persons (i) who exercise operational authority over the daily affairs of the enterprise, (ii) who have the power to direct the management and policies and receive the beneficial interest of the enterprise, and (iii) who are members of a minority, as defined below, or (B) who is an individual with a disability.

3. The term "minority", as used in the Contract Documents, means:

a. Black Americans, including all persons having origins in any of the Black African racial groups not of Hispanic origin;

b. Hispanic Americans, including all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, and all persons having origins in the Iberian Peninsula, including Portugal, regardless of race;

c. Women;

d. Asian Pacific American and Pacific Islanders; or

e. American Indians and persons having origins in any of the original peoples or North American and maintaining identifiable tribal affiliations through membership and participation or community identification.

B. The Contractor shall cooperate with the Owner and the Department of Economic and Community Development (DECD) in implementing the Contract obligations concerning Small Contractors and Minority Business Enterprises' utilization on this project. The Contractor shall also cooperate with the Owner and DECD in reviewing the contractor's activities related to this provision while under Contract.

C. The Contractor shall designate a Liaison Officer who will administer the Contractor's Set-Aside program. The name of the Liaison Officer will be made known to the Owner and the DECD.

D. The Contractor shall make a good faith effort to meet the following Set-Aside goals. The Contractor shall award, in the aggregate, at least twenty-five percent (25%) of the total awarded contract value of this Contract to certified Small Contractors. Of this amount, twenty-five percent (25%) shall be awarded to certified Minority Business Enterprises. Small Contractors and Minority Business Enterprises shall be certified by the Connecticut Department of Administrative Services (DAS) as eligible for set-aside contracts. The award of contracts must be on competitive bases.

E. The award to Small Contractors shall be in the form of: (1) Subcontracts with Small Contractors for work to be performed as part of the Contract; (2) Contracts with Small Contractors for the procurement of materials, equipment or services; or (3) any combination of (1) and (2) totaling not less than twenty-five percent (25%) of the total Contract. The award to Minority Business Enterprises shall be in the form of: (1) Subcontracts with Minority Business Enterprises for work to be performed as part of the Contract; (2) Contracts with Minority Business Enterprises for the procurement of materials, equipment of services; or (3) any combination of (1) and (2) totaling not less than twenty-five percent (25%) of the total Contract with Minority Business Enterprises for the procurement of materials, equipment of services; or (3) any combination of (1) and (2) totaling not less than twenty-five percent (25%) of the total Contract award to Small Contractors.

F. Compliance with this provision may be fulfilled when the Small Contractors and Minority Business Enterprises perform work on the Contract as an approved Subcontractor or provide materials, equipment, or services related to the Contract as an approved supplier and have received payments amounting to at least the percentages specified herein. A Small Contractor(s) awarded a Contract or a portion of a Contract under this section shall perform not less than fifteen percent (15%) of the work with his own forces. A Subcontractor(s), eligible for award under this section of a Small Contractor, shall perform not less than twenty-five percent (25%) of the work with his own forces. A Small Contract with any business with which said Small Contractor(s) has interlocking ownership, management or employees. The submission of releases, receipts or affidavits, pursuant to the terms of the Contract, shall be taken as prima facie evidence that the Contract requirements of this paragraph have been satisfied. This special provision is in addition to all other equal employment opportunity requirements of this Contract

G. All records must be retained for a period of three years following completion of the work and shall be available at reasonable times and places for inspection by authorized representatives of the Owner and the DECD. The DECD or its' Commissioner may conduct an audit of the records of any Small Contractor(s) or Minority Business Enterprises(s) which applies for or is awarded a set-aside contract for the purpose of determining eligibility for awards or compliance with the set-aside requirements.

H. Compliance and Sanctions:

1. Whenever the DECD has reason to believe that a Contractor or Subcontractor awarded a set-aside contract has willfully violated any provision of this section, the DECD may send a notice to such Contractor or Subcontractor by certified mail, return receipt requested. Such notice shall include: A) a reference to the provision alleged to be violated; B) a short and plain statement of the matter asserted, C) the maximum civil penalty that may be imposed for such violation; and D) the time and place for the hearing.

2. The DAS Set-Aside Unit shall hold a hearing on the violations asserted unless such Contractor or Subcontractor fails to appear. If after the hearing the awarding agency finds that the Contractor or Subcontractor has willfully violated any provision of the set-aside Contract payments to the Contractor or Subcontractor and may, in its discretion, order that a civil penalty not exceeding ten thousand dollars (\$10,000) per violation, be imposed on the Contractor or Subcontractor. If such Contractor or Subcontractor fails to appear for the hearing, the DAS Set-Aside Unit may, as the facts require, order that a civil penalty not exceeding ten thousand dollars (\$10,000) per violation be imposed on the contractor. If such Contractor or subcontractors. The DAS Set-Aside Unit shall send a copy of any order issued pursuant to this section by certified mail,

return receipt requested, to the contractor or subcontractor named in such order. The DAS Set-Aside Unit may cause proceedings to be instituted by the Attorney General for the enforcement of any order imposing a civil penalty issued under this section.

I. Nothing contained herein is intended to relieve any Contractor from compliance with all applicable Federal and State legislation or provision concerning equal employment opportunity, affirmative action, nondiscrimination and related subjects during the term of its Contract on this project.

INSURANCES

A. The DECD shall be named as an additional insured for the required insurances. All Insurance policies for which the DECD has an insurable interest must include the following endorsement: DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT, "A.T.I.M.A." (as their interest may appear), 505 Hudson Street, Hartford, CT, 06106. All Certificates of Insurance must contain the project name and address. The insurance shall be placed with such Insurance Company having a rating of "B+" or better as per the latest edition of Best's Rating Guide.

B. Certificates of Insurances are required before an exposure to loss can occur. The policy or policies shall be submitted to the Owner and the DECD for examination. In the event the form of any policy or certificate, or the amount of the insurance, or the companies writing same, are not satisfactory to the Owner and the DECD, the Contractor will secure other policies or certificate, in form and amount, and with companies satisfactory to be canceled or permit them to lapse. All insurance policies shall include a clause to the effect that the policy shall not be subject to cancellation, or to a reduction in the required limits of liability or amounts of insurance, until written notice has been mailed to the Owner and the DECD, stating when, not less than thirty (30) days thereafter, such cancellation or reduction shall be effective.

Contractor's Liability Insurance

A. The Contractor shall carry the insurance coverages as indicated in the attached INSURANCE MATRIX - APPENDIX A.

Property Insurance

A. The contractor shall effect and maintain builders risk insurance in the amount of 100% of the replacement cost of the completed finished building against loss by fire, lightning, windstorm, cyclone, tornado, hale, explosion, riot, riot attending a strike, aircraft, smoke, vehicle, damage, vandalism and malicious mischief, upon all work in place, and all materials stored at the building site; whether or not same is covered by partial payments made by the Owner. This insurance shall be in an amount equal to the full insurable value thereof at all times, and shall be for the benefit of the Owner, the Contractor, each subcontractor, and the State of Connecticut as their interest may respectively appear. This insurance shall be placed with such company or companies as may be acceptable to the Owner and the DECD. Certificates of Insurance shall be furnished to these same parties (through the Owner) prior to signing the construction contract.

BONDS

PERFORMANCE AND PAYMENT BONDS / COMPLETION ASSURANCE AGREEMENT

A. The Contractor shall furnish Performance and Payment Bonds in the penal sum of one hundred percent (100%) of the total amount of the contract. Said bonds shall be in forms acceptable to the Owner and the DECD, and must be from a surety company with a B^+ or better rating by Best and licensed to do business in the State of Connecticut.

2. A Completion Assurance Agreement with a Letter of Credit may be accepted in lieu of the Performance and Payment Bonds. The Contractor, Owner, and the DECD will sign a Completion Assurance Agreement. Said agreement will clearly explain the duties and responsibilities of all parties to the agreement and set the guidelines for establishing a Completion Assurance Fund. The Completion Assurance Fund will be in a form acceptable to the Owner and the DECD, and issued to the Owner and the DECD as dual obligees.

The Letter of Credit, in a form satisfactory to the Owner and the DECD, shall be in an amount equal to ten percent (10%) of the contract for any contract that is less than two hundred fifty thousand dollars and in an amount equal to twenty-five percent (25%) of the contract for any contract that exceeds two hundred fifty thousand dollars.

The Letter of Credit shall be reduced by one half as of the date the certificate of completion and acceptance is issued and shall be retained by the Owner for one year from the date of issuance of the certificate.

C. Said Performance and Payment Bonds or Completion Assurance Agreement with a Letter of Credit shall be furnished and said Contract shall be executed and delivered by the selected Contractor, within fifteen (15) days after the notice of the contract award has been mailed or delivered to the Contractor by the Owner.

APPENDIX A

DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT INSURANCE MATRIX

MINIMUM COVERAGE		LIMITS	
A)	Comprehensive General Liability Occurrence Form with Broad Form CGL Endorsement and Non-owned & Hired Auto.	A)	\$1,000,000
B)	Commercial Auto Liability, if applicable.	B)	\$1,000,000
C)	Contractor's Protective Liability.	C)	\$1,000,000
D)	Worker's Compensation & Employer's Liability Note: When lead based and/or asbestos abatement work is undertaken, direct & indirect damages arising from these activities must be covered.	D)	Bodily injury by accident \$1,000,000/accident Bodily injury by disease \$1,000,000/employee Bodily injury by disease \$1,000,000 policy limit or \$100,000/\$500,000/\$100,000 when not involving hazardous material abatement.
E)	Certificates of insurance for all subcontractors' Workers Compensation & Employer's Liability Note: When lead based and/or asbestos abatement work is undertaken, direct & indirect damages arising from these activities must be covered.	E)	Bodily injury by accident \$1,000,000/accident Bodily injury by disease \$1,000,000/employee Bodily injury by disease \$1,000,000 employee or \$100,000/\$500,000/\$100,000 when not involving hazardous material abatement.
F)	X.C.U. Liability Endorsement, when any digging is required.	F)	\$1,000,000
G)	Builder's Risk Policy, Completed Value Form.	G)	100% Replacement Cost.

<u>Moosup, CT</u>

9b.Affirmative Action Policy Statement Materials*

<u>Materials:</u>

- Affirmative Action Policy Statement Guideline
- Set-Aside Computation Form
- Department of Administrative Services Website for Minority and Small Business Set-Aside Program
- Notification to Bidders/Grantees
- ✤ Sample Transmittal Letter
- Contractor's Notification Letter (For Contractor's Reference Only)
- ✤ Age Discrimination Act of 1975
- Section 202 Equal Opportunity Clause Exec. Order 11246
- Creating a National Women's Business Enterprise Policy Exec. Order 12138
- * Minority Business Enterprise Development Exec. Order 12432

* <u>Applicant Submits:</u>

- 1). Affirmative Action Policy Statement must be signed (Applies to construction awards of \$500,000 or less)
- 2). Set-Aside Computation Form (Does not apply to municipalities)
- 3). Notification to Bidders/Grantees (Applies to all developers)
- 4). Construction awards over \$500,000, a transmittal letter and Contractors Affirmative Action Plan package is forwarded to CHRO. Copies of both documents submitted to DECD with Final Application Documents. The sample Contractor's Notification provides additional details.

Renovations to Aldrich Free Public Library

Affirmative Action Policy Statement Guideline

(THIS GUIDELINE APPLIES TO ALL DEVELOPERS RECEIVING DECD FUNDS AND TO GENERAL CONTRACTORS RECEIVING LESS THAN \$500,000 FOR HOUSING CONSTRUCTION AND/OR REHABILITATION)

You must develop and submit for review and approval an affirmative action policy statement. At a minimum the statement must:

- □ Acknowledge the purpose and need for affirmative action
- □ List all federal and state laws, regulations, guidelines and executive orders that prohibit or outlaw discrimination
- □ List all protected groups
- Outline each step of the employment process and address the role affirmative action plays at each step
- Establish and adopt affirmative action and equal employment opportunity as immediate and necessary objectives
- Pledge the entity to affirmatively provide services and programs in a fair and impartial manner
- Recognize the hiring difficulties experienced by minorities, the physically disabled and by many older persons, and establish hiring and program goals for actions to overcome the present effects of past discrimination, if any, and to achieve the full and fair utilization of such persons in the workforce; and
- □ Identify the agency affirmative action person by name, position, address and telephone number.

The policy statement must be signed by the agency head, dated, revised every two years, posted and disseminated annually to all employees.



Renovations to Aldrich Free Public Library

Moosup, CT

<u>Set-Aside</u>

Add statement lifted from DECD's set-aside policy

<u>Web Site for Department of Administrative Services, Minority and</u> <u>Small Business Set-Aside Program:</u>

Email Address: <u>DAS Set-Aside</u> (click this link when accessing this document electronically)

OR

http://www.das.state.ct.us/Purchase/SetAside/index.html
(type this text into your web browser)

Telephone Number: 860-713-5236
Renovations to Aldrich Free Public Library

Moosup, CT

Notification To Bidders/Grantees:

The contract to be awarded is subject to contract compliance requirements mandated by Section 4-114a of the Connecticut General Statutes; and when the awarding agency is the state, Section 46a71(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 4-114g-1 et. Seq. of the Regulations of Connecticut State Agencies which establish a procedure for the awarding of all contracts covered by Sections 4-114a and 46a-71(d) of the Connecticut General Statutes.

According to Section 4-114a-3(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors, and suppliers of materials." "Minority business enterprise" is defined in Section 4-11a4a of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) who are active in the daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise' and (3) who are members of a minority, as such term is defined in subsection (a) of section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans… (2) Hispanic Americans…(3) Women… (4) Asian Pacific Americans and Pacific Islanders; or (5) American Indians…" The above definitions apply to the contract compliance requirements by virtue of section 4-114a-1 (10) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidders/grantee's qualifications under the contract compliance requirements:

- a. The bidder's/grantee's success in implementing an affirmative action plan;
- **b.** The bidder's/grantee's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Connecticut General Statutes, inclusive;
- **c.** The bidder's/grantee's promise to develop and implement a successful affirmative action plan;
- **d.** The bidder's/grantee's submission of EEO-1 data indicating that the composition of the work force is at or near parity when compared to the racial and sexual composition of the work force in the relevant labor market area; and
- e. The bidder's/grantee's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 4-114a03 (10) of the Contract Compliance Regulations.

INSTRUCTION:	Bidder/Grantee must sign acknowledgment Below, detach along dotted line and return Acknowledgment to Awarding Agency along with bid proposal.	
The undersigned ack "Notification to Bide	nowledges receiving and reading a copy of the ders/Grantees" form.	
The undersigned ack "Notification to Bide Signature:	tnowledges receiving and reading a copy of the ders/Grantees" form. Date:	



This page intentionally left blank.

AFFIRMATIVE ACTION POLICY STATEMENT MATERIALS

.....

<u>EXHIBIT B</u>

INSURANCE REQUIREMENTS FOR NON-PROFIT AND FOR PROFIT ENTITIES

(A) Applicant shall procure and maintain for the duration of the <PER PROPOSAL, EITHER Agreement OR approved Project Financing Plan & Budget> the following types of insurance, in amounts no less than the stated limits, against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder; provided however, that if this project is (i) financial assistance of less than \$100,000, (ii) a planning grant, or (iii) a predevelopment loan, only items 1 and 2 as set forth herein shall apply:

- Commercial General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. Coverage shall include Premises and Operation, Independent Contractors, Product and Completed Operations and Contractual Liability. If a general aggregate is used, the general aggregate limit shall apply separately to the Agreement or the general aggregate limit shall be twice the occurrence limit.
- Workers' Compensation and Employer's Liability: Statutory coverage in compliance with compensation laws of the State of Connecticut. Coverage shall include Employer's Liability with a minimum limit of \$100,000 each accident, and \$500,000 Disease – Policy limit, \$100,000 each employee.
- 3) Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury. Coverage extends to owned, hired and non-owned automobiles. If the vendor/contractor does not own an automobile, but one is used in the execution of the contract, then only hired and non-owned coverage is required. If a vehicle is not used in the execution of the contract then automobile coverage is not required.
- 4) Directors and Officers Liability: \$1,000,000 per occurrence limit of liability; provided, however, that Directors and Officers Liability insurance shall not be required for limited liability corporations or limited partnerships.
- 5) Comprehensive Crime Insurance: \$100,000 limit for each of the following coverages: Employee Dishonesty (Form O), Forgery/Alteration (Form B), and Money and Securities coverage for Theft, Burglary, Robbery, Disappearance and Destruction.
- 6) Builders Risk: (Construction Phase) With respect to any work involving the construction of real property during the construction project, if DECD is taking a collateral position in the property, the Applicant shall maintain Builder's Risk insurance providing coverage for the entire work at the project site. Coverage shall be on a Completed Value form basis in an amount equal to the projected value of the project. Applicant agrees to endorse the State of Connecticut as a Loss Payee.

- 7) Property Insurance: (Post Construction) If DECD is taking a collateral position in the property, the Applicant shall maintain insurance covering all risks of direct physical loss, damage or destruction to real and personal property and improvements and betterments (including flood insurance if property is within a duly designated Flood Hazard Area as shown on Flood Insurance Rate Maps (FIRM) set forth by the Federal Emergency Management Agency (FEMA)) at 100% of Replacement Value for such real and personal property, improvements and betterments or the maximum amount available under the National Flood Insurance Program. The State of Connecticut shall be listed as a Loss Payee.
- (B) Additional Insurance Provisions
 - The State of Connecticut Department of Economic and Community Development, its officials and employees shall be named as an Additional Insured on the Commercial General Liability policy. Additional Insured status is not required for items (A)2 through (A)7 above.
 - 2. Described insurance shall be primary coverage and Applicant and Applicant's insurer shall have no right of subrogation recovery or subrogation against the State of Connecticut.
 - 3. Applicant shall assume any and all deductibles in the described insurance policies.
 - 4. Without limiting Applicant's obligation to procure and maintain insurance for the duration identified in (A) above, each insurance policy shall not be suspended, voided, cancelled or reduced except after thirty (30) days prior written notice by certified mail has been given to the State of Connecticut, with the exception that a ten (10) day prior written notice by certified mail for non-payment of premium is acceptable.
 - 5. Each policy shall be issued by an Insurance Company licensed to do business by Connecticut Department of Insurance and having a Best Rating of A-, VII, or equivalent or as otherwise approved by DECD.

END OF EXHIBIT

NOTIFICATION TO BIDDERS/GRANTEES:

The contract to be awarded is subject to contract compliance requirements mandated by Section 4-114a of the Connecticut General Statutes; and when the awarding agency is the state, Section 46a-71(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 4-114a-1 <u>et. Seq</u>. of the Regulations of Connecticut State Agencies which establish a procedure for the awarding of all contracts covered by Sections 4-114a and 46a-71(d) of the Connecticut General Statutes.

According to Section 4-114a-3(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors, and suppliers of materials." "Minority business enterprise" is defined in Section 4-114a of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) who are active in the daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans... (2) Hispanic Americans... (3) Women... (4) Asian Pacific Americans and Pacific Islanders; or (5) American Indians..." The above definitions apply to the contract compliance requirements by virtue of section 4-114a-1 (10) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's/grantee's qualifications under the contract compliance requirements:

- a) the bidder's/grantee's success in implementing an affirmative action plan;
- b) the bidder's/grantee's success in developing an apprenticeship program complying with Section s 46a-68-1 to 46a-68-17 of the Connecticut General Statutes, inclusive;
- c) the bidder's/grantee's promise to develop and implement a successful affirmative action plan;
- (d) the bidder's/grantee's submission of EEO-1 data indicating that the composition of the work force is at or near parity when compared to the racial and sexual composition of the work force in the relevant labor market area; and
- (e) the bidder's/grantee's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 4-114a-3 (10) of the Contract Compliance Regulations.

*INSTRUCTION: Bidder/Grantee must sign acknowledgment Below, detach along dotted line and return Acknowledgment to Awarding Agency along with bid proposal.

The undersigned acknowledges receiving and reading a copy of the "Notification to Bidders/Grantees" form.

Signature:

Date:

on behalf of:

SECTION 01 10 07

GENERAL PRESERVATION PROJECT GUIDELINES

PART 1 – GENERAL

1.1 SAFETY PRECAUTIONS

PREFACE: This standard includes general project guidelines provided to supplement specific repair and preventive maintenance procedures. Not all of these requirements will be applicable given the level of difficulty of the procedure. However, where applicable, these guidelines should be used in addition to recommendations provided by the regional historic preservation officer (RHPO). The information is listed in the order it might appear in the usual CSI section format.

- A. The supervisor should ensure that all workers wear adequate, approved protective clothing and are provided with protective equipment during work operations and as required at other times.
- B. Check manufacturer's literature for precautions and effects of products and procedures on adjacent building materials, components, and especially vegetation. Take appropriate protective measures.

C. All workers must be protected from the effects of chemicals during repair or cleaning operations.

- 1. DO NOT save unused portions of stain-removal materials.
- 2. DO NOT store any chemicals in unmarked containers.
- 3. EXCELLENT VENTILATION MUST BE PROVIDED WHEREVER ANY SOLVENT IS USED. USE RESPIRATORS WITH SOLVENT FILTERS. NOTE: SOME OF THE SOLVENTS LISTED COULD BE KNOWN CARCINOGENS AND MAY BE BANNED IN SOME STATES.
- 4. No use of organic solvents indoors should be allowed without substantial air movement. Use only spark-proof fans near operations involving flammable liquids.
- 5. Provide adequate clothing and protective gear where the chemicals are indicated to be dangerous.
- 6. Have available antidote and accident treatment chemicals where noted.
- 7. Avoid skin contact and inhalation of any chemical. Rubber or plastic gloves should be worn when handling hazardous (flammable or toxic) chemicals.
 - a. Follow storage and handling procedures printed on the container labels of the cleaning solutions, provide good ventilation while working, and thoroughly wash hands after completion of the work.
 - b. Provide protective clothing which must be worn and protective creams for exposed skin areas.
 - c. Accidental contact with unprotected skin to these materials must be treated immediately by washing with soap and water, never with solvents.
 - d. Exercise care to avoid skin contact to tool cleaning solvents and to provide adequate ventilation for clean-up operations.
- D. When removing bird droppings: Bird droppings may expose workers to the effects of cryptococcosis and histoplasmosis which endanger the human respiratory system. Public health authorities should be consulted for appropriate precautions.
 - 1. All contractor 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 OSHA regulation, 29 CFR 1910.134 and GSA policy, PBS P 5900.2C, Chapter 3, section 8. This includes fit-testing of respirators, maintenance, training, and storage requirements.
- 3. All contractor personnel must wear protective coveralls, gloves, boots, and hats.
- 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 of by the contractor at a sanitary landfill.
- 7. All work must be performed from the outside of the building. Building occupants and the general public must be kept clear of the work site during all operations. It is the contractor's responsibility to provide all barricades, signage, etc. necessary for public protection.
- E. When removing paint:
 - 1. Paint being removed most likely will contain lead. All workers must wear protective clothing (including hair), goggles and respirators with proper filters.
 - 2. No food or drink shall be allowed near any work station so as to prevent contamination from paint, paint chips, dust or chemical removers which contain lead and other toxic substances.
 - 3. Protective clothing shall be removed at the end of each day and kept at the site to prevent workers from tracking dust and paint chips to other parts of the site or to their homes.
 - 4. Wash hands and face often, especially before eating and at the end of the day.
 - 5. All waste material shall be collected at the end of each work day and disposed of in a manner consistent with local environmental regulations. It is considered Hazardous Waste.

1.2 HISTORIC STRUCTURES PRECAUTIONS

- 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 principle of 'minimal disturbance'. The following are good practices which arise from this principle:
 - 1. Retention of as much existing material as possible; repairing and consolidating rather than renewing.
 - 2. The use of additional material or structure to reinforce, strengthen, prop, tie, and/or support existing material or structure.
 - 3. The use of reversible processes wherever possible.
 - 4. The use of traditional materials and techniques. New work should be distinguishable to the trained eye, on close inspection, from the old.
 - 5. The item should be recorded before, during and after the work.
 - a. No smoking will be allowed by personnel performing work on or about Historic Structures.

- b. RHPO's approval is required for any change, addition or removal of historic structural fabric or historic property.
- c. RHPO should be notified of any visible change in the integrity of the material or component whether environmental, such as biological attack, ultraviolet degradation, freeze, thaw, etc., or structural defects, such as cracks, movement, or distortion.
- d. Architectural features will be repaired rather than replaced wherever possible. Repair or replacement of missing features will be based on accurate duplications rather than on conjectural designs.
- e. Work which requires existing features to be removed, cleaned and reused shall be accomplished without damage to the material itself, to adjacent materials, or the substrate.
- f. Existing features removed from the building which are to be reinstalled shall be carefully labeled and stored within the building in a place where they will not be damaged or obstruct other work.
- g. New or replacement materials/features will be permanently marked in an unobtrusive manner to distinguish them from original fabric. The manner of identification and location of these marks shall be recorded in permanent building records.
- h. Identify the historic importance of the material or feature. The item's merit, in terms of age, uniqueness of design, materials, size, technological development, association with persons or events, exceptional workmanship or design qualities, must be understood before decisions regarding repair, maintenance and preservation can be made.
- i. Statement of Non-Compliance: Wherever it is necessary to proceed with the use of products, under conditions which do not comply with the requirements (because of time schedule difficulties or other reasons which the supervisor determines that are crucial to the project), prepare a written statement for the RHPO's Record indicating the nature of the non-compliance, the reasons for proceeding, the extra or precautionary measures taken to ensure the best possible work, and the names of the individuals concurring with the decisions to proceed with the work.
- j. When cleaning, avoid overcleaning. Aim for achieving 85% clean. Most damage occurs when attempting to clean the last 15%.
 - a. Do not use acids or flame tools to strip paint from stone, as it will damage the surface.
 - b. Do not use steel or metal spatulas or tools to scrape stone because of the likelihood of scratching, chipping, gouging, or otherwise marring the surface.

1.3 SUBMITTALS

A. Product Data (when applicable):

- 1. Submit to RHPO manufacturer's technical data for each product indicated including chemical analysis, recommendations for their application and use, and any other available technical data. Include test reports and certifications substantiating that products comply with requirements.
- 2. MANUFACTURERS OFFERING OTHER THAN BRAND NAME ITEMS IDENTIFIED IN THE PROCEDURE SHOULD FURNISH ADEQUATE INFORMATION TO ENSURE THAT A DETERMINATION CAN BE MADE AS TO EQUALITY OF THE PRODUCT(S) OFFERED (SEE THE CLAUSE ENTITLED BRAND NAME OR EQUAL SET FORTH IN SECTION 552.210-74 OF THE GSA

ACQUISITION REGULATION).

B. Samples:

- 1. Clearly labelled samples of all materials to be used on the job should be submitted to the RHPO for approval before work starts.
- 2. The approved samples will become the standard materials used on the job. Substitutions will not be permitted without written approval from the RHPO.
- 3. Quality Control Submittals:
 - a. Submit written program for each phase of process including protection of surrounding materials during operations. Describe in detail materials, methods and equipment to be used for each phase of work.
 - b. If alternative methods and materials to those indicated are proposed for any phase of work, provide written description to RHPO, including evidence of successful use on other, comparable projects, and program of testing to demonstrate effectiveness for use on this project.
 - c. The contractor should supply proof of work on this type of project by submitting a list of pertinent projects the subcontractor has worked on which includes the scope of work, the budget for the scope of work, and a way to
 - d. contact the owner and architect of each project.
- 4. Design Data/Test Reports/Certificates:
 - a. Routine testing of proposed materials, and of final work for compliance with the procedure will be carried out by the RHPO or his\her appointed representative.
 - b. Cleaning methods should be tested prior to selecting the one for use. The simplest and least aggressive method(s) should be selected.
 - c. The level of cleanliness desired also should be determined. A like-new appearance is both inappropriate and requires an overly harsh cleaning method.
 - d. If test results show that performance criteria are not met, removal and repair of rejected work should be performed.

1.4 QUALITY ASSURANCE

A. Qualifications:

- 1. Restoration Specialist: Work must be performed by a firm having not less than five years successful experience in comparable projects and employing personnel skilled in the processes and operations indicated. Project supervisor must have five years experience in work similar to this procedure. Additional personnel must also have experience.
- 2. A supervisory craftsperson will be present when a craftsperson begins to perform the work in order to explain any procedures. Any modification of the written procedures will be made at that time.
- 3. The supervisory craftsperson shall also be present during the work to instruct personnel as required.
 - a. Source of Materials: Obtain materials from a single source for each type material required.
- B. Regulatory Requirements:
 - 1. Engage an approved independent testing laboratory to examine materials prior to use and continuously inspect the work for compliance with this procedure and any related documents.
 - 2. The required research report and manufacturer's data shall be at the site and used for reference.
 - 3. Conform with all applicable safety guidelines.

- 4. For Cleaning: Comply with municipal and Federal regulations governing cleaning, chemical waste disposal, scaffolding and protection of adjacent surfaces.
- C. Mock-ups: After acceptance of the list of materials and proposed method of cleaning, repair or refinishing, a representative sample area shall be cleaned, repaired or refinished as specified.
 - 1. Employ the method proposed and accepted for use. Obtain acceptance of the sample area from the RHPO before proceeding with remainder of the procedure.
 - 2. Maintain the sample area in its accepted condition until final acceptance of the completed work. Manufacturer's Representative should be present during mock-up and its inspection for approval. Sample work should be preformed in an area approved by the RHPO.
 - 3. A SMALLER TEST FOR EACH PRODUCT SHOULD BE DONE ON EACH MATERIAL IN AN INCONSPICUOUS AREA TO CHECK FOR ADVERSE EFFECTS AND DAMAGE TO THE MATERIAL.
 - a. For Cleaning
 - 1. Before cleaning, all drains to be used should be tested to ensure they are functioning properly. Any clogged drains should be reported immediately.
 - 2. During cleaning, prevent cleaning residue from entering the drains or drain lines. Drains or drain lines that become blocked with cleaner residue must be cleaned out immediately.

1.1 DELIVERY, STORAGE AND HANDLING

- A. Packing and Shipping: Deliver materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.
- B. Acceptance at Site: Handle materials in accordance with project safety guidelines and manufacturer's recommendations.
- C. Storage and Protection:
 - 1. Every effort must be made to use and reuse materials that are original to the structure. When removed from their rightful place, these materials must be stored under cover inside the building where they cannot be damaged.
 - 2. When pieces are to be removed, mark pieces inconspicuously in a consistent manner as to their original location. Document original position and label accordingly.
 - 3. If salvage material is to be used, treat it as new or original material with regard to its storage.
 - 4. Protect all materials during storage and construction from wetting by rain, snow or ground water, and from intermixture with earth or other types of materials.
 - 5. Protect materials from deterioration by moisture and temperature.
 - a. Store cementitious materials off ground, under cover and in a dry location. Protect liquid components from freezing.
 - b. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.
 - c. Store all chemicals in metal cabinets. No cans shall be left open or out of the cabinet overnight.

1.2 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Proceed with the work only when forecasted weather conditions are favorable.

- 2. Wet weather: Do not attempt repairing of feature in raining or foggy weather. Do not apply primer, paint, putty, or epoxy when the relative humidity is above 80%. Do not remove exterior elements of structures when rain is in the forecast or in progress.
- 3. Work in the shade when the temperature is above 75 degrees F. Work around the structure in the shade away from the sun.
- 4. Do not perform exterior wet work when the air temperature is below 40 degrees F.
- 5. NEVER begin cleaning, patching, etc. when there is any likelihood of frost or freezing.
- 6. If cleaning is done in very hot, sunny weather, the feature/area should be shielded from excessive heat by hanging protective netting or tarpaulins around it.
- 7. No cleaning shall be executed when either the air or the masonry surface temperature is below 45 degrees F, unless adequate, approved means are provided for maintaining a 45 degrees F temperature of the air and materials during, and for 48 hours subsequent to, cleaning.
- 8. Perform cleaning and rinsing of the exterior masonry only during daylight hours.
- 9. Hot weather maximum application temperatures:
 - a. paint 85 degrees F
 - b. putty 80 degrees F
 - c. epoxy 80 degrees F
- 10. Cold weather minimum application temperatures:
 - a. paint 50 degrees F
 - b. putty 50 degrees F
 - c. epoxy 55 degrees F
- B. Existing Conditions: Check manufacturer's literature for precautions and effects of products and procedures on adjacent building materials, components, and especially vegetation.

1.3 SEQUENCING AND SCHEDULING

- A. Preventive Maintenance and Repair activities should be scheduled during appropriate environmental conditions to avoid weather related failures.
- B. Submit a work schedule indicating the proposed timing and extent of the work.
- C. Co-ordinate the work schedule with that of other trades on site.
- D. When cyclical maintenance work requires the use of high ladders and other access equipment, perform as many work items as possible.

1.4 PROTECTION

- A. Do not change sources or brands of materials during the course of the work.
- B. All necessary precautions shall be taken to protect all parts of the building not being cleaned or repaired from effects of the work, including excessive amounts of water that should not be allowed to pond in any area. Also provide protection as required to prevent damage to adjacent property.
- C. Provide protection against the spread of dust, debris and water at or beyond the work area by suitable enclosures of sheeting and tarpaulins.
- D. Provide masking or covering on adjacent surfaces and permanent equipment. Secure coverings without the use of adhesive type tape or nails. Impervious sheeting which

produces condensation should not be used.

- E. Prevent the entry of dust, debris and water into the building by sealing all openings.
- F. Provide protection from water damage to building, structure, or building contents as required.
- G. Protect all landscape work adjacent to or within maintenance work areas:
 - 1. Provide plank barriers to protect tree trunks. Bind spreading shrubs.
 - 2. Covering should allow plants to breathe and should be removed at the end of each work day. Do not cover plant material with a waterproof membrane for more than 8 hours at one time.
 - 3. Set scaffolding and ladder legs away from plants. Pruning requests should be directed to the RHPO.
- H. Test all drains and other water removal systems to assure that drains and systems are functioning properly prior to performing any cleaning operations. Notify Contracting Officer or designated representative immediately of any and all drains or systems that are found to be stopped or blocked. Contractor shall repair drains if so directed by the Contracting Officer or designated representative. Do not begin work of this Section until the drains are in working order.
- I. Provide a method to prevent solids such as stone or mortar residue from entering the drains or drain lines. Contractor shall be responsible for cleaning out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this Contract.
- J. Scaffolding, ladders and working platforms, required for the execution of this work should be provided. These items should not be attached to the building.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

This page intentionally left blank.

SECTION 01 10 10

SUMMARY

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Contract Description.
- B. Work Covered by Contract Documents
- C. Phase Construction
- D. Work under separate Contracts
- E. Owner-furnished Products
- F. Work Restrictions
- G. Specifications and Drawing Conventions

1.2 PROJECT INFORMATION

- A. Project Identification:
 - 1. Project Location: Aldrich Free Public Library, 299 Main Street, Moosup, CT 06354
- B. Owner: Aldrich Free Public Library, 299 Main Street, Moosup, CT 06354
 - 1. Owner's Point of Contact: Jordan Lumpkins
- C. Architect: Crosskey Architects, llc, 750 Main Street, Suite 150, Hartford, CT 06103
 - 1. Architect's Point of Contact: Laura Crosskey

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
 - 1. Selective Demolition of the existing building
 - 2. Construct a new/ renovate the existing 54,631 sq ft three story building.
- B. Type of Contract:

1.4 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the work of this Contract with work performed under separate contracts.
- B. Subsequent Work: Owner will award separate contract(s) for the following additional work to be performed at site following Substantial Completion. Completion of that work will depend on the successful completion of preparatory work under this Contract.

1.5 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on the 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 8:00am to 5:00pm, Monday through Friday, unless otherwise indicated.
 - 1. Weekend Hours: 9:00am to 5:00pm
 - 2. Hours for Core Drilling or similar noisy activities shall be limited to the hours of

10:00am to 5:00pm.

- C. 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 Construction Manager not less than two days in advance of proposed disruptive operations.
- D. Non Smoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows or outdoor-air intakes.
- E. Controlled Substances: Use of Tobacco Products and other controlled substances within the existing building is not permitted.
- F. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor Personnel working on Project Site.

1.6 SPECIFICATION AND DRAWING CONVENTIONS

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION

Not Used.

SECTION 01 21 00

ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
- C. Related Sections include the following:
 - 1. Section 01 26 00 Contract Modification Procedures
 - 2. Sections 2 through 48 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.4 SUBMITTALS

A. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 LUMP-SUM ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by

Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Refer to Section 00 43 21.

SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit five copies, or via electronic format, 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 CSI Form 13.1A (example can be found after this section).
 - 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.
- 1. 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.
- n. Sample of Warranty (ies) with side-by-side comparison with that specified.
- 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 through Construction Manager 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.

1.4 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.

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:
 - 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 for achieving LEED prerequisites and credits.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed.

PART 3 – EXECUTION

(Not Used)

Crosskey Architects	SUBSTITUTION REQUEST (After the Bidding/Negotiating Phase)
	Substitution Request Number:
	From:
Project:	Date:
	A/E Project Number:
To:	Contract For:
Re:	
Survification Titles	Description
Section: Page:	Article/Paragraph
Proposed Substitution:	
Manufacturer:Address:	Phone:
Installer Address	Phone:
History: \Box New product \Box 1-4 years old \Box 5-10 years	ars old
Differences between proposed substitution and specified proc	duct.
Point-by-point comparative data attached — REQUIRED	D BY A/E
Reason for not providing specified item:	
Similar Installation:	
Project: A	Architect:_ Address:
Own	ner:
I	Date Installed:
Proposed substitution affects other parts of Work:	□ Yes; explain
Savings to Owner for accepting substitution:	
Proposed substitution changes Contract Time:	□ Yes [Add] [Deduct]days.
Supporting Data Attached:	Data 🗆 Samples 🗆 Tests 🗆 Reports 🗆



SUBSTITUTION REQUEST (After the Bidding/Negotiating Phase — Continued)

Б

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by:	
Signed by:	
Firm:	
Address:	
Telephone:	
Attachments:	

A/E's REVIEW AND RECOMMENDATION

Approve Substitution - Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

□ Approve Substitution as noted - Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

□ Reject Substitution - Use specified materials.

~ .

1 1

 \Box Substitution Request received too late - Use specified materials.

Signed by:	Date:	
OWNER'S REVIEW AND ACTION		
□ Substitution approved - Make submittals in accordance with Specification Section 01 33 Order.	3 00 Submittal Procedures.	Prepare Change
Substitution approved as noted - Make submittals in accordance with Specification Sect Change Order.	ion 01 33 00 Submittal Proced	lures. Prepare
□ Substitution rejected - Use specified materials.		
Signed by:	Date:	

Additional Comments: Contractor Subcontractor Supplier Manufacturer A/E

This page intentionally left blank.

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Inspection and testing allowances.
- B. Schedule of Values.
- C. Application for Payment.
- D. Change procedures.
- E. Defect Assessment.
- F. Measurement and Payment Unit Prices.
- G. Alternates.
- H. Requests for Information
- I. Inspections for substantial completion and final completion

1.2 RELATED SECTIONS

- A. Owner Contractor Agreement: Contract sum/price including allowances.
- B. Section 01 33 00 Submittals: Schedule of Values.
- C. Section 01 60 00 Product Requirements: Product substitutions and alternates.

1.3 INSPECTION AND TESTING ALLOWANCES

- A. Costs Included in Allowances: Cost of engaging an inspection or testing firm, execution of inspection or tests, reporting results.
- B. Costs Not Included in the Allowance:
 - 1. Incidental labor and facilities required to assist inspection or testing firm.
 - 2. Costs of testing laboratory services required by Contractor separate from Contract Document requirements.
 - 3. Costs of retesting upon failure of previous tests as determined by Architect/Engineer.

C. Payment Procedures:

- 1. Submit one copy of the inspection or testing firm's invoice with next application for payment.
- 2. Pay invoice on approval by Architect/Engineer.
- D. Include the sum of \$5,000.00 for payment of inspection and testing laboratory services specified in Section 01 40 00. Differences in cost will be adjusted by change order.

1.4 SCHEDULE OF VALUES

- A. Submit typed schedule on AIA Form G703 Application and Certificate for Payment Continuation Sheet. Contractor's standard form or electronic media printout will be considered.
- B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Split line items into subcatagories for materials and labor. Identify bonds, insurance and site mobilization costs.

- D. Include in each line item, the amount of each Allowance specified in this Section.
- E. Revise schedule with each Application For Payment, to list approved change orders.

1.5 APPLICATIONS FOR PAYMENT

- A. Submit five copies of each application on AIA Form G702 Application and Certificate for Payment.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

1.6 CHANGE PROCEDURES

- A. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized and will issue supplemental instructions.
- B. The Architect/Engineer may issue a Proposal Request, which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change, the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within seven days.
- C. The Contractor may propose a change by submitting request for change to the Architect/Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation in the form of unit costs and quantities for Material and Labor. Document any requested substitutions in accordance with Section 01 60 00.
 - 1. <u>Stipulated Sum/Price Change Order:</u> Based on Proposal Request and Contractor's fixed price quotation.
 - 2. <u>Unit Price Change Order</u>: For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work, which are not pre-determined, execute Work under a Construction Change Authorization. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
- D. Construction Change Authorization: Architect/Engineer may issue a directive, on AIA Form G713 Construction Change Authorization signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Contractor will promptly execute the change.
- E. Change Order Forms: AIA G701 Change Order.
- F. Execution of Change Orders: Architect will issue change orders for signature of parties as provided in the Conditions of the Contract.

G. <u>Contractor shall reimburse Owner for Architect's time spent reviewing proposed</u> <u>change orders more than twice (original and 1 revision) for the same item or scope of</u> <u>work.</u>

H. Contractor shall reimburse Owner for Architect's time spent evaluating an extensive number of claims submitted by the Contractor in connection with the Work.

1.7 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Architect, it is not practical to remove and replace the Work, the Architect will direct an appropriate remedy or adjust payment.

1.8 MEASUREMENT AND PAYMENT - UNIT PRICES

- A. Authority: Measurement methods are delineated in the individual specification sections.
- B. Take measurements and compute quantities. The Architect will verify measurements and quantities.
- C. Unit Quantities: Quantities and measurements indicated in the Bid Form are for contract purposes only. Actual quantities provided shall determine payment.
- D. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.9 ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work as required.
- C. Schedule of Alternates:
 - 1. Refer to Section 00 41 23 and Bid Form.

1.10 REQUESTS FOR INFORMATION

- A. Contractor shall reimburse Owner for Architect's time spent responding to the Contractor's requests for information where such information is 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.
- B. Refer to Section 01 31 00.

1.11 INSPECTIONS FOR SUBSTANTIAL COMPLETION AND FINAL COMPLETION

A. Contractor shall reimburse Owner for Architect's time spent inspecting any portion of the Work more than twice to determine final completion or to determine whether such portion of the Work is substantially complete in accordance with the requirements of the Contract Documents."

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION (Not Used)

This page intentionally left blank.

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Coordination.
- B. Requests for Information
- C. Field engineering
- D. Pre-construction conference.
- E. Site mobilization conference.
- F. Progress meetings.
- G. Pre-installation conferences.

1.2 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical and electrical work, which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 REQUESTS FOR INFORMATION (RFIs)

- A. Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
- B. RFI to include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project Date
 - 2. Date
 - 3. Name of Contractor
 - 4. Name of Architect
 - 5. RFI number, numbered sequentially
 - 6. RFI subject

- 7. Specification Section number, title and related paragraphs as appropriate.
- 8. Drawing number and detail references, as appropriate.
- 9. Field dimensions and conditions, as appropriate.
- 10. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or Contract Sum, Contractor shall state impact in the RFI.
- 11. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. Architect will review each RFI, determine action required and respond. Allow ten working days for Architect's response for each RFI. RFIs received by Architect after 1:00pm EST will be considered as received the following day. If it is necessary for a Consultant to review an RFI allow for fifteen working days for both Architect and Consultant response for each RFI.
- D. Architect's action may include a request for additional information, in which Architect's time for response will date from the time of receipt of additional information.
- E. Architect's action that may result in a change to the Contract Time or Contract Sum may be eligible for Contractor to submit a Change Proposal in accordance with 01 26 00 Contract Modification Procedures.
 - 1. If Contractor believe the RFI response warrants change in Contract Time of Contract Sum, notify the Architect in writing within ten business days or receipt of the RFI response.

1.4 FIELD ENGINEERING

- A. Employ a Land Surveyor registered in the State of Connecticut and acceptable to the Architect/Engineer.
- B. Contractor to locate and protect survey control and reference points.
- C. Control datum for survey is that established by Owner provided survey as shown on Drawings.
- D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- E. Submit a copy of registered site drawing and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.

1.5 PRECONSTRUCTION CONFERENCE

- A. Owner will schedule a conference after Notice of Award.
- B. Attendance Required: Owner, Architect/Engineer & Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing the parties in Contract, and the

Architect/Engineer.

- 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
- 7. Scheduling.

1.6 SITE MOBILIZATION CONFERENCE

- A. Owner will schedule a conference at the Project site prior to Contractor occupancy.
- B. Attendance Required: Owner, Architect/Engineer, and Contractor, Contractor's Superintendent & major Subcontractors.
- C. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements.
 - 3. Construction facilities and controls provided by Owner.
 - 4. Temporary utilities provided by Owner.
 - 5. Survey and building layout.
 - 6. Security and housekeeping procedures.
 - 7. Schedules.
 - 8. Procedures for testing.
 - 9. Procedures for maintaining record documents.
 - 10. Requirements for start-up of equipment.
 - 11. Inspection and acceptance of equipment put into service during construction period.

1.7 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum weekly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings. Architect will record meetings and distribute copies within seven days to Contractor, Owner, participants, and those affected by decisions made.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect/Engineer as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems, which impede planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.

1.8 PREINSTALLATION CONFERENCES

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

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

SECTION 01 32 33

PHOTOGRAPHIC DOCUMENTION

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following
 - 1. Periodic Construction Photographs
 - 2. Photographic documentation for submittal with Pay Requisitions.
 - 3. Final Completion Construction Photographs.

1.2 INFORMATIONAL SUBMITTALS

- A. Key Plan and Digital Photographs are to be submitted monthly with Pay requisitions, as documentation of the work completed.
- B. Key Plan: Submit key plan of project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- C. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Digital Camera: Minimum sensor resolution of 8 megapixels
 - 2. Format: Minimum 3200 x 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:
 - a) Name of project
 - b) Name and contract information for photographer
 - c) Name of Architect and Construction Manager/ General Contractor
 - d) Name of Contractor
 - e) Date Photograph was taken
 - f) Description of vantage point, indicating location, direction (by compass point_, and elevation or story of construction

1.3 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 – PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

PART 3 – EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs
- B. General: Take photographs using the maximum range of depth of field, and that are in focus,

to clearly, show the work. Photographs with blurry or out-of-focus areas will not be accepted.

- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Aerial Photography: Where applicable provide a monthly photograph of the project site & building each month of the Construction process for submission with pay requisitions/ for Owner records.
- D. 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 the last photographs were taken.
- E. Final Completion Construction Photographs: Take 20 color photographs after the date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
 - 1. Do not include Date Stamp.
- F. Additional photographs: Architect or Construction Manager may request photographs in addition to periodic photographs specified. Additional photographs include, but are not limited to, the following:
 - 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
 - b) Owner's request for special publicity photographs

SECTION 01 33 00 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. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including but not limited to the following:
 - 1. Submittal schedule.
 - 2. Shop Drawings.
 - 3. Product Data.
 - 4. Samples.
 - 5. Quality assurance submittals.
 - 6. Proposed "Substitutions/Equals".
 - 7. Warrantee samples.
 - 8. Coordination Drawings.
 - 9. O & M Manuals
- B. Administrative Submittals: Refer to other Division 01 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
 - 1. Permits.
 - 2. Applications for Payment.
 - 3. Performance and payment bonds.
 - 4. Contractor's construction schedule.
 - 5. Daily construction reports.
 - 6. Construction Photographs.
 - 7. Insurance certificates.
 - 8. List of subcontractors.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 01 26 00 "Contract Modification Procedures" specifies requirements for submittal of requests for equals and substitutions.
 - 2. Section 01 26 00 "Contract Modification Procedures " specifies requirements for submittal of the Schedule of Values.
 - 3. Section 01 31 00 "Project Management and Coordination " specifies requirements governing preparation and submittal of required Coordination Drawings.
 - 4. Division 01 Section 01 31 00 " Project Management and Coordination " specifies requirements for submittal and distribution of meeting and conference minutes.
 - 5. Division 01 Section 01 40 00 "Quality Control" specifies requirements for submittal of inspection and test reports and mockups.
 - 6. Division 01 Section 01 45 23.13 "Testing for Indoor Air Quality (IAQ), Baseline IAQ, and Materials" specifies requirements for submittal of documentation required to support LEED or Green Globes certification.
- 7. Division 01 Section 01 77 00 "Contract Closeout" specifies requirements for submittal of Project Record Documents and warranties at project closeout.
- 8. Division 01 Section 01 81 13 "Sustainable Design Requirements" specifies requirements for submittal of documentation required to support LEED or Green Globes certification.
- 9. Division 01 Section 01 91 00 "Commissioning" specifies requirements for submittal of quality assurance documentation related to commissioning.

1.3 DEFINITIONS

- A. Coordination Drawings show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or to function as intended and as identified in the Specification Divisions 02 48.
 - 1. Preparation of Coordination Drawings is specified in Section 01 31 00 "Project Management and Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.
- B. Field samples are full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to establish the standard by which the Work will be judged.
- C. Mockups are full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

1.4 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - b. The Architect reserves the right to reject incomplete submitted packages.
 - 3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
 - a. Allow **[inset Number of Days]** days for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow [inset Number of Days] days for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- B. Submittal Preparation: Place a permanent label, title block or 8-1/2 inches x 11 inches cover page approved by the Architect, on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

- 1. The minimum number of copies required for each submittal shall be seven (7) or as determined otherwise at the pre-construction conference or by the Construction Administrator.
- 2. Provide a space approximately 4 inches by 5 inches on the label, beside the title block or on the cover page on Shop Drawings to record the Contractor's review and approval markings and the action taken.
- 3. Include the following information on the label for processing and recording action taken.
 - a. Project Name.
 - b. Date.
 - c. Name and address of the Architect, Construction Administrator, and Owner Representative.
 - d. Name and address of the Contractor.
 - e. Name and address of the subcontractor.
 - f. Name and address of the supplier.
 - g. Name of the manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
 - j. Indicate either initial or resubmittal.
 - k. Indicate deviations from Contract Documents.
 - 1. Indicate if "equal" or "substitution".
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. Copy the Construction Administrator on the transmittal. The Architect will return all submittals to the Contractor after action is taken with a complete copy of the submittal package and one complete copy of the submittal package. The Architect will not accept submittals received from sources other than the Contractor.
 - 1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.5 SUBMITTAL SCHEDULE

- A. After development and review by the Owner and Architect acceptance of the Contractor's Construction or CPM schedule prepare a complete schedule of submittals. Submit the schedule to the Construction Administrator within thirty (30) days of Contract Award.
 - 1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction or CPM Schedule.
 - 2. Prepare the schedule in chronological order. Provide the following information:
 - a. Schedule date for the initial submittal.
 - b. Related section number.
 - c. Submittal category (Shop Drawings, Product Data, or Samples).
 - d. Name of Subcontractor.
 - e. Description of the part of Work covered.
 - f. Scheduled date for resubmittal.
 - g. Scheduled date for the Architect's final release of approval.

- B. Submittal Schedule: Submit a schedule 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 modifications to submittals noted by the 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 Contractor's Construction or CPM Schedule.
 - 2. Initial Submittal: Submit concurrently with start-up construction schedule. Include submittals required during the first **[insert Number of Days]** 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: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
- C. 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 different types of submittals for related parts of the Work 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.
- D. 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 **[insert Number of Days]** 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 with related submittals not yet received. Additional time will be required if processing must be delayed to permit review of related subsequent submittals.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow [insert Number of Days] days for review of each resubmittal.
 - 4. Mass Submittals: Six (6) or more submittals in one (1) day or twenty (20) or more submittals in one (1) week. If "Mass Submittals" are received, Architect's review time stated above may be extended as necessary to perform proper review. Architect will review "Mass Submittals based upon priority determined by Architect after consultation with Owner and Contractor.

- E. Distribution: Following response to the initial submittal, print and distribute copies to the Construction Administrator, Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
 - 1. When revisions are made, distribute 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 construction activities.
- F. Schedule Updating: Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.6 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report recording the following information concerning events at the site, and submit duplicate copies to the Construction Administrator at weekly intervals:
 - 1. List of subcontractors at the site.
 - 2. Approximate count of personnel at the site.
 - 3. High and low temperatures, general weather conditions.
 - 4. Accidents and unusual events.
 - 5. Meetings and significant decisions.
 - 6. Stoppages, delays, shortages, and losses.
 - 7. Meter readings and similar recordings.
 - 8. List of equipment on site and identify if idle or in use.
 - 9. Orders and requests of governing authorities.
 - 10. Change Orders received, start and end dates.
 - 11. Services connected, disconnected.
 - 12. Equipment or system tests and startups.
 - 13. Partial Completion's, occupancies.
 - 14. Substantial Completion's authorized.
 - 15. Equals or Substitutions approved or rejected.

1.7 SHOP DRAWINGS

- A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
- B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
 - 1. Dimensions.
 - 2. Identification of products and materials included by sheet and detail number.
 - 3. Compliance with specified standards.
 - 4. Notation of coordination requirements.
 - 5. Notation of dimensions established by field measurement.
 - 6. 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 36 by 48 inches.
 - 7. Submit **[insert Number]** reproducible media and **[insert Number]** prints as directed by the Construction Administrator. The Contractor's submittal shall identify the specification section and/or drawing number applicable to the submittal.
 - 8. Details shall be large scale and/or full size.

- C. The Contractor shall review the Shop Drawings, stamp with this approval, and submit them with reasonable promptness and in orderly sequence so as to cause no delay in his Work or in the Work of any subcontractor. Shop Drawings shall be properly identified as specified for item, material, workmanship, and project number. At the submission, the Contractor shall inform the Architect, in writing of any deviation in the shop drawings from the requirements of the Contract Documents.
- D. The Architect will review and comment on shop drawings with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the project and with the information given in the Contract Documents. Refer to Article 5 of the General Conditions. Shop Drawings received by the Architect that indicate insufficient study of drawings and specifications, illegible portions or gross errors, will be rejected outright. Such rejections shall not constitute an acceptable reason for granting the Contractor additional time to perform the work.
- E. The Contractor shall make any corrections required by the Architect and shall resubmit the required number of corrected copies of Shop Drawings until fully reviewed.
- F. Upon final review submit **[insert Number]** additional prints, same as submitted, for use by the Construction Administrator.
- G. The Architect's review and comments on Shop Drawings shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents.
- H. Only final reviewed Shop Drawings are to be used on the Project site.
- I. The Work installed shall be reviewed in accordance with the Shop Drawings and the drawings and specifications. Final Review of the Shop Drawings by the Architect shall constitute acceptance by the Owner and the Architect of a variation or departure that is <u>clearly identified</u>. If the contractor believes notations made by the A/E increases the value or scope of the CD's, the contractor must provide written notice to the CA within seven (7) days of this issue. Final reviewed Shop Drawings shall not replace or be used as a vehicle to issue or incorporate change orders or substitutions. Substitutions shall be submitted in accordance with Division 01 Section 01 25 00 "Substitution Procedures".

1.8 SHOP DRAWING FOR FIRE PROTECTION SYSTEMS

A. Shop drawings for fire protection systems shall comply with all of the requirements in the section above "Shop Drawings". In addition Sprinkler system shop drawings and hydraulic calculations must be stamped by a professional engineer licensed in the state of Connecticut. Two (2) sets of information shall be submitted to local jurisdiction for review.

1.9 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, schedules, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
 - 1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with trade association standards.

- c. Compliance with recognized testing agency standards.
- d. Application of testing agency labels and seals.
- e. Notation of dimensions verified by field measurement.
- f. Notation of coordination requirements.
- 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
- 3. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
- 4. Submittals: Submit **[insert Number of Copies]** copies of each required submittal; submit **[insert Number of Copies]** copies where required for maintenance manuals. The Architect will retain one (1) and will return the other marked with action taken and corrections or modifications required.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
- 5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.10 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
 - 1. Store, mount or display Samples on site in the manner to facilitate review of qualities indicated. Prepare Samples to match the Architect's sample. Include the following:
 - a. Specification Section number and reference.
 - b. Generic description of the Sample.
 - c. Sample source.
 - d. Product name or name of the manufacturer.
 - e. Compliance with recognized standards.
 - f. Availability and delivery time.
 - 2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three (3) multiple units that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 - c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

- d. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.
- 3. Preliminary Submittals: Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices, unless otherwise noted in specification section.
 - a. The Architect will review and return preliminary submittals with the Architects notation, indicating selection and other action.
- 4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three (3) sets. The Architect will return one (1) set marked with the action taken.
- 5. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - b. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
 - 1. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.11 QUALITY ASSURANCE SUBMITTALS

- A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.
- B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.
 - 1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
- C. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 01 Section 01 40 00 "Quality Control."

1.12 ARCHITECT'S ACTION

- A. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.
 - 1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:
 - 1. **Furnish as Corrected**: When the Architect marks a submittal "**Furnish as Corrected**," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract

Documents. Submit corrected copies for record. Final payment depends on that compliance.

- 2. Returned for Resubmittal: When the Architect marks a submittal "Rejected, or Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
 - a. Do not use, or allow others to use, submittals marked "**Rejected**, or **Revise** and **Resubmit**" at the Project Site or elsewhere where Work is in progress.
- 3. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "**Reviewed**."
- C. Unsolicited Submittals: The Architect will discard unsolicited submittals without action.

PART 2 – PRODUCTS

(Not Applicable)

PART 3 – EXECUTION (Not Applicable)

This page intentionally left blank.

SECTION 01 35 16

ALTERATION PROJECT PROCEDURES

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Products and installation for patching and extending Work.
- B. Transition and adjustments.
- C. Repair of damaged surfaces, finishes, and cleaning.

1.2 RELATED SECTIONS

- A. Section 01 31 00 Project Management and Coordination: Work sequence, Owner occupancy, Maintenance of utility services.
- B. Section 01 31 00 Project Management and Coordination, Cutting and patching.
- C. Section 01 50 00 Construction Facilities and Temporary Controls: Temporary enclosures, Protection of installed work, Cleaning during construction.
- D. Section 02 41 16.13 Building Demolition
- E. Section 02 41 19.16 Minor Demolition for Remodeling: Removal and storage of products to be reinstalled in this Section.

PART 2 – PRODUCTS

2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New Materials: As specified in product Sections; match existing Products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspection and testing Products where necessary, referring to existing Work as a standard.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that demolition is complete, and areas are ready for installation of new Work.
- B. Beginning of restoration work means acceptance of existing conditions.

3.2 PREPARATION

- A. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- C. Remove debris and abandoned items from area and from concealed spaces.
- D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.
- E. Close openings in exterior surfaces to protect existing work and salvage items from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent

condensation in exposed areas.

3.3 INSTALLATION

- A. Coordinate work of alterations and renovations to expedite completion sequentially and to accommodate Owner occupancy.
- B. Project & Finishes: Complete in all respects including operational mech./elec. work.
- C. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to original or specified condition.
- D. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.
- E. Install Products as specified in individual Sections.

3.4 TRANSITIONS

- A. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patched Work to match existing adjacent Work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect/Engineer.

3.5 ADJUSTMENTS

- A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition for Architect/Engineer review or request instructions from Architect/Engineer.
- C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
- D. Fit work at penetrations of surfaces.

3.6 REPAIR OF DAMAGED SURFACES

- A. Patch or replace portions of existing surfaces, which are damaged, lifted, discolored, or showing other imperfections.
- B. Repair substrate prior to patching finish.

3.7 FINISHES

- A. Finish surfaces as specified in individual Product Sections.
- B. Finish patches to product uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.8 CLEANING

A. In addition to cleaning specified in Section 01 77 00, clean Owner occupied areas of work.

SECTION 01 40 00

QUALITY CONTROL

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. References.
- C. Field samples.
- D. Mock-up.
- E. Inspection and testing laboratory services.
- F. Manufacturers' field services and reports.

1.2 RELATED SECTIONS

- A. Section 01 30 00 Submittals Procedures: Submission of Manufacturers' Instructions and Certificates.
- B. Section 01 60 00 Product Requirements: Requirements for material and product quality.

1.3 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- G. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

1.4 REFERENCES

- A. Conform to reference standard by date of issue current on date for receiving bids.
- B. Obtain copies of standards when required by Contract Documents.
- C. Should specified reference standards conflict with Contract Documents, request clarification for Architect/Engineer before proceeding.
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.5 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications Sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Architect/Engineer.

1.6 MOCK-UP

- A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- B. Assemble and erect specified items, with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Where mock-up is specified in individual Sections to be removed, clear area after mock-up has been accepted by Architect/Engineer.

1.7 INSPECTION AND TESTING LABORATORY SERVICES

- A. Owner will appoint and employ services of an independent firm to perform inspection and testing. Contractor shall pay for services from an allowance specified in Section 01 31 00.
- B. The independent firm will perform inspections, tests, and other services specified in individual specification Sections and as required by the Architect/Engineer.
- C. Reports will be submitted by the independent firm to the Architect/Engineer, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
 - 1. Notify Architect/Engineer and independent firm 24 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- E. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer. Contractor shall pay for required retesting.
- F. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the Architect or the Owner.
- G. Testing does not relieve Contractor to perform Work to contract requirements.

1.8 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. Submit qualifications of observer to Architect/Engineer 30 days in advance of required observations. Observer subject to approval of Architect/Engineer.
- B. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of

surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.

- C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Submit report within 30 days of observation to Architect/Engineer for review.

1.9 TOLERANCES

- A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

PART 2 – PRODUCTS

(Not used)

PART 3 – EXECUTION

(Not used)

This page intentionally left blank.

SECTION 01439

MOCK-UPS

PART 1 – GENERAL

1.1 MOCK-UPS

- A. General mock-up requirements
 - 1. Intent of mock-up is to permit review of appearance, quality of workmanship, coordination, compatibility, and relationships with adjacent materials, to test air and water infiltration performance, and to provide Contractor with opportunity to coordinate Subcontractor Work.
 - 2. Maintain quality control over Work of various Sections of Specifications, manufacturers, products, services, workmanship, and site conditions to produce mock-ups in accordance with the Contract Documents.
 - 3. Mock-ups include, but are not necessarily limited to, the following:
 - a. Exterior claddings and finishes
 - b. Special Exterior Materials
 - c. Interior Finishes
 - d. Masonry Repointing, Infill and Veneer
- B. Related Sections include but are not limited to the following:
 - 1. Section 03100 Concrete Formwork
 - 2. Section 03200 Concrete Reinforcement.
 - 3. Section 03300 Cast-in-Place Concrete.
 - 4. Section 03451 Architectural Precast Concrete
 - 5. Section 04300 Unit Masonry System
 - 6. Section 05120 Structural Steel
 - 7. Section 06100 Rough Carpentry Bulletin #2
 - 8. Section 06112 Framing & Sheathing
 - 9. Section 06200 Finish Carpentry
 - 10. Section 07190 Vapor & Air Retarders
 - 11. Section 07241 Exterior Insulation & Finish System Addendum 007
 - 12. Section 07461 Fiber Cement Siding & Trim
 - 13. Section 07465 Fiber Cement Vertical Panel System
 - 13. Section 07523 Elastomeric EPDM Sheet Roofing, Fully Adhered Bulletin #5
 - 14. Section 07620 Sheet Metal Flashing and Trim
 - 15. Section 07900 Joint Sealers.
 - 16. Section 08410 Aluminum-Framed Entrances and Storefronts
 - 17. Section 08572 Fiberglass Double-Hung Windows
 - 18. Section 09260 Gypsum Board System
 - 19. Section 09300 Ceramic Tile
 - 20. Section 09651 Resilient Wall Base Traditional Vinyl Wall Base
 - 21. Section 09652 Resilient Tile Flooring Vinyl Composition Tile
 - 22. Section 09653 Resilient Flooring Vinyl Tile and Vinyl Plank Bulletin #2
 - 23. Section 09900 Painting

1.2 SUMMARY

- A. Location of the mock-up assembly at Project site must be approved by the Architect.
- B. Provide an in-situ mock-up of a front unit entry porch and stair to permit the review of

appearance, quality of workmanship, coordination, compatibility, and relationships with adjacent materials. The Contractor shall provide framing shop drawings prior to fabrication for approval by the Architect. Mock-up will be constructed out of sequence and will be protected during construction so as to be incorporated into the final building. The mock-up will serve as the standard for workmanship once it has been accepted in writing by the Architect.

- C. Provide a freestanding exterior building mock-up to permit review of appearance, quality of workmanship, coordination, compatibility, and relationships with adjacent materials. The Contractor shall provide composite mock-up drawings prior to fabrication for approval by the Architect. Mock-up shall be constructed out of sequence and will not be incorporated into the final building. The mock-up will stand through the completion of the building exterior and serve as the standard for workmanship once it has been accepted in writing by the Architect/ SHPO. Provide the following exterior building mock-ups:
 - 1. Exterior wall assembly systems and finishes, including all transitions and interfaces between different materials and walls to openings/curtain wall and storefronts. This is a single comprehensive mock-up.
 - a. EIFS: screeds, flashings, control and expansion joints, intersections with heads/jambs/sills of windows and doors and penetrations.
 - b. Brick soldier course to trim board/ siding, with inside corner.
 - c. Fiber cement board & trim board to Castle Top siding, with inside and outside corners.
 - d. Aluminum Composite Panel System to Brick with an outside corner
 - e. Aluminum storefront to Stacked Bond Gemstone units with an outside corner
 - f. Aluminum storefront to fiber cement board
 - g. Aluminum storefront to brick
 - 2. Exterior paving including all finishes specified.
- D. Provide full size room mock-ups within the building. The rooms to serve as the mock-ups shall be as indicated on the Drawings or as approved by the Architect. Room mock-up shall include all required floor, wall, and ceilings finishes, casework, light fixtures, door(s) and frame(s), glazing, mechanical diffusers, and other required materials and finishes. Make necessary modifications until room mock-up is accepted by the Architect. Mock-up shall be constructed out of sequence. Upon acceptance, the room mock-up will be incorporated into the final completed Project. Provide the following room mock-ups:
 - 1. Typical Unit including all finishes
 - 2. Typical Communal Space including all finishes and casework sections.
 - 3. Typical ornamental handrail/guardrail.
 - 4. Mock-ups will be used by the Architect to test color and material alternatives and to accept final colors, textures and workmanship. Multiple colors may be tested for each component as part of the mock-up until the Architect is satisfied.
- E. Special Finishes Mock-ups: Provide special finish mock-ups of the following materials in specified rooms. Mock-ups shall show materials and workmanship to be expected in the completed work. Make necessary revisions as required until each special finish mock-up is accepted by the Architect. Accepted mock-ups will be allowed to remain in place. Provide special finishes mock-ups of the following:
 - 1. Typical Interior Corridor including all finishes- each building.
 - 2. Typical Corridor niche and alcove conditions.

1.3 SUBMITTALS

- A. Mock-ups shall not be fabricated until after acceptance of required submittals for all finish materials to be incorporated into the mock-ups. Project schedule shall take into account early submittal of these components to the Architect.
- B. Submit shop drawings for the mock-up that integrate shop drawings of each finish material and footings and bracing. Clearly identify components and materials to be integrated into the assembly.
- C. Prior to construction of mock-ups, provide material samples as specified in the respective Specification Sections included as part of the mock-ups.
- D. Submit structural calculations as required to ensure the structural integrity of the mockup. The calculations shall be signed by a licensed Structural or civil engineer and shall be submitted to the Architect for review.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.
- B. Performance: Mock-ups shall be constructed for the Architect's review for compliance with the Contract Documents.
- C. Make necessary additions and modifications to mock-ups as required by the Architect.
- D. Modify mock-ups, or construct or install new components if requested by the Architect, until final acceptance isobtained.
- E. Provide as many modifications as required to achieve mock-ups that are acceptable to the Architect, meeting testing requirements, and of sufficient quality to serve as the standard for the complete Project.
- F. Following acceptance, mock-ups shall serve as a performance standard of quality and appearance of the Work it represents, including the interface with adjacent materials and components as applicable.
- G. Coordinate fabrication, delivery, assembly, and installation with related materials to be included in the mock-ups. Construction of the mock-up assemblies shall be under the supervision of the same personnel who will be employed for the subsequent work.
- H. Maintain mock-ups in neat, clean condition until removal or final acceptance. Repair damage as required to maintain in condition suitable for review and approval.
- I. Accepted building mock-up shall be removed from the Project site when indicated by the Architect. Accepted room mock-up may be incorporated into the work.
 - 1. Remove and clear area after approval of the exterior mock-up only as indicated by the Architect.
- J. Scheduling:
 - 1. Construct mock-ups in a timely manner to permit review and modifications such that the

work is not delayed.

- 2. Do not proceed with ordering of components or start construction until after mock-up acceptances have been obtained and Architect has approved.
- 3. Provide the Architect not less than a 7-day notice of the time each component is ready for review.
- 4. Include line item in the construction schedule for the exterior building mock-up, showing submittals, construction, review, and approval periods.
- 5. Allow sufficient time in the schedule to accommodate failures of tests and necessity to modify and retest. The mock-up shall be erected in sufficient time to allow final approval of window frame color, glass selection, and sealant colors. section when the mock-ups are required from Contractor.

1.5 PERFORMANCE TESTING

- A. Test Methods: The on-site exterior wall assembly mock-ups shall be tested in accordance with the following ASTM test procedures:
 - 1. ASTM E 783: Field Measurement for Air Leakage through Installed Exterior Windows and Doors.
 - 2. ASTM E 1105: Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.

PART 2 - PRODUCTS

2.1 MATERIALS

A. As specified in the respective Sections of the Specifications.

2.2 EXTERIOR BUILDING MOCK-UPS

- A. Purpose: Establish standards for work indicated and specified to be included in mock-up to demonstrate quality of workmanship, materials, colors, and textures required by the Contract Documents. Include windows, sealants, siding, flashing, and other exterior materials.
 - 1. Mock-up will be used by the Architect to test color and material alternatives and to review and accept final colors, textures and workmanship. A maximum of 5 different colors may be tested as the mock-up for each component.
 - 2. Interior finishes will not be required to be installed on the interior side of the exterior building mock-up.
- B. Design Concept: Engineer and construct mock-up, including required shoring, bracing, foundations, power, etc., making required additions and modifications to details as required.
 - 1. Comply with performance requirements specified in the individual Specification Sections while maintaining basic design concept, member profiles, and alignment of components.
- C. Location: As indicated on the Drawings or as approved by Architect.

PART 3 - EXECUTION

3.1 **PREPARATION**

A. Pre-Engineering Conference for Exterior wall assembly: Prior to commencement of work, schedule meetings at mutually agreeable time to include Architect, Architect's Consultants (Structural Engineer, Waterproofing Consultant), Contractor, and Subcontractor involved in associated exterior work, manufacturer's representative and other interested parties to review

methods and procedure to be used to achieve design and Performance Requirements.

3.2 INSTALLATION

A. Installers proposed for use on the actual work shall install the mock-ups. Personnel representing manufacturers, fabricators, and installers of exterior wall components shall be present during mock- up construction and testing as appropriate for efficient evaluation and revision if required.

3.3 SEQUENCE OF INSPECTION

- A. Notify the Architect at the start of construction of mock-ups and transmit progress reports to allow the Architect to schedule reviews.
- B. Visual examination of mock-ups shall be made by the Architect.
- C. After approximately 50 percent of each mock-up has been built, request the Architect's preliminary review before completion. Incorporate visual and technical changes or variations requested by the Architect into mock-ups during their construction and prior to their completion.
- D. Obtain the Architect's acceptance of visual and technical qualities of mock-ups before commencing the corresponding work for the Project.
- E. Should the mock-ups fail to meet the requirements, it shall be taken down or dismantled, and reconstructed to the extent necessary, until acceptance has been obtained.
- F. Time the completion and reworking of mock-ups necessary to obtain acceptance to avoid delay in the construction schedule of the Project. Update the Construction Schedule to reflect required revisions to mock-ups.
- G. Maintain and protect mock-ups during construction to serve as a standard for judging work incorporated into the Project. Do not alter, remove, or destroy remote mock-ups until authorized by the Architect.

3.4 TESTING PROCEDURES

- A. Conduct tests of mock-ups in the presence of the Architect, the Contractor, and the Installer. Proceed with each test only after acceptance of the detailed outline of test procedure.
 - 1. Test protocol requires that air infiltration testing precede water tests. Should it be necessary for a water test to be performed in advance of the air test, the specimen must be allowed to completely dry before air test.
 - 2. The wind machine used for the dynamic water test shall generate wind speeds equivalent to 10 psf.
 - 3. Center deflection readings shall be taken for glass during testing.
- B. Tests: Make the following tests of the mock-ups in the order listed:
 - 1. Preliminary loading at 20 psf.
 - 2. Air Infiltration (Static Pressure): ASTME E783, except test pressure difference shall be 6.24 psf. Infiltration for entire assembly shall not exceed 0.1cfm/sf/min.
 - 3. Water Penetration (Cyclic Pressure): ASTM E 1105. Test to full design pressure without derating. No water intrusion is acceptable. The definition of water intrusion includes any water visible from the finished building interior, whether or not defined as controlled.
 - 4. Water penetration testing of exterior wall claddings. CBC Section 1403.2. Test all claddings, following this test procedure. Test to the code prescribed minimum pressure or

building design pressure, whichever is greater.

- C. Preconstruction Test Report:
 - 1. Photographs:
 - a. Take a minimum of 20 photographs at locations and intervals required by the Architect.
 - b. Submit digital color images of mock-up before, during, and after testing. Include these images in the test report.
 - 2. Details of Test Results:
 - a. List test results in order of testing.
 - b. All tests required by the specifications are to be set forth in the test report stating each of the following:
 - 1) Test results achieved
 - 2) In the case where any revisions are made to the rest specimen to achieve the rest results reported. All such changes shall be noted in the test report and graphically described on the mock-up shop drawings.
 - 3) Testing dates.
 - 4) A failure analysis sheet as an appendix to the test report indicting any corrective action taken to achieve compliance with the specification.
- D. Corrective Measures:
 - Correct any deficiencies in the mock-up observed during testing and repeat tests as may be required to show compliance with the specified performance standards and the Contract Documents. Resubmit any submittals affected by these corrections. Resubmit Shop Drawings with changes made to assemblies to successfully complete preconstruction testing.
 - 2. Deficiencies requiring repair or modification to the mock-up shall mandate a complete retesting of the mock-up beginning with the specified Preliminary Test unless otherwise requested by the Architect. If compliance with the performance standards is not achieved after 2 complete retests the Contractor shall replace mock-up completely with revised construction and start testing from the beginning.
 - 3. Incorporate corrective measures indicated by the test report into the final exterior wall assemblies after review by the University's Representative.
- E. Final Acceptance
 - 1. Final Acceptance of the mock-up shall be done in writing. Successful testing results and the completed test report are required for this acceptance.

3.5 DISPOSAL

A. When authorized by Architect, demolish and remove all components of composite mockups from project site.

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities: Electricity, lighting, heat, telephone service, water, and sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.
- C. Construction Facilities: Access roads, truck access routes, parking, progress cleaning, and project signage.

1.2 TEMPORARY ELECTRICITY

- A. Cost: By Contractor; Provide and pay for power service required from Utility source.
- B. Provide temporary electric feeder from electrical service at location as directed.
- C. Contractor will pay cost of energy used.
- D. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required.
- E. Provide main service disconnect and overcurrent protection at convenient location, feeder switch at source distribution equipment.
- F. Permanent convenience receptacles may be utilized during construction.
- G. Provide adequate distribution equipment, wiring, and outlets to provide single-phase branch circuits for power and lighting.

1.3 TEMPORARY LIGHTING

- A. Provide and maintain incandescent lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft.
- B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.
- C. Provide and maintain 0.25 watt/sq ft H.I.D. lighting to interior work areas after dark for security purposes.
- D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- E. Maintain lighting and provide routine repairs.
- F. Permanent building lighting may be utilized during construction.

1.4 TEMPORARY HEAT

- A. Provide and pay for heat devices and heat as required to maintain specified conditions for construction operations.
- B. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
- C. Maintain minimum ambient temperature of 50 degrees F (10 degrees C) in areas where construction is in progress, unless indicated otherwise in specifications.

1.5 TEMPORARY VENTILATION

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.6 TELEPHONE & FACSIMILE SERVICE

A. Provide, maintain and pay for telephone and facsimile service to field office at time of project mobilization.

1.7 TEMPORARY WATER SERVICE

- A. Provide, maintain and pay for suitable quality water service required.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

1.8 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures.

1.9 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide protection for plant life designated to remain. Replace damaged plant life.
- C. Protect non-owned vehicular traffic, stored materials, site and structures from damage.
- D. Provide temporary roofing as required.

1.10 TEMPORARY FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6-foot high fence around construction sites; equip with vehicular and pedestrian gates with locks.

1.11 WATER CONTROL

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

1.12 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather-tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification Sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- B. Provide temporary roofing as required.

1.13 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

1.14 SECURITY

A. Provide security and facilities to protect Work, and operations from unauthorized entry, vandalism, or theft.

1.15 ACCESS ROADS/TRUCK ACCESS ROUTES

- A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.
- B. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Existing on-site roads may be used for construction traffic.
- F. Follow truck access routes as shown on drawings attached to this specification section, pages 01 50 00-5 & 01 50 00-6.

1.16 PARKING

- A. Arrange for temporary parking to accommodate construction personnel.
- B. When site space is not adequate, provide additional off- site parking.

1.17 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Remove waste materials, debris, and rubbish from site periodically and dispose off-site.

1.18 PROJECT IDENTIFICATION

- A. Temporary Signs Provide three (3) project signs of exterior grade plywood and wood frame construction, painted, with die cut vinyl, self-adhesive letters and self-adhesive logo, to Owner's design and colors.
- B. Erect on site at location established by Architect/Engineer.
- C. No other signs are allowed without Owner permission except those required by law.

1.19 FIELD OFFICES

- A. Office: Weather-tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture, drawing rack and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Locate office on site in existing building or job trailer.

1.20 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet (600 mm). Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

(Not Used)

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- A. Section 00 21 13 Instructions to Bidders: Product options and substitution procedures.
- B. Section 01 40 00 Quality Control: Product quality monitoring.

1.3 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- B. Provide interchangeable components of the same manufacturer, for similar components.

1.4 TRANSPORTATION AND HANDLING

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

1.5 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive Products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated Products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when site does not permit on-site storage or protection.
- D. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Provide mixing with foreign matter.
- F. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

G. Arrange storage of Products to permit access for inspection. Periodically inspect to assure Products are undamaged and are maintained under specified conditions.

1.6 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.7 SUBSTITUTIONS

- A. Architect/Engineer will consider requests for Substitutions only within 15 days after date of Owner-Contractor Agreement.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Will provide the same warranty for the Substitution as for the specified Product.
 - 3. Will coordinate installation and make changes to other Work, which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension, which may subsequently become apparent.
 - 5. Will reimburse Owner for review and/or redesign services associated with approval by architect, engineer and other authorities.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
 - 1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 - 2. Submit shop drawings, Product data, and certified test results attesting to the proposed Product equivalence.
 - 3. The Architect will notify Contractor, in writing, of decision to accept or reject request.

PART 2 – PRODUCTS (Not Used) PART 3 – EXECUTION (Not used)

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 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 024119 "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.

1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- 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.

1.3 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. Facilitate recycling and salvage of materials

1.4 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the work

1.5 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
 - 1. Material category.
 - 2. Generation point of waste.
 - 3. Total quantity of waste in tons
 - 4. Quantity of waste salvaged, both estimated and actual in tons.
 - 5. Quantity of waste recycled, both estimated and actual in tons.
 - 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated endof-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- E. 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.
- F. 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.
- G. Qualification Data: For waste management coordinator.

1.6 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements.
- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.7 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and 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, site-clearing and construction waste generated by the Work. 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. 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.
 - 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.

PART 2 - PRODUCTS (Not Used)

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.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - 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, recycled, reused, donated, and sold.
 - 2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 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.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use:
 - 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 on-site.
 - 5. Protect items from damage during transport and storage.

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 accrue to Contractor.
- C. 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 they are 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.

3.4 RECYCLING DEMOLITION WASTE

- A. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- B. 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.
- C. 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.
- D. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- E. Conduit: Reduce conduit to straight lengths and store by type and size.

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.

3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, 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. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

SECTION 01 75 16

STARTUP PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting, and balancing.

1.02 RELATED SECTIONS

- A. Section 01 40 00 Quality Control: Manufacturers field reports.
- B. Section 01 77 00 Contract Closeout: System operation and maintenance data and extra materials.

1.03 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect/Engineer and Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions, which may cause damage.
- D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of responsible Contractors' personnel in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01 40 00 that equipment or system has been properly installed and is functioning correctly.

1.04 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate Project equipment instructed by a qualified manufacturers' representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of

manual with Owners' personnel in detail to explain all aspects of operation and maintenance.

- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled times, at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.05 TESTING, ADJUSTING, AND BALANCING

- A. Contractor will employ services of an independent firm to perform testing and adjusting. Contractor shall pay for services.
- B. Reports will be submitted by the independent firm to the Architect/Engineer indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

Not Used

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Closeout Procedures.
- B. Final Cleaning.
- C. Adjusting.
- D. Project Record Documents.
- E. Operation and Maintenance Data.
- F. Warranties.
- G. Spare Parts and Maintenance Materials.

1.2 RELATED SECTIONS

- A. Section 01 50 00 Construction Facilities and Temporary Controls: Progress cleaning.
- B. Section 01 75 16 Demonstration & Training: System start-up, testing, adjusting, and balancing.
- C. Section 22 08 00 Commissioning of Plumbing
- D. Section 23 08 00 Commissioning of HVAC
- E. Section 26 06 00 Commissioning of Electrical

1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's inspection.
- B. Provide submittals to Architect/Engineer and Owner that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.4 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site.
1.5 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.6 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the Work:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Store Record Documents separate from documents used for construction.
 - 7. Record information concurrent with construction progress.
- B. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and Modifications.
- C. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract Drawings.
- D. Delete Architect/Engineer title block and seal from all documents.
- E. Submit documents to Architect/Engineer with claim for final Application for Payment.

1.7 OPERATION AND MAINTENANCE DATA

- A. Submit one set prior to final inspection, bound in 8-1/2 x 11 inch (216 x 279 mm) text pages, three D side ring capacity expansion binders with durable plastic covers.
- B. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, type on 30 pound white paper.
 - Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone

numbers of Subcontractors and suppliers. Identify the following:

- a. Significant design criteria.
- b. List of equipment.
- c. Parts list for each component.
- d. Operating instructions.
- e. Maintenance instructions for equipment and systems.
- f. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
- Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties and bonds.
- E. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection, with Architect/Engineer comments. Revise content of documents as required prior to final submittal.
- F. Submit final volumes revised, within ten days after final inspection.

1.8 WARRANTIES

- A. Provide notarized copies.
- B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.9 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
- B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

PART 2 – PRODUCTS

(Not used)

PART 3 – EXECUTION

(Not used)

END OF SECTION

This page intentionally left blank.

SECTION 01 81 13

SUSTAINABLE DESIGN REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes general requirements and procedures for achieving the most environmentally conscious Work possible within the limits of the Construction Schedule, Contract Sum, and available materials, equipment, and products.

1.2 OBJECTIVES

- A. To obtain acceptable Indoor Air Quality (IAQ) for the completed project and minimize the environmental impacts of the construction and operation, the Contractor during the construction phase of this project shall implement the following procedures singly or in combination:
 - 1. Select products that minimize consumption of non-renewable resources, consume reduced amounts of energy and minimize amounts of pollution to produce, and employ recycled and/or recyclable materials. To help purchasers incorporate environmental considerations into purchasing decisions, it is the intent of this project to conform with EPA's Five Guiding Principles on environmentally preferable purchasing. The five principles are:
 - a. Include environmental considerations as part of the normal purchasing process.
 - b. Emphasize pollution prevention early in the purchasing process.
 - c. Examine multiple environmental attributes throughout a product's or service's life cycle.
 - d. Compare relevant environmental impacts when selecting products and services.
 - e. Collect and base purchasing decisions on accurate and meaningful information about environmental performance.
 - 2. Control sources for potential IAQ pollutants by controlled selection of materials and processes used in project construction in order to attain superior IAQ.
 - 3. Products and processes that achieve the above objectives to the extent currently possible and practical have been selected and included in these Construction Documents. The Contractor is responsible to maintain and support these objectives in developing means and methods for performing the work of this Contract and in proposing product substitutions and/or changes to specified processes.

1.3 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Divisions 2 through 48 Sections for Sustainable Design Requirements specific to the Work of each of those Sections.
 - 2. Section 01 74 19 Construction Waste Management
 - 3. Section 01 81 20 Testing for Indoor Air Quality
 - 4. Section 01 91 00 Commissioning

1.4 **DEFINITIONS**

- A. <u>Agrifiber Products</u>: Composite panel products derived from agricultural fiber.
- B. Biobased Product: As defined in the 2002 Farm Bill, a product determined by the Secretary to be a commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials.
- C. <u>Biobased Content</u>: The weight of the biobased material divided by the total weight of the product and expressed as a percentage by weight.
- D. Certificates of Chain-of-Custody: Certificates signed by manufacturers certifying that wood used to make products has been tracked through its extraction and fabrication to ensure that is was obtained from forests certified by a specified certification program.
- E. <u>Composite Wood</u>: A product consisting of wood fiber or other plant particles bonded together by a resin or binder.
- F. <u>Construction and Demolition Waste</u>: Includes solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair and demolition operations. A construction waste management plan is to be provided by the Contractor as defined in Section 01 74 19.
- G. <u>LEED</u>: The Leadership in Energy & Environmental Design green building rating systems developed and adopted by the U.S. Green Building Council (USGBC). The systems certify levels of environmental achievement based on a point and credit scoring system.
- H. <u>LEED NC</u>: The Leadership in Energy & Environmental Design green building rating system developed and adopted by the USGBC for new construction and major renovations of buildings.
- I. <u>LEED EB</u>: The Leadership in Energy & Environmental Design green building rating system developed and adopted by the USGBC for operating and maintaining existing buildings.
- J. <u>Light Pollution</u>: Light that extends beyond its source such that the additional light is wasted in an unwanted area or in an area where it inhibits view of the night sky.
- K. <u>Recycled Content Materials</u>: Products that contain pre-consumer or post-consumer materials as all or part of their feedstock.
- L. <u>Post-Consumer Recycled Content</u>: The percentage by weight of constituent materials that have been recovered or otherwise diverted from the solid-waste stream after consumer use.
- M. <u>Pre-Consumer Recycled Content</u>: Materials that have been recovered or otherwise diverted from the solid-waste stream during the manufacturing process. Pre-consumer content must be material that would not have otherwise entered the waste stream as per Section 5 of the FTC Act, Part 260 "Guidelines for the Use of Environmental Marketing Claims": <u>www.ftc.gov/bcp/grnrule/guides980427</u>
- N. <u>Regional Materials</u>: Materials that are extracted, harvested, recovered, and manufactured within a radius of 250 miles (400 km) from the Project site.

- O. <u>Salvaged or Reused Materials</u>: Materials extracted from existing buildings in order to be reused in other buildings without being manufactured.
- P. Sealant: Any material that fills and seals gaps between other materials.
- Q. <u>Volatile Organic Compounds (VOCs)</u>: Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. Compounds that have negligible photochemical reactivity, listed in EPA 40 CFR 51.100(s), are also excluded from this regulatory definition.

1.5 SUBMITTALS

- A. General: Additional Sustainable Design submittal requirements are included in other sections of the Specifications.
- B. Sustainable Design Submittals:
 - 1. Alternative Transportation: Provide manufacturer's cut sheets for all bike racks installed on site, including the total number of bicycle storage slots provided. Also, provide manufacturer's cut sheets for any alternative-fuel refueling stations installed on site, including fueling capacity information for an 8-hour period.
 - 2. Heat Island Effect:
 - a. Site Paving: Provide manufacturer's cut sheets for all impervious paving materials, highlighting the Solar Reflectance Index (SRI) of the material. Also, provide cut sheets for all pervious paving materials.
 - b. Roofing Materials: Submittals for roofing materials must include manufacturer's cut sheets or product data highlighting the Solar Reflectance Index (SRI) of the material.
 - 3. Exterior Lighting Fixtures: Submittals must include cut sheets with manufacturer's data on initial fixture lumens above 90° from nadir for all exterior lighting fixtures, and, for parking lot lighting, verification that the fixtures are classified by the IESNA as "full cutoff" (FCO); OR provide documentation that exterior luminaires are IDA-Approved as Dark-Sky Friendly by the International Dark Sky Association (IDA) Fixture Seal of Approval Program.
 - 4. Irrigation Systems: Provide manufacturer's cut sheets for all permanent landscape irrigation system components and for any rainwater harvesting system components, such as cisterns.
 - 5. Water Conserving Fixtures: Submittals must include manufacturer's cut sheets for all water-consuming plumbing fixtures and fittings (toilets, urinals, faucets, showerheads, etc.) highlighting maximum flow rates and/or flush rates. Include cut sheets for any automatic faucet-control devices.
 - 6. Process Water Use: Provide manufacturer's cut sheets for all water-consuming commercial equipment (clothes washers, dishwashers, ice machines, etc.), highlighting water consumption performance. Include manufacturer's cut sheets or product data for any cooling towers, highlighting water consumption estimates, water use reduction measures, and corrosion inhibitors.
 - 7. Elimination of CFCs AND HCFCs: Provide manufacturer's cut sheets for all cooling equipment with manufacturer's product data, highlighting refrigerants; provide manufacturer's cut sheets for all fire-suppression equipment, highlighting fire-suppression agents; provide manufacturer's cut-sheets for all polystyrene insulation (XPS) and closed-cell spray foam polyurethane insulation, highlighting the blowing agent(s).

- 8. Appliances and Equipment: Provide copies of manufacturer's product data for all Energy Star eligible equipment and appliances, including office equipment, computers and printers, electronics, and commercial food service equipment (excluding HVAC and lighting components), verifying compliance with EPA's Energy Star program.
- 9. On-Site Renewable Energy Systems: Provide cut sheets and manufacturer's product data for all on-site renewable energy generating components and equipment, including documentation of output capacity.
- 10. Measurement and Verification Systems: Provide cut sheets and manufacturer's product data for all controls systems, highlighting electrical metering and trending capability components.
- 11. Salvaged or Reused Materials: Provide documentation that lists each salvaged or reused material, the source or vendor of the material, the purchase price, and the replacement cost if greater than the purchase price.
- 12. Recycled Content: Submittals for all materials with recycled content (excluding MEP systems equipment and components) must include the following documentation:
 - a. Cost of each material or product, excluding cost of labor and equipment for installation
 - b. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the percentage of post-consumer and pre-consumer recycled content (by weight) of each material or product
 - c. An electronic spreadsheet that tabulates the Project's total materials cost and combined recycled content value (defined as the sum of the post-consumer recycled content value plus one-half of the pre-consumer recycled content value) expressed as a percentage of total materials cost. This spreadsheet shall be submitted every third month with the Contractor's Certificate and Application for Payment. It should indicate, on an ongoing basis, line items for each material, including cost, pre-consumer recycled content, post-consumer recycled content, and combined recycled content value.
- 13. Regional Materials: Submittals for all products or materials expected to contribute to the regional calculation (excluding MEP systems equipment and components) must include the following documentation:
 - a. Cost of each material or product, excluding cost of labor and equipment for installation
 - b. Location of product manufacture and distance from point of manufacture to the Project Site
 - c. Location of point of extraction, harvest, or recovery for each raw material in each product and distance from the point of extraction, harvest, or recovery to the Project Site
 - d. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the location and distance from the Project Site to the point of manufacture for each regional material
 - e. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the location and distance from the Project Site to the point of extraction, harvest, or recovery for each regional material or product, including, at a minimum, gravel and fill, planting materials, concrete, masonry, and GWB
 - f. An electronic spreadsheet that tabulates the Project's total materials cost and regional materials value, expressed as a percentage of total materials cost. This spreadsheet shall be submitted every third month with the Contractor's

Certificate and Application for Payment. It should indicate on an ongoing basis, line items for each material, including cost, location of manufacture, distance from manufacturing plant to the Project Site, location of raw material extraction, and distance from extraction point to the Project Site.

- 14. Biobased Products:
 - a. Rapidly Renewable Products: Submittals must include written documentation from the manufacturer declaring that rapidly renewable materials are made from plants harvested within a 10-year or shorter cycle and must indicate the percentage (by weight) of these rapidly renewable components contained in the candidate products, along with the costs of each of these materials, excluding labor and delivery costs.
 - b. Certified Wood: Submittals for all wood-based materials must include a statement indicating the cost of each product containing FSC Certified wood, exclusive of labor and delivery costs, and certificates of chain-of-custody from manufacturers certifying that specified certified-wood products were made from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2 "Principles and Criteria."
- 15. Outdoor Air Delivery Monitoring: Provide manufacturer's cut sheets highlighting the installed carbon dioxide monitoring system components and sequence of controls shop drawing documentation, including CO₂ differential set-points and alarm capabilities.
- 16. Interior Adhesives and Sealants: Submittals for all field-applied adhesives and sealants, which have a potential impact on indoor air, must include manufacturer's MSDSs or other Product Data highlighting VOC content.
 - a. Provide manufacturers' documentation verifying all adhesives used to apply laminates, whether shop-applied or field-applied, contain no urea-formaldehyde.
- 17. Interior Paints and Coatings: Submittals for all field-applied paints and coatings, which have a potential impact on indoor air, must include manufacturer's MSDSs or other Product Data highlighting VOC content
- 18. Exterior Paints and Coatings: Submittals for all field-applied paints and coatings, which have a potential impact on ambient air quality, must include manufacturer's MSDSs or other manufacturer's Product Data highlighting VOC content.
- 19. Floorcoverings:
 - a. Carpet Systems: Submittals for all carpet must include the following:
 - A copy of an assessment from the Building for Environmental and Economic Sustainability (BEES) software model, either Version 3.0 or 4.0, with parameters of the model set as described by this specification section.
 - 2) Manufacturer's product data verifying that all carpet systems meet or exceed the testing and product requirements of the Carpet and Rug Institute Green Label Plus program.
 - b. Resilient Flooring: Submittals for all resilient floorcovering must include manufacturer's product data verifying certification under either the Greenguard for Children & Schools or FloorScore indoor emissions testing program.
 - c. Engineered Wood Flooring and Bamboo Flooring: Submittals for all engineered wood flooring and bamboo flooring must include manufacturer's product data verifying certification under either the Greenguard or FloorScore indoor emissions testing program.

- 20. Composite Wood and Agrifiber Binders: Submittals for all composite wood and agrifiber products (including but not limited to particleboard, wheatboard, strawboard, agriboard products, engineered wood components, solid-core wood doors, OSB, MDF, and plywood products) must include manufacturer's product data verifying that these products contain no urea-formaldehyde resins.
- 21. Systems Furniture and Seating: Provide manufacturer's product data verifying that all systems furniture and seating products meet the requirements of one of the following:
 - a. Greenguard certification
 - b. SCS Indoor Advantage certification
 - c. SCS Indoor Advantage Gold certification
 - d. BIFMA Standard X7.1-2005, as tested to BIFMA method M7.1-2005 and as verified by an independent laboratory
 - e. Calculated indoor air concentration limits for furniture systems and seating determined by the U.S. EPA's Environmental Technology Verification Large Chamber Test Protocol for Measuring Emissions of VOCs and Aldehydes (September 1999) testing protocol as conducted in an independent air quality testing laboratory
- 22. Entryway Systems: Provide manufacturer's cut sheets for all walk-off systems installed to capture particulates, including permanently installed grates, grilles, slotted systems, direct glue-down walk-off mats, and non-permanent roll-out mats.
- 23. Air Filtration: Provide manufacturer's cut sheets and product data highlighting the following:
 - a. Minimum Efficiency Reporting Value (MERV) for filtration media in all air handling units (AHUs)
 - b. Minimum Efficiency Reporting Value (MERV) for filtration media installed at return air grilles during construction if permanently installed AHUs are used during construction
- 24. Mercury in Lighting: Provide manufacturer's cut sheets or product data for all fluorescent or HID lamps highlighting mercury content.
- 25. Lighting Controls: Provide manufacturer's cut sheets and shop drawing documentation highlighting all lighting controls systems components.
- 26. Thermal Comfort Controls: Provide manufacturer's cut sheets and shop drawing documentation highlighting all thermal comfort-control systems components.
- 27. Blended Cement: It is the intent of this specification to reduce CO₂ emissions and other environmentally detrimental effects resulting from the production of portland cement by requiring that all concrete mixes, in aggregate, utilize blended cement mixes to displace 40% of the portland cement typically included in conventional construction. Provide the following submittals:
 - a. Copies of concrete design mixes for all installed concrete .
 - b. Copies of typical regional baseline concrete design mixes for all compressive strengths used on the Project.
 - c. Quantities in cubic yards of each installed concrete mix.
- 28. Gypsum Wall Board: Provide manufacturer's cut sheets or product data verifying that all gypsum wallboard products are moisture and mold-resistant.
- 29. Fiberglass Insulation: Provide manufacturer's cut sheets or product data verifying that fiberglass batt insulation contains no urea-formaldehyde.
- 30. Duct Acoustical Insulation: Provide manufacturer's cut sheets or product data verifying that mechanical sound insulation materials in air distribution ducts consists of an impervious, non-porous coatings that prevent dust from accumulating in the insulating materials.

- 31. Green Housekeeping: Provide documentation that all cleaning products and janitorial paper products meet the VOC limits and content requirements of this specification section.
- C. Project Materials Cost Data: Provide a spreadsheet in an electronic file indicating the total cost for the Project and the total cost of building materials used for the Project, as follows:
 - Not more than 60 days after the Preconstruction Meeting, the General Contractor shall provide to the Owner and Architect a preliminary schedule of materials costs for all materials used for the Project organized by specification section. Exclude labor costs and all mechanical, electrical, and plumbing (MEP) systems materials and labor costs. Include the following:
 - a. Identify each reused or salvaged material, its cost, and its replacement value.
 - b. Identify each recycled-content material, its post-consumer and pre-consumer recycled content as a percentage the product's weight, its cost, its combined recycled content value (defined as the sum of the post-consumer recycled content value plus one-half of the pre-consumer recycled content value), and the total combined recycled content value for all materials as a percentage of total materials costs.
 - c. Identify each regional material, its cost, its manufacturing location, the distance of this location from the Project site, the source location for each raw material component of the material, the distance of these extraction locations from the Project site, and the total value of regional materials as a percentage of total materials costs.
 - d. Identify each biobased material, its source, its cost, and the total value of biobased materials as a percentage of total materials costs. Also provide the total value of rapidly renewable materials (materials made from plants that are harvested in less than a 10-year cycle) as a percentage of total materials costs.
 - e. Identify each wood-based material, its cost, the total wood-based materials cost, each FSC Certified wood material, its cost, and the total value of FSC Certified wood as a percentage of total wood-based materials costs.
 - 2. Provide final versions of the above spreadsheets to the Owner and Architect not more than 14 days after Substantial Completion.
- D. Construction Waste Management: See Section 01 74 19 "Construction Waste Management" for submittal requirements.
- E. Construction Indoor Air Quality (IAQ) Management: Submittals must include the following:
 - 1. Not more than 30 days after the Preconstruction Meeting, prepare and submit for the Architect and Owner's approval, an electronic copy of the draft Construction IAQ Management Plan in an electronic file including, but not limited to, descriptions of the following:
 - a. Construction procedures for meeting or exceeding the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, 1995, Chapter 3, including procedures for HVAC Protection, Source Control, Pathway Interruption, Housekeeping, and Scheduling.
 - b. Construction procedures for protecting absorptive materials stored on-site or installed from moisture damage.

- c. Schedule of submission to Architect of photographs of on-site construction IAQ management measures such as protection of ducts and on-site stored oil installed absorptive materials.
- d. Construction procedures if air handlers must be used during construction, including a description of filtration media to be used at each return air grille
- e. Construction procedure for replacing all air-filtration media immediately prior to occupancy after completion of construction, including a description of filtration media to be used at each air handling or air supply unit.
- 2. Not more than 30 days following receipt of the approved draft CIAQMP, submit an electronic copy of the approved CIAQMP in an electronic file, along with the following:
 - a. Manufacturer's cut sheets and product data highlighting the Minimum Efficiency Reporting Value (MERV) for all filtration media to be installed at return air grilles during construction if permanently installed AHUs are used during construction.
 - b. Manufacturer's cut sheets and product data highlighting the Minimum Efficiency Reporting Value (MERV) for filtration media in all air handling units (AHUs).
- 3. Not more than 14 days after Substantial Completion provide the following:
 - a. Documentation verifying required replacement of air filtration media in all air handling units (AHUs) after the completion of construction and prior to occupancy and, if applicable, required installation of filtration during construction.
 - b. A minimum of 18 Construction photographs: Six photographs taken on three different occasions during construction of the SMACNA approaches employed, along with a brief description of each approach, documenting implementation of the IAQ management measures, such as protection of ducts and on-site stored or installed absorptive materials.
 - c. A copy of the report from testing and inspecting agency documenting the results of IAQ testing, demonstrating conformance with IAQ testing procedures and requirements defined in Section 01 81 09 "Testing for Indoor Air Quality."
- F. Commissioning: See Section 01 91 00 "Commissioning Requirements" for submittal requirements.
- G. Sustainable Design Progress Reports: Concurrent with each Application for Payment, submit reports for the following:
 - Construction Waste Management: Waste reduction progress reports and logs complying with the requirements of Section 01 74 19 "Construction Waste Management."
 - 2. Construction IAQ Management: See details below under Section 3.2 Construction Indoor Air Quality Management for Construction IAQ management progress report requirements.

1.6 QUALITY ASSURANCE

- A. General: Perform the work of this Section as a supplement and in accordance with applicable requirements of Division 1 "Contractor Quality Control Program."
- B. Preconstruction Meeting: After award of Contract and prior to the commencement of the Work, schedule and conduct meeting with Owner, Architect, and all Subcontractors to

discuss the Construction Waste Management Plan, the required Construction Indoor Air Quality (IAQ) Management Plan, and all other Sustainable Design Requirements. The purpose of this meeting is to develop a mutual understanding of the Project's Sustainable Design Requirements and coordination of the Contractor's management of these requirements with the Contracting Officer and the Construction Quality Manager.

C. Construction Job Conferences: The status of compliance with the Sustainable Design Requirements of these specifications will be an agenda item at all regular job meetings conducted during the course of work at the site.

PART 2 – PRODUCTS

2.1 PRODUCT ENVIRONMENTAL REQUIREMENTS

- A. Site Clearing: Topsoil shall be provided by the Contractor from on-site material which has been stockpiled for reuse. Off-site borrow should only be used when on-site sources are exhausted. Chip and/or compost on site all vegetated material identified for removal.
- B. Do not burn rubbish, organic matter, etc. or any material on the site. Dispose of legally in accordance with Specifications Sections 01 74 19.
- C. Site Paving: All site impervious paving must be light colored, with a Solar Reflectance Index (SRI) of at least 29.
- D. Roofing Materials: All roofing systems, other than vegetated roof systems, must comply with the following requirements:
 - 1. Low-Sloped roofing less than or equal to 2:12 slope must have an SRI of at least 78.
 - 2. Steep-Sloped roofing greater than 2:12 slope must have an SRI of at least 29.
- E. Exterior Lighting Fixtures:
 - 1. All exterior luminaires must emit 0% of the total initial designed fixture lumens at an angle above 90° from nadir and/or meet the requirements of the Dark Sky certification program.
 - 2. Exterior lighting cannot exceed 80% of the lighting power densities defined by ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without amendments.
 - 3. No lighting of building facades or landscape features is permitted.
- F. Herbicides and Pest Control: Herbicides shall not be permitted, and pest control measures shall utilize EPA-registered biopesticides only.
- G. Irrigation Systems: Any permanent landscape irrigation systems must be supplied entirely by collected rainwater or graywater and must be comprised of below-grade drip emitters controlled by moisture sensors. Timer controls shall not be permitted.
- H. Water-Conserving Fixtures: Plumbing fixtures and fittings shall use in aggregate at least 40% less water than the water use baseline calculated for the building after meeting the Energy Policy Act of 1992 fixture performance requirements. Flow and flush rates shall not exceed the following:
 - 1. Toilets: no more than 1.3 gallons per flush, otherwise be dual flush 1.6/0.8 gallons per flush, and have documented bowl evacuation capability per MaP testing of at least 400 grams

- 2. Urinals: no more than 0.125 gallons per flush or use
- 3. Lavatory Faucets: 0.5 gpm with automatic faucet controls
- 4. Kitchen Sink Lavatories: 2.2 gpm
- 5. Showerheads: no more than 1.5 gpm
- I. Process Water Use: Employ strategies that in aggregate result in 20% less water use than the process water use baseline for the building after meeting the commercial equipment and HVAC performance requirements as listed in the Table below. For equipment not addressed by EPACT 2005 or the list below, additional equipment performance requirements may be proposed provided documentation supporting the proposed benchmark or industry standard is submitted.
 - 1. Clothes Washer:7.5 gallons/cubic foot/cycle
 - 2. Dishwasher with Racks: 1.0 gallons/rack
 - 3. Ice Machine: 20 gallons/100 pounds ice for machines making over 175 pounds of ice per day; 30 gallons/100 pounds ice for machines making less than 175 ice per day. Avoid water-cooled machines.
 - 4. Food Steamer: 2 gallons/hour. Use only boilerless steamers.
 - 5. Pre-Rinse Spray Valves: 1.4 gallons/minute
 - 6. Kitchen Pot-Washing Sinks: 2.2 gallons/minute
 - 7. Cooling Towers: 2.3 gallons/ton-hr. water loss
 - a. Use atrazine-based corrosion inhibitors and reducing bleed-off by increasing cycles of concentration (at least 5, or with water quality problems limit to 4).
 - b. Install meters on make-up water and discharge blow-down.
 - c. Install conductivity controller for blow-down.
 - d. Provide overflow alarm connected to central building controls.
 - e. Install drift eliminators.
 - f. Provide makeup water from sources other than potable water supply.
- J. Elimination of CFCs AND HCFCs:
 - 1. Ozone Protection: Base building cooling equipment shall contain no refrigerants other than the following: HCFC-123, HFC-134a, HFC-245fa, HFC-407c, or HFC 410a.
 - 2. Fire suppression systems may not contain ozone-depleting substances.
 - 3. Extruded polystyrene insulation (XPS) and closed-cell spray foam polyurethane insulation shall not be manufactured with hydrochlorofluorocarbon (HCFC) blowing agents.
- K. Appliances and Equipment: All Energy Star eligible equipment and appliances, including office equipment, computers and printers, electronics, and commercial food service equipment (excluding HVAC and lighting components), shall be qualified by EPA's Energy Star program.
- L. HVAC Distribution Efficiency:
 - 1. All duct systems shall be constructed of galvanized sheet metal, aluminum, or stainless steel as deemed appropriate based on the application requirements. No fiberglass duct board shall be permitted.
 - 2. All medium- and high-pressure ductwork systems shall be pressure-tested in accordance with the current SMACNA standards.
 - 3. All ductwork shall be externally insulated. No interior duct liner shall be permitted.

- 4. Where possible, all air terminal connections shall be hard-connected with sheet metal ductwork. If flexible ductwork is used, no flexible duct extension shall be more than six feet in length.
- 5. All HVAC equipment shall be isolated from the ductwork system with flexible duct connectors to minimize the transmittance of vibration.
- 6. All supply and return air branch ducts shall include the appropriate style of volume damper. Air terminal devices such as grilles, registers, and diffusers shall be balanced at duct branch dampers, not at terminal face.
- M. Measurement and Verification: Install controls and monitoring devices as required by division 15 and 16 in order to comply with International Performance Measurement & Verification Protocol (IPMVP), Volume III: Concepts and Options for Determining Energy Savings in New Construction, April 2003, Option D.
- N. Salvaged or Reused materials: There shall be no substitutions for specified salvaged and reused materials and products.
- O. Recycled Content of Materials:
 - 1. Provide building materials with recycled content such that post-consumer recycled content value plus half the pre-consumer recycled content value constitutes a minimum of 30% of the cost of materials used for the Project, exclusive of all MEP equipment, labor, and delivery costs. The Contractor shall make all attempts to maximize the procurement of materials with recycled content.
 - a. The post-consumer recycled content value of a material shall be determined by dividing the weight of post-consumer recycled content by the total weight of the material and multiplying by the cost of the material.
 - b. The pre-consumer recycled content value of a material shall be determined by dividing the weight of pre-consumer recycled content by the total weight of the material and multiplying by the cost of the material.
 - c. Do not include mechanical and electrical components in the calculations.
 - d. Do not include labor and delivery costs in the calculations.
 - e. Recycled content of materials shall be defined according to the Federal Trade Commission's "Guide for the Use of Environmental Marketing Claims," 16 CFR 260.7 (e).
 - f. Utilize all on-site existing paving materials that are scheduled for demolition as granulated fill, and include the cost of this material had it been purchased in the calculations for recycled content value.
 - g. At a minimum, the materials in the following list must contain the minimum recycled content indicated:

Category

Compost/mulch Asphaltic Concrete Paving Cast-in-Place Concrete CMU: Gray Block Steel Reinforcing Bars Structural Steel Shapes Steel Joists Steel Deck Steel Fabrications Steel Studs

Minimum Recycled Content

100% post-consumer 25% post-consumer 6% pre-consumer 20% pre-consumer 90% combined 90% combined 75% combined 75% combined 60% combined 30% combined

Steel Roofing	30% post-consumer
Aluminum Fabrications	35% combined
Rigid Insulation	20% pre-consumer
Batt insulation	30% combined
Cellulose Insulation	90% combined
Rock Wool Insulation	75% pre-consumer
Fireproofing	20% combined
Steel Doors and Frames	35% combined
Gypsum Wallboard	100% combined
Carpet	40% combined
Ceramic Tile Flooring	60% combined
Rubber Flooring and Base	60% combined
Acoustical Ceiling Tile (ACT)	40% post-consumer
ACT Suspension System	90% post-consumer
Toilet Partitions	60% post-consumer

- P. Regional Materials: Provide a minimum of 20 percent of building materials (by cost) that are manufactured and extracted/harvested within a 500 mile radius of the project site, exclusive of labor and delivery costs. The Contractor shall make all attempts to maximize the procurement of materials within this specified 500 mile radius.
- Q. Biobased Products:
 - 1. Use only biobased concrete form-release products.
 - Solid Wood Products: All new solid-wood-based materials will be certified as "FSC 100%" by an independent third party in accordance with FSC Forest Stewardship Council "Principles and Criteria" and will have received Chain-of-Custody Certification as certified by an accredited certification group such as Smartwood or Scientific Certification Systems (SCS).
 - 3. Other Wood Products: All other new wood-based materials will be certified by an independent third party in accordance with any of the following standards:
 - a. FSC: Forest Stewardship Council "Principles and Criteria" and has received Chain-of-Custody Certification as certified by an accredited certification group such as Smartwood or Scientific Certification Systems (SCS)
 - 4. Preservative-treated lumber with chromated copper arsenate (CCA) treatments is not permitted, and lumber with copper-based treatments (such as ACQ) is permitted only for ground-contact applications.
 - 5. Wood-based materials include but are not limited to the following materials (when made from wood), engineered wood products, or wood-based panel products:
 - a. Rough carpentry
 - b. Miscellaneous carpentry
 - c. Heavy timber construction
 - d. Wood decking
 - e. Particleboard
 - f. Plywood
 - g. Metal-plate-connected wood trusses
 - h. Structural glued-laminated timber
 - i. Finish carpentry
 - j. Architectural woodwork
 - k. Wood paneling
 - 1. Wood veneer wall covering

- m. Wood flooring
- n. Wood lockers
- o. Wood cabinets
- p. Wood doors
- q. Non-rented temporary construction, including bracing, concrete formwork, pedestrian barriers, and temporary protection
- R. Brominated Flame Retardants: For new furniture, do not utilize cushioned office seating, and for lounge seating, do not utilize cushioned seating with brominated flame retardants.
- S. Outdoor Air Delivery Monitoring:
 - 1. All spaces with an occupant density greater than 1 person per 40 square feet must include at least one CO₂ monitor located between 3 feet and 6 feet above the finished floor.
 - 2. All spaces with occupant density less than 1 person per 40 square feet must include a direct outdoor airflow monitor, capable of measuring the minimum outdoor airflow rate within 15% accuracy.
 - 3. Monitoring equipment must be configured to generate a building automation system alarm and a visual or audible alert when CO₂ concentrations vary by 10% or more from set point.
- T. Adhesives and Sealants:
 - 1. All adhesives and sealants used inside the building's thermal envelope must be thirdparty certified under one of the following programs:
 - a. Indoor Advantage Plus from Scientific Certification Systems, Inc.
 - b. Greenguard Children and Schools from Greenguard Environmental Institute
 - c. Collaborative for High Performance Schools
 - 2. All adhesives and sealants, regardless of where they are used, must comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24):
 - a. Concrete Curing Compound: 60 g/L
 - b. Concrete Sealer: 10 g/L
 - c. Concrete Form Release Agents: 0g/L
 - d. Garage Deck Sealer: 50g/L
 - e. Wood Glues: 20 g/L
 - f. Millwork and Casework Adhesives: 20g/L
 - g. Metal to Metal Adhesives: 30 g/L
 - h. Adhesives for Porous Materials (Except Wood): 50 g/L
 - i. Subfloor Adhesives: 50 g/L
 - j. Plastic Foam Adhesives: 50 g/L
 - k. Carpet Adhesives: 50 g/L
 - 1. Carpet Pad Adhesives: 50 g/L
 - m. Carpet Seam Sealer: 50g/L
 - n. VCT and Sheet Vinyl Adhesives: 50 g/L
 - o. Cove Base Adhesives: 50 g/L
 - p. Rubber Floor Adhesives: 60 g/L
 - q. Wood Flooring Adhesives: 100 g/L
 - r. Ceramic Tile Adhesives: 65 g/L
 - s. Gypsum Board and Panel Adhesives: 50 g/L
 - t. Gypsum Drywall Joint Compound: 20 g/L
 - u. Portland Cement Plaster: 20 g/L

- v. Multipurpose Construction Adhesives: 70 g/L
- w. Cast Resin Countertop Silicone Sealant: 20g/L
- x. Plastic Laminate Adhesives: 20 g/L
- y. General Contact Adhesive: 80 g/L
- z. Structural Glazing Adhesives and Compounds: 100 g/L
- aa. Silicone Sealant: 50 g/L
- bb. Pipe Thread Sealant: 50 g/L
- cc. Duct Sealant: 10 g/L
- dd. Plastic Cement Welding Compounds: 250 g/L
- ee. ABS Welding Compounds: 400 g/L
- ff. CPVC Welding Compounds: 270 g/L
- gg. PVC Welding Compounds: 150 g/L
- hh. Adhesive Primer for Plastic: 250 g/L
- ii. Architectural Sealants: 250 g/L
- jj. Single-Ply Roofing Membrane Adhesives: 250 g/L
- 3. Interior sealants shall not contain: mercury, butyl rubber, neoprene, SBR (styrene butadi-ene rubber), or nitrile.
- 4. Sealants and glazing compounds formulated with aromatic solvents (organic solvent with a benzene ring in its molecular structure) fibrous talc or asbestos, formaldehyde, halo-genated solvents, mercury, lead, cadmium, hexavalent chromium, or their components shall not be used.
- 5. Adhesives used to apply laminates, whether shop-applied or field-applied, shall contain no urea-formaldehyde.
- U. Paints and Coatings:
 - Interior Paints and Coatings: For interior field-applied applications, use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the chemical restrictions (Restricted Components listed below) of Green Seal Standard GS-11, Paints, First Edition, May 20, 1993; Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997; and South Coast Air Quality Management District Rule 1113, Architectural Coatings, rules in effect on January 1, 2004, as follows:
 - a. Flat Paints and Coatings: Not more than 10 grams of VOC per liter of coating less water and exempt compounds, including pigments
 - b. Non-Flat Paints and Coatings Except High Gloss: Not more than 50 grams of VOC per liter of coating less water and exempt compounds, including pigments.
 - c. High Gloss Paints and Coatings: Not more than 150 grams of VOC per liter of coating less water and exempt compounds, including pigments. High Gloss Coatings are coatings that register a gloss of 70 or above on a 60-degree meter according to ASTM Test Method D 523 as specified in paragraph (e)(6).
 - d. Water-Based Polychromatic Finish Coatings: Not more than 150 g/L (150 g/L for primer and flat polychromatic paint)
 - e. Anti-Corrosive Coatings: Not more than 100 grams of VOC per liter of coating less water and exempt compounds
 - f. Sanding Sealers: Not more than 50 grams of VOC per liter of coating less water and exempt compounds
 - g. Waterproofing Sealers: Not more than 100 grams of VOC per liter of coating less water and exempt compounds

- h. Concrete Slab Sealers: Not more than 10 grams of VOC per liter of coating less water and exempt compounds
- i. Polyurethanes: Not more than 100 grams of VOC per liter of coating less water and exempt compounds
- j. Stains: Not more than 250 grams of VOC per liter of coating less water and exempt compounds
- 2. Interior field applied varnishes and lacquers are not permitted.
- 3. Interior paints shall not contain antimicrobial additives (such as fungicides and biocides).
- 4. Exterior Paints and Coatings: For exterior applications, use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the chemical restrictions (Restricted Components listed below) of Green Seal's Standard GS-11:
 - a. Flat Paints and Coatings: Not more than 50 grams of VOC per liter of coating less water and exempt compounds, including pigments
 - b. Non-Flat Paints and Coatings: Not more than 150 grams of VOC per liter of coating less water and exempt compounds, including pigments
 - c. High Gloss Paints and Coatings: Not more than 150 grams of VOC per liter of coating less water and exempt compounds, including pigments. High Gloss Coatings are coatings that register a gloss of 70 or above on a 60-degree meter according to ASTM Test Method D 523 as specified in paragraph (e)(6)
 - d. Anti-Corrosive Coatings: Not more than 100 grams of VOC per liter of coating less water and exempt compounds
 - e. Varnishes and Sanding Sealers: Not more than 275 grams of VOC per liter of coating less water and exempt compounds
 - f. Stains: Not more than 250 grams of VOC per liter of coating less water and exempt compounds
- 5. Aromatic Compounds: Paints and coatings shall not contain more than 1% (by weight) total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
- 6. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein
 - b. Acrylonitrile
 - c. Analine dyes
 - d. Antimony
 - e. Benzene
 - f. Butyl benzyl phthalate
 - g. Cadmium
 - h. Di (2-ethylhexyl) phthalate
 - i. Di-n-butyl phthalate
 - j. Di-n-octyl phthalate
 - k. 1,2-dichlorobenzene
 - 1. Diethyl phthalate
 - m. Dimethyl phthalate
 - n. Ethylbenzene
 - o. Formaldehyde
 - p. Hexavalent chromium
 - q. Isophorone
 - r. Lead

- s. Mercury
- t. Methyl ethyl ketone
- u. Methyl isobutyl ketone
- v. Methylene chloride
- w. Naphthalene
- x. Toluene (methylbenzene)
- y. 1,1,1-trichloroethane
- z. Vinyl chloride
- aa. Xylene
- 7. Coordinate with paint manufacturers for implementing a "take-back program" for all unused paint. Set aside scrap and unused paint to be returned to the manufacturer for recycling into new product. Close and seal all partially used containers of paint to maintain quality as necessary for reuse.
- V. Floorcoverings:
 - 1. Carpet shall achieve an Environmental Performance Score of 0.0200 as determined through an assessment in the Building for Environmental and Economic Sustainability (BEES) software model, either Version 3.0 or 4.0. The parameters of the model must be set in the following way for this assessment:
 - a. "Environmental vs. Economics Performance Weights" shall be set at 100% Environmental Performance.
 - b. "Environmental Impact Category Weights" shall be set using the EPA Scientific Advisory Board weights.
 - c. "Transportation from "Manufacture to Use" shall be set at the lowest distance possible.
 - d. In the "Nylon Carpet Parameters" dialogue box, set "Carpet Type" as "Carpet Tile" and "Installation Glue" as "Low VOC Glue."
 - 2. All carpet systems, including adhesives, must meet or exceed the Carpet and Rug Institute Green Label Plus Indoor Air Quality Test Program.
 - 3. Carpet cushion shall not contain brominated flame retardants.
 - 4. Carpet tile applications shall be self-adhering.
 - 5. All resilient floorcovering must be certified under the Greenguard or FloorScore indoor emissions testing programs.
 - 6. Engineered wood flooring and bamboo flooring must be certified under the Greenguard or FloorScore indoor emissions testing programs.
- W. Composite Wood and Agrifiber Binders: All composite wood, agrifiber products, and wood doors shall contain no added urea-formaldehyde resins.
- X. Systems Furniture and Seating:
 - 1. All systems furniture and seating meet the requirements of one of the following:
 - a. Greenguard certification
 - b. SCS Indoor Advantage certification
 - c. SCS Indoor Advantage Gold certification
 - d. BIFMA Standard X7.1-2005, as tested to BIFMA method M7.1-2005 and as verified by an independent laboratory
 - e. Calculated indoor air concentration limits for furniture systems and seating determined by the U.S. EPA's Environmental Technology Verification Large Chamber Test Protocol for Measuring Emissions of VOCs and Aldehydes (September 1999) testing protocol as conducted in an independent air quality testing laboratory

- 2. Systems furniture and seating made with coatings or sealants that contain any of the following solvents are not permitted: naptha, benzene, toluene, xylene, hexavalent chromium.
- Y. Entryway Systems: Walk-off systems to capture particulates shall be installed at least 12 feet long in the direction of entry travel at all entryways directly connected to the outdoors that are used as regular entry points by building users. Acceptable entryway systems include:
 - 1. Permanently installed grates, grilles, or slotted systems that allow for cleaning beneath them.
 - 2. Permanently installed direct glue-down walk-off mats.
 - 3. Non-permanent roll-out mats, but only if a service organization is contracted for maintenance on a weekly basis.
- Z. Air Filtration: Install air filtration media that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better in all air handling units for processing both return and outside air that is delivered to the air supply system. Replace all filtration media after the completion of construction and prior to occupancy.
- AA. Mercury in Lighting:
 - 1. Provide only low-mercury fluorescent or HID lamps with mercury content limited to the following:
 - a. T-5 and T-8 fluorescent lamps: 80 picograms per lumen hour
 - 2. Measurement Standards: Lumens to be measured according to IES LM9 for linear fluorescent lamps, IES LM66 for compact fluorescent lamps, and LM51 for HID lamps; mercury content to be measured according to U.S. EPA "Total Mercury by Cold Vapor Absorption Method" 7471A.
- BB. Lighting Controls: Install and calibrate controls as specified by Division 26 Electrical in order to comply with LEED IAQ lighting controllability requirements.
- CC. Thermal Comfort: Install and calibrate controls as specified in Division 23 Heating, Ventilation, and Air-Conditioning.
- DD. Blended Cement Concrete:
 - 1. Cementitious Materials: Provide composite mix of portland cement and ground granulated blast-furnace slag or fly ash or blended hydraulic cement and limit percentage (by weight) of portland cement (ASTM C150) in aggregate (total weighted average of cementitious material weight for all mixes and pours) to 40% less than standard regional concrete mix designs.
 - 2. Limit percentage (by weight) of standard portland cement (C-150), to the following maximum percentages of the cementitious portion of the mix while maintaining the above-40% required reduction in portland cement across the Project's total quantity of concrete:
 - a. Footings: 50%
 - b. Slab on Grade: 60%, except for cold-weather pours
 - c. Insulated Concrete Form Concrete: 40%
 - d. Elevated Slabs: 60%, except for cold-weather pours
 - e. Exterior Concrete: 75%
- EE. Gypsum Wallboard: Standard paper-faced gypsum wallboard can be used only in dry climates, where wetting during or after construction is not anticipated. In humid climates,

where dampness and condensation are a concern, use only non-paper-faced gypsum wallboard. In wet locations a cementitious wallboard, made of portland or magnesium oxide cement, must be used.

- FF. Fiberglass Insulation: Fiberglass batt insulation shall contain no formaldehyde-based binders or shall be third-party certified for conformance with Greenguard Children & Schools or Indoor Advantage Gold.
- GG. Duct Acoustical Insulation: Mechanical sound insulation materials within the duct shall consist of an impervious
- HH. Green Housekeeping:
 - Utilize cleaning products that meet the requirements of the Green Seal GS-37 standard or comply with the requirements and maximum VOC limits of Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Regulation for Reducing VOC Emissions from Consumer Products (September 2001).
 - 2. Utilize janitorial paper products and trash bags that meet the minimum percentages of post-consumer recycled content and recovered content requirements of EPA's Comprehensive Procurement Guidelines.

PART 3 – EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

- A. Develop and implement a Construction Waste Management Plan (CWMP), as defined in Section 01 74 19 "Construction Waste Management," quantifying material diversion by weight in order to recycle, reuse, and/or salvage at least 95% (by weight) of construction, demolition, and land-clearing waste.
- B. Clean materials which are contaminated prior to placing in collection containers. Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- C. Utilize any on-site existing paving materials that are scheduled for demolition as granulated fill or subbase material, and include the weight of this material in the calculations for material diverted from landfill disposal.
- D. Arrange for materials collection by or materials delivery to the appropriate recycling or reuse facility.
- E. Tax credits and other savings obtained or revenue generated for recycled or reused materials accrue to the Contractor.
- F. Discuss CWMP procedures and measures as an agenda item at all regular job meetings conducted during the course of work at the site, and record progress in meeting minutes.
- G. Submit monthly progress reports with Applications for Payment in accordance with Section 01 74 19, documenting the status of the CWMP and current diversion percentage rates.

3.2 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

- A. Develop and implement a Construction IAQ Management Plan (CIAQMP) to prevent indoor air quality problems resulting from construction activities, including, at minimum, the following:
 - 1. Construction activities must meet or exceed the minimum requirements of the SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995.
 - 2. During construction, protect all absorptive materials stored on-site or installed from moisture damage as described in the Construction IAQ Management Plan (CIAQMP) defined above. Specifically:
 - a. Exercise special care at all times in the storage of materials to prevent exposure to moisture.
 - b. Avoid installation of gypsum wallboard and other porous materials until the building is weather-tight.
 - c. All standing water which accumulates on interior floors shall be removed on the day that it is observed.
 - d. Any drywall that has retained more than 20% moisture after 48 hours following exposure to moisture, or that has evidence of mold, must be disposed of in accordance with Specification Section 01 74 19 "Construction Waste Management."
 - e. The contractor shall identify and remove all porous building materials that become wet or damaged by moisture within 7 calendar days of such exposure.
 - 3. During construction and HVAC system installation, provide the Architect with photographs of IAQ management measures (such as protection of ducts and on-site or installed absorptive materials), including six photographs on three different occasions depicting implemented SMACNA approaches.
- B. Air Filtration:
 - 1. Install air filtration media that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better in all air handling units for processing both return and outside air that is delivered to the air supply system; replace all filtration media after the completion of construction and prior to occupancy.
 - 2. Install air filtration media that provides a Minimum Efficiency Reporting Value (MERV) of 8 or better for filtration media installed at return air grilles during construction if permanently installed AHUs are used during construction. Inspect weekly and replace as required.
- C. Discuss CIAQMP procedures and measures as an agenda item at all regular job meetings conducted during the course of work at the site, and record progress in meeting minutes.
- D. Engage an independent testing and inspecting agency to conduct a baseline indoor air quality testing program after the completion of construction and prior to occupancy in accordance with Section 01 81 20 "Testing for Indoor Air Quality."

3.3 COMMISSIONING

A. Commissioning: All building energy-related systems and building envelope components shall be commissioned in accordance with the requirements of Specification Section 01 91 00 "Commissioning Requirements" and related commissioning sections in other divisions in order to verify and ensure that fundamental building elements and systems are installed, constructed, calibrated to operate, and perform according to the Owner's Project Requirements, Basis of Design, and Construction Documents.

3.4 MEASUREMENT & VERIFICATION

- A. For new construction, comply with the requirements of the International Performance Measurement & Verification Protocol (IPMVP), Volume III: Concepts and Options for Determining Energy Savings in New Construction, April 2003, Option B or D.
- B. For existing buildings, comply with the requirements of the International Performance Measurement & Verification Protocol (IPMVP), Volume I: Concepts and Options for Determining Energy and Water Savings, 2001, Option B or D.

END OF SECTION

SECTION 01 81 20

TESTING FOR INDOOR AIR QUALITY

PART – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions, other Division 1 Specification Sections, and specifications of materials mentioned in this section, apply to this Section.

1.2 SUMMARY

A. General: This section provides requirements for Baseline Indoor Air Quality (IAQ) Testing for maximum indoor pollutant concentrations for acceptance of the facility.

1.3 RELATED SECTIONS

- A. Section 01 81 13 Sustainable Design.
- B. Section 01 91 00 Commissioning.
- C. All work shall comply with Division 22, the section on "Testing, Adjusting and Balancing."
- D. All work shall comply with Division 23, the section on "Testing, Adjusting and Balancing."

1.4 SUBMITTALS

A. Baseline IAQ Testing: Submit a report for each test site specified for IAQ baseline testing as prescribed herein below and in Division 23, in the section on "Testing, Adjusting, and Balancing." Report on air concentrations of targeted pollutants identified in Subsection 3.1 of this section.

1.5 SEQUENCING AND SCHEDULING

A. Identify, program, and schedule all IAQ testing well in advance of construction in a manner to prevent delays to the performance of the work of this Contract in order to perform and complete all testing after the completion of construction activities and prior to occupancy.

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

3.1 BASELINE IAQ TESTING

- A. HVAC System Verification: To assure compliance with recognized standards for indoor air quality including ASHRAE Standard 62.1-2004, the Contractor's independent testing and balancing agency shall verify the performance of each HVAC system prior to Indoor Air Quality testing, including space temperature and space humidity uniformity, outside air quantity, filter installation, drain pan operation, and any obvious contamination sources.
- B. Indoor Air Quality Testing: Upon verification of HVAC system operation, the Contractor shall hire an independent contractor, subject to approval by the Contracting Officer's Representative, with a minimum of 5 years experience in performing the types of testing specified herein, to test levels of indoor air contaminants for compliance with specified requirements.

- 1. Conduct baseline IAQ testing using testing protocols consistent with the United States Environmental Protection Agency Compendium of Methods for the Determination of Air Pollutants in Indoor Air.
- 2. A test plan shall be submitted for the approval of the Contracting Officer's Representative. The plan shall specify procedures, times, instrumentation, and sampling methods that will be employed.
- 3. Perform IAQ testing for at least the minimum number of required sampling locations, determined as follows: For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq. ft., or for each contiguous floor area, whichever is larger, and include areas with the least ventilation as calculated by Ventilation Rate Procedure of ASHRAE Standard 62.1-2004 and greatest presumed source strength as identified by Owner. Collect air samples on three consecutive days and average the results of each three-day test cycle to determine compliance or non-compliance of indoor air quality for each air handling zone tested.
 - a. Verify areas to be tested with the Contracting Officer's Representative. Areas with 100% outside air ventilation rates such as laboratories are excluded from these testing requirements. The Contracting Officer's Representative is the sole judge of areas exempt from testing.
- 4. Perform IAQ testing following the completion of all interior construction activities and prior to occupancy. The building shall have all interior finishes installed including, but not limited to, millwork, doors, paint, carpet, and acoustic tiles. Perform testing prior to installation of furniture, workstation components, and casework.
- 5. Perform IAQ testing within the breathing zone, between 3'-0" and 6'-0" above the finished floor and over a minimum 4-hour period.
- 6. Collect air samples during normal occupied hours (prior to occupancy) with the building ventilation system starting at the daily normal start times and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.
- 7. Sample and record outside air levels of formaldehyde and TVOC contaminants at three outside air locations (as determined by Owner) simultaneously with indoor tests to establish basis of comparison for these contaminant levels by averaging the three outdoor readings for each contaminant.
- 8. Perform airborne mold and mildew air sampling and speciation with simultaneous indoor and outdoor readings.
 - a. Samples are to be collected using a 12 liter-per-minute pump and a 0.45 micron polycarbonate filter, with a 4-hour duration for each sample.
 - b. Speciation shall be done with DNA detection using the quantitative polymerase chain reaction (QPCR) method. To ensure that filters are not precontaminated with mold, a field blank filter cartridge shall be tested after every eighth sample is tested.
- 9. Acceptance of respective portions of the building by the Owner is subject to compliance with specified limits of indoor air quality contaminant levels.
- C. Indoor air quality shall conform to the following standards and limits:
 - 1. Formaldehyde: <20 microgram/m3 (16.3 ppb)
 - 2. Sum of VOCs: <200 microgram/m3
 - 3. Carbon Monoxide: Not to exceed 9 ppm

- 4. Other compounds found on the California Office of Environmental Health Hazard Assessment's list of chronic inhalation Reference Exposure Levels (RELs) are not to exceed those levels, as published on:
 - http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html
- 5. Airborne Mold and Mildew: The species identified in indoor air cannot vary by more than 10% from those identified in the exterior samples.
- D. Test Reports: Prepare test reports showing the results and location of each test, a summary of the HVAC operating conditions, and a listing of any discrepancies and recommendations for corrective actions, if required.
 - 1. Include certification of test equipment calibration with each test report.
- E. For each sampling point where the maximum concentration limits are exceeded, the Contractor is responsible for conducting additional flush-out with outside air and retesting the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test. Retesting shall be performed at no additional expense to the Owner.
- F. For each sampling point where the airborne mold and mildew indoor species distribution varies by more than 10% from exterior sampling speciation, Contractor shall identify the source of the mold and/or mildew and remediate with corrective action, then retest in accordance with section 3.1.B above until compliant results are attained.
- G. In the event that any non-compliant test results occur, Contractor must provide a written report to the Owner describing the source(s) of the non-compliant condition(s) and the corrective action(s) implemented.

3.2 INDEPENDENT MATERIALS TESTING:

- A. Materials That Must Be Tested: All materials listed below that are proposed for use on this project shall be tested for permanent, in-place indoor air quality performance in accordance with requirements of these specifications. Results shall be furnished to the Contracting Officer's Representative. Materials meeting the criteria for independent testing are as follows:
 - 1. Field-applied paint systems on appropriate substrate. Paint primers and intermediate coats (if used) should be applied with a typical drying time allowed between coats (not to exceed 7 days).
 - 2. Wallcoverings
 - 3. Carpet including manufacturer's recommended adhesive. The carpet will be applied to the appropriate flooring per manufacturer's instructions so that the testing is of the "carpet assembly."
 - 4. Ceiling tile
 - 5. Interior furnishings
 - 6. Any fireproofing material that may be exposed to indoor air, directly or in a plenum, applied to appropriate substrate
- B. Materials for Testing: Only test representative samples of actual products selected for use on this project. Tests of products generically and/or technically similar but produced by a manufacturer other than that of the product selected for use on this project are invalid.

- C. Materials Testing and Evaluation Protocol: California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers," July 2004. available online: <u>http://www.dhs.ca.gov/ps/deodc/ehlb/iaq/VOCS/</u>
- D. Performance Thresholds: All compounds detected that have chronic reference exposure levels listed in the California DHS Standard Practice document shall be analyzed and compared to the allowable concentration levels.
- E. Materials Test Reports: Submit test reports to the Contracting Officer's Representative. The report shall include raw emission levels, as well as the calculated resulting concentrations and the assumptions (loading, volume of space, ventilation rates) used to determine those resulting concentrations.
- F. Product/Material Evaluation: All products/materials shown by testing to comply with emissions limits and other criteria specified in this section will be approved for use on this project subject to compliance with all other specified requirements of the Project Manual. Products/materials shown to exceed specified emission limits shall be discussed, test results interpreted, and a determination made as to alternative product uses or selections.

END OF SECTION

SECTION 01 91 00

COMMISSIONING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Section 22 08 00 Commissioning of Plumbing
- C. Section 23 08 00 Commissioning of HVAC
- D. Section 26 08 00 Commissioning of Electrical Systems

1.2 SUMMARY

- A. This section includes:
 - Commissioning: Commissioning is a systematic process of ensuring that all building systems perform interactively according to the design intent and the Owner's operational needs. This is achieved by beginning in the design phase and documenting design intent and continuing through construction, acceptance, and the warranty period with actual verification of performance. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training.
 - 2. Commissioning during the construction phase is intended to achieve the following specific objectives according to the Contract Documents:
 - a. Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and to industry accepted minimum standards and that they receive adequate operational checkout by installing contractors.
 - b. Verify and document proper performance of equipment and systems.
 - c. Verify that O&M documentation left on site is complete.
 - d. Verify that the Owner's operating personnel are adequately trained.
 - 3. The commissioning process does not take away from or reduce the responsibility of the Contractor to meet the Contract Documents.
- B. Related Sections include the following:
 - 1. Contract drawings and specifications, general provisions of the contract, including general and supplementary conditions, architectural, electrical, and mechanical provisions, and Division 1 Specification Sections apply to work of this Section.

1.3 ABBREVIATIONS

A. Abbreviations: The following are common abbreviations used in this *Specification* and in the *Commissioning Plan*.

A/E	Architect and design engineers	GC	General Contractor
CA	Commissioning authority	IC	Installing Contractor
CC	Construction checklist	MC	Mechanical Contractor
CT	Commissioning Team	RTF	Resolution Tracking Form
Cx	Commissioning	Subs	Subs to Prime Contractors

Cx Plan Commissioning Plan document

EC Electrical Contractor

FT Functional performance test

1.4 COORDINATION

- A. Commissioning Team The members of the commissioning team consist of the CA, the GC, the Architect and Design Engineers (particularly the Mechanical Engineer), the MC, the EC, the TAB representative, the TCC, and any other installing subs or suppliers of equipment. If known, the Owner's building or plant operator/engineer is also a member of the commissioning team.
- B. Management: The CA directs and coordinates the commissioning activities and reports to the Owner. All members work together to fulfill their contracted responsibilities and meet the objectives of the Contract Documents. The CA's responsibilities are the same regardless of who hired the CA.
- C. Scheduling: The CA will work with the GC according to established protocols to schedule the commissioning activities. The CA will provide sufficient notice (generally two weeks' notice) to the GC for scheduling commissioning activities. The GC will integrate all commissioning activities into the master schedule. All parties will address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.
- D. The CA will provide the initial schedule of primary commissioning events, or commissioning milestones, at the initial commissioning meeting. The Commissioning Plan provides a format for this schedule. As construction progresses and more detailed schedules are available from the GC, the CA will adjust the commissioning schedule accordingly.

1.5 COMMISSIONING PROCESS

- A. Commissioning Plan: The Commissioning Plan, provided as part of the bid documents, is binding on the Contractor. The commissioning plan provides guidance in the execution of the commissioning process. The Specifications will take precedence over the Commissioning Plan.
- B. Commissioning Process: The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur.
 - 1. Commissioning during construction begins with an initial Commissioning meeting conducted by the CA where the commissioning process is reviewed with the commissioning team members.
 - 2. Additional meetings will be required throughout construction, scheduled by the CA with necessary parties attending, to plan, coordinate, schedule future activities and resolve problems.
 - 3. Equipment documentation is distributed by the A/E to the CA during the normal submittal process, including detailed start-up procedures.
 - 4. The CA works with the Contractor in each discipline in developing startup plans and startup documentation formats, including providing the Contractor with construction checklists to be completed during the installation and startup process.

- 5. In general, the checkout and performance verification proceeds from simple to complex; from component level to equipment to systems and intersystem levels with construction checklists being completed before functional testing occurs.
- 6. The Contractors, under their own direction, will execute and document the completion of construction checklists and perform startup and initial checkout. The CA documents that the checklists and startup were completed according to the approved plans. This may include the CA witnessing start-up of selected equipment.
- 7. The CA develops specific equipment and system functional performance test procedures.
- 8. The functional test procedures are reviewed with the A/E, CA, and Contractors.
- 9. The functional testing and procedures are executed by the Contractors under the direction of, and documented by, the CA.
- 10. During initial functional tests and for critical equipment, the Engineer will witness the testing.
- 11. Items of non-compliance in material, installation, or setup are corrected at the Contractor's expense, and the system is retested.
- 12. The CA reviews the O&M documentation for completeness.
- 13. The project will not be considered substantially complete until the conclusion of Commissioning functional testing procedures as defined in the Commissioning Plan.
- 14. The CA reviews and coordinates the training provided by the Contractors and verifies that it was completed.
- 15. Deferred testing is conducted as specified or required.

1.6 RESPONSIBILITIES

- A. The responsibilities of various parties in the commissioning process are provided in this section. The responsibilities of the MC, TAB and TCC are in Divisions 22 and 23, those of the EC in Division 26, and those of the GC related to the building envelope and LEED-related credits and prerequisites in Division 1. It is noted that the services for the A/E and CA are not provided for in this Contract. That is, the Contractor is not responsible for providing their services. Their responsibilities are listed in the Commissioning Plan.
- B. All Parties:
 - 1. Follow the Commissioning Plan.
 - 2. Attend an initial commissioning meeting and additional meetings, as necessary.
- C. General Contractor (GC)
 - 1. Construction and Acceptance Phase:
 - a. Facilitate the coordination of the commissioning work by the CA, and with the GC and CA, ensure that commissioning activities are being scheduled into the master schedule.
 - b. Include the cost of commissioning in the total contract price.
 - c. Furnish a copy of all construction documents, addenda, change orders, and approved submittals and shop drawings related to commissioned equipment to the CA.

- d. In each purchase order or subcontract written, include requirements for submittal data, O&M data, commissioning tasks, and training.
- e. Ensure that all Contractors execute their commissioning responsibilities according to the Contract Documents and schedule.
- f. A representative shall attend the initial commissioning meeting and other necessary meetings scheduled by the CA to facilitate the Cx process.
- g. Coordinate and schedule the training of owner personnel.
 - 1) Prepare O&M manuals, according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions.
- h. Provide all requested submittal data, including detailed start-up procedures and specific responsibilities of the Owner to keep warranties in force.
- i. Assist in equipment testing per agreements with sub-contractors.
- j. Include all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment according to these Contract Documents in the base bid price to the Contractor, except for stand-alone data logging equipment that may be used by the CA.
- k. Through the Contractors they supply products to, analyze specified products and verify that the Designer has specified the newest most updated equipment reasonable for this project's scope and budget.
- 1. Provide information requested by CA regarding equipment sequence of operation and testing procedures.
 - 1) Review test procedures for equipment installed by factory representatives.
- 2. Warranty Period:
 - a. Ensure that Subcontractors execute seasonal or deferred functional performance testing, witnessed by the CA, according to the specifications.
- D. Ensure that Subcontractors correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.

1.7 **DEFINITIONS**

- A. Acceptance Phase: Phase of construction after startup and initial checkout when functional performance tests, O&M documentation review, and training occur
- B. Approval: Acceptance that a piece of equipment or system has been properly installed and is functioning in the tested modes according to the Contract Documents
- C. Architect / Engineer (A/E): The prime consultants who comprise the design team, generally the HVAC mechanical designer/engineer and the electrical designer/engineer
- D. Owner's Project Requirements: The Owner's Project Requirements is the documentation of the primary thought processes and assumptions behind design decisions that were made to meet the design intent. The Owner's Project

Requirements describes the systems, components, conditions, and methods chosen to meet the intent. Some reiterating of the design intent may be included.

- E. Commissioning Authority (CA): An independent authority, not otherwise associated with the A/E team members or the Contractor, though he/she may be hired as a subcontractor to them. The CA directs and coordinates the day-to-day commissioning activities. The CA does not take an oversight role.
- F. Commissioning Plan: An overall plan, developed before or after bidding that provides the structure, schedule, and coordination planning for the commissioning process
- G. Construction Checklist (CC): A list of items to inspect and elementary component tests to conduct to verify proper installation of equipment, provided by the CA to the Sub. Construction checklists are primarily static inspections and procedures to prepare the equipment or system for initial operation (e.g., belt tension correct, oil levels OK, labels affixed, gages in place, sensors calibrated, etc.). However, some construction checklist items entail simple testing of the function of a component, a piece of equipment, or system (such as measuring the voltage imbalance on a three phase pump motor of a chiller system). The word construction refers to before functional testing. Construction checklists augment and are combined with the manufacturer's start-up checklist. Even without a commissioning process, Contractors typically perform some, if not many, of the construction checklist items a commissioning authority will recommend. However, few Contractors document in writing the execution of these checklist items. Therefore, for most equipment, the Contractors execute the checklists on their own. The Commissioning Authority only requires that the procedures be documented in writing and does not witness much of the completion of construction checklists, except for larger or more critical pieces of equipment.
- H. Contract Documents: The documents binding on parties involved in the construction of this Project (drawings, specifications, change orders, amendments, contracts, Cx Plan, etc.)
- I. Contractor: The general contractor or authorized representative
 1. Control system: The central building energy management control system.
- J. Data Logging: Monitoring flows, currents, status, pressures, etc. of equipment using stand-alone data loggers separate from the control system
- K. Deferred Functional Tests: FTs that are performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design, or other site conditions that prevent the test from being performed
- L. Deficiency: A condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents
- M. Design Intent: A dynamic document that provides the explanation of the ideas, concepts, and criteria that are considered to be very important to the owner. It is initially the outcome of the programming and conceptual design phases.

- N. Factory Testing: Testing of equipment on-site or at the factory by factory personnel with a Project Manager present
- O. Functional Performance Test (FT): Test of the dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is the dynamic testing of systems (rather than just components) under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint). Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through all the control system's sequences of operation, and components are verified to be responding as the sequences state. Traditional air or water test and balancing (TAB) is not functional testing, in the commissioning sense of the word. TAB's primary work is setting up the system flows and pressures as specified, while functional testing is verifying that which has already been set up. The Commissioning Authority develops the functional test procedures in a sequential written form, coordinates, oversees, and documents the actual testing, which is usually performed by the installing Contractor or vendor. FTs are performed after construction checklists and startup are complete.
- P. General Contractor (GC): The Contractor for this project. Generally refers to all the GC's subs as well. Also referred to as the Contractor, in some contexts.
- Q. Indirect Indicators: Indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100% closed
- R. Installing Contractor: Contractor who installs specific equipment and/or systems
- S. Manual Test: Using hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the "observation")
- T. Monitoring: The recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or the trending capabilities of control systems
- U. Non-Compliance: See Deficiency
- V. Non-Conformance: See Deficiency
- W. Over-written Value: Writing over a sensor value in the control system to see the response of a system (e.g., changing the outside air temperature value from 50°F to 75°F to verify economizer operation). See also "Simulated Signal."
- X. Owner-Contracted Tests: Tests paid for by the Owner outside the GC's contract and for which the CA does not oversee. These tests will not be repeated during functional tests if properly documented.
- Y. Phased Commissioning: Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues, in order minimize the total construction time

- Z. Sampling: Functionally testing only a fraction of the total number of identical or nearidentical pieces of equipment. Refer to Part 3.4 F for details.
- AA. Seasonal Performance Tests: FTs that are deferred until the system(s) will experience conditions closer to their design conditions
- BB. Simulated Condition: Condition that is created for the purpose of testing the response of a system (e.g., applying a hair blower to a space sensor to see the response in a VAV box)
- CC. Simulated Signal: Disconnecting a sensor and using a signal generator to send an amperage, resistance, or pressure to the transducer and DDC system to simulate a sensor value
- DD. Specifications: The construction specifications of the Contract Documents
- EE. Startup: The initial starting or activating of dynamic equipment, including executing construction checklists
- FF. Subs: The subcontractors to the Prime Contractor who provide and install building components and systems
- GG. Test Procedures: The step-by-step process that must be executed to fulfill the test requirements. The CA develops the test procedures.
- HH. Test Requirements: Requirements specifying what modes and functions, etc. shall be tested. The test requirements are not the detailed test procedures. The test requirements for each system are specified in the respective section of the Contract Documents.
- II. Trending: Monitoring using the building control system
- JJ. Vendor: Supplier of equipment
- KK. Warranty Period: Warranty period for entire project, including equipment components. Warranty begins at Substantial Completion and extends for at least one year, unless specifically noted otherwise in the Contract Documents and accepted submittals.

1.8 SYSTEMS TO BE COMMISSIONED

A. The following checked systems are to be commissioned.

HVAC Equipment and System

- () Variable Speed Drives
- () Hydronic Piping systems
- () HVAC Pumps
- () Boilers
- () Chemical Treatment System
- () Air Cooled Condensing Units
- () Makeup Air Systems
- Air Handling Units

Electrical Equipment and System

- Power Distribution System
- _) Lighting Control Systems
- () Lighting Control Programs
 -) Engine Generators
- _) Transfer Switches
- () Switchboard
- () Panelboards
- _) Grounding

Water Infiltration / Shell Drainage Plain

()	Underfloor Air Distribution	()	Fire Alarm and Interface Items with HVAC
$\overline{()}$	Centrifugal Fans	(Security System
$\overline{\bigcirc}$	Ductwork	_	
$\overline{\bigcirc}$	Fire/Smoke Dampers		
Ō	Automatic Temperature Controls – Including an intentional sequence of operation		Plumbing System
()	Laboratory Fume Hoods	()	Domestic Water Heater
$\overline{\bigcirc}$	Testing, Adjusting, and Balancing		Air Compressor & Dryer
$\overline{\bigcirc}$	Building / Space Pressurization		Storm Water Oil / Grit Separators
$\overline{\bigcirc}$	Ceiling Radiant Heating		
Ō	Underfloor Radiant Heating		
			Building Envelope
		()	Building Insulation Installation
		$\overline{\bigcirc}$	Building Roof Installation Methods
		$\overline{()}$	Doors & Windows Installation Methods

()

PART 2 – PRODUCTS

2.1 TEST EQUIPMENT

- A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the ICI for the equipment being tested. For example, the MC of Division 23 shall ultimately be responsible for all standard testing equipment for the HVAC system and controls system in Division 23, except for equipment specific to and used by TAB in their commissioning responsibilities. The Installing Contractor shall provide two-way radios.
- B. Special equipment, tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment, according to these Contract Documents, shall be included in the base bid price to the Contractor and left on site, except for stand-alone data logging equipment that may be used by the CA.
- C. Temporary Data logging equipment and software required to test equipment will be provided by the CA but shall not become the property of the Owner.
- D. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the past year to an accuracy of 0.5°F and a resolution of + or 0.1°F. Pressure sensors shall have an accuracy of + or 2.0% of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.
- E. Refer to Part 3 for details regarding equipment that may be required to simulate required test conditions.

PART 3 – EXECUTION

3.1 MEETINGS

- A. Commissioning Meeting: Within 60 days of commencement of construction, the CA will schedule, plan and conduct a commissioning meeting with the entire commissioning team in attendance. Meeting minutes will be distributed to all parties by the CA. Information gathered from this meeting will allow the CA to revise the Commissioning Plan, which will be distributed to all parties.
- B. Miscellaneous Meetings: Other meetings will be planned and conducted by the CA as construction progresses. These meetings will cover coordination, deficiency resolution and planning issues with particular contractors. The CA will plan these meetings and will minimize unnecessary time being spent by contractors. For large projects, these meetings may be held monthly, until the final 3 months of construction when they may be held as frequently as one per week.

3.2 STARTUP, CONSTRUCTION CHECKLISTS, AND INITIAL CHECKOUT

- A. The following procedures apply to all equipment to be commissioned. Some systems that are not comprised so much of actual dynamic machinery, e.g., electrical system power quality, may have very simplified CCs and startup.
- B. General: Construction checklists are important to ensure that the equipment and systems are hooked up correctly and operational. Checklists also ensure that functional performance testing (in-depth system checkout) may proceed without unnecessary delays. Each piece of equipment receives full construction checkout. No sampling strategies are used. The construction testing for a given system must be successfully completed prior to formal functional performance testing of equipment or subsystems of the given system.
- C. Startup and Initial Checkout Plan: The CA will assist the commissioning team members responsible for startup of any equipment in developing detailed startup plans for all equipment. The primary role of the CA in this process is to ensure that there is written documentation that each of the manufacturer-recommended procedures has been completed. Parties responsible for construction checklists and startup are identified in the initial commissioning meeting and in the checklist forms.
 - 1. The CA adapts, if necessary, the representative construction checklists and procedures from the related sections. These checklists indicate required procedures to be executed as part of startup and initial checkout of the systems and the party responsible for their execution.
 - 2. The CA provides these checklists and tests to the Contractor. The Contractor determines which trade is responsible for executing and documenting each of the line item tasks and notes that trade on the form. Each form will have more than one trade responsible for its execution.
 - 3. The Contractor responsible for the purchase of the equipment develops the full startup plan by combining (or adding to) the CA's checklists with the manufacturer's detailed startup and checkout procedures from the O&M manual and the normally used field checkout sheets. The plan will include checklists and procedures with specific boxes or lines for recording and documenting the checking and inspections of each procedure and a summary statement with a signature block at the end of the plan.
 - a. The full startup plan could consist of something as simple as:
- 1) The CA's construction checklists
- 2) The manufacturer's standard written startup procedures copied from the installation manuals with check boxes by each procedure and a signature block added by hand at the end
- 3) The manufacturer's normally used field checkout sheets
- 4. The contractor submits the full startup plan to the CA for review and approval.
- 5. The CA reviews and approves the procedures and the format for documenting them, noting any procedures that need to be added.
- D. Sensor and Actuator Calibration
 - 1. All field-installed temperature, relative humidity, CO, CO₂ and pressure sensors and gages, and all actuators (dampers and valves) on all equipment shall be calibrated using the methods described below. Alternate methods may be used if approved by the CA beforehand. All test instruments shall have had a certified calibration within the last 12 months. Sensors installed in the unit at the factory with calibration certification provided need not be field-calibrated.
 - 2. All procedures used shall be fully documented on the construction checklists or other approved forms, clearly referencing the procedures followed and written documentation of initial, intermediate, and final results.
 - 3. Sensor Calibration Methods:
 - a. All Sensors: Verify that all sensor locations are appropriate and away from causes of erratic operation. Verify that sensors with shielded cable are grounded only at one end. For sensor pairs that are used to determine a temperature or pressure difference, make sure they are reading within 0.2°F of each other for temperature and within a tolerance equal to 2% of the reading of each other for pressure. Tolerances for critical applications may be tighter.
 - b. Sensors Without Transmitters--Standard Application: Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage, or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, install offset in BAS, calibrate or replace sensor.
 - c. Sensors With Transmitters--Standard Application: Disconnect sensor. Connect a signal generator in place of sensor. Connect ammeter in series between transmitter and BAS control panel. Using manufacturer's resistance-temperature data, simulate minimum desired temperature. Adjust transmitter potentiometer zero until the ammeter reads 4 mA. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the BAS. Record all values and recalibrate controller as necessary to conform to specified control ramps, reset schedules, proportional relationship, reset relationship, and P/I reaction. Reconnect sensor. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage, or building automation system [BAS]) is within the tolerances in the table below of the instrument-measured value. If not, replace sensor and repeat. For pressure sensors, perform a similar process with a suitable signal generator.

- d. Critical Applications: For critical applications (process, manufacturing, etc.) more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.
- 4. Tolerances, Standard Applications

Sensor	Required Tolerance (+/-)	Sensor	Required Tolerance (+/-)
Cooling coil, chilled and		Flow rates, water	4% of design
condenser water temps	0.4F	Relative humidity	4% of design
AHU wet bulb or dew	2.0F	Combustion flue	5.0F
point		temps	
Hot water coil and boiler	1.5F	Oxygen or CO ₂	0.1 % pts
water temp		monitor	
Outside air, space air,	0.4F	CO monitor	0.01 % pts
duct air temps			
Watthour, voltage and	1% of design	Natural gas and oil	1% of design
amperage	_	flow rate	
Pressures, air, water and	3% of design	Steam flow rate	3% of design
gas	_		_
Flow rates, air	10% of design	Barometric pressure	0.1 in. of Hg

- 5. Valve and Damper Stroke Setup and Check
 - a. EMS Readout: For all valve and damper actuator positions checked, verify the actual position against the BAS readout.
 - b. Set pumps or fans to normal operating mode. Command valve or damper closed, visually verify that valve or damper is closed and adjust output zero signal as required. Command valve or damper open, verify position is full open and adjust output signal as required. Command valve or damper to a few intermediate positions. If actual valve or damper position doesn't reasonably correspond, replace actuator or add pilot position indicator (for pneumatics).
 - c. Closure for heating coil valves (NO): Set heating setpoint 20°F above room temperature. Observe valve open. Remove control air or power from the valve and verify that the valve stem and actuator position do not change. Restore to normal. Set heating setpoint to 20°F below room temperature. Observe the valve close. For pneumatics, by override in the EMS, increase pressure to valve by 3 psi (do not exceed actuator pressure rating) and verify valve stem and actuator position does not change. Restore to normal.
 - d. Closure for cooling coil valves (NC): Set cooling setpoint 20°F above room temperature. Observe the valve close. Remove control air or power from the valve and verify that the valve stem and actuator position do not change. Restore to normal. Set cooling setpoint to 20°F below room temperature. Observe valve open. For pneumatics, by override in the EMS, increase pressure to valve by 3 psi (do not exceed actuator pressure rating) and verify valve stem and actuator position does not change. Restore to normal.
- E. Execution of Construction Checklists and Startup

- 1. Four weeks prior to startup, the contractors and vendors schedule startup and checkout with the GC and CA. The performance of the construction checklists, startup and checkout are directed and executed by the contractor or vendor. When checking off construction checklists, signatures may be required of other contractors for verification of completion of their work.
- 2. The CA will, at their own discretion, observe, at minimum, the procedures for each piece of primary equipment unless there are multiple units. In no case will the number of units witnessed be less than four on any one building, nor less than 20% of the total number of identical or very similar units.
- 3. For lower-level components of equipment, (e.g., VAV boxes, sensors, controllers), the CA shall observe a sampling of the construction and startup procedures. The sampling procedures are identified in the Commissioning Plan.
- 4. The contractors shall execute startup and provide the CA with a signed and dated copy of the completed startup and construction tests and checklists.
- 5. Only installing individuals who have direct knowledge that a line item task on the construction checklist was actually performed shall initial or check off that item.
- F. Deficiencies, Non-Conformance and Approval in Checklists and Startup
 - 1. The contractors shall clearly list any outstanding items of the initial startup and construction procedures that were not completed successfully, at the bottom of the procedures form or on an attached sheet. The procedures form and any outstanding deficiencies are provided to the CA within two days of test completion.
 - 2. The CA reviews the report and submits either a non-compliance report or an approval form to the contractors. The CA shall work with the Prime contractors to correct and retest deficiencies or uncompleted items. The CA will involve the contractors and others as necessary. The installing contractors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner, and shall notify the CA as soon as outstanding items have been corrected and resubmit an updated startup report and a Statement of Correction on the original non-compliance report. When satisfactorily completed, the CA recommends approval of the execution of the checklists and startup of each system to the A/E using a standard form.
 - 3. Items left incomplete, which later cause deficiencies or delays during functional testing, may result in back charges to the responsible party.

3.3 PHASED COMMISSIONING

A. The project will require startup and initial checkout to be executed in phases. This phasing will be planned and scheduled in a coordination meeting of the CA, MC, TAB, TCC and the GC. Results will be added to the master and commissioning schedule.

3.4 FUNCTIONAL PERFORMANCE TESTING

- A. This subsection applies to all commissioning functional testing for all divisions.
- B. The general list of equipment to be commissioned is found in this Section. The specific equipment and modes to be tested for each system are found in the respective sections.

- C. The parties responsible to execute each test are listed with each test in the respective sections.
- D. Objectives and Scope: The objective of functional performance testing is to demonstrate that each system is operating according to the Contract Documents. Functional testing facilitates bringing the systems from a state of substantial completion to full dynamic operation. Additionally, during the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.
 - 1. In general, each system should be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load) where there is a specified system response. Verifying each sequence in the sequences of operation is required. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. shall also be tested. Specific modes required in this project are given in Divisions 22, 23, and 26, and other parts of the specification.
- E. Development of Test Procedures: Before test procedures are written, the CA shall obtain all requested documentation and a current list of change orders affecting equipment or systems, including an updated points list, program code, control sequences and parameters. Using the testing parameters and requirements in Divisions 22, 23, 26, and elsewhere, the CA shall develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Each contractor or vendor responsible to execute a test shall provide limited assistance to the CA in developing the procedures review (answering questions about equipment, operation, sequences, etc.). Prior to execution, the CA shall provide a copy of the test procedures to the contractors, who shall review the tests for feasibility, safety, equipment, and warranty protection.
 - 1. The CA shall review Owner-contracted factory testing or required Owner acceptance tests which the CA is not responsible to oversee, including documentation format, and shall determine what further testing or format changes may be required to comply with the Specifications. Redundancy of testing shall be minimized.
 - 2. The purpose of any given specific test is to verify and document compliance with the stated criteria of acceptance given on the test form.
 - 3. Representative test formats and examples (not designed for this facility) are found in the appendices to Divisions 22, 23, and 26. The test procedure forms developed by the CA shall include (but not be limited to) the following information:
 - a. System and equipment or component name(s)
 - b. Equipment location and ID number
 - c. Unique test ID number, and reference to unique construction checklist and start-up documentation ID numbers for the piece of equipment
 - d. Date
 - e. Project name
 - f. Participating parties
 - g. A copy of the specification section describing the test requirements
 - h. A copy of the specific sequence of operations or other specified parameters being verified

- i. Formulas used in any calculations
- j. Required pre-test field measurements
- k. Instructions for setting up the test
- 1. Special cautions, alarm limits, etc.
- m. Specific step-by-step procedures to execute the test, in a clear, sequential, and repeatable format
- n. Acceptance criteria of proper performance with a Yes / No checkbox to allow for clearly marking whether or not proper performance of each part of the test was achieved
- o. A section for comments
- p. Signatures and date block for the CA
- F. Test Methods
 - Functional performance testing and verification may be achieved by manual testing (persons manipulate the equipment and observe performance) or by monitoring the performance and analyzing the results using the control system's trend log capabilities or by stand-alone data loggers. Division 23 Sections and other Sections specify which methods shall be used for each test. The CA may substitute specified methods or require an additional method to be executed other than what was specified. The CA will determine which method is most appropriate for tests that do not have a method specified.
 - 2. Simulated Conditions: Simulating conditions (not by an overwritten value) shall be allowed, though timing the testing to experience actual conditions is encouraged wherever practical.
 - 3. Overwritten Values: Overwriting sensor values to simulate a condition, such as overwriting the outside air temperature reading in a control system to be something other than it really is, shall be allowed, but shall be used with caution and avoided when possible. Such testing methods often can only test a part of a system, as the interactions and responses of other systems will be erroneous or not applicable. Simulating a condition is preferable, e.g., for the above case, by heating the outside air sensor with a hair dryer rather than overwriting the value or by altering the appropriate setpoint to see the desired response. Before simulating conditions or overwriting values, sensors, transducers, and devices shall have been calibrated.
 - 4. Simulated Signals: Using a signal generator which creates a simulated signal to test and calibrate transducers and DDC constants is generally recommended over using the sensor to act as the signal generator via simulated conditions or overwritten values.
 - 5. Altering Setpoints: Rather than overwriting sensor values, and when simulating conditions is difficult, altering setpoints to test a sequence is acceptable. For example, to see the AC compressor lockout work at an outside air temperature below 55°F, when the outside air temperature is above 55°F, temporarily change the lockout setpoint to be 2°F above the current outside air temperature.
 - 6. Indirect Indicators: Relying on indirect indicators for responses or performance shall be allowed only after visually and directly verifying and documenting, over the range of the tested parameters, that the indirect readings through the control system represent actual conditions and responses. Much of this verification is completed during construction testing.

- 7. Setup: Each function and test shall be performed under conditions that simulate actual conditions as close as is practically possible. The contractor executing the test shall provide all necessary materials, system modifications, etc. to produce the necessary flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions. At completion of the test, the contractor shall return all affected building equipment and systems, due to these temporary modifications, to their pre-test condition.
- 8. Sampling: Multiple identical pieces of non-life-safety or otherwise noncritical equipment may be functionally tested using a sampling strategy. Significant application differences and significant sequence of operation differences in otherwise identical equipment invalidates their common identity. A small size or capacity difference, alone, does not constitute a difference. The specific recommended sampling rates are specified with each type of equipment in Divisions 22, 23, and 26. It is noted that no sampling by contractors is allowed in construction checklist execution.
 - a. A common sampling strategy referenced in the Specifications as the "xx% Sampling—yy% Failure Rule" is defined by the following example.
 - 1) xx = the percent of the group of identical equipment to be included in each sample
 - 2) yy = the percent of the sample that if failing, will require another sample to be tested
 - b. The example below describes a 20% Sampling—10% Failure Rule.
 - Randomly test at least 20% (xx) of each group of identical equipment. In no case test less than three units in each group. This 20%, or three, constitute the "first sample."
 - 2) If 10% (yy) of the units in the first sample fail the functional performance tests, test another 20% of the group (the second sample).
 - 3) If 10% of the units in the second sample fail, test all remaining units in the whole group.
 - 4) If at any point, frequent failures are occurring and testing is becoming more troubleshooting than verification, the CA may stop the testing and require the contractor to perform and document a checkout of the remaining units, prior to continuing with functionally testing the remaining units.
- G. Coordination and Scheduling: The contractors shall provide sufficient notice to the CA regarding their completion schedule for the construction checklists and startup of all equipment and systems. The CA will schedule functional tests through the A/E, GC and other contractors. The CA shall direct, witness and document the functional testing of all equipment and systems. The contractors shall execute the tests.
 - 1. In general, functional testing is conducted after construction testing and startup has been satisfactorily completed. The control system is sufficiently tested and approved by the CA before it is used for TAB or to verify performance of other components or systems. The air balancing and water balancing is completed and debugged before functional testing of air-related or water-related equipment or systems. Testing proceeds from components to subsystems to systems. When the proper performance of all interacting individual systems has been achieved, the interface or coordinated responses between systems is checked.

H. Problem Solving: The CA will recommend solutions to problems found; however, the burden of responsibility to solve, correct, and retest problems is with the GC, contractors, and A/E.

3.5 DOCUMENTATION, NON-CONFORMANCE AND APPROVAL OF TESTS

- A. Documentation: The CA shall witness and document the results of all functional performance tests using the specific procedural forms developed for that purpose. Prior to testing, these forms are provided to the contractors for review. The CA will include the filled-out forms in the O&M manuals.
- B. Non-Conformance:
 - 1. The CA will record the results of the functional test on the procedure or test form. All deficiencies or non-conformance issues shall be noted and reported to the A/E on a standard non-compliance form.
 - 2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CA. In such cases the deficiency and resolution will be documented on the procedure form.
 - 3. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. However, the CA will not be pressured into overlooking deficient work or loosening acceptance criteria to satisfy scheduling or cost issues, unless there is an overriding reason to do so at the request of the Owner.
 - 4. As tests progress and a deficiency is identified, the CA discusses the issue with the executing contractor.
 - a. When there is no dispute on the deficiency and the contractor accepts responsibility to correct it:
 - The CA documents the deficiency and the Prime contractor's response and intentions, and they go on to another test or sequence. After the day's work, the CA submits the non-compliance reports to the A/E for signature, if required. A copy is provided to the contractor and CA. The contractor corrects the deficiency, signs the statement of correction at the bottom of the non-compliance form certifying that the equipment is ready to be retested, and sends it back to the CA.
 - 2) The contractor reschedules the test and coordinates with CA to establish a time and date that the test is to be repeated.
 - b. If there is a dispute about a deficiency, regarding whether it is a deficiency or who is responsible:
 - 1) The deficiency shall be documented on the non-compliance form with the contractor's response and a copy given to the A/E and to the contractor representative assumed to be responsible.
 - 2) Resolutions are made at the lowest management level possible. Other parties are brought into the discussions as needed. Final interpretive authority is with the A/E. Final acceptance authority is with the A/E.
 - 3) The CA documents the resolution process.
 - 4) Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency, signs the statement of correction on the non-compliance form and provides it to the CA. The contractor reschedules the test and notifies the CA of the date and time the test is to be repeated. This will occur until satisfactory performance is achieved.

- 5. Cost of Retesting
 - a. The cost for the contractor to retest a construction or functional test, if they are responsible for the deficiency, shall be theirs. If they are not responsible, any cost recovery for retesting costs shall be negotiated with the responsible parties.
 - b. For a deficiency identified, not related to any construction checklist or startup fault, the following shall apply: The CA will direct the retesting of the equipment once at no "charge" to the contractor for their time. However, the CA's time for a second retest will be charged to the contractor, who may choose to recover costs from the responsible Sub.
 - c. The time for the CA to direct any retesting required because a specific construction checklist or start-up test item, reported to have been successfully completed, but determined during functional testing to be faulty, will be back charged to the contractor, who may choose to recover costs from the party responsible for executing the faulty construction test.
 - d. Refer to the sampling section of Section 01 81 20, for requirements for testing and retesting identical equipment.
- 6. The contractor shall respond in writing to the CA at least as often as commissioning meetings are being scheduled concerning the status of each apparent outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreements and proposals for their resolution.
- 7. The CA retains the original non-conformance forms until the end of the project.
- 8. Any required retesting by any contractor shall not be considered a justified reason for a claim of delay or for a time extension by the contractor.
- C. Failure Due to Manufacturer Defect: If 10%, or three, whichever is greater, of identical pieces (size alone does not constitute a difference) of equipment fail to perform to the Contract Documents (mechanically or substantively) due to manufacturing defect, not allowing it to meet its submitted performance spec, all identical units may be considered unacceptable by the Owner. In such case, the contractor shall provide the Owner with the following:
 - 1. Within one week of notification from the A/E, the contractor shall examine all other identical units making a record of the findings. The findings shall be provided to the A/E within two weeks of the original notice.
 - 2. Within two weeks of the original notification, the contractor shall provide a signed and dated, written explanation of the problem, cause of failures, etc. and all proposed solutions, which shall include full equipment submittals. The proposed solutions shall not significantly exceed the specification requirements of the original installation.
 - 3. The A/E will determine whether a replacement of all identical units or a repair is acceptable.
 - 4. Two examples of the proposed solution will be installed by the contractor and the CA will be allowed to test the installations for up to one week, upon which the CA will decide whether to accept the solution.
 - 5. Upon acceptance, the contractor and/or manufacturer shall replace or repair all identical items, at their expense and extend the warranty accordingly, if the original equipment warranty had begun. The replacement/repair work

shall proceed with reasonable speed beginning within one week from when parts can be obtained.

D. Approval: The CA notes each satisfactorily demonstrated function on the test form. Formal approval of the functional test is made later after review by the CA. The CA recommends acceptance of each test to the Owner and A/E using a standard form. The A/E gives final approval on each test using the same form, providing a signed copy to the CA and the contractor.

3.6 OPERATION AND MAINTENANCE MANUALS

- A. Standard O&M Manuals.
 - 1. Special requirements for the TCC and TAB contractor are found in Sections 22 08 00 and 23 08 00.

3.7 TRAINING OF OWNER PERSONNEL

- A. The GC shall be responsible for training coordination and scheduling and ultimately for ensuring that training is completed.
- B. The CA shall be responsible for overseeing and approving the content and adequacy of the training of Owner personnel for commissioned equipment.
 - 1. The CA shall interview the facility manager and lead engineer to determine the special needs and areas where training will be most valuable. The Owner and CA shall decide how rigorous the training should be for each piece of commissioned equipment. The CA shall communicate the results to the contractor and vendors who have training responsibilities.
 - 2. In addition to these general requirements, the specific training requirements of Owner personnel by contractor and vendors is specified in Divisions 22, 23, and 26.
 - 3. Each contractor and vendor responsible for training will submit a written training plan to the CA for review and approval prior to training. The plan will cover the following elements:
 - a. Equipment (included in training)
 - b. Intended audience
 - c. Location of training
 - d. Objectives
 - e. Subjects covered (description, duration of discussion, special methods, etc.)
 - f. Duration of training on each subject
 - g. Instructor for each subject
 - h. Methods (classroom lecture, video, site walk-through, actual operational demonstrations, written handouts, etc.)
 - i. Instructor and qualifications
 - 4. For the primary HVAC equipment, the TCC shall provide a short discussion of the control of the equipment during the mechanical or electrical training conducted by others.
 - 5. The CA develops an overall training plan and coordinates and schedules, with the Owner and contractor, the overall training for the commissioned systems. The CA develops criteria for determining that the training was satisfactorily completed, including attending some of the training, etc. The CA recommends approval of the training to the A/E using a standard form. The A/E also signs the approval form.

- 6. At one of the training sessions, the CA presents a presentation discussing the use of the blank functional test forms for re-commissioning equipment.
- 7. The GC will provide videotaping of the training sessions, with tapes cataloged by the GC, and added to the O&M manuals.
- 8. The mechanical design engineer shall at the first training session present the overall system design concept and the design concept of each equipment section. This presentation shall include a review of all systems using the simplified system schematics (one-line drawings) including chilled water systems, heat rejection systems, heating systems, fuel oil and gas supply systems, supply air systems, exhaust system, and outside air strategies.

3.8 DEFERRED TESTING

- A. Unforeseen Deferred Tests: If any check or test cannot be completed due to the building structure, required occupancy condition, or other deficiency, execution of checklists and functional testing may be delayed upon approval of the A/E.
- B. Architect: These tests will be conducted in the same manner as the seasonal tests as soon as possible. Services of necessary parties will be negotiated.
- C. Seasonal Testing: During the warranty period, seasonal testing (tests delayed until weather conditions are closer to the system's design) specified in Division 23 shall be completed as part of this contract. The CA shall coordinate this activity. Tests will be executed and documented. and any deficiencies corrected by the appropriate contractor, with facilities staff and the CA witnessing. Any final adjustments to the O&M manuals and as-builds due to the testing will be made.

3.9 WRITTEN WORK PRODUCTS

A. The commissioning process generates a number of written work products described in various parts of the Specifications. The Commissioning Plan lists all the formal written work products, describes briefly their contents, who is responsible to create them, their due dates, who receives and approves them, and the location of the specification to create them. In summary, the written products are:

Product	Developed By	
Commissioning plan	СА	
Commissioning meeting minutes	СА	
Commissioning schedules	GC and CA with other contractors	
Equipment documentation submittals	Contractors	
Sequence clarifications	Contractors and A/E as needed	
Construction checklists	CA (Preliminary in Spec. Revised based on Approved Submittals)	
Startup and initial checkout plan	Contractors and CA (Compilation of existing documents)	

Product	Developed By	
Startup and initial checkout forms filled out	Contractors	
Final TAB report	ТАВ	
Issues log (deficiencies)	CA with responses provided by contractors	
Commissioning Progress Record	СА	
Deficiency reports	СА	
Functional test forms	СА	
Filled-out functional tests	СА	
O&M manuals	Contractors with review by CA	
Commissioning record books and CD's	СА	
Overall training plan	CA, GC, and Contractors	
Specific training agendas	Contractors	
Final commissioning report	СА	
Miscellaneous approvals	СА	

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

A. Section 07 92 00 - Joint Sealers.

1.3 REFERENCES

- A. ACI 211.1 Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- B. ACI 301 Structural Concrete for Buildings.
- C. ACI 302 Guide for Concrete Floor and Slab Construction.
- D. ACI 304 Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- E. ACI 305R Hot Weather Concreting.
- F. ACI 306R Cold Weather Concreting.
- G. ACI 308 Standard Practice for Curing Concrete.
- H. ACI 318 Building Code Requirements for Reinforced Concrete.
- I. ASTM C33 Concrete Aggregates.
- J. ASTM C94 Ready-Mixed Concrete.
- K. ASTM C150 Portland Cement.
- L. ASTM C260 Air Entraining Admixtures for Concrete.
- M. ASTM C494 Chemical Admixtures for Concrete.
- N. ASTM D994 Preformed Expansion Joint Filler for Concrete (Bituminous Type).
- O. ASTM D1190 Concrete Joint Sealer, Hot-Poured Elastic Type.
- P. ASTM D1751 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- Q. ASTM D1752 Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.4 SUBMITTALS FOR REVIEW

- A. Section 01 33 00 Submittal Procedures: Procedures for submittals.
- B. Product Data: Provide data on joint devices, attachment accessories.

1.5 SUBMITTALS FOR INFORMATION

- A. Section 01 33 00 Submittal Procedures: Procedures for submittals.
- B. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent Work.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

A. Section 01 77 00 - Contract Closeout: Operation and Maintenance Data, Warranties and Bonds, Procedures for submittals.

B. Accurately record actual locations of embedded utilities and components which are concealed from view.

1.7 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

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

2.2 ACCESSORIES

- A. Bonding Agent: Polymer resin emulsion.
- B. Vapor Retarder: 6 mil thick clear polyethylene film.
- C. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.

2.3 JOINT DEVICES AND FILLER MATERIALS

A. Joint Filler Type A: ASTM D1751; Asphalt impregnated fiberboard or felt, 1/4 inch thick; tongue and groove profile.

2.4 CONCRETE MIX

- A. Mix concrete in accordance with ACI 304. Deliver concrete in accordance with ASTM C94.
- B. Select proportions for normal weight concrete in accordance with ACI 301 Method 1.
- C. Use accelerating admixtures in cold weather only when approved by Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.
- D. Use calcium chloride only when approved by Architect/Engineer.
- E. Use set retarding admixtures during hot weather only when approved by Architect/Engineer.
- F. Add air entraining agent to normal weight concrete mix for work exposed to exterior.
- G. Slab Concrete:
 - 1. Compressive Strength (28 days): 3000 psi

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 02 21 13.
- B. Verify requirements for concrete cover over reinforcement.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.2 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- C. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

3.3 PLACING CONCRETE

- A. Place concrete in accordance with ACI 301.
- B. Notify Architect/Engineer minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, are not disturbed during concrete placement.
- D. Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends.
- E. Repair vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- F. Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.
- G. Place joint filler in floor slab. Set top to required elevations. Secure to resist movement by wet concrete.
- H. Extend joint filler from bottom of slab to within 1/8 inch of finished slab surface. Conform to Section 07 92 00 for finish joint sealer requirements.
- I. Place concrete continuously between predetermined expansion, control, and construction joints.
- J. Do not interrupt successive placement; do not permit cold joints to occur.
- K. Screed floors and slabs on grade level, maintaining surface flatness of maximum 1/8 inch in 10 feet and 1/16" in 24-inches.

3.4 CONCRETE FINISHING

- A. Steel trowel interior surfaces which are scheduled to be exposed.
- B. Broom finish exterior surfaces which are scheduled to be exposed.

3.5 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Cure floor surfaces in accordance with ACI 308.

D. Spraying: Spray water over floor slab areas and maintain wet for 7 days.

3.6 FIELD QUALITY CONTROL

- A. Section 01 40 00 Quality Control: Field inspection, testing.
- B. Provide slab flatness & levelness report upon completion of slab curing process prior to commencement of framing/ structural steel/ masonry work.
- C. Provide free access to Work and cooperate with appointed firm.
- D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.
- E. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.

3.7 PATCHING

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

3.8 DEFECTIVE CONCRETE

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

3.9 SCHEDULE OF CONCRETE FINISHES

- A. Steel trowel finish at floor slabs.
- B. Broom finish at exterior sidewalks.

END OF SECTION

SECTION 04 01 20

UNIT MASONRY RESTORATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes maintenance of unit masonry consisting of brick masonry restoration and cleaning as follows:
 - 1. Unused anchor removal.
 - 2. Repairing unit masonry, including replacing units.
 - 3. Painting steel uncovered during the work.
 - 4. Repointing joints.
 - 5. Preliminary cleaning, including removing plant growth.
 - 6. Cleaning exposed unit masonry surfaces.
- B. Related Sections:
 - 1. Division 1 Section "Special Procedures for Historic Treatment."
 - 2. Section "Unit Masonry Assemblies" for new clay masonry construction.
 - 3. Division 7 Section "Water Repellents" for water repellents applied to clay masonry.
 - 4. Division 7 Section "Sheet Metal Flashing and Trim" for metal flashing installed in or on restored clay masonry.

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Division 1 Section "Unit Prices."
 - 1. Unit prices apply to authorized work covered by quantity allowances for areas that exceed the base bid. Refer to drawings for more info.
 - 2. Unit prices apply to additions to and deletions from Work as authorized by Change Orders.

1.4 DEFINITIONS

- A. Very Low-Pressure Spray: Under 100 psi.
- B. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
- C. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.
- D. High-Pressure Spray: 800 to 1200 psi; 4 to 6 gpm.
- E. Saturation coefficient in paragraph below is also called "C/B ratio."
- F. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.

- B. Shop Drawings: For the following:
 - 1. Provisions for expansion joints or other sealant joints.
 - 2. Provisions for flashing, lighting fixtures, conduits, and weep holes as required.
 - 3. Replacement and repair anchors. Include details of anchors within individual masonry units, with locations of anchors and dimensions of holes and recesses in units required for anchors.
- C. Samples for Initial Selection: For the following:
 - 1. Pointing Mortar: Submit sets of mortar for pointing in the form of sample mortar strips, 6 inches long by 1/4 inch wide, set in aluminum or plastic channels.
 - a. Have each set contain a close color range of at least three Samples of different mixes of colored sands and cements that produce a mortar matching the cleaned masonry when cured and dry.
 - b. Submit with precise measurements on ingredients, proportions, gradations, and sources of colored sands from which each Sample was made.
 - 2. Patching Compound: Submit sets of patching compound Samples in the form of plugs (patches in drilled holes) in sample units of masonry representative of the range of masonry colors on the building.
 - a. Have each set contain a close color range of at least three Samples of different mixes of patching compound that matches the variations in existing masonry when cured and dry.
 - 3. Include similar Samples of accessories involving color selection.
- D. Samples for Verification: For the following:
 - 1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.
 - a. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.
 - 2. Each type, color, and texture of pointing mortar in the form of sample mortar strips, 6 inches long by 1/4 inch wide, set in aluminum or plastic channels.
 - a. Include with each Sample a list of ingredients with proportions of each. Identify sources, both supplier and quarry, of each type of sand and brand names of cementitious materials and pigments if any.

1.6 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful inservice performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.
- B. Source Limitations: Obtain each type of material for masonry restoration (face brick, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- C. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from 20 feet away by Architect. Perform additional paint and stain removal, general cleaning, and spot cleaning of small areas that are noticeably different, so that surface blends smoothly into surrounding areas.

- D. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
 - . Masonry Repair: Prepare sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each mockup not smaller than 2 adjacent whole units or approximately 48 inches in least dimension. Erect sample areas in existing walls unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:
 - a. Patching: Three small holes at least 1 inch in diameter for each type of masonry material indicated to be patched, so as to leave no evidence of repair.
 - 2. Repointing: Rake out joints in 2 separate areas, each approximately 36 inches high by 48 inches wide for each type of repointing required and repoint one of the areas.
 - 3. Cleaning: Clean an area approximately 25 sq. ft. for each type of masonry and surface condition.
 - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not use cleaners and methods known to have deleterious effect.
 - 4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry units to Project site strapped together in suitable packs or pallets or in heavy-duty cartons.
- B. Deliver other materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- E. Store lime putty covered with water in sealed containers.
- F. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.
- B. Repair masonry units and repoint mortar joints only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for masonry repair and mortar-joint pointing unless otherwise indicated:

- 1. When air temperature is below 40 deg F , heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F
- 2. When mean daily air temperature is below 40 deg F , provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 7 days after repair and pointing.
- D. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and windbreaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.
- E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.
- F. Clean masonry surfaces only when air temperature is 40 deg F and above and is predicted to remain so for at least 7 days after completion of cleaning.

1.9 COORDINATION

A. Coordinate masonry restoration and cleaning 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.

1.10 SEQUENCING AND SCHEDULING

- A. Order replacement materials at earliest possible date to avoid delaying completion of the Work.
- B. Order sand and gray Portland cement for pointing mortar immediately after approval of mockups. Take delivery of and store at Project site a sufficient quantity to complete Project.
- C. Perform masonry restoration work in the following sequence:
 - 1. Remove plant growth below only if cleaning precedes repairs and repointing. For this, masonry and joints must be sufficiently sound to prevent water and chemicals from penetrating into building.
 - 2. Inspect for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
 - 3. Remove paint.
 - 4. Clean 100% of masonry surfaces.
 - 5. here water repellents, specified in Division 7, are to be used on or near masonry work, delay application of these chemicals until after pointing.
 - 6. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
 - 7. Repair masonry, including replacing existing masonry with new masonry materials.
 - 8. Rake out mortar from joints to be repointed.
 - 9. Point mortar and sealant joints.
 - 10. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
 - 11. Inspect for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.

- 12. Remove paint.
- 13. Clean masonry surfaces.
- D. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units to comply with "Masonry Unit Patching" Article. Patch holes in mortar joints to comply with "Repointing Masonry" Article.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

- A. Face Brick: Provide face brick, including specially molded, ground, cut, or sawed shapes where required to complete masonry restoration work.
 - 1. Provide units with colors, color variation within units, surface texture, size, and shape to match existing brickwork and with physical properties within 10 percent of those determined from preconstruction testing of selected existing units.
 - a. For existing brickwork that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range and variation rather than brick that matches an individual color within that range.
 - 2. Tolerances as Fabricated: Comply with tolerance requirements in ASTM C 216, Type FBX.
 - 3. Date Identification: Emboss in the clay body on an interior surface of each unit in easily read 1/2-inch- high characters, "MADE 2007." Manufacturer's name may also be embossed.

2.2 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.
 - 1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Factory-Prepared Lime Putty: ASTM C 1489.
- D. Quicklime: ASTM C 5, pulverized lime.
- E. Mortar Sand: ASTM C 144 unless otherwise indicated.
 - 1. For pointing mortar, provide sand with rounded edges.
 - 2. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
- F. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.
- G. Water: Potable.

2.3 MANUFACTURED REPAIR MATERIALS

A. Masonry Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching masonry.

- 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cathedral Stone Products, Inc.; Jahn M100 Terra Cotta and Brick Repair Mortar.
 - b. Conproco Corporation; Mimic.
 - c. Edison Coatings, Inc.; Custom System 45.
- 2. Use formulation that is vapor- and water permeable (equal to or more than the masonry unit), exhibits low shrinkage, has lower modulus of elasticity than the masonry units being repaired, and develops high bond strength to all types of masonry.
- 3. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary.
- 4. Formulate patching compound used for patching brick and terra cotta in colors and textures to match each masonry unit being patched. Provide not less than three colors to enable matching the color, texture, and variation of each unit.

2.4 PAINT REMOVERS

- A. Solvent-Type Paint Remover: Manufacturer's standard water-rinsable, solvent-type gel formulation for removing paint coatings from masonry.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ABR Products, Inc.; Super Bio Strip Gel.
 - b. Diedrich Technologies Inc.; 505 Special Coatings Stripper.
 - c. Dumond Chemicals, Inc.; Peel Away 2.
 - d. Hydroclean, Hydrochemical Techniques, Inc.; Hydroclean HT-300 Solvent Paint Remover.
 - e. Price Research, Ltd.; Price Strip-All.
 - f. PROSOCO; Sure Klean Fast Acting Stripper.
- B. Low-Odor, Solvent-Type Paint Remover: Manufacturer's standard low-odor, water-rinsable solvent-type gel formulation, containing no methanol or methylene chloride, for removing paint coatings from masonry.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ABR Products, Inc.; Super Bio Strip Gel.
 - b. Cathedral Stone Products, Inc.; S-301.
 - c. Dumond Chemicals, Inc.; Peel Away 6.
 - d. PROSOCO; Enviro Klean Safety Peel 1.

2.5 CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F.
- C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups of tetrasodium polyphosphate, 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
- D. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.

- 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Price Research, Ltd.; Price Marble Cleaner-Gel.
 - b. PROSOCO; Sure Klean 942 Limestone and Marble Cleaner.

2.6 ACCESSORY MATERIALS

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ABR Products, Inc.; Rubber Mask.
 - b. Price Research, Ltd.; Price Mask.
 - c. PROSOCO; Sure Klean Strippable Masking.
- B. Setting Buttons: Resilient plastic buttons, nonstaining to masonry, sized to suit joint thicknesses and bed depths of masonry units without intruding into required depths of pointing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material, compatible with pointing mortar, joint primers, sealants, and surfaces adjacent to joints; that will easily come off entirely, including adhesive.
- D. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer complying with SSPC-Paint 20 or SSPC-Paint 29 zinc-rich coating.
 - 1. Use coating requiring no better than SSPC-SP 3, "Power Tool Cleaning" surface preparation according to manufacturer's literature or certified statement.
 - 2. Use coating with a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Miscellaneous Products: Select materials and methods of use based on the following, subject to approval of a mockup:
 - 1. Previous effectiveness in performing the work involved.
 - 2. Little 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 in any way harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in contract.
 - b. Leave a residue on surfaces.

2.7 MORTAR MIXES

- A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C 5 and manufacturer's written instructions.
- B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
 - 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a

damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

- C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.
 - 1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-tocement ratio of 1:10 by weight.
- D. Do not use admixtures in mortar unless otherwise indicated.
- E. Mortar Proportions: Mix mortar materials in the following proportions:
 - Pointing Mortar for Brick: 1 part Portland cement, 2 parts lime, and 6 parts sand.

 Add mortar pigments to produce mortar colors required.
 - 2. Pointing Mortar for Terra Cotta: 1 part white Portland cement, 1 part lime, and 6 parts sand.
 - a. Add mortar pigments to produce mortar colors required.
 - 3. Rebuilding (Setting) Mortar: Same as pointing mortar.
 - 4. Rebuilding (Setting) Mortar: Comply with ASTM C 270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to Portland cement and lime.

PART 3 - EXECUTION

3.1 **PROTECTION**

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
 - 1. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration and cleaning work.
- B. Prevent mortar from staining face of surrounding masonry and other surfaces.
 - 1. Cover sills, ledges, and projections to protect from mortar droppings.
 - 2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
 - 3. Immediately remove mortar in contact with exposed masonry and other surfaces.
 - 4. Clean mortar splatters from scaffolding at end of each day.

3.2 UNUSED ANCHOR REMOVAL

- A. Remove masonry anchors, brackets, wood nailers, and other extraneous items no longer in use unless identified as historically significant or indicated to remain.
 - 1. Remove items carefully to avoid spalling or cracking masonry.
 - 2. Where directed, if an item cannot be removed without damaging surrounding masonry, do the following:
 - a. Cut or grind off item approximately 3/4 inch beneath surface and core drill a recess of same depth in surrounding masonry as close around item as practical.
 - b. Immediately paint exposed end of item with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding

manufacturer's recommended dry film thickness per coat. Keep paint off sides of recess.

3. Patch the hole where each item was removed unless directed to remove and replace the masonry unit.

3.3 BRICK REMOVAL AND REPLACEMENT

- A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated or are to be reused. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.
 - 1. When removing single bricks, remove material from center of brick and work toward outside edges.
- B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
- D. Remove in an undamaged condition as many whole bricks as possible.
 - 1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
 - 2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
 - 3. Store brick for reuse. Store off ground, on skids, and protected from weather.
 - 4. Deliver cleaned brick not required for reuse to Owner unless otherwise indicated.
- E. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.
- F. Replace removed damaged brick with other removed brick in good quality, where possible, or with new brick matching existing brick, including size. Do not use broken units unless they can be cut to usable size.
- G. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.
 - 1. Maintain joint width for replacement units to match existing joints.
 - 2. Use setting buttons or shims to set units accurately spaced with uniform joints.
- H. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min.. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.
 - 1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
 - 2. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

3.4 MASONRY UNIT PATCHING

- A. Repointing shall match the color, texture, joint width and joint profile of the existing historic masonry. Specifications and repointing samples shall be reviewed and approved by the Connecticut Commission on Culture & Tourism before proceeding with this work.
- B. Patch the following masonry units unless another type of replacement or repair is indicated:
 - 1. Units with holes.
 - 2. Units with chipped edges or corners.
 - 3. Units with small areas of deep deterioration.
- C. Remove and replace existing patches unless otherwise indicated or approved by Architect.
- D. Patching Bricks:
 - 1. Remove loose material from masonry surface. Carefully remove additional material so patch will not have feathered edges but will have square or slightly undercut edges on area to be patched and will be at least 1/4 inch thick, but not less than recommended by patching compound manufacturer.
 - 2. Mask adjacent mortar joint or rake out for repointing if patch will extend to edge of masonry unit.
 - 3. Mix patching compound in individual batches to match each unit being patched. Combine one or more colors of patching compound, as needed, to produce exact match.
 - 4. Rinse surface to be patched and leave damp, but without standing water.
 - 5. Brush-coat surfaces with slurry coat of patching compound according to manufacturer's written instructions.
 - 6. Place patching compound in layers as recommended by patching compound manufacturer, but not less than 1/4 inch or more than 2 inches thick. Roughen surface of each layer to provide a key for next layer.
 - 7. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of the masonry unit. Shape and finish surface before or after curing, as determined by testing, to best match existing masonry unit.
 - 8. Keep each layer damp for 72 hours or until patching compound has set.

3.5 WIDENING JOINTS

- A. Do not widen a joint, except where indicated or approved by Architect.
- B. Location Guideline: Where an existing masonry unit abuts another or the joint is less than 1/8 inch, widen the joint for length indicated and to depth required for repointing after obtaining Architect's approval.
- C. Carefully perform widening by cutting, grinding, routing, or filing procedures demonstrated in an approved mockup.
- D. Widen joint to width equal to or less than predominant width of other joints on building. Make sides of widened joint uniform and parallel. Ensure that edges of units along widened joint are in alignment with joint edges at unaltered joints.

3.6 CLEANING MASONRY, GENERAL

A. Cleaning of masonry shall be accomplished using the gentlest means possible without damaging the surface of the masonry. Specifications and test cleaning samples shall be

reviewed and approved by the Connecticut Commission on Culture and Tourism before proceeding with this work.

- B. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.
- C. Use only those cleaning methods indicated for each masonry material and location.
 - 1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
 - 2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
 - a. Equip units with pressure gages.
 - b. Power Washers are <u>not</u> to be used. Line pressure water cleaning only.
 - 3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
 - 4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
 - 5. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.
- D. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- E. Water Application Methods:
 - 1. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- F. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
 - 1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- G. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.7 PRELIMINARY CLEANING

- A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing to dry as long as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.
- B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.

- 1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
- 2. Remove paint and calking with alkaline paint remover.
 - a. Comply with requirements in "Paint Removal" Article.
 - b. Repeat application up to two times if needed.
- 3. Remove asphalt and tar with solvent-type paint remover.
 - a. Comply with requirements in "Paint Removal" Article.
 - b. Apply paint remover only to asphalt and tar by brush without prewetting.
 - c. Allow paint remover to remain on surface for 10 to 30 minutes.
 - d. Repeat application if needed.

3.8 PAINT REMOVAL

- A. Paint Removal with Solvent-Type Paint Remover:
 - 1. Remove loose and peeling paint using high-pressure spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
 - 2. Apply thick coating of paint remover to painted masonry with natural-fiber cleaning brush, deep-nap roller, or large paint brush.
 - 3. Allow paint remover to remain on surface for period recommended by manufacturer. Agitate periodically with stiff-fiber brush.
 - 4. Rinse with cold water applied by low-pressure spray to remove chemicals and paint residue.

3.9 CLEANING BRICKWORK

- A. Detergent Cleaning:
 - 1. Scrub masonry with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that masonry surface remains wet.
 - 2. Rinse with cold water applied by low-pressure spray to remove detergent solution and soil.
 - 3. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

3.10 REPOINTING MASONRY

- A. Repointing shall match the color, texture, joint width and joint profile of the existing historic masonry. Specifications and repointing samples shall be reviewed and approved by the Connecticut Commission on Culture & Tourism before proceeding with this work.
- B. Rake out and repoint joints to the following extent:
 - 1. All joints in areas indicated.
 - 2. Joints where mortar is missing or where they contain holes.
 - 3. Cracked joints where cracks can be penetrated at least 1/4 inch by a knife blade 0.027 inch thick.
 - 4. Cracked joints where cracks are 1/8 inch or more in width and of any depth.
 - 5. Joints where they sound hollow when tapped by metal object.
 - 6. Joints where they are worn back 1/4 inch or more from surface.
 - 7. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
 - 8. Joints where they have been filled with substances other than mortar.
 - 9. Joints indicated as sealant-filled joints.

- C. Do not rake out and repoint joints where not required.
- D. Rake out joints as follows, according to procedures demonstrated in approved mockup:
 - 1. Remove mortar from joints to depth of joint width plus 1/8 inch, but not less than 1/2 inch or not less than that required to expose sound, unweathered mortar.
 - 2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
 - 3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.
 - a. Cut out mortar by hand with chisel and resilient mallet. Do not use poweroperated grinders without Architect's written approval based on approved quality-control program.
- E. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- F. Pointing with Mortar:
 - 1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
 - 2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
 - 3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch . Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
 - 4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
 - 5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.
 - a. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
 - b. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
 - 6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.
- G. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.11 FINAL CLEANING

A. Cleaning of exterior masonry shall be accomplished using the gentlest means possible without damaging the surface of the masonry. Specifications and test cleaning samples shall

be reviewed and approved by the Connecticut Commission on Culture & Tourism before proceeding with this work.

- B. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.
 - 1. Do not use metal scrapers or brushes.
 - 2. Do not use acidic or alkaline cleaners.
- C. Wash adjacent woodwork and other non-masonry surfaces. Use detergent and soft brushes or cloths.
- D. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- E. Sweep and rake adjacent pavement and grounds to remove mortar and debris. Where necessary, pressure wash pavement surfaces to remove mortar, dust, dirt, and stains.

3.12 FIELD QUALITY CONTROL

- A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare test reports. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.
- B. Notify inspectors in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors have had reasonable opportunity to make inspections of work areas at lift device or scaffold location.

END OF SECTION

SECTION 04 00.00

GENERAL CLEANING OF EXTERIOR BRICK MASONRY

PART 1 – GENERAL

1.1 SUMMARY

- A. This procedure includes guidance on cleaning exterior brick masonry.
- B. Safety Precautions:
 - 1. The work specified herein requires knowledge of older materials and methods and a high degree of skill to execute properly. This work should be performed only by an experienced, pre-qualified
 - contractor. It is not recommended that building maintenance personnel perform this work.
 - 2. This outline specification contains recommended materials which may be toxic. The manufacturers literature on application techniques, appropriate protection for workers and disposal procedures for
 - materials should be complied with in conjunction with all regulatory requirements referenced in this
 - document.
- C. See 01 10 07 for General Preservation Project Guidelines to be reviewed along with this procedure. These guidelines cover the following sections:
 - 1. Safety Precautions
 - 2. Historic Structures Precautions
 - 3. Submittals
 - 4. Quality Assurance
 - 5. Delivery, Storage and Handling
 - 6. Project/Site Conditions
 - 7. Sequencing and Scheduling
 - 8. General Protection (Surface and Surrounding) These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Regional Historic Preservation Officer (RHPO).

1.2 SUBMITTALS

A. Product Data:

- 1. Submit manufacturer's product literature instructions for use, and Material Safety Data Sheets (MSDS) to the Contracting Officer or the designated representative for all cleaning materials.
- 2. Prior to commencing the cleaning operations, the Contractor shall submit to the Contracting Officer or the designated representative a written description of the entire methods and procedures proposed for cleaning the masonry including, but not limited to: Method of application, dilution of application, temperature of application, length of time of surface contact, method of rinsing surface (temperature, pressure, and duration), repetition of procedures, etc.
- 3. Prior to commencing the cleaning operations, the Contractor shall submit to the Contracting Officer or the designated representative for approval, a written description of

proposed materials and methods of protection for preventing damage to adjacent materials, vehicular and pedestrian traffic, and the building interior during the cleaning of masonry.

- B. Samples:
 - 1. The Contractor shall clean a sample panel(s), approximately 3' x 3' in area, on each type of masonry included in the work of this section for approval by the Contracting Officer. Locations of sample panels to be selected by the Contracting Officer or the designated representative.
 - 2. Adjust the chemical concentrations, working pressures and methodologies during test panel cleaning, as directed by the Contracting Officer or the designated representative.
 - 3. Sample panels shall be cleaned by the Contractor using methods, materials, and working pressures previously submitted and approved. Sample panel cleaning shall be performed in the presence of the Contracting Officer or the designated representative. The working pressures during sample panel cleaning shall be varied up to the previously submitted and approved capacities to determine the best working pressure.
 - 4. Where chemical cleaners and poultices are tested, the manufacturer's representative shall be present during testing.
 - 5. The Contractor shall obtain written approval from the Contracting Officer or the designated representative of cleaning methods, working pressures, materials, equipment used and sample panels before proceeding with building cleaning operations. For this written approval purpose, the Contractor shall allow a minimum of seven calendar days after completion of sample cleaning to permit the Contracting Officer of the designated representative to study the sample panels for negative reaction. Retain approved panels in unaltered condition, suitably designated during construction as a standard for judging completed work.

1.3 QUALITY ASSURANCE

A. Qualifications:

- 1. Comply with municipal and federal regulations governing all work included in this section and including, but not limited to waste disposal.
- 2. General Objective: The objectives of masonry cleaning are to remove dirt, grime and coatings from masonry without damaging underlying material and to give all masonry a clean, uniform appearance without blotches, streaks, runs, or any other kind of spotty appearance. Too aggressive cleaning shall not be acceptable.
- 3. Cleaning Standard: Prepare sample panels for approval which shall establish a standard for general brick and stone cleaning. General cleaning shall not commence until written approval is obtained from the Contracting Officer or the designated representative.
- 4. Contractor: The work of this section shall be performed by a specialist possessing a minimum of five (5) years of specialized experience in the cleaning of historic architectural masonry similar to that which is required by this project. Contractors shall submit to the Contracting Officer or the designated representative references of previous work justifying their experience. The Contracting Officer or the designated representative reserves the right to approve or disapprove the use of Contractors contingent upon their experience.
- 5. In the event that the Contractor wishes to modify any cleaning method specified, he shall submit his proposal in writing for consideration and review. The Contracting

Officer of the designated representative will have the right to ask for test samples before final approval. Any such modifications or changes shall be at no additional cost to the Government.

B. Regulatory Requirements: Comply with municipal and Federal regulations governing the cleaning, chemical waste disposal, product safety, scaffolding and protection to workers and adjacent properties.

1.4 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
 - 1. No cleaning shall be executed when air or masonry surface temperature is below 45 degrees (F.), unless adequate, approved means are provided for maintaining a 45 degrees (F.), temperature of the air and materials during, and for 48 hours subsequent to, cleaning.
 - 2. Perform cleaning and washing of the exterior masonry only during hours of natural daylight

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. ProSoCo, Inc. http://www.prosoco.com/
- B. Diedrich Technologies, Inc. <u>http://www.diedrichtechnologies.com/</u>

2.2 MATERIALS

A. Masonry Cleaner: Commercially available very mild blend of inhibited acidic ingredients and wetting agents specifically formulated for restorative cleaning of brick and natural stone surfaces such as "Sure Klean Restoration Cleaner" (ProSoCo, Inc.), "101 G Granite, Terra Cotta and Brick Resoration Cleaner" (Diedrich Technologies), or approved equal. Masonry cleaner should have the following physical characteristics:

> Form: Clear liquid Ph: 1.2 Specific Gravity (Typical): 1.05

- B. Water: Potable, non-staining and free of oils, acids, alkalis and organic matter.
- C. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film forming, strippable masking material for protecting glass, metal and polished stone surfaces from damaging effect of acidic and alkaline masonry cleaners, such as "Sure Klean Strippable Masking" (ProSoCo, Inc.), or approved equal.

2.3 EQUIPMENT

- A. Brushes: Natural fiber bristle only. The use of wire brushes or steel wool is not permitted.
- B. Garden hose with fan tip nozzles. Power washers are <u>not</u> to be used.

PART 3 – EXECUTION

3.1 PREPARATION

A. Protection:

- Take all necessary precautions and measures to protect surrounding materials on the site, surfaces of the building not being cleaned, adjacent buildings, pedestrians and vehicles from coming in contact with cleaning chemicals, over spray, or runoff. Products used for masonry cleaning may be harmful to painted, polished, glazed, or metallic surfaces. Any damage to materials caused by the cleaning operations is unacceptable and shall be repaired or replaced by the Contractor to the satisfaction of the Contracting Officer or the designated representative at no cost to the Government.
- 2. Provide protection from water damage to building, structure, or building contents as required.
- 3. Protect trees and plants around the building from contamination or damage as directed by the Contracting Officer or the designated representative. The Contractor shall be responsible for replacing with new stock, any trees, shrubbery or grass damaged by the cleaning operations.
- 4. Test all drains and other water removal systems to assure that drains and systems are functioning properly prior to performing any cleaning operations. Notify Contracting Officer or the designated representative immediately of any and all drains or systems that are found to be stopped or blocked. Contractor shall repair drains if so directed by the Contracting Officer or the designated representative. Do not begin work of this Section until the drains are in working order.
- 5. Provide a method to prevent solids such as stone or mortar residue from entering the drains or drain lines. Contractor shall be responsible for cleaning out drains and drain lines that become blocked or filled by sand or other solids because of work performed under this Contract.

3.2 ERECTION, INSTALLATION, APPLICATION

- A. Dilute masonry cleaner with 16 parts water to 1 part concentrate, or use appropriate dilution based on sample panel cleaning. When diluting, always pour water into empty bucket first, then carefully add concentrate. Handle in rubber or polyethylene buckets only. Acidic liquids and fumes will attack metal.
- B. After protecting all non-masonry surfaces, thoroughly wet the area to be cleaned.
- C. Apply the cleaning solution liberally using low pressure spray (50 psi), roller or densely filled (tampico) masonry washing brush. Do not apply restoration cleaner with high pressure spray. Such application will drive the chemicals deep into the surface, making it difficult to rinse completely. Discoloration to the surface may result.
- D. Allow the cleaning solution to remain on the surface for three to five minutes in accordance with approved test procedures. Light scrubbing of the surface will improve cleaning results. Caution: Do not allow cleaning solution to "dry in" to the masonry bleaching may result.
 - 1. Begin rinsing with low pressure flood rinse to remove initial acidic residue with minimum risk of wind drift.
 - 2. Then rinse the treated area thoroughly using pressurized cold water. Rinse water pressure shall not exceed 300 psi, and shall be sprayed through nozzles fitted with 15 to 20" wide tips. Nozzles shall be held perpendicular to the surface at a working distance of 1.4 to 2.0 feet. All pressure pumps shall be equipped with working pressure gauges.

- 3. Rinse from the bottom of the treated area to the top flushing each section of the surface with a concentrated stream of water. To avoid streaking on vertical walls, take care to keep the wall below wet and rinsed free of cleaner and residues.
- 4. Application of rinse water is extremely important to assure that all surface staining matters and cleaning residues are thoroughly flushed from the treated surface.
- E. Surrounding stone surfaces below the section of brick to be cleaned shall be pre-wetted and rinsed periodically during cleaning operations to prevent etching of stone.
- F. The surfaces below the sections of brick to be cleaned shall be protected from run-off.
- G. Repeat procedures if necessary to remove heavier build-up of soiling.

END OF SECTION

This page intentionally left blank

SECTION 04 00 00

REMOVING & REPLACING DETERIORATED BRICK MASONRY

PART 1 – GENERAL

1.1 SUMMARY

- A. This procedure includes guidance on removing and replacing deteriorated brick masonry. It should be used in conjunction with the procedure on repointing historic masonry. For guidance on repointing, see 04 01 20.55 "Repointing Masonry Using Lime Mortar".
- **B.** See 01 10 07 for general project guidelines to be reviewed along with this procedure. These guidelines cover the following sections:
 - 1. Safety Precautions
 - 2. Historic Structures Precautions
 - 3. Submittals
 - 4. Quality Assurance
 - 5. Delivery, Storage and Handling
 - 6. Project/Site Conditions
 - 7. Sequencing and Scheduling
 - 8. General Protection (Surface and Surrounding)
 - 9. These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Regional Historic Preservation Officer (RHPO).

1.2 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Do not proceed with brick replacement under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation; Proceed with the work only when forecasted weather conditions are favorable for proper cure.
 - 2. Wet Weather: Do not apply or mix mortar on outside surfaces with standing water or outside during rain.
 - 3. Cold Weather, winter construction is not allowed without consent of RHPO; Winter construction when surface temperature of masonry is below 400 F. or air temperature is predicted to be below 400 F. within 48 hours. See #6 below.
 - 4. Hot Weather: The surface temperature of the work, not the ambient temperature, should not be higher than 1000 F.; Mortar mixing should be done only in the shade; Cover mortar with water-misted burlap in hot weather to reduce evaporation; Pointing work should be done in the shade; Work around the building during the day so that the fresh work will be shielded from direct sunlight to reduce evaporation rate. High temperatures can cause flash setting of cements and rapid evaporation of water in the mix, leading to lack of development of final strength by the cement.
 - 5. All materials must be kept above 40 degrees F.
 - 6. Special Precautions and Notes: Do not allow masonry to freeze until mortar is thoroughly dry and hardening almost complete (approx. three days time); The setting of lime mortar is very much slower than that of cement mortar because the curing requires the absorption of carbon dioxide to form hard lime carbonates; It is a very lengthy process, so do not expect it to become hard immediately, especially at the core of large masses of masonry.
PART 2 – PRODUCTS

2.1 MATERIALS

- A. Salvaged Brick: Approved by RHPO, sound, crack free, clean brick without face chips larger than 1/2 inch, salvaged from removal of removed face brick work of same type.
- B. Replacement Brick: Approved by RHPO.
- C. Brick slips: Approved by RHPO.
- D. Mortar to match existing (see 04100-03-S "Preparing Lime Mortar for Repointing Masonry").

2.2 EQUIPMENT

- A. Trowel
- B. Joint tools
- C. Chisel
- D. Hawk
- E. Hammer
- F. Stiff bristle brushes

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Deterioration of brick due to moisture is evident as spalling, erosion, cracking, peeling paint, and deteriorated mortar joints.
- B. Some causes of brick deterioration include:
 - 1. Rising damp,
 - 2. the accumulation of dissolved acids carried by rainwater and condensation,
 - 3. soluble salts crystallizing in the pores of the brick face,
 - 4. alternate freezing and thawing, and e) the accumulation of dirt and air-borne particles on the exterior surface.

3.2 PREPARATION

- A. Surface Preparation:
 - 1. Wet brick having absorption rates greater than 0.025 oz. per sq. inch per minute.
 - a. On the flat side of a brick, deposit water on an area approximately the size of a 25 cent coin.
 - b. If the water disappears in less than 30 seconds, wet the bricks.
 - 2. Absorptive brick should be thoroughly soaked in the pile each afternoon prior to the day they are to be used.
 - 3. Cover the bricks with tarps or heavy paper to prevent evaporation.
 - 4. Wet brick as necessary during the day; Sprinkle the brick pile with a hose for a period long enough for water to run down the side of the pile; Use wetting methods which ensure that each masonry unit is nearly saturated but surface dry when laid; (DO NOT wet stone masonry units).
 - 5. Repair flashing if necessary.

6. Where fresh masonry joins existing work, clean the exposed surface of the set masonry by removing loose brick and mortar and wet lightly to obtain the best possible bond with the new work.

3.3 ERECTION, INSTALLATION, APPLICATION

A. Replacing Deteriorated Masonry with Brick slips: The use of brick slips should be limited to replacement of individual bricks or to small areas of brickwork.

NOTE: Brick slips are brick facings about 1 inch thick. They are used when damage to adjacent sound brickwork is likely to occur if full-size replacement is attempted.

- 1. Cut out the deteriorated masonry to a regular shape.
- 2. Clean the cavity of loose mortar and other debris by hand using a chisel and stiff bristle brushes.
- 3. Solidly set the slip in a bed of mortar.
- B. Replacing Deteriorated Units with Full-Size Bricks:
 - 1. Carefully remove deteriorated brick units by hand using a hammer and chisel.
 - 2. Rebuild back-up and substrate as required to replace any unsound material that was removed.
 - 3. Clean the cavity of loose mortar and other debris by hand using a chisel and stiff bristle brushes.
 - 4. Lightly wet the exposed brick surfaces.
 - 5. Lay brick units with completely filled bed and head joints; Butter ends with sufficient mortar to fill head joints and shove into place.

NOTE: Lay masonry plumb and true following the coursing and patterns of the adjacent existing sound construction; Level off work at required heights and form beds to build-in salvaged or moved materials.

- 6. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
- 7. Blend new work into existing work smoothly with no lines of demarcation and no change of pattern or coursing.
- 8. Rake all joints in replacement work to receive tuck pointing; Joints up to 3/8" in width shall be raked to a depth of 1/2"; Joints 3/8" in width shall be raked to a depth of 1".
- 9. Brush all excess mortar from the wall surface frequently during the work; Protect all existing surfaces from mortar dripping and splashing.

3.4 ADJUSTING/CLEANING

- A. Clean off adjacent surfaces which have been spattered during the course of the work. Rinse immediately with clean, clear water.
- B. Wipe all excess mortar as the work progresses. Dry brush at the end of each day's work.
- C. After mortar is thoroughly set and cured, remove loose mortar and dirt from new masonry surfaces.
- D. Wash down the masonry surface with clean, clear water.

This page intentionally left blank

SECTION 04 01 20.55

REPOINTING MASONRY USING LIME MORTAR

PART 1---GENERAL

1.1 SUMMARY

A.This procedure includes guidance on repointing stone masonry using lime mortar.

- B.Repointing is the process of removing deteriorated mortar from a masonry joint and replacing old mortar with new, sound mortar.
- C. This process is sometimes referred to as "tuck pointing", though "tuck pointing", is actually a decorative treatment rather than a method of repair. True tuck pointing is the process of adding a finish layer of mortar, occasionally tinted, to the outer portion of a newly laid joint.
- D.Major reasons for mortar joint failures include:
 - 1. Weathering action,
 - 2. Settling,
 - 3. Temperature cycles,
 - 4. Poor original design and materials, and
 - 5. Lack of exterior maintenance.
- E. See 01 10 07 for general project guidelines to be reviewed along with this procedure. These guidelines cover the following sections:
 - 1. Safety Precautions
 - 2. Historic Structures Precautions
 - 3. Submittals
 - 4. Quality Assurance
 - 5. Delivery, Storage and Handling
 - 6. Project/Site Conditions
 - 7. Sequencing and Scheduling
 - 8. General Protection (Surface and Surrounding)

These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Regional Historic Preservation Officer (RHPO).

F. For guidance on preparing lime mortar, see 04100-03-S.

1.2 SUBMITTALS

A.Manufacturers' literature describing packaged items.

B.Source and screen analysis of bulk aggregate.

C.Mortar sample: Submit, for verification and approval, a sample of each type of mortar used, in form of 6" long by 1/2" wide sample strips of mortar set in aluminum or plastic channels.1.Provide record of mortar mix, composition and field procedures to be followed.

1.3 QUALITY ASSURANCE

A.Mock-ups: Raking and Repointing Sample Work:

- 1. Test/Sample Area and RHPO Approval:
 - a. Initially perform sample joint raking and repointing on each of a 100 sq. ft. test of stone, brick, and terra cotta areas as approved by RHPO.
 - b.Demonstrate proficiency with joint raking tools and ability to not damage masonry units with either hand or power tools.
 - c. Mix and cure test batch of repointing mortar and place in joints; repeat test mix until mortar color is approved. Test mortar should be matched, dried and approved before placing in joints.
 - d.Demonstrate workmanship of repointing procedures and joint finishing.
- e. Gain written approval from RHPO for test area before proceeding with remaining work.
- 2. Joint Raking Method: Rake joints by hand ONLY using special joint cleaning chisels and hammer.
- 3.Repointing Method: Repoint joints by hand ONLY using approved pointing trowels. NO "BAGGING" OR CAULKING GUN POINTING METHODS APPROVED.

1.4 PROJECT/SITE CONDITIONS

A.Environmental Conditions: Perform repointing only when the temperature is between 40 degrees Fahrenheit and 80 degrees Fahrenheit. If the temperature is below 40 degrees, the mortar sets too slowly, and there is a good chance of freezing before it fully sets. If the temperature is above 80 degrees, the mortar will set too quickly, and there is a strong chance of excessive loss of water prior to adequate setting.

PART 2---PRODUCTS

2.1 MANUFACTURERS

A.Repointing Tools: Available from good hardware stores, building material suppliers or mail-order catalogues.

1. The Stanley Gold-blatt Tool Co. http://www.goldblatttool.com/

2. Marshalltown Trowel Co. https://marshalltown.com/

2.2 MATERIALS

A.Lime mortar (See 04100-03-S for materials and procedures in preparing lime mortar) B.Clean, potable water

A.Trowels: range in length from 10-12 inches

B.Chisels:

1. Joint chisels or a standard mason's chisel with a 1-1/2 in. blade and a long narrow handle

2. Floor chisels

C.Hammers:

- 1.5# stone dressing hammer
- 2.2# striking hammer
- 3. "No-Bounce" hammer
- 4. Full size and one-half size brick hammers

D.Joint Tools: (see 2.01 MANUFACTURERS above)

- 1.3/8"-1/4" raised beaded tool
- 2. 3/8"-1/4" beaded striking tool
- 3. 1/2" raised beaded tool with offset handle
- 4. 1/2" flat joint iron

5. Pointing tool should be about 1/16" narrower than the joint being filled to achieve good compaction

E. Hawks: Plywood or steel hawk (mortar board)

F. Brushes:

- 1. Natural bristle brushes
- 2. Stiff bristle brushes (no wire)

G.Spray bottle

2.3 MIXES

A.See 04100-03-S for lime mortar mixes

PART 3---EXECUTION

3.1 EXAMINATION

- A.Examine all existing exterior mortar joints. If the answer to any of the following questions is yes, then the building's joints are deteriorated and need repointing:
 - 1. Are mortar joints eroded back more than 1/4" from the masonry face?
 - 2. Are there cracks running vertically or horizontally through the mortar?
 - 3. Are mortar bonds broken or pulled away from the masonry?
 - 4. Has mortar fallen out of joints?
 - 5. Is mortar excessively soft, powdery or crumbling?
 - 6. Is pointing badly-stained?
- B.Typical exterior damage due to mortar deterioration includes open joints, efflorescence, spalling and loosened masonry units.

C. Typical interior damage due to mortar deterioration includes failing plaster and stained wall paper.

D.A professional pointer experienced in old masonry is required for any of the following areas or conditions:

1. Chimneys need repointing

- 2. Window lintels must be rebuilt
- 3. Masonry is loose or missing
- 4. Work must be done from scaffolds or extension ladders
- 5. The original mortar joints were "beaded"-tooled with a raised, round-profiled joint that projects out from the wall

3.2 PREPARATION

A.Preparing the Joints:

- 1.Clean area of loose dirt and debris using a stiff bristle brush and remove all extraneous fastenings and devices.
- 2. Install necessary protection of adjacent building materials, property and persons from joint cleaning work and dirt.
- 3.Control dust and dirt from raking work; dampen area being worked; and use curtains to limit spread of dust from joint raking and cutting operations.
- B.Joint Cutting and Raking:
- 1.Cut and rake old mortar from existing joints by hand using a hammer and chisel. NOTE: POWER

CHISELS AND POWER SAWS SHOULD NOT BE USED.

- 2.Place the chisel in the center of the joint and pound it with a striking hammer or "No-Bounce" hammer until the mortar disintegrates.
- 3. Rake out the loose material to a depth of about 1 inch and never to a depth less than their width.

Leave a clean, square face at the back of the joint to provide optimum contact with the new mortar.

CAUTION: AVOID OVERCUTTING ENDS OF VERTICAL JOINTS, WIDENING JOINTS OR CUTTING INTO BEDDING FACES OF MASONRY UNITS.

- 4. While raking out joints, remove all metal fittings such as nails, brackets and clips on both horizontal and vertical surfaces.
- 5. Carefully clean out the prepared face with a soft or stiff bristle brush, or blow the joints clean

with low-pressure compressed air (40-60 psi).

6. Thoroughly flush out joint with clean, clear water.

3.3 ERECTION, INSTALLATION, APPLICATION

A.Filling Joints:

1.Dampen masonry surfaces and joints to control suction and evaporation before placing repointing mortars.

NOTE: THERE SHOULD BE NO FREE WATER PRESENT WHICH MAY CAUSE VOIDS IN THE MORTAR.

2. Using a pointing tool, push the mortar into the joint from a board and iron with the maximum possible pressure; The mortar should be applied in layers, each to a maximum thickness of 3/8". NOTE: THE POINTING TOOL SHOULD BE ABOUT 1/16" NARROWER THAN THE JOINT BEING FILLED TO ACHIEVE GOOD COMPACTION. IN SOME CASES, THE JOINTS WILL BE SO THIN THAT A STANDARD POINTING TOOL WILL NEED TO BE GROUND DOWN TO FIT THE JOINT.

3. Thoroughly compact each layer of mortar and allow to set until thumb-print hard before applying the

next layer of mortar.

- 4. Fill the joints so that they are slightly recessed from the masonry face. Avoid leaving a joint which is visually wider than the actual historical appearance.
- 5. Continuously keep all excess and spilled mortar brushed off the faces of masonry units, ledges and other surfaces before it sets or stains the work.

B.Joint Finishing:

- 1.Begin when mortar attains "thumb print" hardness.
- 2. Tool the joint to match the old mortar.

NOTE: IT IS IMPORTANT TO TOOL THE JOINT AT THE RIGHT STAGE; IF THE JOINT IS TOO SOFT, THE COLOR WILL BE LIGHTER THAN EXPECTED AND HAIRLIN SHRINKAGE CRACKS ARE LIKELY TO OCCUR; IF THE JOINT IS TOO HARD WHEN TOOLED, DARK STREAKS MAY APPEAR (TOOL BURNING) AND GOOD CLOSURE OF THE MORTAR AGAINST THE MASONRY WILL NOT BE ACHIEVED. EXCESSIVE TOOLING MAY BRING LIME AND FINE AGGREGATES TO THE SURFACE, CREATING A VISUAL CHANGE IN THE TEXTURE AND A SURFACE SUBJECT TO EARLY DETERIORATION.

- 3. To produce a roughened texture, lightly spray the mortar with water after the initial set, stipple the mortar with a stiff bristle brush or dab the mortar with coarse sacking.
- 4. Protect finished work from direct sun and rain until the face has dried and hardened.

3.4 ADJUSTING/CLEANING

A.Cleaning Up:

- 1. Use masking and drop cloths to prevent mortar stains on adjacent work and ledges.
- 2.Keep work areas clean and free from mortar drips, spills and residue of waste mortars or wash-off.
- 3.Clean off excess mortar as work proceeds using masonry brushes before mortar sets.
- 4. Wash completed repointing work when finished mortar joints are set with clean water and masonry brushes, scrubbing only as required to clean mortar stains off masonry without scouring the units and joint faces.
- 5.Do not use acid or detergent cleaning agent to aid mortar removal and clean-up without written approval from RHPO.

B.Curing:

- 1. Schedule work only when moderate weather is forecast.
- 2. Protect completed work from adverse weather, heavy rainfall, freezing, and drying by direct sunlight and winds until cured.
- 3.Sprinkle or mist repointed work as required to achieve cure in mortar joints for a minimum of 72 hours after completion.
- 4.Lime Mortar: Cures by drying and crystallization, not by hydration; and can be washed out of joints if not protected before it cures.

C.Final Cleaning:

1. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water spray applied at low pressure.

NOTE: USE OF METAL SCRAPERS OR BRUSHES IS NOT PERMITTED. USE OF ACID OR ALKALI CLEANING AGENTS IS NOT PERMITTED.

D.Some efflorescence, called new construction "bloom," occasionally appears on the surface within the first few months following a repointing project. These deposits normally are harmless and are removed by the natural washing of the rain. If not removed by natural weathering, they can be removed with dry brushing with a bristle brush. The use of chemical cleaners to remove this type of efflorescence normally is not necessary;

AVOID USING ACIDS, PARTICULARLY MURIATIC ACID.

SECTION 06 01 40

MAINTENANCE OF ARCHITECTURAL WOODWORK

BEFORE UNDERTAKING ANY PROJECT INVOLVING PAINT REMOVAL, APPLICABLE STATE AND FEDERAL LAWS ON LEAD PAINTABATEMENT AND DISPOSAL MUST BECONSIDERED AND CAREFULLY FOLLOWED. STATE AND FEDERAL REQUIREMENTS MAY AFFECT OPTIONS AVAILABLE TO OWNERS ON BOTH PAINT REMOVAL AND REPAINTING. THESE LAWS, and ANY REQUIREMENTS PROHIBITING VOLATILE ORGANIC COMPOUNDS (VOCs), SHOULD BE REQUESTED FROM THE STATE HISTORIC PRESERVATION OFFICER IN EACH STATE. (From Preservation Brief 28, "Painting Historic Interiors"). REGULATORY INFORMATION MAY ALSO BE REQUESTED FROM THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REGIONAL OFFICE AND/OR THE STATE OFFICE OF ENVIRONMENTAL QUALITY.

PART 1 -GENERAL

1.1 SUMMARY

- A. This procedure includes guidance on removing an existing wood finish and refinishing with a stain, varnish or wax.
- B. Safety Precautions:
 - 1. Dispose of all used solutions, paint stripper residue and soiled rags in sealed noncombustible containers daily to prevent fire hazard.
 - 2. The Contractor shall maintain a healthy level of air circulation within the space being treated. Exhaust fans or other air moving devices shall be regularly employed and maintained to the satisfaction of the Contracting Officer or designated representative.
 - 3. Areas being treated shall be curtained off from other trades or occupants to prevent fumes from reaching other parts of the building.
 - 4. All workers in the area being treated shall wear appropriate safety devices, including but not limited to, respirators fitted with the correct cartridge, gloves, other clothing.
- C. Related Sections:
 - 1. Section 01 00 00 Summary
 - 2. Historic Structures Precautions
 - 3. Section 01 33 00 Submittal Procedures
 - 4. Section 01 40 00 Quality Control
 - 5. Section 01 50 00 Construction Facilities & Temporary Controls
 - 6. Section 01 60 00 Product Requirements
 - 7. Section 11306.6 General Cleaning of Painted or Waxed Wood Surfaces

These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Regional Historic Preservation Officer (RHPO).

1.2 SUBMITTALS

- A. Samples:
 - 1. The Contractor shall refinish two (2) sample areas for approval by the Contracting Officer or designated representative. Locations of sample areas shall be as selected by the Contracting Officer or designated representative.

- 2. The Contractor shall obtain written approval from the Contracting Officer or designated representative of wood refinishing methods, materials, and sample panels before proceeding with the work of this section. Approved sample panels shall be marked and protected for the duration of the project. They shall be used as the standard for similar work throughout the project.
- 3. In the case of rejection of the sample areas, these locations shall be re-stripped and refinished until approved by the Contracting Officer or designated representative.

1.3 QUALITY ASSURANCE

- A. General Objective: The objectives of wood refinishing and cleaning are to give wood surfaces a smooth, uniform appearance consistent with the original design intent, and to preserve the inherent patina. Splotches, streaks, runs, or any other kind of spotty appearance shall not be accepted. Too aggressive cleaning or sanding shall not be accepted.
- B. Work Standards: Basic reference and standard for wood refinishing shall be "Wood Finishing and Refinishing Revised Edition," by S.W. Gibbia, New York: Van Nostrand Reinhold Co., 1971.
- C. Contractor: A firm with not less than five (5) years in wood refinishing and restoration. The Contractor shall be required to submit reference for six (6) other projects of similar nature. The Contracting Officer or designated representative reserves the right to approve or disapprove the use of the Contractor contingent upon their experience.
- D. Refinish Standard: Sample areas shall be prepared which shall form a standard for wood refinishing.
- E. Refinishing is defined as all the process(es) necessary to restore woodwork. Stripping is defined as the process damage to the wood. Finishing is defined as the process of applying stain and protective coating and all related preparatory and follow-up tasks. Cleaning is defined as the removal of dirt embedded in the upper finish layers and does not include the removal of any finish layer.
- F. Single Source Responsibility: Provide compatible finish coating, thinner, sanding sealer, and wood filler that are produced by the same manufacturer.
- G. Regulatory Requirements: Comply with municipal and Federal regulations governing the refinishing operations, chemical waste disposal, and scaffolding.

PART 2-PRODUCTS

2.1 MANUFACTURERS

- A. Bonakemi USA, Inc. https://us.bona.com/
- B. Butcher Polish Company http://www.bwccompany.com/index.html
- C. 3M Consumer Products Group http://www.3m.com/3M/en_US/consumer-us
- D. The Sherwin Williams Co. http://www.sherwin-williams.com/
- E. W.M. Barr & Company http://www.citristrip.com/about/wm-barr

2.2 MATERIALS

NOTE: Chemical products are sometimes sold under a common name. This usually

means that the substance is not as pure as the same chemical sold under its chemical name. The grade of purity of common name substances, however, is usually adequate for stain removal work, and these products should be purchased when available, as they may be less expensive. Common names are shown below by an asterisk (*).

- A. Commercial Paint and Varnish Remover such as "Citristrip" (W.M. Barr & Company), "Safest Stripper" (3M), or approved equal.
- B. Mineral Spirits:
 - 1. A petroleum distillate that is used especially as paint or varnish thinner.
 - 2. Other chemical or common names include Benzine* {not Benzene); Naphtha*; Petroleumspirits*; Solvent naphtha*.
 - 3. Potential Hazards: TOXICAND FLAMMABLE.
 - 4. Safety Precautions:
 - a. AVOID REPEATED OR PROLONGED SKIN CONTACT.
 - b. ALWAYS wear rubber gloves when handling mineral spirits.
 - c. If any chemical is splashed onto the skin, wash immediately with soap and water.
 - 5. Available from construction specialties' distributor, hardware store, paint store, or printer's supply distributor.

-OR-

Turpentine:

- 1. Typically used as a solvent and thinner.
- 2. Potential Hazards: TOXICAND FLAMMABLE.
- 3. Safety Precautions:
 - a. Work in a well ventilated area.
 - b. Observe safety rules as turpentine is flammable, and the fumes can trip an ionization smoke detection system.
 - c. Store soiled cloths in a metal safety container to guard against spontaneous combustion.
- 4. Available from hardware store or paint store.
- -OR-

Solvent Wax Remover such as "Woodline Renovator" (Bonakemi USA, Inc.), or approved equal.

- C. Wood filler incolor to match original stain. CAUTION: WOOD FILLERS CONTAINING A LINSEED OIL VEHICLE MAY CAUSE WHITE SPOTS TO DEVELOP IN THE LACQUER FINISH COAT.
- D. Oilstain or universal stain (Sherwin Williams), or approved equal.
- E. Alkyd or urethane-base satin varnish (Sherwin Williams), or approved equal.
- F. Paste wax (non-yellowing) such as "Butcher's Paste Wax" (Butcher Polish Company), or approved equal.

2.3 EQUIPMENT

- A. Steelwool
- B. Steelorbrasswirebrushes
- C. Stiff fiber bristle brushes

- D. Putty knife or broad knife
- E. Clean, dry cloths (cheese clothor gauze)
- F. Orbital Sander
- G. Electric floor polisher
- H. Nylonweb scrubbing pads
- I. Lamb'swool buffing pads

PART3-EXECUTION

3.1 ERECTION, INSTALLATION, APPLICATION

- A. Remove Existing Coating:
 - 1. Work in areas approximately 4' by 4' at one time.
 - 2. Apply chemical stripper using a brush or roller. Follow manufacturer's instructions.
 - 3. Allow stripper to stand for length of time as recommended by manufacturer, depending upon the number of surface layers to be stripped; if necessary, cover with plastic sheeting to keep the stripper moist.
 - 4. Using a broad knife or scrapper, remove paint and stripper from the surface.
 - 5. Safely dispose of paint and stripper residue. Follow EPA regulations for disposal of lead-base paint.
 - 6. Specifically for varnish buildup:
 - a. Wet steel wool with solvent and rub over the wood surface to remove varnish buildup and to smooth out any checks in the surface.
 - b. Replace steel wool frequently with clean, and continue the wiping process until a smooth surface is achieved.

NOTE: DO NOT USE WATER ON THE WOOD SURFACE.

- 7. Wipe wood with a clean cloth soaked in mineral spirits to remove chemical residue.
- 8. Allow to dry and dry-brush loose material from the surface using a short fiber bristle brush.
- 9. Repeat as necessary to sufficiently remove the previous coating.
- 10. Special Procedures for Varnished Wood Floors:
 - a. Sand the floor with an orbital sander to remove stains, old finish and indentations in the wood. Sand indirection of wood grain.
 NOTE: DO NOT REMOVE MORE THAN V16" OF THE WOOD SURFACE.
 b. Demous dust from floor with an analysis and to also also be also
 - b. Remove dust from floor with vacuum and tack cloth.
- 11. Special Procedures for Waxed Wood Floors: *NOTE: Some sophisticated modern waxes, formulated for long wear and for high production commercial use, require special strippers that most often are not appropriate for historic materials because the ingredients cannot be readily detected. Some silicon waxes can only be removed by abrasion. NOTE: WORK IN A WELL-VENTILATED ROOM. OBSERVE SAFETY RULES AS BOTH THE TURPENTINE AND THE WAX ARE FLAMMABLE, AND THE FUMES CAN TRIP AN IONIZATION SMOKE DETECTION SYSTEM. STORE SOILED*

CAN TRIP AN IONIZATION SMOKE DETECTION SYSTEM. STORE SOILED CLOTHS INA METAL SAFETY CONTAINER TO GUARDAGAINST SPONTANEOUS

COMBUSTION.

- a. Dampen small area of floor with turpentine or mineral spirits, or apply wax remover evenly over the floor following manufacturer's instructions.
- b. Using a 16" electric floor machine, scrub lightly with a piece of 000 steel wool or nylon web scrubbing pad. Change steel wool or pads as they become clogged with old wax.
- c. Wipe up solvent and wax with clean cloths.
- d. Continue cleaning in this manner until all of the old wax has been removed. Allow floor to dry, approximately 15-20 minutes after the last area has been cleaned.
- e. Apply wax and buff as described 06200-01-P. Apply two or more thin coats rather than one thick coat. Buff after each coat.
- B. Fill scratches, gouges and dents with wood filler.
- C. Apply a high quality paste wood filler with a brush to all open grain wood species (i.e. Oak) before staining.
 - 1. Dampen a clean cloth with mineral spirits and wipe the paste off across the grain of the wood to enable the filler to remain in the grain depressions.
 - 2. Allow the filler to fully dry before applying the stain or varnish.
- D. Stain and Varnish the Wood:
 - 1. On a SAMPLE area 12 inches square, brush apply oil stain or universal stain.
 - 2. Allow the stain to penetrate the wood for at least 5-10 minutes.
 - 3. Remove excess stain with a clean, lint-free cloth. Rub the wood parallel to the grain.
 - 4. Allow the stain to dry at least 12 hours before applying varnish.
 - 5. Brush apply one coat of alkyd or urethane-base satin varnish. Varnish should be thin, but not watery.
 - 6. Allow to dry for at least 24 hours.
 - When dry, buff the surface with 000 steel wool and dry-brush with a fiber bristle brush to remove any metal particles left behind from the steel wool. A tack rag may also be used to remove dust from the surface.
 - 8. Apply second coat of satin varnish (full-strength).
 - 9. Allow to fully dry.
 - 10. Buff the surface with 000 steel wool and dry-brush with a fiber bristle brush to remove any metal particles left behind from the steel wool.
 - 11. If sample is approved by RHPO, follow the same procedures for all remaining wood.
 - 12. For areas subject to wear (i.e. handrails, wainscot, etc.):
 - a. After buffing the final coat of varnish, apply one coat of non-yellowing paste wax.

This page intentionally left blank

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Floor, wall, and roof framing.
- B. Related Sections include the following:
 - 1. Section 06 10 53 Miscellaneous Rough Carpentry

1.3 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.
 - 3. RIS: Redwood Inspection Service.
 - 4. SPIB: The Southern Pine Inspection Bureau.
 - 5. WCLIB: West Coast Lumber Inspection Bureau.
 - 6. WWPA: Western Wood Products Association.

1.4 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - 3. For fire-retardant treatments specified to be High-Temperature (HT) type, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
 - 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 - 5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.
- C. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- D. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - 1. Wood-preservative-treated wood.
 - 2. Fire-retardant-treated wood.
 - 3. Engineered wood products.
 - 4. Power-driven fasteners.
 - 5. Powder-actuated fasteners.
 - 6. Expansion anchors.
 - 7. Metal framing anchors.

1.5 QUALITY ASSURANCE

- A. Source Limitations for Engineered Wood Products: Obtain each type of engineered wood product through one source from a single manufacturer.
- B. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":
 - 1. Dimension lumber framing.
 - 2. Timber.
 - 3. Rim boards.
 - 4. Miscellaneous lumber.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. For exposed lumber indicated to receive a stained or natural finish omit grade stamp and provide certificates of grade compliance issued by grading agency.
 - 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.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA UC4A.

- 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- 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 does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood sills, sleepers, blocking and similar concealed members in contact with masonry or concrete.
 - 2. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
 - 3. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING

- A. Maximum Moisture Content 19 percent.
- B. Interior Partitions: Construction grade or better, any of the following species:
 - 1. Hem-fir (north); NLGA.
 - 2. Mixed southern pine; SPIB.
 - 3. Spruce-pine-fir; NLGA.
 - 4. Hem-fir; WCLIB, or WWPA.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
- B. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber with 19 percent maximum moisture content of any species.
- C. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber with 19 percent maximum moisture content and any of the following species:
 - 1. Hem-fir (north); NLGA.
 - 2. Mixed southern pine; SPIB.
 - 3. Spruce-pine-fir; NLGA.
 - 4. Hem-fir; WCLIB, or WWPA.
- D. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine, No. 3 grade; SPIB.
 - 2. Hem-fir or hem-fir (north), Standard or 3 Common grade; NLGA, WCLIB, or WWPA.
 - 3. Spruce-pine-fir (south) or spruce-pine-fir, Standard or 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
- E. 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.

F. 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.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2

2.6 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32 inch; selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 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 "Details for Conventional Wood Frame Construction," unless otherwise indicated.

- C. Place horizontal members laid flat, crown side-up.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- E. 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.
- F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the 2021 Connecticut Building Code.
- H. Use common wire 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 between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.
- I. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
- J. Place sill gasket directly on foundation. Puncture gasket clean and fit tight to protruding foundation anchor bolts.
- K. Coordinate installation of wood decking, glue laminated and plywood web joists.
- L. All wood contact with concrete or masonry to be pressure treated.

3.2 STUD INSTALLATION

- A. Stud Spacing: 16 inches (400 mm) on center. Unless noted otherwise on the drawings.
- B. Wall & Partition Heights: Full height to floor or roof/ceiling construction above.
- C. Frame all walls and partitions with double top plates. All top plates to be lapped.
- D. Door Opening Framing: Install double studs at doorframe jambs. Install stud jacks on each side of opening, at frame head height, and between studs and adjacent studs.
- E. Blocking: Nail wood blocking to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, cabinetry, and future grab bars in all units.
- F. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work placed in or behind partition framing.

3.3 WOOD SLEEPERS, 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. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.4 WOOD FURRING INSTALLATION

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
- B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal-size furring horizontally and vertically at 24 inches o.c.
- C. Furring to Receive Gypsum Board: Install 1-by-2-inch nominal- size furring vertically at 16 inches o.c.

3.5 **PROTECTION**

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

SECTION 06 10 53

MISCELLANEOUS ROUGH CARPENTRY

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Blocking in wall and roof openings.
- B. Wood furring and grounds.
- C. Concealed wood blocking for support of miscellaneous accessories.
- D. Wood treatment.

1.2 RELATED WORK

- A. Section 03 30 00 Cast-in Place Concrete: Concrete openings to receive wood blocking
- B. Section 06 20 00 Finish Carpentry.

1.3 REFERENCES

- A. ALSC American Lumber Standards Committee: Softwood Lumber Standard.
- B. APA American Plywood Association: Grades and Standards.
- C. FS TT-W-571 Wood Preservation: Treating Practices.
- D. NFPA National Forest Products Association.
- E. SFPA Southern Forest Products Association.
- F. WCLIB West Coast Lumber Inspection Bureau: Standard Grading Rules for West Coast Lumber.
- G. WWPA Western Wood Products Association.

1.4 QUALITY ASSURANCE

- A. Lumber Grading Agency: Certified by ALSC.
- B. Plywood Grading Agency: Certified by APA.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Lumber Grading Rules: WWPA.
- B. Softwood Lumber: Southern Pine species, No. 2 grade, kiln dried or surfaced dry with 19 percent maximum moisture content.
- C. Plywood: APA Grade C-D, with waterproof glue, unsanded.
- D. Fasteners: Hot-dipped galvanized steel for exterior, high humidity, and treated wood locations; plain finish elsewhere; size and type to suit condition.
- E. Anchors: Adhesive expanding bolt type for anchorage to hollow masonry. Bolts or ballistic fasteners for anchorages to steel.

2.2 WOOD TREATMENT

A. Wood Preservative (Pressure Treatment): FS TT-W-571 AWPA Treatment UC4A using water borne preservative with 0.30 percent retainage; preservative shall not contain

chromium or arsenic.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Erect wood framing members level and plumb.
- B. Space framing and furring 16 inches.
- C. Curb all roof openings except where prefabricated curbs are provided. Form corners by lapping side members alternatively.
- D. Coordinate work with installation of decking and support of decking at openings.

SECTION 06 20 00

FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items, other than shop prefabricated casework.
- B. Hand attachment accessories.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Section 08 71 00 - Door Hardware: Supply of hardware to this Section.

1.03 RELATED SECTIONS

- A. Section 06 10 53 Miscellaneous Rough Carpentry: Wood Blocking and Curbing.
- B. Section 08 14 33 Stile & Rail Wood Doors
- C. Section 08 52 00 Wood Windows
- D. Section 09 91 00 Painting: Painting and finishing of finish carpentry items.

1.04 REFERENCES

- A. AWI Quality Standards.
- B. PS 20 American Softwood Lumber Standard.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable code for fire retardant requirements.
- B. Conform to Certification of Compliance with HUD Severe Use Standards.

1.06 SUBMITTALS

- A. Submit shop drawings under provisions of Section 01 33 00.
- B. Submit shop drawings indicating materials, component profiles, fastening methods, jointing details, finishes, accessories, to a minimum scale of 1-1/2 inch to one foot.
- E. Submit product data under provisions of Section 01 33 00.
- D. Submit samples under provisions of Section 01 33 00.
- F. Submit one sample 24 x 24 inch in size illustrating wood grain and specified finish.
- F. Submit two samples 12-inch-long of wood trim.
- G. Mock-ups: Build mock-ups to set quality standards for fabrication and installation.
 1. Contractor shall provide mock-up of the porch including the following elements for Architect's review & approval. Mock-up may be kept in place if approved.
 a. All Miscellaneous trim including but not limited to skirts, friezes, facias, and rakes.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.

C. Store materials in ventilated, interior locations under constant minimum temperatures of 60 degrees F (16 degrees C) and maximum relative humidity of 55 percent.

PART 2 PRODUCTS

2.01 FABRICATORS

- A. Brockway-Smith Company.
- B. Custom Millwork Shop.
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 LUMBER MATERIALS

- A. Softwood Lumber: PS 20; Premium grade in accordance with AWI; maximum moisture content of 6 percent. Pine species, with plain sawn grain, of quality capable of transparent finish.
- B. Hardwood Lumber: FS MM-L-736; Premium grade in accordance with AWI; maximum moisture content of 6 percent. Birch or oak species, with plain sawn grain, of quality capable of transparent finish.
- C. MDO Plywood: Grade C-D: Graded in accordance with AWI Custom: veneer core; paper face; exterior glue.

2.03 ACCESSORIES

- A. Nails: Size and type to suit application, plain and coated finish.
- B. Bolts, Nuts, Washers, Blind Fasteners, Lags, and Screws: Size and type to suit application; plain and galvanized finish.
- G. Lumber for Shimming, Blocking, Softwood lumber of Southern yellow pine species.
- D. Primer: Alkyd primer sealer type.
- E. Wood Filler: Oil base, tinted to match surface finish color.

2.04 FABRICATION

A. Fabricate to AWI Premium standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and openings are ready to receive work and field measurements are as shown on the drawings.
- B. Verify mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this work.
- C. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

- A. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.
- B. Before installation, back prime paint all unexposed surfaces.

3.03 INSTALLATION

- A. Install work in accordance with AWI Premium quality standard.
- B. Set and secure materials and components in place, plumb and level.
- C. Install components and trim with nails and screws at 8 inch on center.
- D. Install hardware in accordance with manufacturer's instructions.

3.04 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch (1.5 mm).
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.7 mm).

3.05 SITE TREATMENT OF WOOD MATERIALS

- A. Brush apply one coat of primer on hidden surfaces of exterior located finish carpentry items.
- B. Apply preservative treatment in accordance with manufacturer's instructions.
- C. Treat site-sawn ends. Allow preservative to cure prior to erecting materials.
- D. Verify that materials requiring paint finish do not exceed 6 percent moisture content before applying treatment.

3.06 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: Refer to Section 09 91 00.

3.07 PROTECTION

A. Protect finished installation under provisions of Section 01500.

This page intentionally left blank

SECTION 07 71 23

GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-coated copper integral gutters and downspouts.
- B. Down Spout Nozzles

1.2 RELATED SECTIONS

A. Section 09 90 00 - Painting: Field painting of metal surfaces.

1.3 REFERENCES

- A. ASTM B209 Aluminum and Aluminum Alloy Sheet and Plate.
- B. FS TT-C-494 Coating Compound, Bituminous, Solvent Type, Acid Resistant.
- C. SMACNA Architectural Sheet Metal Manual.

1.4 SUBMITTALS

- A. Submit manufacturer's installation instructions under provisions of Section 01 33 00.
- B. Submit shop drawings & Product data under provisions of Section 01 33 00.
- C. Indicate on shop drawings, general construction, configurations, jointing methods and locations, fastening methods, locations and installation details.
- D. Provide product data on prefabricated components.
- E. Submit Samples under the provisions of Section 01 33 00.
- F. Submit three samples 12 inches in length illustrating component design, finish, color and configuration.

1.5 QUALITY ASSURANCE

A. Conform to SMACNA Manual Drawings for nominal sizing of components for rainfall intensity determined by a storm occurrence of 1 in 5 years.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.
- C. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to aid ventilation. Slope to drain.
- D. Prevent contact with materials during storage, which may cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Architectural Metals; 8188 S. State Road, M-66, Portland, MI 48875; Tel: 616.374.0161; Fax: 616.374.0785; web: <u>www.archmetalsinc.com</u>
- B. Englert Inc.; 1200 Amboy Avenue, Perth Amboy, NJ 08861; Tel: 800.364.5378; Fax: 888.389.0520; Web: <u>www.englertinc.com</u>
- C. Berger Building Products; 805 Pennsylvania Boulevard, Feasterville, PA 19053; Tel: 215.355.1200; Fax: 215.355.7738; <u>www.bergerbp.com</u>
- D. Alcoa Building Products (Aluminum Coil Stock), 201 Isabella Street, Pittsburgh, PA 15212-5858; Tel: 412.553.4545; Fax: 412.553.4498
- E. Rutland Gutter Supply llc (Copper Gutters & Accessories), 10895 Rocket Boulevard, Orlando, FL 32824; Tel: 407.859.1119; Fax: 407.859.1123; www.rutland guttersupply.com
- F. Jay R. Smith Mfg. Co., 2781 Gunter Park DR E, Montgomery, AL 36109; Tel: 334.277.8520; <u>www.jrsmith.com</u>
- G. Substitutions: Under provisions of Section 01 60 00.

2.2 MATERIALS

- A. Aluminum Sheet: ASTM B209, 3003 Aluminum alloys, 0.032-inch-thick; shop precoated with 3 coats of paint coating, color as selected by architect.
- B. Copper Sheet: ASTM B 370, minimum temper H00 (cold rolled) except where temper 060 is required for forming:
 - a. Integral Gutters and Downspouts: 16 oz. per sq. ft

2.3 COMPONENTS

- A. Gutters: Integral
- B. Downspouts: Round pipe

2.4 ACCESSORIES

- A. Elbow: Crimped
- B. Gooseneck Pipe: Profiled to match downspout
- C. Anchorage Devices: Type recommended by fabricator.
- D. Gutter Supports: Brackets/ hanger to match Gutter material & finish
- E. Downspout Supports: Pipe Straps to match Downspout material & finish
- F. Joint Fasteners: Profiled to suit gutter & downspout

2.5 FABRICATION

A. Form gutters and downspouts of profiles and sizes indicated.

- B. Field measure site conditions prior to fabricating work.
- C. Fabricate with required connection pieces.
- D. Form sections square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance.
- E. Hem exposed edges of metal.

2.6 FINISHES

- A. Backpaint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.
- B. Natural Weathering mill finished copper. No applied finish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work & conditions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION

- A. Install conductor heads, gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Join lengths with formed seams sealed watertight. Flash & seal gutters to downspouts & accessories.
- C. Apply backing paint to metal back surfaces.
- D. Apply bituminous protective backing on surfaces in contact with dissimilar materials.
- E. Slope gutters 1/16 inch per foot minimum.
- F. Seal metal joints watertight.
- G. Connect downspouts to storm sewer system. Seal connection watertight.

This page intentionally left blank

SECTION 07 92 00

JOINT SEALERS

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Preparing sealant substrate surfaces.
- B. Sealant and backing

1.2 RELATED SECTIONS

A. Section 03 30 00 - Concrete: Sealants used in conjunction with concrete.

1.3 REFERENCES

- A. ANSI/ASTM D1056 Flexible Cellular Materials Sponge or Expanded Rubber.
- B. ANSI/ASTM D1565 Flexible Cellular Materials Vinyl Chloride Polymers and Copolymers (Open-Cell Foam).
- C. ASTM C790 Use of Latex Sealing Compounds.
- D. ASTM C804 Use of Solvent-Release Type Sealants.
- E. ASTM C834 Latex Sealing Compounds.
- F. FS TT-C-00598 Calking Compound, Oil and Resin Base Type.
- G. FS TT-S-001657 Sealing Compound, Single Component, Butyl Rubber Based, solvent Release Type.
- H. FS TT-S-00227 Sealing Compound: Elastomeric Type, Multi-Component.
- I. FS TT-S-00230 Sealing Compound: Elastomeric Type, Single Component.
- J. FS TT-S-001543 Sealing Compound, Silicone Rubber Base.
- K. SWI (Sealing and Waterproofers Institute) Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations and color availability.
- C. Submit samples under provisions of Section 01 33 00.
- D. Submit two samples $1/4 \ge 4$ inches in size illustrating colors selected.
- E. Submit manufacturer's installation instructions under provisions of Section 01 33 00.
- F. Submit manufacturer's certificate under provisions of Section 01 40 00 that products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience.
- B. Applicator: Company specializing in applying the work of this Section with minimum three years documented experience, approved by sealant manufacturer.
- C. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.7 SEQUENCING AND SCHEDULING

- A. Coordinate work under provisions of Section 01 31 00.
- B. Coordinate the work of this Section with all Sections referencing this Section.

1.8 WARRANTY

- A. Provide five-year warranty under provisions of Section 01 77 00.
- B. Warranty: Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 – PRODUCTS

2.1 SEALANTS

- A. Acrylic Emulsion Latex: ASTM C834-76, single component; as selected; AC-20 manufactured by Pecora.
- B. Butyl Sealant: FS TT-S-001657, black color; BC-158 manufactured by Pecora.
- C. Polysulphide Sealant: FS TT-S-230C, Type II non-sag, Class A; as selected; Synthacalk GC-9 manufactured by Pecora.
- D. Polyurethane Sealant: FS TT-S-230C, Type I self-levelling, Class A; as selected; manufactured by Pecora.
- E. Silicone Sealant: FS TT-S-01543B, Class A, low modulus type; as selected; #864 manufactured by Pecora.
- F. Acoustical, Fire-rated Sealant: USG Sheetrock Brand Acoustical Sealant by USG

2.2 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ANSI/ASTM D1056 and D1565; Denverfoam or Greenrod oversized 30 to 50 percent larger than joint width; as recommended by Pecora.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing surfaces.

3.2 PREPARATION

- A. Clean and prime joints in accordance with manufacturer's instructions.
- B. Remove loose materials and foreign matter, which might impair adhesion of sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Perform preparation in accordance with ASTM C804 for solvent release and C790 for latex base sealants.
- E. Protect elements surrounding the work of this Section from damage or disfiguration.

3.3 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints channel shaped.

3.4 CLEANING AND REPAIRING

- A. Clean work under provisions of Section 01 77 00.
- B. Clean adjacent soiled surfaces.
- C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.5 PROTECTION OF FINISHED WORK

- A. Protect finished installation under provisions of Section 01 50 00.
- B. Protect sealants until cured.

5.0	SCHEDULE		
Location		Туре	Color
A.	Concrete Sidewalks	D.	Limestone
B.	Brick	Ε.	Color to match new mortar
D.	Dampproofing	C.	Black
E.	Vapor & air barriers	A.	White or clear
F.	Roofing	B.	Black
G.	Flashing & sheet metal	B.	Clear
I.	Windows	Е.	Color to match windows
Κ.	Drywall	F.	White

3.6 SCHEDULE

SECTION 08 14 33

STILE AND RAIL WOOD DOORS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Exterior Wood and glass doors, stile and rail design.

1.2 RELATED SECTIONS

- A. Section 06 10 00 Rough carpentry
- B. Section 06 20 00 Finish Carpentry
- E. Section 08 71 00- Door Hardware.
- F. Section 08 80 00 Glazing.
- G. Section 09 91 00 Painting: Site finishing doors.

1.3 REFERENCES

A. AWI - Quality Standards of the Architectural Woodwork Institute.

1.4 SUBMITTALS FOR REVIEW

- A. Section 01 33 00 Submittals: Procedures for submittals.
- B. Product Data: Indicate stile and rail core materials and construction; wood species, type and characteristics.
- C. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special blocking for hardware, identify cutouts for glazing.
- D. Samples: Represent typical range of color and grain for each specied of veneer and solid lumber required.

1.5 SUBMITTALS FOR INFORMATION

- A. Section 01 33 00 Submittals: Procedures for submittals.
- B. Manufacturer's Installation Instructions: Indicate special installation instructions.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with AWI Quality Standard Section 1400, Premium Grade.
- B. Finish doors in accordance with AWI Quality Standard Section 1500.
- C. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Section 01 60 00 Material and Equipment: Transport, handle, store, and protect products.
- B. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit
ventilation.

1.8 PROJECT CONDITIONS

- A. Section 01 31 00 Project Management and Coordination.
- B. Coordinate the work with door opening construction, door frame and door hardware installation.

1.9 WARRANTY

- A. Section 01 77 00 Contract Closeout.
- B. Provide warranty to the following term:
 - 1. Life of Installation: Interior and exterior doors.
- C. Include coverage for warping beyond specified installation tolerances, defective materials.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Brockway-Smith Company; 35 Upton Drive, Wilmington, MA 01887
- B. Marshfield-Algoma Wood Doors, 1001 Perry Street, Algoma, WI 54201
- C. Mohawk, 980 Point Township Rd, P.O. Box 112, Northumberland, PA, 17857
- D. Section 01 60 00 Material and Equipment: Product options and substitutions. Substitutions: Permitted.

2.2 DOOR TYPES

- A. Exterior Stile and Rail Wood Doors: Exterior custom doors complying with the AWI's, "Architectural Woodwork Standards," WDMA L.S.6A, "Industry Standard for Architectural Stile and Rail Doors," and with other requirements specified.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings.
 - 2. Thermal Transmittance: Maximum whole fenetrastion product U-factor of 0.40 Btu/sq. ft x h x deg F, according to AAMA 1503, ASTM E 1423, or NFRC 100.
 - 3. Grade: Premium Custom.
 - 4. Finish: Transparent.
 - 5. Options in "Wood Species and Cut for Transparent Finish" Subparagraph below are examples for transparent-finished doors. Fourth option is an example for use where several species are required; if retaining, indicate species in a door schedule on Drawings or insert a schedule at the end of Part 3.
 - 6. Wood Species and Cut for Transparent Finish: Mahogany, plain sawed/sliced.
 - 7. Door Construction for Transparent Finish:
 - a. Stile and Rail Construction: Clear lumber; may be edge glued for width.
 - b. Raised-Panel Construction: Clear lumber; edge glued for width.

2.3 ADHESIVE

A. Adhesive: Type I - waterproof.

2.4 FABRICATION

- A. Fabricate doors in accordance with AWI Quality Standards requirements.
- B. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.
- C. Glazed openings: factory install glazing in doors, complying with Section 08 80 00 Glazing. Install glass using manufacturer's standard elastomeric glazing sealant complying with ASTM C 920. Secure glass in palce with removable wood moldings. Miter wood moldings at corner joints.
- D. Exterior Doors: Factory treat exterior doors after fabrication with water-repellent preservative to comply with WDMA I.S.4. Flash top of outswing doors with manufacturer's standard metal flashing.
- E. Prehung Doors: Provide stile and rail doors complete with frames, weather stripping, and hardware.
 1. Provide wood door fgrames that comply with Section 06 20 00 Finish Carpentry
 2. Provide hardware including weather stripping, that complied with section 08 71 00

2. Provide hardware including weather stripping, that complied with section 08 71 00 Door Hardware.

2.5 FINISHING

- A. Finish wood doors at woodworking shop that are indicated to receive transparent finish in Door/ Finish Schedule.
- B. Use only paints and coatings that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Transparent Finish:
 - 1. Grade: Premium Custom

2. Finish: AWI's, AWMAC's and WI's "Architectural Woodwork Standards" System 11, catalyzed polyurethane.

3. Staining: as selected by Architect

4. Effect: Semifilled finish, producteed by applying an additional finish coat to partially fill the wood pores.

5. Sheen: Satin.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Section 01 31 00 Project Management and Coordination: Verification of existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

3.2 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and AWI Quality Standards

requirements.

- B. Trim door width by cutting equally on both jamb edges.
- C. Trim door height by cutting bottom edges to a maximum of 3/4 inch(19 mm).
- D. Machine cut for hardware.
- E. Coordinate installation of doors with installation of frames specified in Section 08 11 13 and hardware specified in Section 08 71 00.
- F. Coordinate installation of glass and glazing.

3.3 INSTALLATION TOLERANCES

- A. Conform to AWI requirements for fit, clearance, and joinery tolerances.
- B. Maximum Diagonal Distortion (Warp): 1/8 inch measured with straight edge or taut string, corner to corner, over an imaginary 36 x 84 inch surface area.
- C. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taut string, top to bottom, over an imaginary 36 x 84 inch surface area.
- D. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 x 84 inch surface area.

3.4 ADJUSTING

- A. Section 01 77 00 Contract Closeout: Adjusting installed work.
- B. Adjust door for smooth and balanced door movement.

END OF SECTION

SECTION 08 80 00

GLAZING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Glass for Wood Doors.
- B. Glass for Windows.

1.02 RELATED WORK

A. Section 06 20 00 – Finish Carpentry

1.03 REFERENCES

- A. ANSI Z97.1 Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
- B. ASTM C804 Use of Solvent Release Type Sealants.
- C. ASTM C864 Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
- D. ASTM C920 -Elastomeric Joint Sealants.
- E. ASTM C1036 Flat Glass.
- F. ASTM C1048 Heat-Treated Flat Glass Kind HS, Kind FT Coated and Uncoated Glass.
- G. ASTM E84- Surface Burning Characteristics of Building Materials.
- H. ASTM E283 Test Method For Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
- I. ASTM E330 Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- J. ASTM E546 Test Method For Frost Point of Sealed Insulating Glass Units.
- K. ASTM E576 Test Method For Dew/Frost Point of Sealed Insulating Glass Units in Vertical Position.
- L. ASTM E773 Test Method for Seal Durability of Sealed Insulating Glass Units.
- M. ASTM E774 Sealed Insulating Glass Units.
- N. FGMA Glazing Manual.
- O. FGMA Sealant Manual.
- P. SIGMA Sealed Insulated Glass Manufacturers Association.
- Q. CPSC 16 CFR Part 1201 for Category II materials.

1.04 PERFORMANCE REQUIREMENTS

A. Limit glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

1.05 QUALITY ASSURANCE

A. Conform to Flat Glass Marketing Association (FGMA) Glazing Manual for glazing installation methods.

1.06 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Submit samples under provisions of Section 01 33 00.
- C. Submit 12 x 12 inch samples of insulated glass units.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.

PART 2 PRODUCTS

2.01 ACCEPTABLE GLASS MANUFACTURERS

- A. Pittsburg Plate Glass.
- B. Saint-Gobain
- C. Pilkington/ Libbey-Owens-Ford
- D. Substitutions: Under provisions of Section 01 60 00.

2.02 GLASS MATERIALS

A. Float or Plate Glass: Clear, premium quality windows, 1/4 inch thick minimum at store fronts.

2.05 ACCEPTABLE GLAZING COMPOUND MANUFACTURERS

- A. Dow Chemical.
- B. Substitutions: Under provisions of Section 01 60 00.

2.06 GLAZING COMPOUNDS

- A. Silicone Sealant: Single component, capable of water immersion without loss of properties; non-bleeding; non-staining; cured Shore A hardness of 15-25; dark brown color.
- B. Verify glazing sealant is compatible with glazing accessories as supplied by door and window manufacturer. Notify Architect if non-silicone compatible accessories are supplied and require a field applied glazing sealant.

2.07 GLAZING ACCESSORIES

- A. Supply glazing accessories in accordance with window and door manufacturer's standard shop glazing procedures and as shown on the drawings.
- B. Supply field installed glazing accessories in accordance with window and door manufacturer's recommendations.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify wall surfaces are clean, free of obstructions, and ready for work of this Section.
- B. Verify sashes are clean, free of obstructions, and ready for work of this Section.
- C. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses.

3.05 EXTERIOR WET METHOD (SEALANT AND SEALANT)

- A. Place setting blocks at 1/4 points and install glass pane.
- B. Install removable stops with pane centered in space by inserting spacer shims both sides at 24 inch (600 mm) intervals, 1/4 inch (6 mm) below sightline.
- C. Fill gap between pane and stops with type sealant to depth equal to bite of frame on pane, but not more than 3/8 inch (9 mm) below sightline.
- D. Apply sealant to uniform line, flush with sightline. Tool or wipe sealant surface with solvent for smooth appearance.

3.10 CLEANING

- A. After installation, mark pane with an "X" by using plastic tape or removable paste.
- B. Remove glazing materials from finish surfaces.
- C. Remove labels after work is completed.

END OF SECTION

This page intentionally left blank

SECTION 09 01 90.51

GENERAL CLEANING OF PAINTED OR WAXED WOOD SURFACES

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Guidance for periodically cleaning painted or waxed wood surfaces.
- B. Related Sections:
 - 1. Section 01 10 00 Summary
 - 2. Historic Structures Precautions
 - 3. Section 01 33 00 Submittals
 - 4. Section 01 40 00- Quality Control
 - 5. Section 01 60 00 Product Requirement
 - 6. Section 01 50 00 Construction Facilities & Temporary Controls
 - 7. Section 06 01 20 Maintenance of Finish Carpentry

PART 2 – PRODUCTS

2.1 MATERIALS

NOTE: Chemical products are sometimes sold under a common name. This usually means that the substance is not as pure as the same chemical sold under its chemical name. The grade of purity of common name substances, however, is usually adequate for stain removal work, and these products should be purchased when available, as they tend to be less expensive. Common names are indicated below by an asterisk (*).

A. Non-Ionic detergent such as "Joy" or "Ivory Liquid", or trisodium phosphate (TSP)
 1. Trisodium Phosphate:

NOTE: THIS CHEMICAL IS BANNED IN SOME STATES SUCH AS CALIFORNIA. REGULATORY INFORMATION AS WELL AS ALTERNATIVE OR EQUIVALENT CHEMICALS MAY BE REQUESTED FROM THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REGIONAL OFFICE AND/OR THE STATE OFFICE OF ENVIRONMENTAL QUALITY.

- a. Strong base-type powdered cleaning material sold under brand names.
- b. Other chemical or common names include Sodium Orthophosphate; Tribasic sodium phosphate; Trisodium orthophosphate; TSP*; Phosphate of soda*; (also sold under brand names such as).
- c. Potential Hazards: CORROSIVE TO FLESH.
- d. Available from chemical supply house, grocery store or supermarket or hardware store.
- B. Mineral Spirits:
 - 1. A petroleum distillate that is used especially as a paint or varnish thinner.
 - 2. Other chemical or common names include Benzine* (not Benzene); Naphtha*; Petroleum spirits*; Solvent naphtha*.
 - 3. Potential Hazards: TOXIC AND FLAMMABLE.
 - 4. Safety Precautions:
 - a. AVOID REPEATED OR PROLONGED SKIN CONTACT.
 - b. ALWAYS wear rubber gloves when handling mineral spirits.
 - c. If any chemical is splashed onto the skin, wash immediately with soap and water.
 - 5. Available from construction specialties distributor, hardware store, paint store, or printer's

supply distributor.

-OR-

Turpentine: Available from hardware store or paint store.

-OR-

Denatured Alcohol:

- a. Other chemical or common names include Methylated spirit*.
- b. Potential hazards: TOXIC AND FLAMMABLE.
- c. Available from hardware store, paint store or printer's supply distributor.
- d. Denatured alcohol should be a satisfactory substitute for ethyl alcohol for stain removing purposes.
- C. Paste wax
- D. Liquid bleach
- E. Clean, potable water

2.2 EQUIPMENT

- A. Steel wool
- B. Two buckets (solution and rinse)
- C. Two sponges (solution and rinse)
- D. Supply of soft dry wiping cloths
- E. Ladder
- F. Drop cloth
- G. 16" electric floor machine
- H. Lamb's wool buffing pads

PART 3 – EXECUTION

3.1 PREPARATION

- A. Protection:
 - 1. Cover all surfaces and equipment not to be cleaned. Coverings must be adhered without adhesive tape or nails. Impervious sheeting that produces condensation shall not be used.
 - 2. Make sure work area is well ventilated and wear protective clothing and rubber gloves.
 - 3. When cleaning, always rub along the grain of the wood.
 - 4. Change cloths as often as necessary to be effective in cleaning.
- B. Surface Preparation: Thoroughly dust and/or vacuum surfaces before washing.

3.2 ERECTION, INSTALLATION, APPLICATION

- A. Cleaning Painted Wood Surfaces:
 - 1. To clean spots, rub area gently with a clean, damp sponge and dry with a clean wiping cloth.
 - 2. If water alone will not remove spot, use a non- ionic detergent or TSP solution as described below, rinse thoroughly, and wipe dry. If this cleaning procedure leaves a noticeable difference between treated and untreated areas, cleaning is not being performed properly or frequently enough.
 - a. Wash dirt and grease using a solution of 3 quarts warm water mixed with 2/3 cup trisodium phosphate (TSP) and non-ammoniated detergent. If mildew is a problem add 1 quart of liquid bleach.
 - b. Start at a lower corner of room, moisten 5 to 10 square feet of surface, then scrub with a

medium bristle brush to remove dirt. Thoroughly rinse surface, two rinses may be required, and wipe dry with clean wiping cloth.

- c. Continue process on lower portion of walls around entire room, slightly overlapping preceding section. ALWAYS WASH THE LOWER PORTION FIRST BECAUSE SOLUTION STREAKS RUNNING DOWN A DIRTY WALL CANNOT BE REMOVED. Proceed to wash upper wall surfaces and ceiling, including any painted wood ornament, from ladder.
- B. Cleaning Waxed Wood Surfaces:

NOTE: WAX IS AN IMPORTANT MAINTENANCE AGENT WHICH PROTECTS AGAINST MATERIAL ABRASION AND WETTING. ITS ADVANTAGE IS THAT IT IS EASY TO APPLY AND EASY TO REMOVE. IT CAN BE RECONDITIONED WITHOUT STRIPPING BY APPLYING MORE WAX AND REBUFFING. THE SOLVENT IN THE WAX RECONDITIONS THE PREVIOUS COAT AND MINIMIZES BUILD-UP.

- 1. For walls:
 - a. Follow the above wall washing techniques, but keep the surface as dry as possible. Cleaning solution should contain only non-ionic detergent and water.
 - b. Working in a well-ventilated area, remove paste wax by rubbing hard with a coarse cloth soaked in turpentine.
 - c. Remove stubborn dirt spots by scrubbing lightly with 000 steel wool. Change cloth or steel wool when they become clogged with old wax.
 - d. Apply wax with a clean, soft cloth. Waxing unpainted wood surfaces is imperative for protection from moisture and abrasion. Use a paste or microcrystalline wax that is removable by water or turpentine.
 - e. Place a small amount on the cloth and wipe it over surface leaving a thin, even coating. Wipe off any stray wax grains.
 - f. Buff wax before it hardens.

NOTE: Paste wax can be reconditioned by applying more wax and rebuffing. The solvent in the paste wax reconditions previous coats and minimizes build-up.

2. For floors:

NOTE: BE SURE THE WAX IS DESIGNATED FOR USE ON HARDWOOD FLOORS. DO NOT USE A LIQUID WAX WITH A WATER-BASE (I.E. FUTURE). NATIONAL OAK FLOORING MANUFACTURERS ASSOCIATION (NOFMA) RECOMMENDS USING ONLY A SOLVENT-BASE PRODUCT.

- a. Place a small amount of wax on dampened, clean, soft cloth and wipe it over the floor leaving a thin and even coating. It is not necessary to go right to the baseboards because the buffing operation will spread the wax to the edges of the room in every place except the inside corners.
- b. Buff floor using a 16" electric floor machine and lamb's wool pads. Reverse or replace pads as they become dirty. Buff to high gloss.
- NOTE: TAKE CARE NOT TO DAMAGE ADJACENT SURFACES.
- c. After polishing, sweep the floor to pick up stray wax grains that are loose on the floor. Wash all equipment before the wax hardens.

3.3 ADJUSTING/CLEANING

A. BOTH PASTE WAX AND TURPENTINE ARE FLAMMABLE, DISPOSE OF USED CLOTHS PROPERLY IN A METAL SAFETY CONTAINER TO GUARD AGAINST SPONTANEOUS COMBUSTION.

END OF SECTION

This page intentionally left blank

SECTION 09 01 90.91

PAINTING RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Cleaning and paint removal for exterior and interior historic items and surfaces.
 - 2. Surface preparation for painting of exterior and interior historic items and surfaces.
 - 3. Painting of exterior and interior historic items and surfaces using historic paint materials.
 - 4. Patching of minor damage to surfaces of historic items to be painted.
 - 5. Custom color matching.
- B. Paint historic items and surfaces as indicated in the schedules at the end of Part 3.
 - 1. Comply with requirements in other Division 9 painting Sections for prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
- C. Replication of decorative painting is the reproduction of original decorative painting with historically accurate colors and effects. This work includes, but is not limited to, the following:
 - 1. Faux finishes, including marbling and stenciling.
 - 2. Trompe l'oeil.
 - 3. Freehand painting.
 - 4. Glazing.
- D. Related Sections include the following:
 - 1. Division 9 painting Sections for use of modern (conventional) paint materials and application methods.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
- B. Historic Paint Materials: Paint materials formulated to match historic formulations; either custom-formulated products or standard products available from manufacturers of historic paint materials.
- C. Faux Finish: Painted finish of exposed materials by application of graining or marbleizing to imitate wood graining, marbling, or other finish.
- D. Trompe L'Oeil: Painted finish of exposed materials to replicate three-dimensional architectural detailing.

1.4 SUBMITTALS

- A. Product Data: For each paint system indicated.
 - 1. Material List: An inclusive list of required coating materials. Identify each material by manufacturer's number and classification.

- 2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
- B. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.
 - 1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
 - 2. Provide a list of materials and applications for each coat of each Sample. Label each Sample for location and application.
 - 3. Submit Samples on the following substrates for Architect's review of color and texture:
 - a. Gypsum Wall Board: 4-by-8-inch (100-by-200-mm) Samples for each color and finish.
 - b. Painted Wood: 4-by-8-inch (100-by-200-mm) Samples for each color and material on hardboard.
 - c. Stained or Natural Wood: 4-by-8-inch (100-by-200-mm) Samples of natural- or stained-wood finish on representative surfaces.
 - d. Ferrous Metal: 4-by-8-inch (100-by-200-mm) Samples of flat metal and 8-inch-(200-mm-) long Samples of solid metal for each color and finish.
 - 4. Decorative Paint Samples: Submit Samples of the following types of decorative painting for Architect's review of color and texture:
 - a. Marbling: Match existing on 4-by-8-inch- (100-by-200-mm-) sample.
 - b. Stenciling: Match existing on 4-by-8-inch- (100-by-200-mm-) sample.
 - c. Freehand Painting: Match existing indicated on Drawings on 4-by-8-inch- (100-by-200-mm-) sample.
 - d. Glazing: Apply glazing over decorative painting on 4-by-8-inch- (100-by-200-mm-) sample.
- C. LEED Submittal:
 - 1. Product Data for Credit EQ 4.2: For paints and coatings, including printed statement of VOC content.
- D. Color Matching Certification: Submit certification of computer color matching performed by paint manufacturer.
- E. Qualification Data: For painting restoration specialist.
- F. Restoration program for each phase of restoration process including protection of surrounding materials on the building and Project site during operations. Describe in detail the materials, methods, equipment, and sequence of operations to be used for each phase of the Work.
 - 1. If materials and methods alternative to those indicated are proposed for any phase of restoration work, provide a written description, including evidence of successful use on other comparable projects, and a testing program to demonstrate their effectiveness for this Project.

1.5 QUALITY ASSURANCE

- A. Painting Restoration Specialist Qualifications: A firm or individual experienced in painting restoration similar in material, design, and extent to that indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
 - 1. Field Supervision: Require that an experienced full-time supervisor be at Project site during times that painting restoration is in progress.

- B. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample for each type of coating and substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved sample submittals.
 - 1. Architect will select one room or surface to represent surfaces and conditions for application of each type of coating and substrate.
 - a. Surface-Preparation Mockup: On existing surfaces using applicable specified methods of cleaning and surface preparation, provide mockup sample of at least 100 sq. ft. (9 sq. m).
 - b. Wall Surfaces: Provide Samples of at least 100 sq. ft. (9 sq. m).
 - c. Small Architectural Detail Areas and Items: Architect will designate items or areas required for mockups.
 - d. Decorative Painting: Architect will designate items or areas required for mockups.
 - 2. Apply benchmark samples, according to requirements for the completed Work, after permanent lighting and other environmental services have been activated. Provide required sheen, color, and texture on each surface.
 - a. After finishes are accepted, Architect will use the room or surface to evaluate coating systems of a similar nature.
 - 3. Final approval of colors will be from benchmark samples.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name 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.
 - 8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain storage containers in a clean condition, free of foreign materials and residue.
 - 1. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.7 PROJECT CONDITIONS

- A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F (10 and 32 deg C).
- B. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F (7 and 35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
 - 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 PAINT CLEANING AND REMOVAL MATERIALS

- A. Alkaline Paste Paint Remover: Manufacturer's standard alkaline paste formulation for removing paint coatings from masonry, stone, wood, plaster, and metal.
 - 1. Provide chemical paint removers that do not contain methylene chloride.
 - 2. Available Products:
 - a. Back to Nature Products Company; Lift-n-Strip.
 - b. Dumond Chemicals, Inc.; Peel Away 1.
 - c. Minnesota Mining and Manufacturing Company (3M), Specified Construction Products Division; Paint Stripper.
- B. Biodegradable Paint Remover: Manufacturer's standard biodegradable formulation for removing paint coatings from masonry, stone, wood, plaster, and metal.
 - 1. Available Products:
 - a. Back to Nature Products Company; Multi-Strip.
 - b. Back to Nature Products Company; Ready-Strip.
- C. Solvent Paste Paint Remover: Manufacturer's standard solvent-based formulation for removing paint coatings from masonry, stone, wood, plaster, and metal.
 - 1. Available Products:
 - a. Dumond Chemicals, Inc.; Peel Away 6.
 - b. Dumond Chemicals, Inc.; Peel Away 7.
- D. Metal Paint Stripper: Paint stripper specifically designed to remove coatings from metal surfaces and recommended for use for applications indicated.
 - 1. Available Products:
 - a. Dumond Chemicals, Inc.; Peel Away ST1.
 - b. ProSoCo, Inc.; Sure-Klean T1375.
- E. Mineral-Powder-Based Paint Removal System: Cleaning and coating removal system for removing coating from masonry, stone, concrete, metals, and wood; apply with compressed air to scour coating without damaging substrate.
 - 1. Available Products:
 - a. ArmaKleen Company (The); ARMEX Cleaning and Coating Removal System.
 - b. JOS-Quintek Corporation; Rotec Vortex Cleaning Process.

2.3 COLOR MATCHING

- A. Custom Color Matching: Colors shall be selected by color codes indicated. Obtain color chips indicated by color codes from one of the following color systems; computer match paint colors with color chips:
 - 1. Munsell Color.
 - 2. Plochere Color System.

2.4 INTERIOR PRIMERS

- A. VOC Content of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
 - 2. Non-Flat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
 - 3. Anticorrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC content of not more than 250 g/L.
 - 4. Floor Coatings: VOC not more than 100 g/L.
 - 5. Shellacs, Clear: VOC not more than 730 g/L.
 - 6. Shellacs, Pigmented: VOC not more than 550 g/L.
 - 7. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
 - 8. Floor Coatings: VOC not more than 100 g/L.
 - 9. Shellacs, Clear: VOC not more than 730 g/L.
 - 10. Shellacs, Pigmented: VOC not more than 550 g/L.
 - 11. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
- B. Chemical Components of Field-Applied Interior Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: Provide products that comply with the following chemical restrictions:
 - 1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 - 2. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.
 - j. 1,2-dichlorobenzene.
 - k. Diethyl phthalate.
 - l. Dimethyl phthalate.
 - m. Ethylbenzene.
 - n. Formaldehyde.
 - o. Hexavalent chromium.
 - p. Isophorone.
 - q. Lead.
 - r. Mercury.
 - s. Methyl ethyl ketone.
 - t. Methyl isobutyl ketone.
 - u. Methylene chloride.
 - v. Naphthalene.
 - w. Toluene (methylbenzene).
 - x. 1,1,1-trichloroethane.
 - y. Vinyl chloride.
- C. Interior Gypsum Board Primer: Factory-formulated, latex-based primer for interior application.

2.5 EXTERIOR FINISH COATS

- A. Exterior Flat Acrylic Paint: Factory-formulated, flat, acrylic-emulsion latex paint for exterior application.
- B. Exterior Low-Luster Acrylic Paint: Factory-formulated, low-sheen (eggshell) acrylic-latex paint for exterior application.
- C. Exterior Semigloss Acrylic Enamel: Factory-formulated, semigloss, waterborne acrylic-latex enamel for exterior application.

2.6 INTERIOR FINISH COATS

- A. VOC Content of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
 - 2. Non-Flat Paints and Coatings: VOC content of not more than 150 g/L.
 - 3. Anticorrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC content of not more than 250 g/L.
 - 4. Floor Coatings: VOC not more than 100 g/L.
 - 5. Shellacs, Clear: VOC not more than 730 g/L.
 - 6. Shellacs, Pigmented: VOC not more than 550 g/L.
 - 7. Flat Topcoat Paints: VOC content of not more than 50 g/L.
 - 8. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
 - 9. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
 - 10. Floor Coatings: VOC not more than 100 g/L.
 - 11. Shellacs, Clear: VOC not more than 730 g/L.
 - 12. Shellacs, Pigmented: VOC not more than 550 g/L.
- B. Chemical Components of Field-Applied Interior Paints and Coatings: Provide products that comply with the following chemical restrictions:
 - 1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 - 2. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.
 - j. 1,2-dichlorobenzene.
 - k. Diethyl phthalate.
 - l. Dimethyl phthalate.
 - m. Ethylbenzene.
 - n. Formaldehyde.
 - o. Hexavalent chromium.
 - p. Isophorone.

- q. Lead.
- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.
- C. Interior Flat Acrylic Paint: Factory-formulated, flat, acrylic-emulsion latex paint for interior application.
- D. Interior Flat Latex-Emulsion Size: Factory-formulated, flat, latex-based paint for interior application.
- E. Interior Low-Luster Acrylic Enamel: Factory-formulated, eggshell, acrylic-latex enamel for interior application.
- F. Interior Semigloss Acrylic Enamel: Factory-formulated, semigloss, acrylic-latex enamel for interior application.

2.7 WOOD STAINS AND VARNISHES

- A. VOC Content of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Clear Wood Finishes, Varnishes: VOC content of not more than 350 g/L.
 - 2. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
 - 3. Floor Coatings: VOC not more than 100 g/L.
 - 4. Shellacs, Clear: VOC not more than 730 g/L.
 - 5. Shellacs, Pigmented: VOC not more than 550 g/L.
 - 6. Stains: VOC content of not more than 250 g/L.
- B. Wood Filler: Factory-formulated, paste wood filler applied at spreading rate recommended by manufacturer
- C. Wood Stain: Factory-formulated, alkyd-based penetrating wood stain for application applied at spreading rate recommended by manufacturer.
- D. Clear Sanding Sealer: Factory-formulated, fast-drying, alkyd-based clear wood sealer applied at spreading rate recommended by manufacturer.
- E. Alkyd- or Polyurethane-Based Clear Satin Varnish: Factory-formulated, alkyd- or polyurethanebased clear varnish applied at spreading rate recommended by manufacturer.
- F. Waterborne Clear Satin Varnish: Factory-formulated, clear satin acrylic-based polyurethane varnish applied at spreading rate recommended by manufacturer.

2.8 PATCHING MATERIALS

A. Wood Patching Compound: 2-part polyester or epoxy-resin wood compound with a 10- to 15minute cure at 70 deg F (21 deg C), in knife grade formulation and recommended by manufacturer for type of wood repair indicated. Compound shall be produced for filling damaged wood materials that have deteriorated due to weathering and exposure. Filler shall be capable of filling deep holes and capable of spreading to featheredge.

2.9 MISCELLANEOUS MATERIALS

- A. Detergent Cleaning Solution: Mix 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent, 5 quarts (5 L) of 5 percent sodium hypochlorite bleach, and 15 quarts (15 L) of warm water for each 5 gal. (20 L) of solution required.
- B. Job-Mixed Mold, Mildew, and Algae Remover: Mix 2 cups (0.5 L) of tetrasodium polyphosphate, 5 quarts (5 L) of 5 percent sodium hypochlorite bleach, and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.

PART 3 - EXECUTION

3.1 PAINTING RESTORATION SPECIALIST

- A. Available Painting Restoration Specialist Firms: Subject to compliance with requirements, firms that may provide painting restoration include, but are not limited to, the following:
- B. Painting Restoration Specialist Firms: Subject to compliance with requirements, provide painting restoration by one of the following:
 - 1. John Canning, Painting & Conservation Studios, 125 Commerce Court, Unit 5, Cheshire, CT 06410, Phone (203) 272-9868.

3.2 EXAMINATION

- A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements.
 - 1. Comply with manufacturer's requirements for inspection.
 - 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
 - 3. Apply paint only after unsatisfactory conditions have been corrected.
- B. Notify Architect a minimum of one working day prior to painting about possible problems resulting from using the specified materials over previously finished substrates.
- C. Conduct alkali testing with litmus paper on exposed plaster, cementitious, and masonry surfaces, and do not begin painting if surfaces exceed alkalinity allowed by paint manufacturer
- D. Test moisture content of surfaces using an electronic moisture meter. Do not begin application of coatings unless moisture content of exposed surfaces is below the following maximum values:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Finish Woodwork: 7 to 10 percent moisture content.
 - 3. Wood Surfaces: 18 percent.
- E. Coordination of Work: Review other sections in which primers are specified to ensure compatibility for the total system with various substrates.

3.3 SURFACE PREPARATION, GENERAL REQUIREMENTS

- A. Prepare existing surfaces as follows:
 - 1. Clean existing surfaces to remove loose dirt and dust.
 - 2. Remove surface films that will prevent proper adhesion.
 - 3. Treat paint finishes with gloss sheen to dull the surface with de-glosser.
 - 4. Remove loose, blistered, or otherwise defective paint; smooth edges with sandpaper.
 - 5. Clean corroded iron or steel surfaces to bright metal.
 - 6. Spackle and sand gypsum and plaster surfaces.
 - 7. Prime bare surfaces.
- B. If existing surfaces cannot be prepared to an acceptable condition for proper finishing by using specified surface-preparation methods, notify Architect in writing.
- C. Clean and prepare surfaces to be painted according to surface-preparation schedule at the end of Part 3 and with manufacturer's written instructions for each substrate condition.
 - 1. Provide barrier coats over incompatible previously painted surfaces or primers or remove coats and prime prepared surfaces. Notify Architect in writing about possible problems resulting from using the specified finish-coat material over substrates previously finished.
- D. Deteriorated Paint: The following classifications of deteriorated paint films shall be used to determine the degree of surface preparation required. Measure adhesion by ASTM D 3359 Method A, tape test (multiply results by 2 to correlate with the 0 to 10 rating system).
 - 1. Sound Existing Paint, Including Tightly Adhered Paint Film: No evidence of cracking, checking, blistering, or lack of adhesion; slight chalking and mildew may be present.
 - a. Adhesion: Rating of 10.
 - b. Wash areas to be repainted; use mild detergent solution, and rinse with clean water until all detergent has been removed.
 - c. Remove dirt and chalking from the surface without damaging the substrates or adjacent areas.
 - d. Allow washed areas to dry before painting.
 - 2. Slightly to Moderately Deteriorated Paint Including Cracked or Loose Paint Film: Moderate cracking, checking, blistering, erosion, and loss of adhesion.
 - a. Adhesion: Rating of 6 to 8.
 - b. Treat areas as specified for sound existing paint above.
 - c. After washing, carefully examine surface for cracking, blistering, peeling, or flaking paint.
 - d. Remove cracked, blistered, and nonadhering paint.
 - e. Scrape and sand edges smooth so that edges will not telegraph through new paint finish.
 - f. Wipe surface clean to remove remaining dust.
 - 3. Severely Deteriorated Paint Including Extensive Cracked and Loose Paint Film: Considerable cracking, checking, blistering, erosion, loss of adhesion, and severe chalking or mildew.
 - a. Adhesion: Rating of 0 to 4.
 - b. Remove old paint film down to bare substrate by using hand-tool removal, scraping and sanding, chemical removal, or a combination of all three methods.
- E. Selection of surface-preparation tools and methods shall be the responsibility of painting restoration specialist, provided surface preparation complies with requirements specified for type of existing surface condition. Comply with the following general requirements for equipment:
 - 1. Do not use power tools including sanders, grinders, and power brushing tools.

2. Heat gun (flameless) with temperature range of 700 to 1000 deg F (389 to 555 deg C) maximum temperature may be used.

3.4 SURFACE-PREPARATION METHODS

- A. General: Use the cleaning methods specified in this article, using the gentlest appropriate method necessary to clean the surface.
- B. Wash surfaces by hand cleaning using clean rags, sponges, water, and detergent.
- C. Hand-Tool Cleaning: Use wet sanding and wet scraping methods only. Lightly mist substrate before sanding or scraping. Acceptable hand-tools include scrapers, wire brushes, sandpaper, steel wool, nonmetallic pads, and dusters. Because of varying substrates, selection of tools shall be the responsibility of Contractor. After hand-cleaning is attempted, power tool cleaning may be required to complete cleaning and surface preparation.
- D. Solvent Cleaning: Solvent cleaning may be used to remove oil, grease, smoke, tar, and asphalt from painted or unpainted surfaces before preparation work begins. In addition, if necessary, spot-solvent cleaning may be employed just prior to the commencement of paint application, provided enough time is allowed for complete evaporation. Clean solvent and clean rags shall be used for the final wash to ensure that all foreign materials have been removed.
- E. Power Tool Cleaning: Do not use power-operated cleaning equipment without painting restoration specialist's written approval based on submission by Contractor of a satisfactory quality-control program and demonstrated ability of operators to use tools without damaging historic surfaces. Quality-control program shall include provisions for supervising performance. Power tool equipment shall be used with vacuum filter attachments. The substrate to be cleaned and its existing condition will dictate the specific tools to be employed. Contractor shall select and use a combination of tools appropriate to the substrate.

3.5 PAINT REMOVAL METHODS

- A. Removal Methods, General: Where cleaning methods have been attempted and further removal of the paint is required because of incompatible or unsatisfactory surfaces for repainting, use paint removal methods specified in this Article. Completely remove paint film from those items indicated or specified to have existing paint completely removed.
- B. Chemical Removal: Chemical removal systems may be employed to remove parts or complete coatings of paint. Spread the remover over the surface from which coatings are to be removed. Remove the softened paint with a scraper (broad knife) or similar tool that painting restoration specialist may select. Repeat the procedure until all paint and residue are removed as directed by manufacturer's written instructions. Rinse and neutralize as required by remover manufacturer. Allow enough time to elapse to permit the surface to dry before proceeding with refinishing.
- C. Heat Removal: Use and selection of heat removal equipment shall be the responsibility of painting restoration specialist. Care must be taken to protect flammable materials. When a heat device is used, one hand shall direct the heat device to the surface and the other hand shall follow behind with the scraper. Scrape the paint off while it is soft and bubbling. Fire-fighting equipment shall be located directly at hand during this process. All burned-off surfaces shall be wet sanded and cleaned before coatings are applied.
- D. Mechanical Removal: Use and selection of mechanical removal equipment shall be the responsibility of painting restoration specialist. Use of hand or power paint removal tools shall

be the option of Contractor. Acceptable tools for manual paint removal include scrapers, wire brushes, sandpaper, and steel wool.

E. Mineral-Powder-Based Removal System: Remove existing deteriorated paint film with airblasting, mineral-powder-based system according to manufacturer's written instructions.

3.6 SURFACE PREPARATION FOR EXISTING PAINTED WOOD

- A. Repair damaged wood areas including dents, holes, and cracks by filling with patching compound and wet sand smooth. Reset or remove protruding nail heads.
- B. Clean as required to remove existing deteriorated coatings and any foreign matter. Thick buildup of paint and runs and sags shall be wet sanded to achieve a smooth edge.
- C. Clean wood surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper.

3.7 SURFACE PREPARATION FOR EXISTING BARE AND PAINTED METAL

- A. Bare Metal Solvent Cleaning: Clean with solvents to remove oil, grease, and other contaminants before other cleaning treatments are used. Do not use solvents, including primer thinner and turpentine that leave residue.
- B. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces; remove rust, oil, grease, dirt, and other foreign substances. Use removal or cleaning methods that comply with paint manufacturer's written recommendations.
 - 1. Touch up bare areas and prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as shop coat.
- C. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents until surfaces are free of oil and surface contaminants.
- D. Metal Conditioner (Apply to Bare Metal): Apply phosphoric acid-based, etching-type surface treatments after solvent cleaning and according to manufacturers' written instructions. Rinse with clear water when reaction is complete. Allow at least 15 to 30 minutes but not less time than recommended by manufacturer for metal conditioner to condition the metal surface. Do not allow conditioner to dry before rinsing. If white rust (zinc oxide) appears after drying, wash clean with denatured alcohol immediately before priming.
- E. Surface-Preparation Methods: Remove loose rust and mill scale, spatter, slag, and flux deposits. Prepare surfaces as follows:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."
 - 3. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- F. Priming: Immediately after surface preparation, apply primer according to manufacturer's instructions and at rate to provide a dry film thickness of not less than 1.5 mils (0.03 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 2. Apply two coats of shop paint to inaccessible surfaces.

3.8 APPLICATION, GENERAL

- A. Comply with manufacturers' requirements for application methods and with other Division 9 painting Sections.
- B. In addition to the number of coats specified in schedules in other Division 9 painting Sections, provide additional coats as required to produce the finishes to match sample and mockup finishes.
- C. Blending: When painting new substrates patched into existing surfaces, furnish finishes specified for the specific substrate. Final finish coat shall be applied over entire surface from edge to edge and corner to corner.

3.9 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.10 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.11 PAINT REMOVAL SCHEDULE

- A. General: Prepare existing surfaces according to requirements for paint removal specified in this Schedule, which include descriptions of existing surface conditions before restoration painting begins.
- B. Paint Removal Class PR-1:
 - 1. Description: Existing paint film in good condition and tightly adhered.
 - 2. Paint Removal: Paint removal not required.
- C. Paint Removal Class PR-2:
 - 1. Description: Paint film cracked or broken but adhered.
 - 2. Paint Removal: Scrape by hand-tool cleaning methods to remove all loose paint film until only tightly adhered film remains.
- D. Paint Removal Class PR-3:
 - 1. Description: Paint film loose, flaking, or peeling.
 - 2. Paint Removal: Remove loose, flaking, or peeling paint film by hand cleaning, power tool cleaning, or chemical removal methods.
- E. Paint Removal Class PR-4:
 - 1. Description: Painted surface indicated to have paint completely removed.
 - 2. Paint Removal: Completely remove paint film by hand-tool, heat, or chemical removal methods.
 - 3. Remove severely deteriorated paint film down to bare substrate.

4. Remove paint from surfaces of fine architectural detail work that have been covered by layers of paint film to reveal architectural details.

3.12 SURFACE-PREPARATION SCHEDULE

- A. General: Prepare existing surfaces according to applicable requirements specified in this Schedule, which include descriptions of existing surface conditions before restoration painting begins.
- B. Surface-Preparation Class SP-1:
 - 1. Description: Existing paint film in good condition and tightly adhered.
 - 2. Surface Preparation: Detergent wash with specified cleaning methods. Roughen or degloss existing paint surfaces to ensure adhesion.
- C. Surface-Preparation Class SP-2:
 - 1. Description: Paint film cracked or broken but adhered.
 - 2. Surface Preparation: Following removal methods, detergent wash. Sand surfaces to smooth remaining paint film edges. Prepare bare cleaned surfaces to be repainted according to specified surface-preparation methods for substrate construction materials.
- D. Surface-Preparation Class SP-3:
 - 1. Description: Paint film loose, flaking, or peeling.
 - 2. Surface Preparation: Following removal methods, detergent wash. Sand surfaces to smooth remaining paint film edges. Prepare bare cleaned surfaces to be repainted according to specified surface-preparation methods for substrate construction materials.
- E. Surface-Preparation Class SP-4:
 - 1. Description: Painted surface indicated to have paint completely removed.
 - 2. Surface Preparation: Following paint removal, prepare bare cleaned surfaces to be repainted according to specified surface-preparation methods for substrate construction materials.
- F. Surface-Preparation Class SP-5:
 - 1. Description: Missing material, including small holes, openings, and deteriorated or corroded substrate.
 - 2. Surface Preparation: Replace missing material by patching with compounds or splicing new material with old material. After patching, refinish new surface complying with surface preparation and painting specified for new construction materials. Provide surface preparation of adjacent existing materials to comply with surface-preparation class required for description of existing surface.

END OF SECTION

This page intentionally left blank

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Gypsum board.
- B. Taped and sanded joint treatment.
- F. Fasteners and accessories.

1.02 RELATED WORK

- A. Section 06 10 00 Rough Carpentry
- B. Section 06 10 53 Miscellaneous Rough Carpentry: Wood blocking for support
- C. Section 09 91 00 Painting

1.03 REFERENCES

- A. ASTM C36 Gypsum Wallboard.
- B. ASTM C442 Gypsum Backing Board & Core Board.
- C. ASTM C475 Joint Treatment Materials for Gypsum Wallboard Construction.
- D. ASTM C557 Adhesive for Fastening Gypsum Wallboard to Wood Framing.
- F. ASTM C646 Steel Drill Screws for the Application of Gypsum Sheet Material.
- G. ASTM C754 Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.
- H. ASTM C840 Application and Finishing of Gypsum Board.
- J. ASTM E119 Fire Tests of Building Construction and Materials.
- L. GA-201 Gypsum Board for Walls and Ceilings.
- M. GA-216 Recommended Specifications for the Application and Finishing of Gypsum Board.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with ASTM C840.
- B. Applicator: Company specializing in gypsum board systems work with three years documented experience.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - GYPSUM BOARD

- A. United States Gypsum
- B. Georgia-Pacific
- C. Gold Bond Building Products Division

2.02 FRAMING MATERIALS

- A. Shaftwall Studs & accessories: See drawings, ASTM C 645.
- B. Furring, Framing & accessories: See drawings, ASTM C 645.

- C. Fasteners: ASTM C646. GA 201 and GA 216.
- D. Adhesive: ASTM C557. GA201 and GA216.

2.03 GYPSUM BOARD MATERIALS

- A. Standard Gypsum Board: ASTM C36; 1/2 inch (13 mm) thick, maximum permissible length; ends square cut, tapered and beveled square edges.
- B. Moisture Resistant Gypsum Board: ASTM C630; 1/2 & 5/8 inch (13 mm) thick, maximum permissible length; ends square cut, tapered and beveled square edges.

2.04 ACCESSORIES

- A. Corner Beads: Metal, unless noted otherwise in Drawings.
- B. Joint Materials: ANSI/ASTM C475; GA 201 and GA 216; reinforcing tape, joint compound, adhesive, water, and fasteners.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that site conditions are ready to receive work and opening dimensions are as instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing surfaces.

3.06 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with GA 201 and GA 216 and manufacturer's instructions.
- B. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Use screws when fastening gypsum board to wood furring or framing.
- D. Place corner beads at external corners as indicated. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials as indicated.

3.07 JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch (0.8 mm).

3.08 TOLERANCES

A. Maximum Variation from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

END OF SECTION

SECTION 09 91 00 PAINTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Interior and exterior painting, including surface preparation.

1.2 RELATED SECTIONS

- A. Section 03 30 00 Cast-in-Place Concrete.
- B. Section 05 50 00 Metal Fabrications.
- C. Section 05 52 00 Metal Railings
- D. Section 06 20 00 Finish Carpentry.
- E. Section 06 60 00 Plastic Fabrications
- F. Section 08 11 13 Hollow Metal Doors and Frames
- G. Section 08 11 19 Stainless- Steel Doors & Frames
- H. Section 09 21 16 Gypsum Board Assemblies

1.3 REFERENCES

- A. Green Seal Standard GS-11; May 20, 1993.
- B. US Green Building Council, (USGBC) Green Seal standards for LEED paint credits.
- C. Occupational Safety and Health Act (OSHA) Safety Standards.
- D. American National Standards Institute (ANSI) Performance Standards.
- E. Paint Decorating Contractors of America (PDCA) Application Standard.
- F. National Paint and Coatings Association (NPCA) Gloss Standard.
- G. American Society for Testing Materials (ASTM) Testing Methods.
- H. Master Paint Institute (MPI #) Established paint categories and standards.
- I. Ozone Transmission Commission (OTC) Established levels of Volatile Organic Compounds.
- J. SCAQMD 1168 South Coast Air Quality Management District Rule #1168; October 3, 2003.
- K. SSPC (PM1) Steel Structures Painting Manual, Vol. 1, Good Painting Practice; Society for Protective Coatings; 1993, Third Edition.
- L. SSPC (PM2) Steel Structures Painting Manual, Vol. 2, Systems and Specifications; Society for Protective Coatings; 1995, Seventh Edition.
- M. 40 CFR 59, Subpart D National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

1.4 **DEFINITIONS**

- A. Commercial as used in this Section refers to a product well suited for a commercial application.
- B. DFT as used in this Section refers to the Dry Film Thickness of the coating.
- C. Enamel refers to any acrylic or alkyd (oil) base paint which dries leaving an eggshell, pearl, satin, semi-gloss or high gloss enamel finish.
- D. DTM as used in this Section refers to paint that is applied Direct To Metal.
- E. LEED as used in this Section refers to Leadership in Energy and Environmental Design. Products listed meet LEED criteria for environmentally safe interior primers, paints and coatings.

- F. OTC as used in this Section refers to the Ozone Transmission Commission. OTC has established the following VOC levels for the Northeastern United States. Products shall meet the following OTC limits for VOC's.
 - 1. Interior flat paints: 50 grams per liter or less, per gallon.
 - 2. Interior enamels: 150 grams per liter or less, per gallon.
 - 3. Interior stains: 250 grams per liter or less, per gallon.
 - 4. Interior primers: 200 grams per liter or less, per gallon.
 - 5. Rust preventive coatings: 400 grams per liter or less, per gallon.
 - 6. Dry fog coatings: 400 grams per liter or less, per gallon.
 - 7. Floor coatings: 250 grams per liter or less, per gallon.
- G. Premium as used in this Section refers to the best quality product "top of the line".
- H. VOC as used in this Section refers to Volatile Organic Compounds found in primers, paints, sealers and stains. The level of VOCs appears after each product listed in the Schedule in grams per liter (g/L).
- I. Paints are available in a wide range of sheens or glosses, as measured by a gloss meter from a 60 and/or 85 degree angle from vertical, as a percentage of the amount of light that is reflected. The following terms are used to describe the gloss of our products. The list below is provided for general guidance; refer to the technical data sheet for the actual gloss/sheen level for each product.
 - 1. Flat Less than 5 Percent.
 - 2. Eggshell 5 20 Percent.
 - 3. Satin 20 35 Percent.
 - 4. Semi-Gloss 30 65 Percent.
 - 5. Gloss Over 65 Percent.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 Submittals
- B. Product Data: Provide a complete list of all products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category.
 - 2. Cross-reference to specified paint system(s) that the product is to be used in; include description of each system.
- C. Samples: Submit three paper samples, 5 inches by 7 inches (127mm x 178mm) in size, illustrating selected colors for each color and system selected with specified coats cascaded.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures.
- E. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied

by a single manufacturer with a minimum of ten years experience.

- B. Installer Qualifications: All products listed in this section are to be applied by a Painting Contractor with a minimum of five years demonstrated experience in surface preparation and field application of the same type and scope as specified.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Mock-up areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Approved mock-up areas will serve as the standard for remaining Work.
 - 4. Refinish mock-up area as required to produce acceptable Work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Disposal:
 - 1. Never pour leftover coating down any sink or drain. Use up material on the job or seal can and store safely for future use.
 - 2. Do not incinerate closed containers.
 - 3. For specific disposal or recycle guidelines, contact the local waste management agency or district. Recycle whenever possible.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 WARRANTY

- A. Inspection of all surfaces to be coated must be done by the manufacturer's representative to insure proper preparation prior to application. All thinners, fillers, primers and finish coatings shall be from the same manufacturer to support a product warranty. Products other than those submitted shall be accompanied by a letter stating its fitness for use and compatibility.
- B. At project closeout, provide to the Owner or owner's representative an executed copy of the Manufacturer's standard form outlining the terms and conditions of and any exclusions to their Limited Warranty against Manufacturing Defect.

1.10 EXTRA MATERIALS

- A. At project closeout, supply the Owner or owner's representative one gallon of each product for touch-up purposes. Cans shall be clearly marked with color name, number and type of paint.
- B. At project closeout, provide the color mixture name and code to the Owner or owner's representative for accurate future color matching.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Benjamin Moore & Co., which is located at: 101 Paragon Dr; Montvale, NJ 07645; Toll Free Tel: 855-724-6802 ; Email:request info (info@benjaminmoore.com); Web:www.benjaminmoore.com/en-us/for-architects-anddesigners|www.benjaminmoore.ca
- B. United States Gypsum Company, which is located at: 550 West Adams Street, Chicago IL 60661; Toll Free Tel: 800.874.4968; Web: <u>www.usg.com</u>
- C. Substitutions:
 - 1. Sherwin Williams, which is located at: 101 Prospect Ave, Cleveland, OH 44115; Toll Free Tel: 800.474.3794; Web: <u>www.sherwin-williams.com</u>
 - 2. Pittsburgh Paints Industries, Inc., which is located at: One PPG Place, Pittsburgh, PA 15272; Toll Free Tel: 800.441.9695; Web: <u>www.ppgpittsburghpaints.com</u>
- D. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 Product Requirements.

2.2 LEED CRITERIA

- A. LEED Version 3 2009: EQ CR4.2 Low Emitting Materials: 1 Credit Paint.
 - 1. All architectural paints and coatings used must meet the VOC limits of Green Seal Standard GS-11, 1993.
 - 2. Interior: 50 g/l VOC or less for Flats, 150 g/l VOC for Non Flats, and 200 g/l or less for primer sealers/
 - 3. Anti-Corrosive Coatings GC-03, 1997: Interior 250 g/l VOC or less any sheen.
 - 4. Clear wood finishes, floor coatings, stains, and shellacs applied to interior elements: District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.
 - 5. Clear wood finishes: varnish 350 g/L; lacquer 550 g/L; Floor coatings; 100 g/L, waterproofing sealers 250 g/L; sanding sealers 275 g/L; Shellacs: Clear 730 g/L; pigmented 550 g/L; Stains: 250 g/L.
- B. LEED Version 4:
 - All interior paints and coatings wet-applied on site must meet the applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011 (50g/l or less for interior flats, 100 g/l or less for non-flats, 150 g/l or less for non-flats high gloss).
 - 2. Ninety percent of all interior paints and coatings must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1-2010.

2.3 MATERIALS - GENERAL

- A. Volatile Organic Compound (VOC) Content:
 - 1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D-National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. Determination of VOC Content: Testing and calculation in accordance with 40

CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

B. Compatibility: Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

2.4 MIXING AND TINTING

- A. Except where specifically noted in this section, all paint shall be ready-mixed and pre-tinted. Agitate all paint prior to and during application to ensure uniform color, gloss, and consistency.
- B. Thinner addition shall not exceed manufacturer's printed recommendations. Do not use kerosene or other organic solvents to thin water-based paints.
- C. Where paint is to be sprayed, thin according to manufacturer's current guidelines.

2.5 INTERIOR PAINT SYSTEMS

- A. CONCRETE (Walls and Ceilings, Poured Concrete, Precast Concrete, Unglazed Brick, Cement Board, Tilt-Up, Cast-In-Place) including PLASTER (Walls, Ceilings).
 - 1. Latex Systems:
 - a. Gloss Finish High Performance:
 - 1) 1st Coat: Benjamin Moore Super Spec Interior/Exterior Acrylic High Build Masonry Primer N068 (97 g/L), MPI # 3, LEED 2009.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, LEED 2009, LEED V4.
 - 3) 3rd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, LEED 2009, LEED V4.
 - b. Semi-Gloss Finish High Performance
 - 1) 1st Coat: Benjamin Moore Super Spec Interior/Exterior Acrylic High Build Masonry Primer N068 (97 g/L), MPI # 3, LEED 2009.
 - 2nd Coat: Benjamin Moore Ultra Spec 500 Interior Latex Gloss N540 (0 g/L), MPI # 54, LEED 2009, LEED V4, CHPS Certified.
 - 3rd Coat: Benjamin Moore Ultra Spec 500 Interior Latex Gloss N540 (0 g/L), MPI # 54, LEED 2009, LEED V4, CHPS Certified.

B. CONCRETE: Ceilings.

- 1. Dryfall Waterborne Systems:
 - a. Semi-Gloss Finish:
 - 1st Coat: Coronado Super Kote 5000 Dry Fall Latex Semi-Gloss 112 (67 g/L), MPI # 226.
 - 2) 2nd Coat: Coronado Super Kote 5000 Dry Fall Latex Semi-Gloss 112 (67 g/L), MPI # 226.
- C. MASONRY: CMU Concrete, Split Face, Scored, Smooth, High Density, Low Density, Fluted.
 - 1. Latex Systems:
 - a. Gloss Finish High Performance:
 - 1st Coat: Benjamin Moore Super Spec Masonry Interior/Exterior Hi-Build Block Filler 206 (45 g/L), MPI # 4, LEED 2009, LEED V4, CHPS Certified.

- 2) 2nd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, LEED 2009, LEED V4.
- 3) 3rd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, LEED 2009, LEED V4.
- b. Semi-Gloss Finish High Performance:
 - 1st Coat: Benjamin Moore Super Spec Masonry Interior/Exterior Hi-Build Block Filler 206 (45 g/L), MPI # 4, LEED 2009, LEED V4, CHPS Certified.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel HP29 (45 g/L), MPI # 141, LEED 2009, LEED V4.
 - 3) 3rd Coat: Benjamin Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel HP29 (45 g/L), MPI # 141, LEED 2009, LEED V4.
- D. METAL: Aluminum, Galvanized.
 - 1. Latex Systems:
 - a. Semi-Gloss Finish High Performance:
 - 1st Coat: Benjamin Moore Super Spec HP Acrylic Metal Primer P04 (47 g/L), MPI # 107, LEED 2009, CHPS Certified.
 - 2nd Coat: Benjamin Moore Ultra Spec 500 Interior Latex Gloss N540 (0 g/L), MPI # 54, LEED 2009, LEED V4.
 - 3rd Coat: Benjamin Moore Ultra Spec 500 Interior Latex Gloss N540 (0 g/L), MPI # 54, LEED 2009, LEED V4.
 - b. Gloss Finish High Performance:
 - 1) 1st Coat: Benjamin Moore Super Spec HP Acrylic Metal Primer P04 (47 g/L), MPI # 107, X-Green 107, 134, LEED 2009, CHPS Certified.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, LEED 2009, LEED V4.
 - 3) 3rd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, LEED 2009, LEED V4.
- E. METAL (Structural Steel Columns, Joists, Trusses, Beams, Miscellaneous and Ornamental Iron, Structural Iron, Ferrous Metal)
 - 1. Latex Systems:
 - a. Gloss Finish High Performance:
 - 1) 1st Coat: Corotech Acrylic Metal Primer V110 (199 g/L), LEED Credit.
 - 2) 2nd Coat: Corotech Acrylic DTM Enamel Gloss V330 (199 g/L), MPI # 154, LEED 2009, LEED V4.
 - 3) 3rd Coat: Corotech Acrylic DTM Enamel Gloss V330 (199 g/L), MPI # 154, LEED 2009, LEED V4.
 - b. Semi-Gloss Finish:
 - 1) 1st Coat: Corotech Acrylic Metal Primer V110 (199 g/L), LEED Credit.
 - 2nd Coat: Corotech Acrylic DTM Enamel Semi-Gloss V331 (204 g/L), MPI # 153.
 - 3) 3rd Coat: Corotech Acrylic DTM Enamel Semi-Gloss V331 (204 g/L), MPI # 153.
- F. WOOD (Walls, Ceilings, Doors, Trim):
 - 1. Latex Systems:
 - a. Semi Gloss Finish:
 - 1st Coat: Benjamin Moore Fresh Start Multi-Purpose Primer N023 (44 g/L), MPI # 6, LEED Credit, CHPS Certified.

- 2nd Coat: Coronado Rust Scat Waterborne Acrylic Semi-Gloss 90 (134 g/L), MPI # 153, LEED Credit.
- 3rd Coat: Coronado Rust Scat Waterborne Acrylic Semi-Gloss 90 (134 g/L), MPI # 153, LEED Credit.
- b. Eggshell / Satin Finish:
 - 1st Coat: Benjamin Moore Fresh Start Multi-Purpose Primer N023 (44 g/L), MPI # 6, LEED Credit, CHPS Certified.
 - 2nd Coat: Benjamin Moore Waterborne Satin Impervo N314 (137 g/L), MPI # 43, LEED Credit.
 - 3) 3rd Coat: Benjamin Moore Waterborne Satin Impervo N314 (137 g/L), MPI # 43, LEED Credit.
- 2. Stain and Varnish System:
 - a. Gloss Finish:
 - 1st Coat: Lenmar Waterborne Interior Wiping Stain 1WB.1300 (240 g/L), MPI # 186, LEED Credit.
 - 2) 2nd Coat: Lenmar Waterborne Aqua-Plastic Urethane Gloss 1WB.1400 (322 g/L), MPI # 121, 130.
 - 3rd Coat: Lenmar Waterborne Aqua-Plastic Urethane Gloss 1WB.1400 (322 g/L), MPI # 121, 130.
 - b. Satin Finish:
 - 1) 1st Coat: Lenmar Waterborne Interior Wiping Stain 1WB.1300 (240 g/L), MPI # 186 LEED Credit.
 - 2nd Coat: Lenmar Waterborne Aqua-Plastic Urethane Satin, 1WB.1427 (335 g/L), MPI # 121, 128.
 - 3rd Coat: Lenmar Waterborne Aqua-Plastic Urethane Satin, 1WB.1427 (335 g/L), MPI # 121, 128.
- G. DRYWALL (Walls, Ceilings, Gypsum Board and similar items)
 - 1. Latex Systems:
 - a. Semi-Gloss System:
 - 1) At all Level 4 Drywall conditions Base coat: United States Gypsum Tuff-Hide Primer-Surfacer, VOC (22 g/l)
 - 1st Coat: Benjamin Moore Eco Spec WB Primer N372 (0 g/L) MPI # 50, LEED V4 CHPS Certified.
 - 2nd Coat: Benjamin Moore Eco Spec WB Semi-Gloss N376 (0 g/L) MPI # 54, LEED V4, CHPS Certified.
 - 3rd Coat: Benjamin Moore Eco Spec WB Semi-Gloss N376 (0 g/L) MPI # 54, LEED V4, CHPS Certified.
 - b. Eggshell / Satin System:
 - 1) At all Level 4 Drywall conditions Base coat: United States Gypsum Tuff-Hide Primer-Surfacer, VOC (22 g/l)
 - 1st Coat: Benjamin Moore Ultra Spec 500 Interior Latex Primer N534 (0 g/L), MPI # 50, LEED 2009, LEED V4, CHPS Certified.
 - 2nd Coat: Benjamin Moore Ultra Spec 500 Latex Eggshell N538 (0 g/L), MPI # 52, LEED 2009 LEED V4, CHPS Certified.
 - 4) 3rd Coat: Benjamin Moore Ultra Spec 500 Latex Eggshell N538 (0 g/L), MPI # 52, LEED 2009, LEED V4, CHPS Certified.
- H. Concrete (Floors, non-vehicular):
 - 1. Latex Systems:

- a. Semi-Gloss System:
 - 1) 1st Coat: Insl-X Tough Shield Floor and Patio TS-3 (167 g/L).
 - 2) 2nd Coat: Insl-X Tough Shield Floor and Patio TS-3 (167 g/L).
- I. PLASTER (Walls, Ceilings).
 - 1. Latex Systems:
 - a. Gloss Finish:
 - 1) 1st Coat: Benjamin Moore Super Spec Interior/Exterior Acrylic High Build Masonry Primer N068 (97 g/L), MPI # 3, LEED 2009.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, LEED 2009, LEED V4.
 - 3) 3rd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, LEED 2009, LEED V4.
 - b. Semi-Gloss Finish:
 - 1) 1st Coat: Benjamin Moore Super Spec Interior/Exterior Acrylic High Build Masonry Primer N068 (97 g/L), MPI # 3, LEED 2009.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel, HP29 (45 g/L), MPI # 141, LEED 2009, LEED V4.
 - 3rd Coat: Benjamin Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel, HP29 (45 g/L), MPI # 141, LEED 2009, LEED V4.

2.6 EXTERIOR PAINT SYSTEMS

- A. CONCRETE (Cementitious Siding, Flexboard, Transite Board, Shingles (Non-Roof), Common Brick, Stucco, Tilt-up, Precast, and Poured-in-place Cement).
 - 1. Latex Systems:
 - a. Gloss Finish:
 - 1) 1st Coat: Benjamin Moore Super Spec Interior/Exterior Acrylic High Build Masonry Primer N068 (97g/L), MPI # 3, LEED 2009.
 - 2nd Coat: Benjamin Moore Ben Waterborne Exterior Soft-Gloss 543 (45 g/L), MPI # 11.
 - 3rd Coat: Benjamin Moore Ben Waterborne Exterior Soft-Gloss 543 (45 g/L), MPI # 11.
 - b. Semi-Gloss Finish:
 - 1) 1st Coat: Benjamin Moore Super Spec Interior/Exterior Acrylic High Build Masonry Primer N068 (97g/L), MPI # 3, LEED 2009.
 - 2) 2nd Coat: Benjamin Moore Regal Select Exterior High-Build Soft-Gloss N403 (43 g/L), MPI # 11, 311.
 - 3rd Coat: Benjamin Moore Regal Select Exterior High-Build Soft-Gloss N403 (43 g/L), MPI # 11, 311.
 - 2. Stain System:
 - a. Solid Color Waterborne Finish:
 - 1) 1st Coat: Coronado TuffCrete Waterborne Acrylic Concrete Stain CST-2000 (153 g/L), MPI # 58.
 - 2) 2nd Coat: Coronado TuffCrete Waterborne Acrylic Concrete Stain CST-2000 (153 g/L), MPI # 58.
- B. MASONRY: Concrete Masonry Units (CMU) Cinder or Concrete Block.
 - 1. Latex Systems:
 - a. Gloss Finish:
 - 1) 1st Coat: Coronado Super Kote 5000 Production Block Filler 958-11 (35

- g/L), MPI # 4, LEED V4, CHPS Certified.
- 2) 2nd Coat: Coronado Cryli Cote 100% Acrylic Gloss House & Trim Paint 2 (94 g/L).
- 3) 3rd Coat: Coronado Cryli Cote 100% Acrylic Gloss House & Trim Paint 2 (94 g/L).
- b. Gloss Finish Early Moisture Resistant Finish:
 - 1st Coat: Benjamin Moore Super Spec Masonry Interior/Exterior Hi-Build Block Filler 206 (45 g/L), MPI # 4, LEED 2009, LEED V4, CHPS Certified.
 - 2) 2nd Coat: Benjamin Moore Regal Select Exterior High-Build Soft-Gloss N403 (43 g/L), MPI # 11, 311.
 - 3) 3rd Coat: Benjamin Moore Regal Select Exterior High-Build Soft-Gloss N403 (43 g/L), MPI # 11, 311.
 - 4) Regal Select Exterior High-Build Flat Finish N400 (42 g/L) MPI # 10.
- c. High Build Coating
 - 1) 1st Coat: Coronado Texcrete WB Acrylic Masonry Waterproofer Smooth Finish 3194 (90 g/L), LEED Credit.
- 2. Clear Water Repellant:
 - a. Clear Finish
 - 1st Coat: Coronado Texcrete Silicone Water Repellant 194 (21 g/L), MPI # 117, LEED Credit.
 - 2) 2nd Coat: Coronado Texcrete Silicone Water Repellant 194 (21 g/L), MPI # 117, LEED Credit.
- C. CONCRETE: Concrete Floors (non-vehicular), Patios, Porches, Steps and Platforms.
 - Acrylic System Water-Based:
 - Floor Finish:
 - 1) 1st Coat: Benjamin Moore Floor & Patio Latex Enamel Low Sheen N122 (45 g/L), LEED 2009.
 - 2nd Coat: Benjamin Moore Floor & Patio Latex Enamel Low Sheen N122 (45 g/L), LEED 2009.
- D. METAL: Aluminum, Galvanized.
 - 1. Latex Systems:

1.

a.

- a. Gloss Finish:
 - 1) 1st Coat: Benjamin Moore Ultra Spec EXT Gloss Finish N449 (46 g/L) MPI # 11.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec EXT Gloss Finish N449 (46 g/L) MPI # 11.
- b. Gloss Finish- Early Moisture Resistant Finish
 - 1) 1st Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, X-Green 114, LEED 2009, LEED V4.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28 (45 g/L), MPI # 114, X-Green 114, 154, LEED 2009, LEED V4.
- c. Semi-Gloss Finish:
 - 1) 1st Coat: Benjamin Moore Ultra Spec HP Acrylic DTM Semi-Gloss Enamel HP29 (45 g/L), MPI # 141, LEED 2009.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec HP Acrylic DTM Semi-Gloss Enamel HP29 (45 g/L), MPI # 141, LEED 2009.
- E. METAL: Misc. Iron, Ornamental Iron, Structural Iron and Steel, Ferrous Metal.
- 1. Latex Systems:
 - a. Gloss Finish
 - 1) 1st Coat: Corotech Acrylic Metal Primer V110 (199 g/L), LEED Credit.
 - 2nd Coat: Benjamin Moore Ultra Spec EXT Gloss Finish N449 (46 g/L) MPI # 11.
 - 3) 3rd Coat: Benjamin Moore Ultra Spec EXT Gloss Finish N449 (46 g/L) MPI # 11.
 - b. Semi-Gloss Finish
 - 1) 1st Coat: Corotech Acrylic Metal Primer V110 (199 g/L), LEED Credit.
 - 2) 2nd Coat: Benjamin Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel, HP29 (45 g/L), MPI # 141, LEED 2009, LEED V4.
 - 3rd Coat: Benjamin Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel, HP29 (45 g/L), MPI # 141, LEED 2009, LEED V4.

F. ARCHITECTURAL PVC, PLASTIC, FIBERGLASS

- 1. Latex Systems:
 - a. Gloss Finish:
 - 1) 1st Coat: Insl-X Stix Waterborne Bonding Primer SXA-110 (47 g/L).
 - 2nd Coat: Benjamin Moore Ultra Spec EXT Gloss Finish N449 (46 g/L) MPI # 11.
 - 3) 3rd Coat: Benjamin Moore Ultra Spec EXT Gloss Finish N449 (46 g/L) MPI # 11.
 - b. Semi-Gloss:
 - 1) 1st Coat: Insl-X Stix Waterborne Bonding Primer SXA-110 (47 g/L).
 - 2nd Coat: Benjamin Moore Ben Waterborne Exterior Soft-Gloss 543 (45 g/L), MPI # 11.
 - 3rd Coat: Benjamin Moore Ben Waterborne Exterior Soft-Gloss 543 (45 g/L), MPI # 11.
- G. WOOD- Siding, Trim, Shutters, Sashes, Hardboard-Bare/Primed.
 - 1. Latex Systems:
 - a. Gloss Finish:
 - First Coat: Benjamin Moore Fresh Start High-Hiding All Purpose Primer 046 (44 g/L), MPI # 6, 17, 17 X-Green, 39, 50, 50X-Green, 137, 137 X-Green, LEED v4, qualifies for CHPS credit.
 - Second Coat: Benjamin Moore Impervex Latex High Gloss Enamel W309, 48 g/L.
 - Third Coat: Benjamin Moore Impervex Latex High Gloss Enamel W309, 48 g/L.
 - b. Semi-Gloss Finish:
 - First Coat: Benjamin Moore Fresh Start High-Hiding All Purpose Primer 046 (44 g/L), MPI # 6, 17, 17 X-Green, 39, 50, 50X-Green, 137, 137 X-Green, LEED v4, qualifies for CHPS credit.
 - 2) Second Coat: Benjamin Moore Aura Waterborne Exterior Semi-Gloss Finish 632 (46 g/L).
 - Third Coat: Benjamin Moore Aura Waterborne Exterior Semi-Gloss Finish 632 (46 g/L).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. The Contractor shall review the product manufacturer's special instructions for surface preparation, application, temperature, re-coat times, and product limitations.
- B. The Contractor shall review product health and safety precautions listed by the manufacturer.
- C. The Contractor shall be responsible for enforcing on site health and safety requirements associated with the Work.
- D. Do not begin installation until substrates have been properly prepared.
- E. Ensure that surfaces to receive paint are dry immediately prior to application.
- F. Ensure that moisture-retaining substrates to receive paint have moisture content within tolerances allowed by coating manufacturer. Where exceeding the following values, promptly notify Architect and obtain direction before beginning work.
 - 1. Concrete and Masonry: 3-5 percent. Allow new concrete to cure a minimum of 28 days.
 - 2. Exterior Wood: 17 percent.
 - 3. Interior Wood: 15 percent.
 - 4. Interior Finish Detail Woodwork, Including Trim, and Casework: 10 percent.
 - 5. Plaster and Gypsum: 15 percent.
- G. Examine surfaces to receive coatings for surface imperfections and contaminants that could impair performance or appearance of coatings, including but not limited to, loose primer, rust, scale, oil, grease, mildew, algae, or fungus, stains or marks, cracks, indentations, or abrasions.
- H. Correct conditions that could impair performance or appearance of coatings in accordance with specified surface preparation procedures before proceeding with coating application.

3.2 PREPARATION - GENERAL

- A. Clean surfaces thoroughly prior to coating application.
- B. Do not start work until surfaces to be finished are in proper condition to produce finished surfaces of uniform, satisfactory appearance.
- C. Stains and Marks: Remove completely, if possible, using materials and methods recommended by coating manufacturer; cover stains and marks which cannot be completely removed with isolating primer or sealer recommended by coating manufacturer to prevent bleed-through.
- D. Remove Mildew, Algae, and Fungus using materials and methods recommended by coating manufacturer.
- E. Remove dust and loose particulate matter from surfaces to receive coatings immediately prior to coating application.

- F. Remove or protect adjacent hardware, electrical equipment plates, mechanical grilles and louvers, lighting fixture trim, and other items not indicated to receive coatings.
- G. Move or protect equipment and fixtures adjacent to surfaces indicated to receive coatings to allow application of coatings.
- H. Protect adjacent surfaces not indicated to receive coatings.
- I. Prepare surfaces in accordance with manufacturer's instructions for specified coatings and indicated materials, using only methods and materials recommended by coating manufacturer.

3.3 SURFACE PREPARATION

- A. Existing Coatings:
 - 1. Remove surface irregularities by scraping or sanding to produce uniform substrate for coating application; apply one coat primer of type recommended by coating manufacturer for maximum coating adhesion.
 - 2. If presence of lead in existing coatings is suspected, cease surface preparation and notify Architect immediately.
- B. Gypsum Board: Repair cracks, holes and other surface defects with joint compound to produce surface flush with adjacent surfaces.
- C. Masonry Surfaces Restored: Remove loose particles, sand, efflorescence, laitance, cleaning compounds and other substances that could impair coating performance or appearance.
- D. Metals Aluminum, Mill-Finish: Clean and etch surfaces with a phosphoric acid-water solution or water based industrial cleaner. Flush with clean water and allow to dry, before applying primer coat.
- E. Metals Copper: Clean surfaces with pressurized steam, pressurized water, or solvent washing.
- F. Metals Ferrous, Unprimed: Remove rust or scale, if present, by wire brush cleaning, power tool cleaning, or sandblast cleaning; remove grease, oil, and other contaminants which could impair coating performance or appearance by solvent cleaning, with phosphoric-acid solution cleaning of welds, bolts and nuts; spot-prime repaired welds with specified primer.
- G. Metals Ferrous, Shop-Primed: Remove loose primer and rust, if present, by scraping and sanding, feathering edges of cleaned areas to produce uniform flat surface; solvent-clean surfaces and spot-prime bare metal with specified primer, feathering edges to produce uniform flat surface.
- H. Metals Galvanized Steel (not passivated): Clean with a water-based industrial strength cleaner, apply an adhesion promoter followed by a clean water rinse. Alternately, wipe down surfaces using clean, lint-free cloths saturated with xylene or lacquer thinner; followed by wiping the surface dry using clean, lint-free cloths.
- I. Metals Galvanized Steel, Passivated: Clean with water-based industrial strength cleaner. After the surface has been prepared, apply recommended primer to a small area. Allow primer to cure for 7 days, and test adhesion using the "cross-hatch adhesion tape test" method in accordance with ASTM D 3359. If the adhesion of the primer is positive, proceed with a recommended coating system for galvanized metal.
- J. Plaster: Repair cracks, holes and other surface defects as required to maintain proper surface adhesion. Apply patching plaster or Joint compound and sand to produce surface flush with adjacent undamaged surface. Allow a full cure prior to coating application as recommended by the patching compound manufacturer's recommendations.
- K. Polyvinyl Chloride (PVC) Pipe: remove contaminants and markings with denatured alcohol scuff sand and wipe with solvent for maximum adhesion. Test adhesion before starting the

job.

- L. Textiles Insulated Coverings, Canvas or Cotton: Clean using high-pressure air and solvent of type recommended for material.
- M. Wood:
 - 1. Seal knots, pitch streaks, and sap areas with sealer recommended by coating manufacturer; fill nail recesses and cracks with filler recommended by coating manufacturer; sand surfaces smooth.
 - 2. Remove mill marks and ink stamped grade marks.
 - 3. Apply primer coat to back of wood trim and paneling.
- N. Wood Doors: Seal door tops and bottoms prior to finishing.
- O. Wood Doors Field-Glazed Frames and Sash: Prime or seal glazing channels prior to glazing.

3.4 APPLICATION - GENERAL

- A. Application of primers, paints, stains or coatings, by the Contractor, will serve as acceptance that surfaces were properly prepared in accordance with the manufacturer's recommendation.
- B. Apply each coat to uniform coating thickness in accordance with manufacturer's instructions, not exceeding manufacturer's specified maximum spread rate for indicated surface; thins, brush marks, roller marks, orange-peel, or other application imperfections are not permitted.
- C. Allow manufacturer's specified drying time, and ensure correct coating adhesion, for each coat before applying next coat.
- D. Inspect each coat before applying next coat; touch-up surface imperfections with coating material, feathering, and sanding if required; touch-up areas to achieve flat, uniform surface without surface defects visible from 5 feet (1.5 m).
- E. Remove dust and other foreign materials from substrate immediately prior to applying each coat.
- F. Where paint application abuts other materials or other coating color, terminate coating with a clean sharp termination line without coating overlap.
- G. Where color changes occur between adjoining spaces, through framed openings that are of same color as adjoining surfaces, change color at outside stop corner nearest to face of closed door.
- H. Re-prepare and re-coat unsatisfactory finishes; refinish entire area to corners or other natural terminations.

3.5 CLEANING

- A. Clean excess coating materials, and coating materials deposited on surfaces not indicated to receive coatings, as construction activities of this section progress; do not allow to dry.
- B. Re-install hardware, electrical equipment plates, mechanical grilles and louvers, lighting fixture trim, and other items that have been removed to protect from contact with coatings.
- C. Reconnect equipment adjacent to surfaces indicated to receive coatings.
- D. Relocate to original position equipment and fixtures that have been moved to allow application of coatings.
- E. Remove protective materials.

3.6 PROTECTION AND REPAIR

A. Protect completed coating applications from damage by subsequent construction activities.

B. Repair to Architect's acceptance coatings damaged by subsequent construction activities. Where repairs cannot be made to Architect's acceptance, re-apply finish coating to nearest adjacent change of surface plane, in both horizontal and vertical directions.

3.7 SCHEDULE - COLORS

A. Exterior

- 1. To match existing colors
- B. Interior
 - 1. TBD at later date.
- C. Final Color Selections will be made by the Architect and Owner at a later date based on samples and product submissions in accordance with section 1.5.

END OF SECTION

SECTION 09 93 13

WOOD STAINING AND FINISHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes surface preparation and the application of wood finishes on the following substrates:
 - 1. Interior Substrates:
 - a. Exposed wood panel products.
- B. Related Sections include the following:
 - 1. Division 9 wood flooring Sections for stains and transparent finishes applied to wood flooring.
 - 2. Division 9 Section "Painting" for surface preparation and application of standard paint systems on interior substrates.
 - 3. Division 9 painting Sections for special-use coatings.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. For interior primers, stains, and transparent finishes, including printed statement of VOC content.
 - 2. Samples for Initial Selection: For each type of product indicated.
 - 3. Samples for Verification: For each type of finish system and in each color and gloss of finish indicated.
 - a. Submit Samples on representative samples of actual wood substrates, 8 inches square.
 - b. Label each Sample for location and application area.
- B. Product List: For each product indicated, include the following:
 - a. Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - b. Printout of MPI's current "MPI Approved Products List" for each product category specified in Part 2, with the product proposed for use highlighted.

1.4 QUALITY ASSURANCE

- A. MPI Standards:
 - a. Products: Complying with MPI standards indicated and listed in its "MPI Approved Products List."
 - b. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and finish systems indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - a. Maintain containers in clean condition, free of foreign materials and residue.

b. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ZAR Products, High Gloss and Satin Polyurethane
 - b. Minwax, Product: Semi Transparent Stain
 - c. Benjamin Moore: Lenmar Urethane Gloss and Satin

2.2 MATERIALS, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each finish 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 finish system, provide products recommended in writing by manufacturers of topcoat for use in finish system and on substrate indicated.
- B. VOC Content of Field-Applied Interior Primers, Stains, and Transparent Finishes: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to primers, stains, and transparent finishes that are applied in a fabrication or finishing shop:
 - 1. Paints, Coatings & Primers applied to interior walls & ceilings:
 - a. Flat Primers: VOC content of not more than 50 g/L.
 - b. Non-flat Primers: VOC content of not more than 100 g/L.
 - c. Anticorrosive & Antirust Paints applied to interior ferrous metal substrates: VOC content of not more than 250 g/L.
 - d. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
 - e. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
 - f. Floor Coatings: VOC not more than 100 g/L.
 - g. Shellacs, Clear: VOC not more than 730 g/L.
 - h. Stains: VOC not more than 250 g/L.
 - 2. Stain Colors: As selected by Architect from manufacturer's full range.

2.3 WOOD FILLERS

- A. Wood Filler Paste: MPI #91.
 - 1. VOC Content: E Range of E2.

2.4 PRIMERS AND SEALERS

- A. Alkyd Sanding Sealer: MPI #102.
 - 1. VOC Content: E Range of E2.
- B. Shellac: MPI #88.
 - 1. VOC Content: E Range of E2.

2.5 STAINS

- A. Interior Wood Stain (Semitransparent): MPI #90.
 - 1. VOC Content: E Range of E2.

2.6 VARNISHES

- A. Interior Varnish (Flat): MPI #73, Gloss Level 1, alkyd type.1. VOC Content: E Range of E2.
- B. Interior Varnish (Semigloss): MPI #74, Gloss Level 5, alkyd type.1. VOC Content: E Range of E2.
- C. Interior Varnish (Gloss): MPI #75, Gloss Level 6, alkyd type.1. VOC Content: E Range of E2.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
 - 1. Maximum Moisture Content of Wood Substrates: 15 percent when measured with an electronic moisture meter.
 - 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes.
 - 3. Begin finish application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 4. Beginning application of finish system constitutes Contractor's acceptance of substrate and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove plates, machined surfaces, and similar items already in place that are not to be finished. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.
 - 1. After completing finishing operations, reinstall items that were removed; use workers skilled in the trades involved. Remove surface-applied protection if any.
- C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each particular substrate condition and as specified.
 - 1. Remove surface dirt, oil, or grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
 - 2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.
 - 3. Countersink steel nails, if used, and fill with putty tinted to final color to eliminate rust leach stains.
- D. Apply wood filler paste to open-grain woods, as defined in "MPI Architectural Painting Specification Manual," to produce smooth, glasslike finish.

3.3 APPLICATION

A.

- Apply finishes according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for finish and substrate indicated.
 - 2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
- B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when finishes are being applied:
 - 1. Owner will engage the services of a qualified testing agency to sample finish materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will perform tests for compliance with product requirements.
 - 3. Owner may direct Contractor to stop applying finishes if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying materials from Project site, pay for testing, and refinish surfaces finished with rejected materials. Contractor will be required to remove rejected materials from previously finished surfaces if, on refinishing with complying materials, the two finishes are incompatible.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.6 INTERIOR WOOD-FINISH-SYSTEM SCHEDULE

- A. Exposed Wood Panel-Product Substrates:
 - 1. Filler coat (for open grained wood only).
 - 2. Two coats stain.
 - 3. Two coats Satin Polyurethane.

END OF SECTION