WJE

# Project Manual

Lake Forest Library
Dome Roof Replacement
360 E. Deerpath Road, Lake Forest, Illinois

September 2, 2022

WJE No. 2021.5121

**PREPARED FOR:**
Lake Forest Library
360 E. Deerpath Road
Lake Forest, Illinois 60045

**PREPARED BY:**
Wiss, Janney, Elstner Associates, Inc.
330 Pfingsten Road
Northbrook, Illinois 60062
(847) 272-7400

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**END OF SECTION**

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**INVITATION TO BID**

**PROJECT:** Lake Forest Library
Dome Roof Replacement
360 E. Deerpath Road
Lake Forest, Illinois 60045

**OWNER:** **Lake Forest Library**
360 E. Deerpath Road
Lake Forest, Illinois 60045

Executive Director: Ms. Catherine Lemmer, (847) 810-4602, clemmer@lakeforestlibrary.org

**ARCHITECT/ENGINEER:** **Wiss, Janney, Elstner Associates, Inc.**
330 Pfingsten Road
Northbrook, Illinois 60062
(847) 272-7400
Contact: Kenneth Itle
kitle@wje.com

**MANDATORY PRE-BID MEETING:** Thursday, **September 15, 2022**, at 9:00 a.m., meet at the front entrance to the library.

**BID DUE:** Friday, **September 30, 2022**, at 3:00 p.m.
Submit via e-mail to **operations@lakeforestlibrary.org** with copy to **kitle@wje.com**
E-mail subject line: Lake Forest Library Dome Roof Replacement – BID SUBMISSION

**SUMMARY OF THE WORK:** Project includes replacement of dome roof assembly with new tin-zinc-alloy coated copper batten seam roofing, repointing of brick masonry, and repair of existing skylight and plaster ceiling.

**COPIES OF BIDDING DOCUMENTS:** Bid documents are being provided in electronic format. Printed copies of Bidding Documents can be obtained from Architect/Engineer for $50 per set.

**END OF SECTION**

# SECTION 00 21 13

# INSTRUCTIONS TO BIDDERS

## 1.1 DEFINITIONS

A. Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Rider to Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 1.8 of these Instructions.

B. Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

C. The terms *Architect*, *Engineer*, and *Architect/Engineer* are used interchangeably.

D. Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

E. A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

F. The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

G. An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

H. A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

I. A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

J. A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

## 1.2 BIDDER'S REPRESENTATIONS

A. By submitting a Bid, the Bidder represents that:
   1. the Bidder has read and understands the Bidding Documents;
   2. the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
   3. the Bid complies with the Bidding Documents;

4. the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
    a. Bidder is responsible for verifying visible conditions, including dimensions, materials, and attachments to remain, on existing facility. Existing conditions shown on Drawings are for information only and must be verified in field.
    b. Schedule site visits by contacting Ms. Catherine Lemmer, (847) 810-4602, operations@lakeforestlibrary.org
5. the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception.

## 1.3 BIDDING DOCUMENTS

A. Distribution
1. Bidders shall obtain complete Bidding Documents from the issuing office designated in the advertisement or invitation to bid.
2. Electronic versions of Bidding Documents shall be provided at no cost to Bidders. Paper copies are available for a fee upon request.
3. Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.
4. Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.
5. The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

B. Modification or Interpretation of Bidding Documents
1. The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to paragraph 2, below.
2. Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder via e-mail and shall be received by the Architect at least **seven days** prior to the date for receipt of Bids.
3. Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

C. Substitutions
1. The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.
2. Substitution Process
    a. Written requests for substitutions shall be received by the Architect at least **ten days** prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in paragraph B.2, above.
    b. Requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or

equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

3. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.
4. If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.
5. No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

D. Addenda
1. Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.
2. Addenda will be transmitted to Bidders via email.

E. Addenda will be available where Bidding Documents are on file.

F. Addenda will be issued no later than **four days** prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

G. Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

## 1.4 BIDDING PROCEDURES

A. Preparation of Bids
1. Bids shall be submitted on the forms included with or identified in the Bidding Documents.
2. All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.
3. Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.
4. Edits to entries made on paper bid forms must be initialed by the signer of the Bid.
5. All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.
6. Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.
7. Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have

the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

8. A Bidder shall incur all costs associated with the preparation of its Bid.
9. **Contractor's Qualification Statement**. Bidders shall include properly executed AIA Document A305, Contractor's Qualification Statement with Bid.
    a. Modify Paragraph 3.2.1 as follows: "…failed to complete *or been involved in arbitration or litigation in conjunction with* any work awarded to it?"
    b. Add to Paragraph 3.5: Include at least three projects of similar scope, scale, and technical complexity to this Project.
    c. Similar qualifications material shall be provided for principal Subcontractors.

B. Bid Security
    1. Each Bidder shall provide Bid security in the amount of **ten (10) percent** of Base Bid Total amount, in form of surety bond or cashier's check.
    2. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.
    3. If a surety bond is required as bid security, it shall be written on AIA Document A310, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.
    4. The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning 60 calendar days after the opening of Bids, withdraw its Bid and request the return of its bid security.

C. Roofing License
    1. Each bid shall be accompanied by a copy of the Roofing Contractor License from the Illinois Department of Financial and Professional Regulation for either the Bidder or the principal Subcontractor performing the roofing work of the project.

D. Schedule
    1. With Bid, a Bidder shall provide a draft construction schedule, indicating duration of major divisions of work, proposed date for mobilization on site, and proposed date of Substantial Completion.

E. Submission of Bids
    1. A Bidder shall submit its Bid via e-mail to operations@lakeforestlibrary.org with copy to kitle@wje.com.
    2. The subject line of the e-mail shall state: "Lake Forest Library Dome Roof Replacement – BID SUBMISSION"

3. Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.
4. The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.
5. The Owner reserves the right to reject a Bid submitted by any method other than as provided in this section.
6. Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope, delivered to the library to the attention of Ms. Catherine Lemmer. The envelope shall be identified with the Project name and the Bidder's name and address. The outermost sealed envelope shall be marked with the notation "SEALED BID ENCLOSED" on its face. The paper copies shall be received within **seven days** after the bid date and time indicated in the invitation to bid.

F. Modification or Withdrawal of Bid
1. Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.
2. Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section C, above, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.
3. After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this section, the bid security shall be returned to the Bidder.

## 1.5 CONSIDERATION OF BIDS

A. Opening of Bids
1. Bids shall be opened in private. A summary of the Bids may be made available to Bidders at the sole discretion of the Owner.

B. Rejection of Bids
1. The Owner shall have the right to reject any or all Bids.

C. Acceptance of Bid (Award)
1. It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

a. Duration of construction period is of the essence to Owner and will be considered in awarding a Contract.

2. Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.
3. Bidder shall execute Owner-Contractor Agreement within **thirty (30) calendar days** of receipt of notice of bid acceptance.

## 1.6 POST-BID INFORMATION

A. Submittals
1. After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:
   a. a designation of the Work to be performed with the Bidder's own forces;
   b. names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
   c. names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.
2. The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.
3. Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.
4. Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

## 1.7 PERFORMANCE BOND AND PAYMENT BOND

A. Bond Requirements
1. If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.
2. If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.
3. The Bidder shall provide surety bonds from a company that is acceptable to the Owner.
4. Provide performance and payment bonds for 100 percent of Contract Amount.

B. Time of Delivery and Form of Bonds

1. The Bidder shall deliver the required bonds to the Owner not later than **three days** following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section.
2. Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.
3. The bonds shall be dated on or after the date of the Contract.
4. The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

## 1.8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

A. The proposed Contract Documents have been made available to the Bidder and consist of the following documents:
   1. Proposed Agreement and conditions as enumerated in Sections 00 52 00 Agreement Form and 00 72 00 General Conditions.
   2. Rider to AIA A101.
   3. Drawings as enumerated in Section 00 01 15 List of Drawing Sheets.
   4. Specifications as enumerated in Section 00 01 10 Table of Contents.
   5. Addenda issued prior to the Bid due date.

**END OF SECTION**

**SECTION 00 41 44**

**BID FORM**

**PROJECT:** Lake Forest Library
Dome Roof Replacement
360 E. Deerpath Road
Lake Forest, Illinois 60045

**BID DUE:** Friday, **September 30, 2022**, at 3:00 p.m.

**SUBMITTED TO:** Lake Forest Library
360 E. Deerpath Road
Lake Forest, Illinois 60045
Executive Director: Ms. Catherine Lemmer, (847) 810-4602,
operations@lakeforestlibrary.org
E-mail subject line: Lake Forest Library Dome Roof Replacement – BID SUBMISSION

**COPY TO:** Wiss, Janney, Elstner Associates, Inc.
330 Pfingsten Road
Northbrook, Illinois 60062
Project Manager: Mr. Kenneth Itle, (847) 272-7400, kitle@wje.com

**SUBMITTED BY:** _____
Bidder name

_____
Bidder address

_____

_____
Bidder point of contact

## 1.1 CERTIFICATIONS AND ACKNOWLEDGEMENT OF ADDENDA

A. Bidder certifies that
   1. Bidder has carefully read and understands Bidding Documents;
   2. Bidder has visited site and become familiar with local conditions under which Work is to be performed, including verifying visible conditions, such as dimensions, materials, and attachments to remain, on existing facility; and
   3. Bidder has correlated Bidder's personal observations with requirements of Bidding Documents. Bidding Documents include Project Manual and Drawings prepared by WJE and dated September 2, 2022, and addenda.
   4. Copy of original design drawings is available for review at office of Owner's Representative.

B. Bidder may not withdraw Bid within 60 calendar days after Bid Due date.

C. Bidder agrees that Owner has right to waive informalities and irregularities in Bid received and to accept Bid which, in Owner's judgment, is in Owner's own best interests.

D. Bidder shall notify Architect/Engineer of discrepancies, omissions, conflicts, or unclear meaning within Contract Documents; Architect/Engineer will interpret Contract Documents and, if necessary, issue written addendum. Contracted Work will be based on Architect/Engineer's interpretation of Contract Documents.

E. Bidder acknowledges receipt of following addenda.

No._____Dated_____

No._____Dated_____

**1.2 BASE BID**

Furnish labor, materials, services, and equipment necessary for completion of Work, except for Work listed as alternates, for lump sum of $_____.

In words:_____DOLLARS.

**1.3 BASE BID CONSTRUCTION PERIOD**

Start work within _____ calendar days after notice of Contract award and complete Base Bid Work within _____calendar days after start date.

**1.4 MARKUPS**

In the event of a Change Order or other mutually agreed modification to the contract sum, a markup of _____ percent for Overhead & Profit will be applied to the cost of the trades, and a markup of _____ percent for Insurance & Bonds will be applied to the cost of the trades.

**1.5 SUBCONTRACTORS**

A. Bid is predicated on acceptance by Owner and Architect/Engineer of following principal subcontractors.

_____
Subcontractor name and address

_____
Subcontractor name and address

_____
Subcontractor name and address

_____
Subcontractor name and address

## 1.6 ROOFING LICENSE

A. Attached herewith is a copy of the Bidder's (or Subcontractor's) Roofing Contractor License from the Illinois Department of Financial and Professional Regulation.

## 1.7 BID SECURITY

A. Provided as paper copy under separate cover is bid security, in the form of surety bond or cashier's check, in amount of 10 percent of Base Bid. Bid security will be forfeited to Owner as liquidated damages in event that Bidder fails to execute Owner-Contractor Agreement within 10 days of receipt of notice of bid acceptance and to furnish required bonds and insurance certificates to Owner within three days thereafter.

## 1.8 SIGNATURE

**Submitted By:** _____
Signature

_____
Title

_____
Company Seal (if Bidder is a corporation)

**END OF SECTION**

# SECTION 00 52 00

# AGREEMENT FORM

## PART 1 GENERAL

### 1.1 AGREEMENT FORM

A. Owner/Contractor Agreement form is AIA Document A101-2017, Standard Form of Agreement Between Owner and Contractor. Free sample previews of the document are available at www.aiacontracts.org.

B. The attached Rider to AIA A101-2017 shall be signed and shall accompany the Standard Form of Agreement Between Owner and Contractor.

C. Terms *Architect*, *Engineer*, and *Architect/Engineer* are used interchangeably.

**END OF SECTION**

**RIDER TO A101-2017**

For Inclusion in Standard Form of Agreement
Between Owner and Contractor ("Agreement")
(AIA Document A101-2017) dated _____
Between the Lake Forest Library ("Owner")
And _____ ("Contractor")

For Information Purposes:

The architect on this project is Wiss, Janey, Elstner Associates, Inc. ("Architect")

(WJE Proposal No. 2021.5121; Project includes replacement of dome roof assembly with new tin-zinc-alloy coated copper batten seam roofing, repointing of brick masonry, and repair of existing skylight and plaster ceiling)

A. This Rider to A101-2017 (Rider) applies to all services to be provided by Contractor pursuant to the Agreement.

B. All representations made by the Owner in the Contract Documents that complete the Agreement are made to the best of Owner's knowledge and belief.

C. Contractor shall provide a Payment Bond and a Performance Bond in a sum equal to 100% of the amount of the contract issued by an insurance company acceptable to Owner.

D. Performance Bonds to be provided (AIA Form) shall contain the following language:

> "Any suit under this bond must be instituted before the expiration of the statute of limitation applicable to any claims against the Contractor named herein, and further, the parties intend that modifications in the Agreement or Contract Documents or Performance Bond of the limitations provided by 735 ILCS 5/13-214, if any, shall be given no effect."

E. Any claims shall be commenced within the limitations stated in 735 ILCS 5/13-214.* The

* (a) Actions based upon tort, contract or otherwise against any person for an act or omission of such person in the design, planning, supervision, observation or management of construction, or construction of an improvement to real property shall be commenced within 4 years from the time the person bringing an action, or his or her privity, knew or should reasonably have known of such act or omission. Notwithstanding any other provision of law, contract actions against a surety on a payment or performance bond shall be commenced, if at all, within the same time limitation applicable to the bond principal.

(b) No action based upon tort, contract or otherwise may be brought against any person for an act or omission of such person in the design, planning, supervision, observation or management of construction, or construction of an improvement to real property after 10 years have elapsed from the time of such act or omission . . .

parties intend that modifications in the Agreement or Contract Documents of the limitations provided by 735 ILCS 5/13-214, if any, shall be given no effect.

F. Contractor shall purchase insurance to cover claims and expenses, including costs of defense, asserted against Owner and Architect, their agents, employees and consultants for bodily injury, sickness, disease or death caused by any negligent act or omission of the Contractor, anyone directly or indirectly employed by them or anyone for whose acts any of them may be liable. The coverage afforded the Owner and Architect and Owner's Representative shall be primary insurance for the Owner and Architect and Owner's Representative with respect to claims arising out of operations performed by or on behalf of the Contractor. If the Owner and Architect and Owner's Representative have other insurance which is applicable to the loss, such other insurance shall be on an excess or contingent basis. The amount of liability of the Contractor under this insurance policy shall not be reduced by the existence of such other insurance.

G. Work will not begin, nor will any payment be authorized absent submission by the Contractor to the Owner and/or Owner's Representative of proof that all required insurance coverages and bonds are in effect. A Certificate of Insurance is not adequate proof. The Contractor may provide a Certificate of Insurance but shall also provide the actual endorsement from the contractor's insurance company.

H. "As built" drawings from the Contractor are a condition of receipt of the Contractor's final payment.

I. The responsibilities/liabilities of the Owner and the Contractor and their consultants, agents and employees and any concomitant damages and/or consequential damages shall be determined in such amount and to such extent as provided by Illinois law, insurance coverage, caps or limitations notwithstanding. By way of this provision, the parties intend that any limitations in the Agreement of the amounts or types of damages available to the parties shall be given no effect.

J. The Contractor shall reimburse the Owner for all reasonable fees charged to the Owner by the Architect and Owner's Representative, if any, which the Owner incurs as a result of the Contractor's failure to fulfill the Contractor's obligations including, without limitation, timely completion of the project.

K. Contractor shall pay all reasonable attorneys' fees, experts' fees, and costs incurred by the Owner in enforcing the terms and provisions of this Agreement and in defending any proceeding to which the Owner is made a party as result of the acts or omissions of the Contractor.

L. Contractor shall defend, indemnify, and hold harmless Owner, Architect, and Owner's Representatives from and against all claims, losses, damages, and expenses to the extent such claims, losses, damages or expenses are caused by Contractor's conduct, acts, errors or omissions.

M. In an effort to resolve any conflicts that arise under this Agreement, prior to commencing litigation all disputes between the Owner and the Contractor arising out of or relating to this Agreement shall be submitted to non-binding mediation. After such non-binding mediation and, unless the parties agree to submit to binding arbitration, any claims, disputes, liabilities of the parties or other matters between the Owner and the Contractors shall be resolved in the Circuit Court of Lake County, Illinois in accordance with Illinois law.

N. Contractor shall obtain lien waivers for all labor and materials for the project.

O. Contractor acknowledges sole responsibility for determining the nature and extent of any and all work required to complete the Project.

P. It is intended that neither the Owner nor the Architect nor the Owner's Representative has responsibility for constructions means, methods, techniques, sequences, or procedures, and/or safety precautions and programs.

Q. Contractor shall at all times observe and comply with all laws, ordinances, regulations and codes of any applicable governmental entity including, without limitation, prevailing wage laws.

R. Contractor acknowledges full and sole authority for all safety programs and precautions in connection with the work.

S. Contractor acknowledges that he has examined the property and has familiarized himself with all local conditions affecting the property.

T. The Contractor's standard of care shall be the standard of care consistent with those usual and customary standards of professional care, skill, and diligence which are, at the time of performance of services under this Agreement, commonly followed by Contractors performing the same or similar services in the locale in which the Project is located. Consistent with this standard of care, Contractor is cognizant of its duties:

a) vis-à-vis assessing compliance with the Drawings and Specs; and

b) to confirm in writing, when appropriate, interpretations by government officials of building codes and applicable regulations.

U. Contractor, at Contractor's expense, will obtain and maintain all necessary permits and licenses.

V. Contractor shall provide Owner with all documents requested by Owner thereby enabling Owner to respond timely to any request to Owner for documents pursuant to the Freedom of Information Act.

W. The Owner is subject to the Freedom of Information Act, 5 ILCS 140/1, et seq. ("FOIA"). All information submitted by Contractor to Owner is subject to disclosure to third parties in

accordance with FOIA. If Contractor intends for Owner to withhold the bidder's trade secrets, commercial information, or financial information from disclosure to a third party in response to a FOIA request, Contractor must include with its bid written notification specifically identifying such information, along with a statement that disclosure of such information will cause competitive harm to the bidder, as provided by FOIA Section 7(1)(g), 5 ILCS 140/7(1)(g). Any information submitted which is not so marked by Contractor at the time of bid submittal will be presumed to be open to public inspection. Contractor may be required to substantiate the basis for its claims. Owner reserves the right, in its sole discretion and subject only to applicable law, to withhold or release Contractor's information in response to a FOIA request.

X. THIS RIDER TO A101-2017 (RIDER) IS THE LAST ARTICLE TO THE AGREEMENT AND IS EXECUTED ON THE DATES STATED BELOW. IN THE EVENT OF ANY CONFLICT BETWEEN THE PROVISIONS OF THIS RIDER AND ANY OTHER PROVISIONS OF THE AGREEMENT, THIS RIDER CONTROLS. THIS PARAGRAPH IS STATED IN ALL CAPITAL LETTERS AND IS INITIALED AS CONFIRMATION OF THE PARTIES' UNDERSTANDING OF THE PRECEDENCE THIS RIDER TAKES OVER ANY OTHER PROVISIONS OF THE AGREEMENT.

| | |
|---|---|
| _____ | _____ |
| Contractor (Initial) | Owner (Initial) |
| Date Initialed: _____ | Date Initialed: _____ |

| | |
|---|---|
| CONTRACTOR TBD<br>COMPANY | BOARD OF LIBRARY TRUSTEES<br>LAKE FOREST PUBLIC LIBRARY |
| By: _____ | By: _____ |
| President | John F. Johnson<br>President |
| Date Signed: _____, 2022 | Date Signed: _____, 2022 |

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# SECTION 00 60 11

# BONDS AND CERTIFICATES

## PART 1 GENERAL

### 1.1 BONDS AND CERTIFICATES

A. Furnish the following with executed Owner-Contractor Agreement.
   1. Performance and Payment Bonds: Use AIA Document A312-2010, Performance Bond and Payment Bond, or another pre-approved form.
   2. Certificates of Insurance: Use ACORD 25 (2016/03), Certificate of Liability Insurance, and ACORD 27 (2009/12), Certificate of Property Insurance, with AIA Document G715-2017, Supplemental Attachment, or another pre-approved form.

B. Bond surety company shall be satisfactory to Owner.

C. Include costs for bonds and insurance in Bid.

D. Attorneys-in-Fact who sign bonds shall file with each bond a certified copy of their Power of Attorney, with effective date.

**END OF SECTION**

# SECTION 00 72 00

# GENERAL CONDITIONS

## PART 1 GENERAL

### 1.1 GENERAL CONDITIONS

A. General Conditions are AIA Document A201-2017, General Conditions of the Contract for Construction. Free sample previews of the document are available at www.aiacontracts.org.

### 1.2 SUPPLEMENTARY CONDITIONS

A. The following supplementary conditions modify provisions of AIA Document A201-2017, General Conditions of the Contract for Construction. Free sample previews of the document are available at www.aiacontracts.org. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

B. Article 1, General Provisions

1. Add Sections 1.1.3.1, 1.1.3.2, and 1.1.3.3

**§ 1.1.3.1** Furnish
Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

**§ 1.1.3.2** Install
Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

**§ 1.1.3.3** Provide
Furnish and install, complete and ready for intended use.

2. Add Section 1.2.4

**§ 1.2.4** Sections of Division 01 - General Requirements expand on and are supplemental to the provisions of the General Conditions and are applicable to the execution of all Work enumerated by the Drawings and Divisions 2–49 of the Specifications.

3. Add Section 1.4.1

**§ 1.4.1** Where phrases such as “as selected,” “as approved,” “or equal,” or “or approved equal” are used, it is understood that the selecting or approving party is the Architect/Engineer, unless another party is designated by the Owner.

4. Add Section 1.5.3

**§ 1.5.3** Any unauthorized use of the Instruments of Service by the Contractor, Subcontractors, Sub-subcontractors, or suppliers shall be at that party’s sole risk and that party shall indemnify

Architect/Engineer for any liability or legal exposure to Architect/Engineer related to the unauthorized use.

5. Delete Sections 1.7 and 1.8 and substitute the following:

**§ 1.7** —Not Used—
**§ 1.8** —Not Used—

C. Article 2, Owner

1. Delete Section 2.3.2 and substitute the following:

**§ 2.3.2** The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number. The terms "Architect," "Architect/Engineer," and "Engineer" are used interchangeably to identify the person or entity but does not imply professional practice outside the person's or entity's licensed practice area.

2. Delete 2.3.6 and replace with the following:

**§ 2.3.6** The Owner shall furnish the Contract Documents to the Contractor in digital format. If the Contractor requires paper documents, the Contractor shall be responsible for the costs of producing such paper documents.

D. Article 3, Contractor

1. Add Section 3.1.4.

**§ 3.1.4** The Contractor is responsible for all obligations necessary and incidental to execute the Work unless the obligation is specifically attributed within the Contract Documents to the Owner or other party.

2. Add Sections 3.2.2.1 and 3.2.2.2

**§3.2.2.1** Dimensions, quantities, and geometries provided for existing construction are based on original drawings and limited field documentation by Architect. The Contractor shall field verify applicable information prior to submitting a bid, ordering materials, or otherwise committing resources to the Work. Provided dimensions take precedence over scaled dimensions.

**§3.2.2.2** The Contractor shall promptly report to the Architect any Work that, in the opinion of the Contractor, cannot reasonably be constructed as designed or will not perform consistent with the design intent.

3. Delete Section 3.5.2 and substitute the following.

**§ 3.5.2** All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner or shall be transferrable to the Owner, shall commence in accordance with Section 9.8.4, and shall not be limited by the period for correction of work established in Section 12.2.

E. Article 4, Architect

1. Delete Section 4.1.2 and substitute the following.

**§4.1.2** Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents may be restricted, modified, or expanded by the Owner and Architect without the consent of the Contractor. The Contractor shall be notified of any changes to the duties, responsibilities, or limitations of authority of the Architect.

F. Article 5, Subcontractors

1. Add Section 5.3.1.

**§ 5.3.1** Each Subcontractor shall indemnify and hold harmless the Owner, Architect/Engineer, Architect/Engineer's consultants, and agents and employees of any of them, per Section 3.18, to the extent of the Work to be performed by the Subcontractor.

G. Article 11, Insurance And Bonds

1. Delete Section 11.1.4 and substitute the following.

**§ 11.1.4** Within three (3) business days of the date the Contractor becomes aware of any impending or actual cancellation of any insurance or substantial change in coverage required by Section 11.1, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide the required coverage throughout the project duration (including statute of limitations period). Upon receipt of the notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. Alternately, the Owner shall have the right, but not the obligation, to independently obtain such insurance. In such case, the Contractor shall repay the Owner immediately upon demand the premium together with interest and all costs and expenses incurred by the Owner without prejudice to any rights or remedies of the Owner under this Agreement. At the Owner's option, all sums due the Owner may be deducted from payments due to the Contractor under this Agreement.

H. Article 12, Uncovering and Correction of Work

1. Modify Sections 12.2.2.1, 12.2.2.2, 12.2.2.3 as follows:

12.2.2.1 Change "one year" to "two years" at one location in Line 1. Change "one-year" to "two-year" at one location in Line 7.
12.2.2.2 Change "one-year" to "two-year" at one location in Line 1.
12.2.2.3 Change "one-year" to "two-year" at one location in Line 1.
12.2.2.5 Change "one-year" to "two-year" at one location in Line 2.

2. Add Section 12.2.2.4

**§ 12.2.2.4** Upon request by the Owner and prior to the expiration of two years from the date of Substantial Completion, the Architect will conduct, and the Contractor shall attend, a meeting with the Owner to review the facility operations and performance.

3. Add Section 12.4

**§ 12.4** In addition to complying with the requirements of the Contract Documents, the completed Work shall be watertight (i.e., no liquid water inboard of the primary waterproofing, roofing, and/or weather barrier element) for the correction period. In executing the Owner-Contractor Agreement, the Contractor represents that it is knowledgeable in the Work to be performed. It is

the responsibility of the Contractor to take any and all steps necessary to provide a watertight system. Errors, inconsistencies, or omissions in the Contract Documents or unanticipated field conditions shall be reported promptly to the Architect/Engineer under Section 3.2.2, and do not relieve the Contractor of its responsibility to provide a watertight system.

I. Article 13, Miscellaneous Provisions

1. Add the following to the end of Section 13.5.

Interest shall not accrue on disputed amounts due until the Owner and Contractor have resolved such dispute.

J. Article 14, Termination Or Suspension Of The Contract

1. Delete Section 14.1.1.3 and substitute the following.

**.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 certified by the Architect that is undisputed by the Owner within the time stated in the Contract Documents; or

K. The following supplementary conditions modify provisions of AIA Document A101-2017 Exhibit A, Insurance and Bonds. Unaltered portions remain in effect.

1. Add the following after Subparagraph A.3.2.1:

Maintain products-completed operations coverage through statute of limitations for any Project-related claims, including warranty claims.

2. Add the following Subparagraph A.3.2.2.3:

General Aggregate and Per Project Aggregate endorsements shall be added to the General Liability policy.

3. Insert the underlined dollar amounts into the corresponding blanks provided in each of the following Subparagraphs:

A.3.2.2.1 Commercial General Liability $5,000,000. each occurrence; $5,000,000. general aggregate; $5,000,000. aggregate for products-completed operations hazard
A.3.2.3 Automobile Liability $1,000,000. per accident
A.3.2.6 Employer's Liability $1,000,000. each accident; $1,000,000. each employee; $5,000,000. policy limit

A.3.4 Performance Bond and Payment Bond

**END OF SECTION**

# SECTION 01 11 00

# SUMMARY OF WORK

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Description of existing conditions and Work scope, and Contractor duties and use of premises.

### 1.2 DEFINITIONS

A. The terms *Architect*, *Engineer*, and *Architect/Engineer* are used interchangeably.

### 1.3 CONTRACTOR DUTIES

A. Except as specifically noted, provide and pay for:
   1. Labor, materials, and equipment.
   2. Tools, construction equipment, and machinery.
   3. Water, power, and lights required for construction.
   4. Other facilities and services necessary for proper execution and completion of Work.
   5. Legally required sales, consumer, and use taxes.
   6. Permits, government fees, and licenses as necessary for proper execution and completion of Work and as applicable at time of receipt of bids.

B. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities having jurisdiction, which bear on performance of Work.
   1. Take necessary safety precautions to prevent injury to construction personnel, non-construction personnel, Owner's property, and adjacent facilities.
   2. Give required notices.
   3. Products shall comply with local regulations, including environmental restrictions.
   4. Promptly submit written notice to Architect/Engineer of observed variance of Contract Documents from legal requirements. It is not the Contractor's responsibility to make certain that Drawings and Specifications comply with codes and regulations.
      a. Propose appropriate modifications to Contract Documents for necessary changes.
      b. Assume responsibility for Work known to be contrary to such requirements, which is performed without notice.

C. Enforce strict discipline and good order among employees. Do not employ unfit persons or persons not skilled in their assigned tasks.

D. Provide 24-hour emergency contact information for Contractor and major subcontractors, including names and telephone numbers.

E. Coordinate access to the site by Owner's Representative, Architect/Engineer, and third parties invited by the Owner.

## 1.4 PROJECT CONDITIONS

A. Historic Background: The Lake Forest Library was chartered on July 4, 1898, by Lake Forest City Council. Funded by a donation from sisters Mrs. Charles H. Schweppe and Mrs. Stanley Keith in memory of Mrs. Keith's first husband, Kersey Coates Reed, a new library building was constructed on East Deerpath Road in 1930–1931. Exterior construction was largely complete by March 1931, and the building was dedicated and opened to the public in June 1931.

As noted on the original drawings, the dome roof was lead-coated copper supported on a structural deck of "Pyrofill." Pyrofill was a proprietary system of U.S. Gypsum Company and consists of gypsum mixed with wood fibers applied over a gypsum board formwork. This material was placed and shaped to create the doubly curved form of the dome. At the center of the dome was a double-glazed steel-framed skylight system. Below the dome itself, there are four triangular corner roof areas clad with similar lead-coated copper, terminating in corner piers. These corner roof areas are supported on wood-framed structural decks. The walls below the dome are clad with limestone down to a continuous watertable course; the walls below the watertable are brick masonry.

Based on the available historic photographs, at some point early in the life of the building, a sheet metal gutter was installed on top of the lowest continuous limestone watertable course below the dome. This gutter connected to two downspouts, one on the east elevation and one on the west elevation, which discharged onto the north flat roof behind the dome. This gutter collects all runoff from the dome and corner roof areas, although water still runs off the sheet metal and over the limestone masonry to reach the gutter.

The original sheet metal roofing of the dome and corner areas was completely replaced in 1984. The original sheet metal roofing was removed, and new asphalt roofing felt and lead-coated copper roofing were installed, matching the original detailing. The perimeter gutter and downspouts at the limestone watertable were replaced in kind. The limestone and brick masonry was cleaned as part of the project.

B. Description of Deterioration: Subsequent to the 1984 project, the lead-coated copper roofing has weathered irregularly, with variable gray and black patina. Staining has recurred on the limestone masonry. However, the primary current concern and need for the project is to address water infiltration. Leakage has occurred at the dome roof, leading to staining and deterioration of the plaster ceiling below. Water infiltration has also occurred at the masonry walls below the dome, leading to efflorescence and deterioration of masonry within the attic, and damage to finishes within the building. To mitigate the water infiltration, the dome has been covered with temporary tarps since 2018.

C. The library is located within the National Register-listed Lake Forest Historic District. All work of the project is subject to review by the City of Lake Forest Historic Preservation Commission.

## 1.5 WORK SCOPE

A. Work includes the following activities:
   1. Protect in place the existing slate roofing, membrane roofing, drains, downspouts, and skylights; existing exterior walls and windows; existing interior finishes; mechanical, electrical, and plumbing systems; adjacent landscaping; adjacent road, sidewalk, and

terrace pavement; and light fixtures, sculpture, signage, and other appurtenances in or adjacent to the limits of work. Existing materials or elements that are damaged during the Work shall be repaired or replaced at no additional cost to the Owner.

2. Skylight. Replace cracked pieces of existing wire glass with new wire glass in the original frame. Remove, salvage, and reinstall trim pieces as necessary for the glazing work and to tie in to the new dome roofing. Re-seal all joinery.
3. Dome roof. Remove the existing batten-seam sheet metal roofing assembly down to the original gypsum deck. Install new coated copper batten-seam sheet metal roofing over a new fully adhered rubberized asphalt underlayment.
4. Dome perimeter trim and cornice. Remove the existing sheet metal. Modify the wood framing supporting the cornice as shown to create a new built-in gutter and downspouts. Install new fully soldered coated copper perimeter trim and cornice sheet metal work, otherwise matching the existing profiles.
5. Four (4) corner roof areas. Remove the existing sheet metal roof assembly down to the original wood deck. Install a new cricket at the upslope side of each corner pier. Install new coated copper batten-seam sheet metal roofing, matching the existing profiles. At the top of each area, an existing surface that is flat will be given a slight slope for drainage.
6. Limestone masonry. Provide trial samples and mockups, and clean all limestone masonry below the sheet metal roofing. Replace joint sealant.
7. Replace the existing sheet metal gutter atop the lowest watertable to match the existing profile, with downspouts matching the existing configuration. Install a sheet metal flashing atop the secondary limestone watertable above the gutter.
8. Brick masonry. Repoint the brick masonry below the limestone on all four sides of the central volume of the building, down to the roof flashing below, or to grade.
9. In the attic, repoint the existing common brick masonry, and replace individual spalled bricks with new common brick units. Remove loose efflorescence and debris by sweeping and vacuuming.
10. In the attic, install new foil-faced insulation at the dome and perimeter knee wall.
11. Repair isolated areas of damage at the plaster ceiling of the central lobby (under the dome) to match the existing texture. Repaint the ceiling to match the existing colors.

## 1.6 CONTRACTOR USE OF PREMISES

A. Confine operations at Site to areas permitted by law, ordinance, permits, and Contract Documents.

B. Streets, Walkways, and Entrances: Keep adjacent streets, walkways, and entrances serving the building clear and available to Owner, Owner's employees, library visitors, and emergency vehicles at all times. Do not use these areas for storage of materials.
   1. Landscaped courtyard areas to the southeast and southwest of the dome will be closed to the public for the duration of the work.
   2. Schedule deliveries to minimize use of adjacent walkways and entrances by construction operations.
   3. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Owner will occupy premises outside of Work area during construction period, and library will remain open to the public throughout the work.
   1. Cooperate with Owner to minimize conflicts and facilitate Owner usage.

2. Perform Work to avoid interference with Owner's day-to-day operations. Notify Owner's Representative at least 72 hours in advance of activities that will affect Owner's operations.
    a. Maintain utilities serving areas occupied by Owner or others. Do not interrupt utilities unless approved in writing in advance by Owner's Representative. Notify Owner's Representative at least 72 hours in advance of interruption. Provide temporary utility services if required.
3. Maintain vehicular, pedestrian, and emergency access to adjacent site areas that are in use. Keep entrances and exits clear of stored materials and construction equipment.
    a. Short interruptions in access may be permitted if approved in advance in writing by the Owner's Representative.
    b. Schedule deliveries to minimize interruptions.
4. Do not disturb Site outside of Work area.
5. Notify the Owner's Representative at least one week in advance of when portions of Work area will be removed from use or returned to use.

D. Contractor shall have no additional storage or operational area outside of areas designated on the Drawings, except as approved in advance by Owner's Representative.
    1. Construction equipment, tools, etc., shall not be stored in areas of Owner's continued use.
    2. Do not unreasonably encumber Site with materials or equipment.
    3. Do not load Project structure with weight that will endanger Project structure.
    4. Assume full responsibility for Site security and protection and safekeeping of products stored at Site.
    5. Obtain and pay for additional storage areas needed for operations.

E. Perform Site Work between 7:00 a.m. and 6:00 p.m. on Monday through Friday, except as approved in advance by the Owner's Representative and public authorities having jurisdiction.
    1. Library is open to the public at these times:
        a. Monday to Thursday, 9:00 a.m. to 9:00 p.m.
        b. Friday, 9:00 a.m. to 6:00 p.m.
        c. Saturday, 9:00 a.m. to 5:00 p.m.
        d. Sunday, 1:00 p.m. to 5:00 p.m.
    2. Perform plaster repair and repainting work during hours in which the library is closed to the public, unless otherwise approved in advance by the Owner's Representative.

## 1.7 OWNER USAGE

A. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage of the building. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits from building unless otherwise indicated.
    1. Maintain access to existing site walkways and occupied facilities. Do not close or obstruct walkways or entrances without written permission from Owner and authorities having jurisdiction.
    2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

**PART 2 PRODUCTS [Not Used]**

**PART 3 EXECUTION**

**3.1 SITE WORK**

A. Prior to beginning any repair work, submit plan for containing, collecting, and disposing of construction debris in safe manner.

B. Restore all Site items to their condition prior to start of construction after the Work has been completed.

**END OF SECTION**

# SECTION 01 20 00

# PRICE AND PAYMENT PROCEDURES

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for preparing, handling, and processing Contract modifications and Applications for Payment, including Alternates and product substitutions.

### 1.2 SUBSTITUTION PROCEDURES

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

B. Submittals:
   1. Substitution Requests: Submit three copies of request for consideration. Use CSI Form 13.1A or similar form. Identify product or fabrication or installation method to be replaced. Include Specification section and Drawing numbers and titles.
      a. Provide the following information. If the following information is not provided, Architect/Engineer may return requests without action, except to record noncompliance with these requirements.
         1) Statement indicating why specified product, fabrication, or installation cannot be provided, if applicable.
         2) Product Data, including drawings and descriptions of products, and fabrication and installation procedures. Where applicable or requested, include:
            a) Samples.
            b) Certificates and qualification data.
         3) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
            a) Research reports evidencing compliance with the building code in effect for Project.
            b) Necessary approvals of public authorities having jurisdiction.
         4) A detailed comparison of significant qualities of proposed substitution with those of specified Work. Include an 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 specified Work.

5) Coordination information, including a list of changes or modifications needed to other portions of Work that will be necessary to accommodate proposed substitution.
6) Cost information and a detailed comparison of Contractor's construction schedule using proposed substitution compared to specified product, including the effect on overall Contract Time. Include proposal of change, if any, in Contract Sum or Contract Time.
7) Contractor's certification that proposed substitution complies with requirements in Contract Documents, including specified warranty, except as indicated in substitution request; is compatible with other portions of Work and other products; and is appropriate for applications indicated and will produce indicated results.
    a) Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturer.
8) Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of the proposed substitution to produce the indicated results.

b. In addition, for substitutions of convenience, requested substitution must:
    1) Offer Owner substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect/Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    2) Not require extensive revisions to Contract Documents.
c. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not less than fourteen (14) days prior to time required for preparation and review of related submittals.
d. Substitutions for Convenience: Architect/Engineer will consider requests for substitution if received within fourteen (14) days after Notice of Award. Requests received after that time may be considered or rejected at the discretion of Architect/Engineer.

2. Architect/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within seven days of receipt of substitution request. Architect/Engineer will notify Contractor of acceptance or rejection of proposed substitution within fourteen (14) days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
    a. Acceptance or rejection of proposed substitutions shall be at the sole discretion of Architect/Engineer, whose decision is final.
    b. Accepted substitution will be incorporated into the Contract by Change Order, Construction Change Directive, or Architect/Engineer's Supplemental Instructions for minor changes in Work.
    c. Use product specified if Architect/Engineer does not issue decision on use of proposed substitution within time allocated.

C. Modify or adjust Work as necessary to integrate work of approved substitutions.

## 1.3 CONTRACT MODIFICATION PROCEDURES

A. All changes to the Contract will be documented in writing. Only the Owner's designated representative may authorize changes to the Scope of Work, Contract Sum, or Contract Time.

B. Minor Changes in Work: Architect/Engineer will issue supplemental instructions authorizing minor changes in Work, not involving adjustment to Contract Sum or Contract Time.

C. Proposal Requests:
   1. Owner-Initiated Proposal Requests: Architect/Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or Contract Time. The description may include supplemental or revised Drawings and Specifications.
      a. Proposal Requests issued by the Architect/Engineer are for information only, and are not instructions to either stop Work or execute the proposed change.
      b. Within the time specified in the Proposal Request after receipt of the Proposal Request, submit adjustments to the Contract Sum and Contract Time necessary to execute change.
   2. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, propose changes by submitting a request for change to the Architect/Engineer.
      a. Include a statement outlining reasons for the change and provide a complete description of the proposed change.
      b. Submit adjustments to the Contract Sum and Contract Time necessary to execute the change within fourteen (14) days of becoming aware of latent or unforeseen condition. Owner will reject claims submitted later than fourteen (14) days after latent or unforeseen condition becomes known.
   3. Indicate the effect of the proposed change on the Work, and adjustments to the Contract Sum and Contract Time necessary to execute the change.
      a. Include quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.
      d. Do not include Contractor's or subcontractor's indirect expense unless it is clearly shown that the nature or extent of Work has changed from that which could have been foreseen from information in the Contract Documents. No change to Contractor's indirect expense is permitted for the selection of higher- or lower-priced materials, or systems of the same scope and nature as originally indicated.
      e. Include an updated Construction Schedule that indicates the effect of the change, including changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of Contract Time.
      f. Comply with requirements in Section 01 60 00 if proposed change requires substitution of one product or system for product or system specified.
   4. Use AIA Document G709 or a similar form for Proposal Requests.

D. Construction Change Directives:
   1. Architect/Engineer may issue a Construction Change Directive, instructing Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
      a. A Construction Change Directive contains a complete description of the change in Work, including a method to determine changes in the Contract Sum and Contract Time.
   2. Maintain detailed records on time and material basis of Work required by Construction Change Directive.
      a. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

E. Change Order Procedures:
   1. Owner will authorize a change in the Contract by signing the Change Order form describing the specific change(s) to the Scope of Work, Contract Sum, or Contract Time.

## 1.4 PAYMENT PROCEDURES

A. Schedule of Values:
   1. Format and Content:
      a. Include the following Project identification.
         1) Project name and location.
         2) Name of Architect/Engineer.
         3) Contractor's name and address.
         4) Date of submittal.
      b. Provide a breakdown of the Contract Sum in sufficient detail to facilitate an evaluation of the Applications for Payment.
         1) Coordinate with Project Manual Table of Contents.
         2) Provide separate line items for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of Work.
         3) Provide separate line item for each part of Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
         4) Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
         5) Show temporary facilities and other major cost items that are not a direct cost of actual Work-in-place, as either separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
         6) Round amounts to nearest whole dollar; total shall equal Contract Sum.
   2. Coordinate the Schedule of Values with other administrative forms and schedules, including the Construction Schedule, submittal schedule, and application for payment forms.
   3. Submit the Schedule of Values to Architect/Engineer at least two weeks before submittal of the initial Application for Payment.
   4. Update and resubmit the Schedule of Values before the next Application for Payment when a Change Order results in a change in the Contract Sum.

B. Applications for Payment:
   1. Payment Application Form: Use AIA Document G702 and AIA Document G703 Continuation Sheets or another form approved by the Owner as the form for Applications for Payment.
   2. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect/Engineer and paid by Owner.
   3. Application Preparation: Complete every entry on form. Notarize and execute by person authorized to sign legal documents on behalf of Contractor. Architect/Engineer will return incomplete applications without action.
      a. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedule if revisions were made.
      b. Include amounts of Change Orders and Construction Change Directives issued before the last day of the construction period covered by the application.
   4. Submittal: Submit signed and notarized copy of each Application for Payment to Architect/Engineer by method ensuring receipt within twenty-four (24) hours. Include waivers of lien and similar attachments.
   5. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file mechanic's lien arising out of the Contract and related to the Work covered by payment, including Subcontractors.
      a. Submit partial waivers on each item for the amount requested in the application, after deduction for retainage on each item.
      b. When the application shows completion of an item, submit final or full waiver.
      c. Execute waiver forms in a manner acceptable to Owner.
      d. Owner reserves the right to designate which entities involved in Work must submit waivers.
   6. Application for Payment at Substantial Completion: After issuing a Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of Work claimed as substantially complete.
      a. Include documentation supporting claim that Work is substantially complete and statement showing accounting of changes to Contract Sum.
      b. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of Work.
   7. Final Payment Application: Submit a final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
      a. Evidence of completion of Project closeout requirements, including As-Built drawings.
      b. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
      c. Updated final statement, accounting for final changes to the Contract Sum.
      d. AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims.
      e. AIA Document G706A, Contractor's Affidavit of Release of Liens, and final waivers of lien for all subcontractors.
      f. AIA Document G707, Consent of Surety to Final Payment.
      g. Evidence that claims have been settled.
      h. Final meter readings for utilities, measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of Work.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

# SECTION 01 30 00

# ADMINISTRATIVE REQUIREMENTS

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Personnel background checks, project coordination and supervision, meetings, schedules, submittals, and photographic documentation.

### 1.2 BACKGROUND CHECK

A. Upon request of the Owner's Representative, provide information for all Contractor and Subcontractor personnel who will be performing work on site, to perform a background check in accordance with 105 ILCS 5/10-21.9.

B. Only employ personnel who can pass a background check for work on site.

### 1.3 COORDINATION

A. Provide supervision, planning, scheduling, and control to perform Work and meet requirements of Contract Documents.
   1. Schedule and coordinate construction operations in sequence required to obtain best results where installation of one part of Work depends on installation of other components, before or after its own installation.
   2. Notify affected parties in writing, as necessary, of special procedures required for coordination.
   3. Coordinate scheduling and timing of required administrative procedures to ensure orderly progress of Work. Such administrative activities include the following:
      a. Preparation of a construction schedule and Schedule of Values.
      b. Installation and removal of temporary facilities and controls.
      c. Delivery and processing of submittals.
      d. Progress and pre-installation meetings.
      e. Project closeout activities.

B. Notify the Owner's Representative in writing forty-eight hours in advance of time when construction areas will be returned to the Owner for use or when new Work areas are required.

C. Submit a site access plan to Owner's Representative for review and written approval at least five working days prior to its implementation. Include locations of temporary enclosures and storage.

### 1.4 SUPERVISION

A. Provide a project superintendent at the Site a minimum of eight hours per day during the progress of the Work. The superintendent shall be literate and fluent in English.

B. 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. The responsible person shall conduct regularly scheduled meetings with Subcontractors and, in the event of Separate Contracts, with other Contractors to promote compliance with governing safety regulations.

## 1.5 MEETINGS

A. General:
   1. Schedule and conduct meetings at the Site, unless otherwise indicated.
   2. Notify participants, others involved, and individuals whose presence is required, of the date and time of the meeting. Notify the Owner and Architect/Engineer of scheduled meeting dates and times.
   3. Agenda: Prepare a meeting agenda and distribute agenda to invited attendees.
   4. Minutes: Record significant discussions, agreements, and disagreements, and distribute the meeting minutes to concerned parties, including the Owner and Architect/Engineer, within three days of the meeting.

B. Pre-Construction Meeting:
   1. Conduct a pre-construction meeting before Work begins. The Owner's Representative, Architect/Engineer, and responsible representatives from major subcontractors and other concerned parties shall be present. Participants shall be familiar with the Project and authorized to conclude matters relating to the Work.
   2. Describe in detail when each portion of the Work is to be performed, based on the construction schedule. Discuss phasing and critical work sequencing. Subcontractors shall participate in discussion.
   3. Discuss the following:
      a. Subcontractors, including responsibilities and personnel assignments.
      b. Key personnel, including contact information, and their duties.
      c. Procedures for requests for interpretations, field decisions, and change orders.
      d. Submittal procedures.
      e. Procedures for processing Applications for Payment.
      f. Use of premises, including office and storage areas, parking availability, and Owner's requirements.
      g. Work hours and restrictions.
      h. Deliveries and priorities.
      i. Temporary facilities and controls.
      j. Testing and inspecting requirements.
      k. Safety and security procedures.
      l. Housekeeping procedures, including progress cleaning and construction waste management and recycling.
      m. Preparation of record documents.
   4. Discuss questions that Contractor or subcontractors may have about Work or construction schedule.
   5. The Architect/Engineer will interpret the Contract Documents.
   6. The Owner's Representative will discuss occupancy and use of the campus during the construction and other Owner concerns.

C. Pre-Installation Meetings: Conduct pre-installation meetings before each construction activity that requires coordination with other construction.
   1. Responsible representatives from the Installer and manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall be present.
   2. Review the progress of the construction and preparations for the particular activity under consideration, including the following:
      a. Contract Documents, including warranty requirements, requests for interpretations, and Change Orders.
      b. Regulations of public authorities having jurisdiction.
      c. Construction Schedule, including deliveries.
      d. Submittals, manufacturer's written recommendations, and mockups.
      e. Temporary facilities and controls; space and access limitations; and protection of construction and personnel.
      f. Installation procedures, including weather limitations, coordination with other work, protection of adjacent work, compatibility concerns and possible conflicts, acceptability of substrates, testing and inspecting requirements, and required performance results.
   3. Include required corrective measures and actions in meeting minutes.
   4. Do not proceed with the installation if the meeting was not successfully concluded. Initiate necessary actions to resolve impediments to the performance of the Work and reconvene the meeting at the earliest feasible date.

D. Progress Meetings: Conduct weekly progress meetings.
   1. The Owner's Representative, Architect/Engineer, and representatives of each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be present. Participants shall be familiar with the Project and authorized to conclude matters relating to the Work.
   2. Review and correct or approve the minutes of the previous progress meeting. Review items of significance that could affect the progress of the Work. Include topics for discussion as appropriate to the status of the Project.
   3. Construction Schedule: Review the progress of the Work since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to the construction schedule. Determine how construction behind schedule will be expedited, and secure commitments from the parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      a. Review the schedule for the next two-week period.
   4. Review present and future needs of each entity present, including the following:
      a. Sequence of operations, interface requirements, and coordination of the Work.
      b. Status of submittals, deliveries, and off-site fabrication.
      c. Site utilization, temporary facilities and controls, access, and progress cleaning.
      d. Field observations, problems, and decisions.
      e. Quality and work standards, and status of corrective measures for deficient items.
      f. Status of payment requests, requests for interpretations, proposal requests, pending changes, Change Orders, and pending claims and disputes.

## 1.6 SCHEDULES

A. Prepare a construction schedule for the entire Work, including a complete sequence of construction by activity. The schedule shall be in the form of a horizontal bar chart, with a separate horizontal bar for each construction activity and the first workday of each week identified.
   1. Provide beginning and completion dates for each construction activity and phase.
      a. Indicate the completion percentage for each activity on the first day of each month.
      b. Indicate time periods when portions of the Site will not be available for Owner use and when stairs and elevators will be used for construction activities.
      c. Indicate periods of interruption of utility services.
   2. Provide submittal dates and dates when reviewed submittals will be required.
   3. Provide product procurement and delivery dates.
   4. Provide dates for the selection of colors and finishes.
   5. Provide separate sub-schedules as necessary to provide more detail for critical portions of the schedule.

B. Submit the construction schedule to the Owner's Representative and Architect/Engineer within one week after the date of the Notice to Proceed.

C. Update the schedule on a monthly basis or when actual construction progress deviates significantly from that shown on the current schedule.
   1. Show all changes that have occurred since the previous schedule was prepared, including the progress of each activity, current completion dates, and major changes in scope.
   2. Provide a narrative report that discusses the following items and their effects on the schedule.
      a. Progress of each activity and current completion date, compared to the previous schedule.
      b. Description of changes.
      c. Problem areas, including current and anticipated delay factors.
      d. Corrective actions taken or proposed.
   3. Resubmit to the Owner's Representative and Architect/Engineer.

D. Distribute the current schedule to the job-site file, subcontractors, and other affected parties. Instruct parties to report any inability to comply and to provide a detailed explanation with suggested remedies.

## 1.7 SUBMITTALS

A. General:
   1. Electronic Format: Prepare submittals as a PDF package, incorporating complete information into one PDF file for each product or material. Name each PDF file with submittal number
   2. Submittal Identification: Include the following information in each submittal.
      a. Project name.
      b. Date.
      c. Names of Architect/Engineer, Contractor, subcontractor, manufacturer, supplier, and firm or entity that prepared submittal, as appropriate.

d. Identification information, such as the number and title of the appropriate Specification section, Drawing number and detail references, location(s) where product is to be installed, or other necessary information.
e. Label each submittal with the six digit Specification section number followed by a sequential number (e.g., 042000-01). On resubmittals, include a suffix to the original number (e.g., 042000-01-R1).
f. Provide space approximately 6 by 8 inches on or beside the label or title block for the Contractor's approval stamp and the action stamp of the Architect/Engineer.

3. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not use reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements outlined in the Contract Documents. Include the following information, as applicable:
a. Dimensions, including notation of those established by field measurement.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Shopwork manufacturing instructions.
f. Templates and patterns.
g. Schedules.
h. Notation of coordination requirements.
i. Relationship to adjoining construction by other trades clearly indicated.
j. Seal and signature of professional Engineer if specified.

C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. Clearly mark each copy of the submittal to show which products and options are applicable. Delete information which is not applicable. Supplement standard information with project-specific information.
2. Include the following information, as applicable:
a. Manufacturer's catalog cuts, product specifications, schematic drawings, installation instructions, and written recommendations.
b. Compliance with referenced standards.
c. Testing by recognized testing agency.

D. Samples: Submit physical samples to illustrate functional and aesthetic characteristics of the product, for review of materials and workmanship, for compatibility with other elements, and for comparison with the actual installed elements.
1. Deliver samples to the project site unless otherwise indicated.
2. Samples shall be of sufficient size to show the general visual effect.
3. Include sets of at least three samples that show the full range of color, pattern, texture, graining, and finish.
4. Transmit samples that contain multiple, related components, such as accessories, together in one submittal package.
5. Identification: Attach a label on an unexposed side of each sample that includes the following:
a. Generic description of sample.

b. Product name, name of manufacturer, and sample source.
c. Number and title of appropriate Specification section.

6. Samples for Initial Selection: Submit at least two full sets of units or sections of units from the supplier's product line, showing the full range of colors, textures, and patterns available. Architect/Engineer will retain one set and return one set with the options selected.
7. Samples for Verification: Submit full-size units or samples of the size indicated, prepared from the same material to be used for the Work, cured and finished in the manner specified, and physically identical with material or product proposed for use, and that show the full range of color and texture variations expected.
   a. Submit at least two samples, one of which will be retained by the Architect/Engineer.
8. Maintain approved samples at the Site, available for quality-control comparisons during construction. Samples may be used to determine final acceptance of construction associated with the sample.

E. Delegated Design:
   1. Where required by the Contract Documents, in addition to shop drawings, product data, and other required submittals, submit a statement, signed and sealed by responsible design professional, for each product and system specifically assigned to the Contractor to be designed or certified by a design professional.
      a. Indicate that products and systems comply with performance and design criteria in the Contract Documents.
      b. Include a list of codes, loads, and other factors used in performing these services, and signed and sealed design calculations where required.

## 1.8 SUBMITTAL PROCEDURE

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

B. Coordinate the preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, submittals requiring concurrent review, and related activities that require sequential activity.
   2. Allow sufficient time for submittal and resubmittal review. Failure to provide sufficient time for submittal and resubmittal reviews will not be a basis for extension of the Contract Time.

C. Review Time:
   1. Allow fourteen days for the review of each submittal and resubmittal.
   2. Allow additional time if coordination with subsequent submittals is required. The Architect/Engineer will advise the Contractor when the submittal being processed must be delayed for coordination.
   3. Time for review shall commence when the Architect/Engineer receives the submittal.

D. Contractor Review:
   1. Review each submittal, coordinate with other Work, and check for compliance with the Contract Documents. Verify field dimensions and conditions. Identify variations from the Contract Documents and product or system limitations that may be detrimental to the successful performance of completed Work. Note corrections.

2. Before submitting to the Architect/Engineer, stamp or electronically mark-up, with a uniform approval stamp, including the reviewer's name; the date of Contractor's approval; and a statement certifying that the submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
3. Submittal Log: Maintain submittal log that lists submitted items per specification section. Record dates submitted, dates returned, and disposition of each item based on Architect/Engineer's review. Submit final log showing approved materials at Substantial Completion.

E. Transmittal: Package each submittal individually and appropriately for transmittal and handling.
1. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics, and identification information for record.

F. Architect/Engineer Action:
1. Architect/Engineer will not review submittals that are received from sources other than the Contractor or that do not bear the Contractor's approval stamp, and will return them without action to the Contractor.
2. Architect/Engineer will review each submittal for conformance with the design concept of the Project and compliance with the Contract Documents. Architect/Engineer will make marks to indicate corrections or modifications required, and stamp or electronically mark-up with an action stamp. The action stamp will include the reviewer's name, date of review, and required Contractor action. Contractor actions may include making corrections or modifications to the submittal or resubmitting the submittal, or both.

G. Resubmittals: Make resubmittals in the same form and number of copies as the initial submittal.
1. Note the date and content of previous submittal.
2. Note the date and content of the revision in the label or title block and clearly indicate the extent of the revision and changes made.
3. Resubmit until the Architect/Engineer indicates that no resubmittal is required.

H. Distribution: Furnish final copies (paper or digital) to the Site file, record documents file, manufacturers, subcontractors, suppliers, fabricators, installers, public authorities having jurisdiction, and others as necessary for performance of construction activities. Show the distribution on the transmittal forms.

I. For construction, use only the final submittals with the Architect/Engineer's action stamp.

## 1.9 PHOTOGRAPHIC DOCUMENTATION

A. Photograph existing conditions that are important to the construction or that deviate substantially from the Contract Documents; significant conditions that will be concealed by the Work; finish surfaces that might be misconstrued as damage caused by removal or other Work operations; and immediate follow-up when on-site events result in construction damage or loss.
1. Photographs shall be in focus and shall clearly show the condition.
2. Provide images in JPG format, produced by a digital camera with a minimum sensor size of 6.0 megapixels, and at an image resolution of at least 3000 by 2000 pixels. Each image shall include a date and time stamp, and a unique sequential identifier.
3. Maintain a complete set of photographs at the Site, with an image log including:
a. Name of Project.

b. Unique sequential identifier.
c. Date and time photograph was taken.
d. Description of vantage point, indicating location, direction by compass point, and elevation or story of construction or key plan with photograph locations, or both.

B. Within two days of taking photographs, submit the complete digital-image electronic file with image log to the Architect/Engineer and Owner's Representative. Submit digital images exactly as originally recorded in the camera, without alteration, manipulation, editing, or modification.
1. Submit photographs of pre-existing damage prior to beginning Work in area.

**PART 2 PRODUCTS Not Used**

**PART 3 EXECUTION Not Used**

**END OF SECTION**

# SECTION 01 40 00

# QUALITY REQUIREMENTS

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated, and do not relieve the Contractor of responsibility for compliance with requirements of the Contract Documents.
   1. Specified tests, inspections, and related actions do not limit the Contractor's other quality assurance and quality control procedures that facilitate compliance with requirements of the Contract Documents.
   2. Requirements for the Contractor to provide quality assurance and quality control services required by the Architect/Engineer, Owner, or public authorities having jurisdiction are not limited by provisions of this Section.

### 1.2 DEFINITIONS

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

B. Quality Control Services: Tests, inspections, procedures, and related actions during and after the execution of the Work to evaluate that the actual products incorporated into the Work and the completed construction comply with requirements. Services do not include contract enforcement activities performed by the Architect/Engineer.

### 1.3 COMPLIANCE CRITERIA

A. General: If compliance with two or more standards is specified and standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.

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

C. Refer uncertainties to the Architect/Engineer for a decision before proceeding.

## 1.4 SUBMITTALS

A. Testing Agency Qualification Data: Provide documentation demonstrating compliance with ASTM E329 of laboratory and personnel.

B. Reports: Prepare and submit certified written reports. Submit copies of reports to the Owner's Representative, Architect/Engineer, and Contractor. Reports shall include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification section.
   8. Complete test or inspection data.
   9. Test and inspection results and interpretation of test results.
   10. Record of temperature and weather conditions at the time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with requirements of the Contract Documents.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and re-inspecting.

C. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on the performance of the Work.

## 1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Comply with the requirements of ASTM E329, with experience and capability to conduct testing and inspecting indicated and with additional qualifications specified in individual sections.

B. Mockups: Full-size, physical assemblies that are constructed on-site.
   1. Mockups are used to verify selections made under sample submittals; to demonstrate proposed range of aesthetic effects and workmanship and, where indicated, qualities of materials and execution; and to review construction, coordination, testing, or operation.
   2. Do not construct mockups until corresponding product data, shop drawings, samples, and other submittals have been approved.
   3. Construct mockups for each form of construction and finish required, in accordance with applicable Specification section or as shown on Drawings, using materials indicated for completed Work.
   4. Coordinate locations of mockups in advance with Architect/Engineer and Owner's Representative. To the greatest extent practicable, mockups are to be constructed in readily accessible locations.
   5. Provide access to mockups for review.
   6. As a courtesy, Owner may invite other third-party entities to the site to review mockups. Coordinate and provide access to mockups for all reviewers.

7. Architect/Engineer may observe mockup construction in progress. Notify Architect/Engineer seven days in advance of dates and times when mockups will be constructed.
8. Portions of mockup that will be concealed shall be inspected by Architect/Engineer prior to concealment and, when approved, photographed for future reference.
9. If Architect/Engineer or Owner's Representative determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved. Remove and replace mockups that are not approved.
10. Do not order materials; or proceed with fabrication or construction on portions of Work requiring mockups or affected by construction represented by mockups, until mockup has been approved by Architect/Engineer and Owner's Representative.
11. Maintain approved mockups during construction in undisturbed condition as standard for judging completed Work.
12. Demolish and remove mockups when directed by Owner, unless otherwise indicated that mockups may remain as part of the permanent work.

## PART 2 PRODUCTS Not Used

## PART 3 EXECUTION

### 3.1 QUALITY CONTROL

A. Owner Responsibilities: Where quality control services are indicated as the Owner's responsibility, the Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names and contact information of testing agencies engaged and descriptions of types of testing and inspecting they are engaged to perform.
   2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to the Owner, and testing and inspecting requested by the Contractor and not required by the Contract Documents, are the Contractor's responsibility. Unless otherwise indicated, provide quality control services specified and those required by public authorities having jurisdiction, whether specified or not.
   1. Where services are indicated as the Contractor's responsibility, engage a qualified testing agency to perform these services.
      a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.
   2. Where quality control services are indicated as the Contractor's responsibility, submit a certified written report, in duplicate, of each quality control service.
   3. Submit additional copies of each written report directly to public authorities having jurisdiction, when they so direct.
   4. Retesting/Re-inspecting: Regardless of whether the original tests or inspections were the Contractor's responsibility, provide quality control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.

C. Testing Agency Responsibilities: Cooperate with the Architect/Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Determine location from which test samples will be taken and in which in-situ tests are conducted.
   2. Notify the Architect/Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
   4. Submit a certified written report of each test, inspection, and similar quality control service.
   5. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
   6. Do not perform any duties of the Contractor.

D. Coordination: Coordinate the sequence of activities to accommodate the required quality assurance and quality control services with a minimum of delay and to avoid the necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

E. Associated Services: Cooperate with the Architect/Engineer and testing agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Provide the following:
   1. Submittals of materials and products necessary for the testing agency to test and evaluate field work.
   2. Access to the Work.
   3. Incidental labor and facilities necessary to facilitate tests and inspections.
   4. Adequate quantities of representative samples of materials that require testing and inspecting. Assist the testing agency in obtaining samples.
   5. Facilities for storage and field curing of test samples.
   6. Security and protection for samples and for testing and inspecting equipment at Site.

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

**END OF SECTION**

# SECTION 01 50 00

# TEMPORARY FACILITIES AND CONTROLS

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Requirements for temporary utilities, support facilities, and protection and controls.

B. Pay for temporary utilities, support facilities, and protection and control measures unless otherwise indicated. Allow other entities to use temporary utilities and facilities without cost, including Owner's Representative, Architect/Engineer, subcontractors, testing agencies, and public authorities having jurisdiction.

### 1.2 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging and storage areas, and access for construction personnel.

B. Dust Control Plan: Submit coordination drawing and narrative that describes dust control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate.

C. Shop Drawings and Product Data: For temporary fences and canopies.

## PART 2 PRODUCTS

### 2.1 WOOD MATERIALS, GENERAL

A. Lumber: Any species, Construction or No. 2 grade.

B. Plywood: APA rated sheathing, minimum 3/4 inch thick, Exterior Exposure.

## PART 3 EXECUTION

### 3.1 GENERAL

A. Conditions of Use:
   1. Locate temporary services and facilities where they will serve Project adequately and result in minimum interference with performance of Work. Coordinate locations with Owner's Representative.
   2. Provide temporary services and facilities ready for use when needed to avoid delay.
   3. Maintain temporary and existing services and facilities clean and neat, in good operating condition, and in condition acceptable to Owner's Representative.
   4. Relocate and modify temporary services and facilities as required by progress of Work.

5. Enforce strict discipline in use of temporary services and facilities. To minimize waste and abuse, limit availability of temporary services and facilities to essential and intended uses.
6. Remove temporary services and facilities when no longer needed, but no later than Substantial Completion.
    a. Personnel remaining after Substantial Completion will be permitted to use permanent facilities under conditions acceptable to Owner's Representative.
    b. Restore Site to condition existing before Project commencement.
    c. Materials and facilities that constitute temporary facilities are property of Contractor.

B. Provide temporary ladders, ramps, runways, stairs, scaffolding, staging, enclosures, hoists, rubbish chutes, and other construction aids as may be required for Work.

## 3.2 TEMPORARY UTILITIES

A. General: Install temporary service or connect to existing service.
1. Coordinate with utility company.
2. Arrange with utility company, Owner's Representative, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
3. Arrange for public authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

B. Water Service: Use of Owner's existing water service will be permitted.
1. Provide connections and extensions of service as required for construction operations.
2. Exterior hose bibb locations are shown on the Drawings.
3. Provide additional water as necessary.

C. Electric Power Service: Use of Owner's existing electric power service will be permitted.
1. Provide connections, extensions of service, and receptacle outlets as required for construction operations.
2. As necessary, provide additional electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations. Do not overload Owner's service.
3. Comply with NECA 200 and NFPA 70.
4. Maintain temporary service in safe condition and utilize in safe manner.
5. Electrical panel locations are shown on the Drawings.

D. Lighting: Existing building and site lighting will remain in place during the work.
1. If needed, provide additional lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

## 3.3 TEMPORARY CONTRACTOR FACILITIES

A. Parking: Construction personnel shall park off-site unless other arrangements are made in advance in writing with Owner's Representative. City-owned parking lots are located south of Deerpath Road and are likely available for construction personnel use, with prior coordination with the city.

B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel at exterior staging location shown on the drawings and as coordinated with Owner's Representative.

1. Provide disposable supplies, including toilet tissue, paper towels, and paper cups. Maintain adequate supply. Provide covered waste containers for disposal of used material.
2. Service toilets at least twice weekly.
3. Provide wash facilities supplied with potable water at convenient locations for personnel who handle materials that require clean up. Supply cleaning compounds appropriate for each type of material handled. Dispose of drainage properly.
    a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
4. Comply with public authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

C. Field Office: Provide and maintain prefabricated, site-built, or mobile unit with lockable doors, operable windows, serviceable furnishings and finishes, electrical outlets, lights, temperature controls, and foundations adequate for normal loading. No field office space is available inside the building.

D. Storage Sheds: Provide sheds or containers sized, furnished, and equipped to accommodate materials and equipment for construction operations. No storage space is available inside the building.

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of public authorities having jurisdiction. Do not use Owner's waste containers. Coordinate pickup of waste during construction hours defined above.

## 3.4 TEMPORARY PROTECTION AND CONTROLS

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
    1. Comply with applicable laws, governmental rules and regulations, and public authorities having jurisdiction with regard to noise, dust, pest, and pollution control.

B. Temporary Fencing:
    1. Site Enclosure Fence: Before construction operations begin, provide enclosure fence in manner that will prevent people and animals from easily entering work area except by entrance gates.
        a. Provide lockable entrances to prevent unauthorized entrances. Lock entrances during non-working hours. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner's Representative with one set of keys.

C. Barricades, Warning Signs and Lights, and Traffic Controls: Provide and maintain barricades, warning signs and lights, and traffic controls. Provide traffic control as necessary for construction vehicles entering and leaving Site, and for non-construction vehicles on or near Site. Comply with requirements of public authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

D. Project Identification and Temporary Signs: Provide Project identification and other signs at locations indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
   1. Provide temporary directional signs for construction personnel and visitors.
   2. Maintain signs so they are legible at all times.

E. Traffic Control: Provide traffic control on the adjacent public right-of-way as needed for execution of the Contractor's work.
   1. Coordinate with Owner's Representative at least 72 hours in advance. Notify Owner's Representative of duration and location of work requiring traffic control.

F. Dust and Fume Control: Prevent dust, dirt, fumes, and odors from entering adjacent buildings.

G. Noise Control: Perform Work in manner to minimize noise, during hours authorized by Owner's Representative.

H. Existing Drains:
   1. Verify that site and roof drains in or near Work area are open and free flowing prior to start of Work.
   2. Lawfully remove construction effluent from Site. Do not allow contaminated water or construction debris to flow into existing drains or sewer systems. Comply with local, state, and federal laws and ordinances regarding water runoff.
   3. Rout or replace clogged drain lines at completion of Work.

I. Temporary Construction Protection:
   1. Provide and secure temporary weathertight protection for in-progress exterior construction, as needed. Prevent moisture from creating or contributing to conditions conducive to deterioration of materials or biological growth.
   2. Protect finished surfaces against damage. Minimize traffic on finished pavement surfaces and do not use for material storage.

**END OF SECTION**

# SECTION 01 60 00

# PRODUCT REQUIREMENTS

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for selection of products for use in Project, including requests for comparable products and general product delivery, storage, and handling requirements.

### 1.2 DEFINITIONS

A. Products: Items obtained for incorporating into Work, whether purchased for Project or taken from previously purchased stock. Includes "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, which is current as of date of Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process to have indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

### 1.3 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with Contract Documents, are undamaged, and, unless otherwise indicated, are new at time of installation.
   1. Select products compatible with other products specified or previously selected.
   2. Provide products complete with accessories, trim, finish, fasteners, and other items needed for complete installation and indicated use and effect.
   3. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   4. Owner reserves right to limit selection to products with warranties in conformance with requirements of Contract Documents.
   5. Where products are accompanied by term "as selected," Architect/Engineer or Owner will make selection.
   6. Descriptive, performance, and reference standard requirements in Specifications establish salient characteristics of products.

B. Product Selection Procedures:
   1. Products:
      a. Where Specifications name single manufacturer and product, select named product. Comparable products or substitutions for Contractor's convenience will not be considered.
      b. Where Specifications include list of names of both manufacturers and products, select one of products listed that complies with requirements. If “or equal” products are permitted, comply with requirements for comparable product requests in Submittals Article or substitutions for convenience requests in Section 01 20 00 for consideration of unnamed products that comply with requirements.
      c. Where Specifications name product, or refer to product indicated on Drawings, and include list of manufacturers, select specified or indicated product or comparable product by one of other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on product named.
      d. Where Specifications specify product or method by reference or performance standards only, select product that meets or exceeds standards.
   2. Manufacturer/Source:
      a. Where Specifications name single manufacturer or source, select product by named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
      b. Where Specifications include list of manufacturers' or source’s names, select product by one of manufacturers or sources listed that complies with requirements. If “or equal” products are permitted, comply with requirements for comparable product requests in Submittals Article or substitutions for convenience requests in Section 01 20 00 for consideration of unnamed manufacturer's or source’s product.

C. Visual Matching Specification: Where Specifications require "match Architect/Engineer's sample" or “match existing”, select product that complies with requirements and matches sample. Architect/Engineer's decision will be final on whether proposed product matches.
   1. If no product available within specified category matches and complies with other specified requirements, comply with requirements for substitutions for cause in Section 01 20 00 for proposal of product.

D. Visual Selection Specification: Where Specifications include phrase "as selected by Architect/Engineer from manufacturer's standard or full range of colors, patterns, and textures" or similar phrase, select product that complies with other specified requirements.
   1. Standard Range: Manufacturer's product line, excluding premium items.
   2. Full Range: Manufacturer's product line, including standard and premium items.
   3. Architect/Engineer will select color, gloss, pattern, density, and texture from manufacturer's indicated product line.

## 1.4 SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of substitute products. Identify product, fabrication, or installation method to be replaced. Include relevant Specification section and Drawing numbers and titles.
   1. Provide the following information. If the following information is not provided, Architect/Engineer may return requests without action, except to record noncompliance with these requirements.

a. Detailed comparison of significant qualities of proposed product with those named in Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
b. Evidence that proposed product provides specified warranty.
c. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
d. Samples, if requested.
e. Statement that proposed product does not require revisions to Contract Documents, that it is consistent with Contract Documents and will produce indicated results, and that it is compatible with other portions of Work.

2. If there is cost difference between specified product and proposed product, submit as substitution rather than comparable product.

B. Architect/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within seven days of receipt of comparable product request. Architect/Engineer will notify Contractor of acceptance or rejection of proposed comparable product within fourteen days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
1. Acceptance or rejection of proposed comparable products shall be at sole discretion of Architect/Engineer, whose decision is final.
2. Use product specified if Architect/Engineer does not issue decision on use of proposed comparable product within time allocated.

## 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery:
1. Schedule delivery to minimize long-term storage at Site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:
1. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
2. Store products that are subject to weather damage under cover in weathertight enclosure above ground, with ventilation adequate to prevent condensation.
3. Protect stored products from damage and stored liquids from freezing.
4. Store products to allow for inspection and measurement of quantity or counting of units.

5. Store materials in manner that will not endanger Project structure, away from edge of Project structure.
6. Provide secure location and enclosure at Site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner's Representative.
7. Move stored products that interfere with operations of Owner or other Contractors.

**PART 2 PRODUCTS Not Used**

**PART 3 EXECUTION Not Used**

**END OF SECTION**

# SECTION 01 70 00

# EXECUTION AND CLOSEOUT REQUIREMENTS

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: General administrative and procedural requirements governing execution of Work, including the following:
   1. Examination of existing conditions.
   2. Preparation.
   3. Removal of existing construction, including salvage and reuse of materials.
   4. Cutting and patching.
   5. Installation of Work.
   6. Protection of installed construction.
   7. Correction of Work.
   8. Progress cleaning.
   9. Project Record Documents.
   10. Substantial completion procedures.
   11. Final completion procedures.
   12. Final cleaning.

B. Cutting and patching includes the following:
   1. Removal and replacement of existing construction necessary to install Work or make several parts fit properly.
   2. Removal and replacement of Work
      a. That is defective;
      b. That does not conform to requirements of Contract Documents;
      c. To provide for installation of ill-timed Work;
      d. To alter Work; or
      e. To allow observation of concealed Work.
   3. Removal of samples of installed Work for testing.

### 1.2 REFERENCES

A. Definitions:
   1. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
   2. Existing to remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.
   3. Patching: Fitting and repair work required to restore construction to original condition after installation of other work.
   4. Remove: Detach items from existing construction and legally dispose of off-site, unless indicated to be removed and salvaged or removed and reinstalled.
   5. Remove and reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

6. Remove and salvage: Detach items from existing construction and deliver to Owner ready for reuse.

## 1.3 SUBMITTALS

A. Submit plan/procedures for protecting stored materials, installed work, building, and Site.

B. Submit, prior to beginning Work, documentation of existing conditions, including finish surfaces, which might be misconstrued as damage caused by Work.

C. Submit identification codes and inventory of materials to be salvaged or reinstalled.

D. Manufacturers' recommendations for cleaning spillage and over-application of products.
   1. Proposed products and methods for cleaning where no manufacturers' recommendations.

E. Punch List: List of items to be completed or corrected.
   1. Include name and identification of each area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside limits of construction. Use CSI Form 14.1A or similar form.

F. Project Record Documents:
   1. Submit two copies of marked-up prints. Include each Drawing, whether or not changes and additional information were recorded. Revise and resubmit if Architect/Engineer determines information recorded is unacceptable or illegible.
   2. Submit two copies of marked-up Specifications, including addenda and contract modifications.
   3. Submit two copies of each marked-up Product Data submittal. Include one copy in Product Maintenance Manual.
   4. Assemble and submit two copies of test and inspection reports, surveys, inspection reports by public authorities having jurisdiction, and other miscellaneous records. Bind or file miscellaneous records and identify each, ready for continued use and reference.

G. Warranties:
   1. Organize warranty documents into orderly sequence based on table of contents of Project Manual.
   2. Provide additional copies of each warranty to include in maintenance manual.

H. Product Maintenance Manual:
   1. Assemble complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated in Work. Include maintenance data required in individual Specification Sections, for each product and system and following:
      a. Manufacturer's address and product information, cross-referenced to Specification Section number and title.
         1) Include project-specific product details, such as color, pattern, texture, and material and chemical composition.
         2) Include re-ordering information for specially manufactured products.
         3) For manufacturers' standard printed data, include only sheets pertinent to product installed. Mark each sheet to identify each product incorporated into Work. If data include more than one item, identify each item using appropriate

references from Specification Sections. Identify data applicable to Work and delete references to information not applicable.

b. Name, address, and telephone number of Installer or supplier.
c. Maintenance and service schedules for preventive and routine maintenance.
d. Maintenance procedures, and maintenance materials and sources.
e. Maintenance record forms.
f. Copies of maintenance service agreements and warranties.

## 1.4 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
   1. Structural Elements: When cutting and patching structural elements, notify Architect/Engineer of locations and details of cutting and await directions from Architect/Engineer before proceeding. Shore, brace, and support structural element, as necessary, during cutting and patching. Do not cut and patch structural elements in manner that could change their load-carrying capacity or load-deflection ratio.
   2. Other Construction Elements: Do not cut and patch other construction elements or components in manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements might include the following:
      a. Water, moisture, or vapor barriers.
      b. Membranes and flashings.
      c. Exterior curtain-wall construction.
      d. Equipment supports.
   3. Visible Elements: Do not cut and patch exposed construction in a manner that results in visible evidence of cutting and patching or in a manner that would, in Architect/Engineer's opinion, reduce building's aesthetic qualities. Remove and replace construction that has been cut and patched in visually unsatisfactory manner.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## 1.5 PROJECT CONDITIONS

A. Notify Architect/Engineer of discrepancies between Drawings and existing conditions before proceeding with Work.

B. Assume responsibility for actual condition of existing construction.

## 1.6 WARRANTY

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

## PART 2 PRODUCTS

### 2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.
   1. Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match adjacent surfaces to fullest extent possible.
      a. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide match acceptable to Architect/Engineer for visual and functional performance of in-place materials.

B. Cleaning: Select cleaning materials, equipment, and methods to avoid scratching, marring, defacing, staining, or discoloring surfaces.
   1. Use cleaning materials and methods recommended by manufacturer of surface to be cleaned.
   2. Use cleaning materials on surfaces recommended by cleaning-material manufacturer.
   3. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## PART 3 EXECUTION

### 3.1 EXAMINATION OF EXISTING CONDITIONS

A. Survey existing conditions and correlate with requirements indicated to determine extent of removal Work required.
   1. Inventory and record condition of items to be removed and salvaged or reinstalled.

B. Document with photographs or videotape, or both, existing conditions of adjoining construction, including finish surfaces, which might be misconstrued as damage caused by demolition or other Work activities; existing conditions that are important to construction or that deviate substantially from Contract Documents; and significant conditions that will be concealed by Work.

C. Examination and Acceptance of Conditions: Before proceeding with each component of Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
   1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   2. Provide a written description of conditions detrimental to performance of the Work, including substrates and unacceptable installation tolerances, and recommend corrections.
   3. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

D. When unanticipated structural, electrical, or mechanical elements that conflict with intended function or design are encountered, investigate and measure nature and extent of conflict. Promptly submit written report to Architect/Engineer.

E. Survey existing conditions as Work progresses to detect hazards resulting from construction.

F. Provide access to Work areas and perform localized demolition as necessary for inspection of concealed underlying conditions by Architect/Engineer and Owner's Representative.

## 3.2 PREPARATION

A. Field Measurements: Take survey and field measurements as required to fit Work properly and provide grades and slopes indicated. Recheck measurements before installing each product. Where portions of Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of Contract Documents caused by differing field conditions outside of the control of the Contractor, submit a request for information to Architect/Engineer. Include a detailed description of the problem encountered, with recommendations for changing the Contract Documents.

## 3.3 PARTIAL REMOVAL

A. Demolish and remove existing construction and installations only as necessary and required for proper installation of Work indicated on the Drawings and Specifications.
   1. Conduct removals carefully to avoid damaging existing construction and installations that will remain. Protect construction that will remain against damage and soiling. When permitted by Architect/Engineer, items may be removed to a suitable, protected storage location during removal Work and cleaned and reinstalled in original locations after removal operations are complete.
      a. Neatly cut openings and holes plumb, square, and true to dimensions required.
      b. Cut or drill from exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
      c. Use cutting methods least likely to damage construction to remain.
      d. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces.
      e. Temporarily cover openings to remain.
   2. Provide and maintain shoring, bracing, and structural supports, as required to preserve stability and prevent movement, settlement, or collapse of construction or finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   3. Remedy damage to existing construction and installations caused by Contractor operations.

B. Items to be Salvaged or Reinstalled.
   1. Carefully remove from structure, clean, and mark with identifying code.
   2. Store in secure area and protect from damage.
   3. Replace damaged items to be reinstalled with new items to match undamaged originals.
   4. Items to be salvaged.
      a. Pack or crate, and label contents of containers.
      b. Store in secure area until delivery to Owner.
      c. Transport to Owner's on-site storage area.
      d. Protect from damage during transport and storage.

## 3.4 CUTTING AND PATCHING

A. General: Cut in-place construction to provide for installation of other components or performance of other construction and proceed with patching after construction operations requiring cutting are complete, as required to restore surfaces to their original condition.
   1. Employ skilled workers to perform cutting and patching.
   2. Proceed with cutting and patching at earliest feasible time and complete without delay.
   3. Provide temporary support of work to be cut.
   4. Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Finished Surfaces: Cut or drill from exposed or finished side into concealed surfaces.
   3. Concrete and Masonry: Cut using cutting machine, such as abrasive saw or diamond-core drill.
   4. Provide substrate suitable for installation of Work and patching.
   5. Notify Architect/Engineer and Owner’s Representative immediately of damage to concealed elements, such as electrical conduits.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections.
   1. Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
   2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in manner that will minimize evidence of patching and refinishing. Provide even surface of uniform finish, color, texture, and appearance.
   3. Where patching occurs in painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over patch, and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
   4. Patch waterproofing components in manner that restores weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

## 3.5 INSTALLATION OF WORK

A. General: Locate Work and components of Work accurately, in correct alignment, elevation, slopes and grades. Make vertical work plumb and make horizontal work level.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Attachment: Provide attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where the size and type of attachments are not indicated, verify size and type required for load conditions.
   1. Allow for cyclical movement, including thermal expansion and contraction.
   2. Coordinate the installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.

G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for best visual effect.

H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous. Provide adequate ventilation during use of volatile or noxious materials.

## 3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at the time of Substantial Completion.

B. Comply with the manufacturer's written instructions for temperature and relative humidity.

## 3.7 CORRECTION OF WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their condition prior to construction.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

## 3.8 PROGRESS CLEANING

A. General: Clean Site and Work areas daily. Enforce requirements strictly. Separate materials per disposal requirements and dispose of legally.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of Work, broom-clean or vacuum entire work area or dampen area, as appropriate.
3. Provide containers for waste materials, debris, and rubbish.
4. Do not hold waste materials, debris, or rubbish more than seven days during normal weather or three days if temperature is expected to rise above 80 degrees Fahrenheit.
5. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
6. Collect hazardous and unsanitary waste materials and debris in separate containers from other waste. Use containers intended for holding waste materials of type to be stored and mark containers appropriately. Remove from Site daily and dispose of legally.
7. Do not bury or burn waste materials, debris, or rubbish on-site. Do not discharge or wash waste materials, debris, or rubbish down sewers or into waterways.

B. Installed Work: Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

C. Concealed Spaces: Remove debris from concealed spaces before enclosing space.

D. Handle waste materials, debris, and rubbish in a controlled manner with as few handlings as possible. Do not throw from heights.

E. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

F. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period.

## 3.9 PROJECT RECORD DOCUMENTS

A. During Work, maintain one set of prints of Drawings and reviewed shop drawings, Specifications, and product data for recording deviations of as-built construction from design information. Include addenda and Contract modifications.
   1. Accurately document and record changes and modifications as soon as possible after they occur, in understandable manner.
   2. Record and verify information related to concealed elements, before enclosing concealed installations.
   3. Include:
      a. Dimensional changes.
      b. Revisions to Drawing details and details not on Drawings.
      c. Changes made by Change Order or Architect/Engineer's written orders. Note Change Order numbers or similar identification.
      d. Field records for variable and concealed conditions.
      e. Record information on Work that is shown only schematically or omitted from Drawings.

f. Actual products and materials used.

4. Mark record documents with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of Work at same location.

B. Store Record Documents and samples apart from Contract Documents used for construction. Maintain Record Documents in good order and in clean, dry, legible condition, protected from deterioration and loss.

C. Provide access to Record Documents for Architect/Engineer's reference during normal working hours. Immediately before inspection for Substantial Completion, review marked-up Record Drawings with Architect/Engineer.

## 3.10 SUBSTANTIAL COMPLETION

A. Before requesting inspection for determining date of Substantial Completion, complete following. List items below that are incomplete with request.
   1. Prepare punch list, value of items on list, and reasons why Work is not complete.
   2. Deliver salvaged material, surplus materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   4. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Request inspection for Substantial Completion. On receipt of request, Architect/Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect/Engineer will prepare Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect/Engineer, that must be completed or corrected before certificate will be issued.
   1. Request re-inspection when Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form basis of requirements for final completion.

## 3.11 FINAL COMPLETION

A. Before requesting final inspection for determining final completion, complete following:
   1. Complete final cleaning requirements, including touchup painting.
   2. Submit final Application for Payment.
   3. Submit copy of Architect/Engineer's Substantial Completion inspection punch list, endorsed and dated by Architect/Engineer, with statement that items on punch list have been completed or otherwise acceptably resolved.
   4. Submit executed warranties, maintenance service agreements, certifications of inspection and occupancy, paid utility bills, and similar documents.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, and similar final record information.
   6. Instruct Owner's personnel in maintenance of products installed.

B. Request final inspection. On receipt of request, Architect/Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect/Engineer will prepare final

Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request re-inspection when Work identified in previous inspections as incomplete is completed or corrected.

## 3.12 FINAL CLEANING

A. General: Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Return adjacent surfaces and areas to condition existing before Work began.

B. In areas disturbed by construction activities, complete following cleaning operations before requesting inspection for verification of Final Completion for entire Project. Comply with manufacturer's written instructions. Employ experienced workers or professional cleaners.
   1. Remove tools, construction equipment, machinery, and surplus material from Project site.
   2. Clean Project site and adjacent yard and grounds, including landscaped areas, of rubbish, waste materials, litter, and other foreign substances.
      a. Broom clean paved areas. Remove petrochemical spills, stains, and other foreign deposits.
   3. Clean exposed hard-surfaced finishes to remove dirt and debris deposited during construction. Avoid disturbing natural weathering of exterior surfaces.
      a. Touchup and otherwise repair and restore marred exposed finishes and surfaces.
         1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
   4. Remove labels that are not permanent.
   5. Remove debris from limited access spaces, including trench drains and similar spaces.
   6. Leave work area clean and ready for occupancy.

**END OF SECTION**

# SECTION 04 01 20

# MASONRY CLEANING

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Cleaning of limestone masonry.
   1. Purpose of cleaning is to remove as much atmospheric deposits, soil, staining, grease, oil, and other contaminants as possible without damaging substrate.

B. Related Sections:
   1. Section 04 01 27 - Repointing with Cement-Lime Mortar
   2. Section 07 92 00 – Joint Sealants

### 1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
   1. With Owner's Representative.
   2. With other trades:
      a. To ensure that work done by other trades is complete and ready for cleaning Work.
      b. To avoid or minimize work in immediate vicinity of cleaning Work in progress.
      c. To ensure that subsequent work will not adversely affect cleaned surfaces.

B. Notify Architect/Engineer of conflicts between Specifications and cleaning material manufacturer's recommendations. Perform Work according to Specifications unless Architect/Engineer authorizes changes in writing.

C. Sequencing: Perform cleaning and repair Work in the following sequence:
   1. Remove plant growth (vines, etc.).
   2. Prior to cleaning, inspect for open mortar or sealant joints and other potential sources of water infiltration, and perform repairs and repointing as necessary to prevent intrusion of water and other cleaning materials into wall.
   3. Remove coatings, clean walls, and apply cleaner as specified.
   4. Perform remaining repairs as specified.

### 1.3 SUBMITTALS

A. Product Data: List of products proposed for use, with Manufacturer's product literature and application instructions.
   1. Include Safety Data Sheets (SDS) for information only; safety restrictions are sole responsibility of Contractor.

B. Samples for Verification: Before performing mockups, samples of cleaning chemicals.

C. Cleaning System Descriptions: Modify specified requirements based on approved mockups and submit complete written descriptions of cleaning systems, including materials and procedures.

D. Protection Plan: Written plan describing protection measures proposed for use on Project.

E. Containment, Collection, and Disposal Plan: Written plan describing methods for containing, collecting, and disposing of runoff during cleaning operations.

F. Cleaning Subcontractor Qualifications: Evidence that Subcontractor's *existing company* has minimum five years of continuous experience in use of specified cleaning system; list of at least five representative, successfully-completed projects of similar scope and size, including:
   1. Project name.
   2. Owner's name.
   3. Owner's Representative name, address, and telephone number.
   4. Description of work.
   5. Cleaning system, including materials and procedures, used.
   6. Project supervisor.
   7. Total cost of cleaning work and total cost of project.
   8. Completion date.

## 1.4 QUALITY ASSURANCE

A. Cleaning Subcontractor Qualifications: Experienced firm that has successfully completed cleaning work similar in material, design, and extent to that indicated for the Project. Must have successful use of specified cleaning system in local area for minimum of five years.
   1. Employ trained foreman with a minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during the Work. Do not change foreman during the course of the Project except for reasons beyond the control of Subcontractor; inform Architect/Engineer in advance of any changes.
   2. Employ laborers with training and at least three years of experience with the specified cleaning system.

B. Trial Samples
   1. Trial samples: Prepare trial samples of cleaning as follows to demonstrate effectiveness of materials and execution. Prepare trial samples on existing walls under same weather conditions to be expected during remainder of the Work.
   2. Execute at least one trial sample using the materials and techniques for each type of specified cleaning system.
   3. Area(s) where trial samples are to be applied shall be selected by the Architect in consulation with the Contractor, and shall be approved by the Owner.
   4. Area of each trial sample shall be 4 square feet in area representing each type of surface condition. Document location and materials of trial samples.
   5. Additional trial samples shall be made until an acceptable result is achieved. Minor adjustments to methods of application, dilutions and dwell times of products shall be made in accordance with limits defined in manufacturer's recommendations.
   6. Prior to proceeding with samples, test cleaners and methods for adverse reactions on adjacent materials or other materials that may be affected by the cleaning process, if those materials are to remain unprotected. Test areas of adjacent materials shall be small and in an unobtrusive location. Protect against now deleterious effects of cleaners and methods during testing.
   7. Allow a waiting period of not less than 14 days after completion of sample cleaning ot permit a study of same area for effectiveness of cleaner and for negative reactions.

8. Based on results of trial samples, Owner and Architect will select one cleaning system for use in the project. Contractor will proceed to prepare a mockup of the selected system.

C. Mockup: Apply selected cleaning system to demonstrate procedures and effectiveness.
   1. Apply selected cleaning system at one mockup location selected by Architect to deomonstrate procedures and effectiveness.
   2. Mockup to be minimum 12 square feet unless noted otherwise.
   3. Prepare mockup on existing walls, at locations designated by Architect and in presence of Architect, under same weather conditions expected during Work. Provide access to mockup locations.
   4. Test adjacent materials and other materials that may be affected by cleaning system, to determine if materials need to be protected. Test areas shall be small and in unobtrusive locations.
   5. Include protection systems and devices proposed for use to counteract adverse effects of cleaning system, in mockup.
   6. Allow period of at least 14 days after mockup preparation for evaluation of effectiveness of cleaning system and for negative reactions.
   7. If Owner's Representative and Architect determine mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved. Modifications may include minor adjustments to application methods, dilutions, and dwell times of products within limits recommended by manufacturers.
   8. Approved mockup shall be maintained in an undisturbed condition throughout the Project as a basis for acceptance of completed work and may become part of completed Work if undisturbed at time of Substantial Completion.
   9. Record locations and materials and methods used for mockups on drawings and in field reports for reference as Work proceeds.
   10. Do not order materials or proceed with Work until mockups have been approved by Architect and Owner's Representative.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer's written instructions.

B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which have been exposed to moisture to their detriment.

C. Store and handle materials in accordance with manufacturer's written instructions, safety requirements, and all applicable laws and regulations. Remove from Site, and replace at no cost to Owner, any materials that are damaged or otherwise negatively affected by not being stored or handled in accordance with manufacturer's written instructions.

D. Store materials in original, undamaged containers and packaging in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition. Manufacturer's standard packaging and covering alone is ***not*** considered adequate weather protection.

E. Locate materials in a secure location approved by Owner's Representative

F. Conspicuously mark damaged or opened containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.

G. Limit stored materials on structures so as to preclude damage to materials and structures.

H. Maintain copies of all applicable Safety Data Sheets (SDS) with materials in storage area, such that they are available for ready reference on Site.

## 1.6 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of Work. Promptly notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer how to proceed.

A. Comply with limitations and restrictions for Site use, accessibility, and work hours imposed by codes, ordinances, rules, regulations, orders, laws, and other legal requirements of public authorities having jurisdiction, and by Owner.
1. Comply with city, state, water department, and Federal regulations covering protection and waste water disposal.

B. Environmental Limitations:
1. Perform cleaning Work when air temperature is 40 degrees Fahrenheit or above and is predicted to remain so for at least seven days after completion of cleaning.
2. Do not perform chemical cleaning when air temperature is greater than 90 degrees Fahrenheit.
3. Do not perform cleaning Work when winds are sufficiently strong to spread cleaning materials to unprotected areas.

C. Maintain adequate ventilation during preparation and application of cleaning materials.

## 1.7 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the performance of the Work.
1. Notify Architect/Engineer of conditions that may interfere with or preclude proper execution of the Work or jeopardize the performance of the Work, prior to proceeding with the Work.

# PART 2 PRODUCTS

## 2.1 CLEANING MATERIALS

A. Water for Prewetting, Cleaning, and Rinsing:
1. Clean, potable water, with iron content of less than two parts per million by weight.
2. Provide chemical test results to confirm local water is suitable for use on cleaning Work.

3. Notify Architect/Engineer and Owner's Representative of local water conditions that may make it unsuitable for cleaning, including presence of additives, water softeners, or other agents.

B. Detergents, Surfactants, and Chelating Agents:
   1. Enviro Klean 2010 All Surface Cleaner by Prosoco, Inc.; Mix ten percent cleaner with water by volume.
   2. Safe n' Easy All Green Masonry Cleaner, by Dumond Chemicals, Inc.

C. Two-Step Chemical Cleaning System:
   1. Prewash: Sure Klean 766 Limestone & Masonry Prewash by Prosoco, Inc.
   2. Afterwash: Sure Klean Limestone & Masonry Afterwash by Prosoco, Inc.; Mix one part afterwash with two parts water by volume.

D. Biocide:
   1. D/2 Biological Solution by D/2 Biological Solutions, Inc.
   2. Enviro Klean ReVive by Prosoco, Inc., Mix one part cleaner with five parts water by volume.

E. Auxiliary Materials:
   1. pH Indicator: Litmus paper or other indicator capable of identifying neutral solutions.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Examine substrates and conditions with Cleaning Subcontractor and representatives of cleaning materials manufacturers and cleaning equipment suppliers, as applicable, for compliance with requirements and other conditions affecting performance of cleaning Work.
   1. Ensure that Work done by other trades is complete and ready for cleaning Work.
   2. Verify that areas and conditions under which cleaning Work is to be performed permit proper and timely completion of Work.
   3. Notify Architect/Engineer in writing of conditions which may adversely affect cleaning Work and recommend corrections.
   4. Do not proceed with cleaning Work until adverse conditions have been reviewed by Architect/Engineer and, if necessary, corrections have been made.
   5. Commencing cleaning Work constitutes acceptance of Work surfaces and conditions.

### 3.2 PROTECTION

A. Cleaning materials may include caustic or acidic chemicals, and may be subject to dispersion by wind and other weather features.

B. Protect the following elements:
   1. Surfaces being cleaned from cleaning materials not designated for use on those surfaces.
   2. Decorative features, such as metalwork, entrances, planters, signs, awnings, canopies, and standards.
   3. Paving and sidewalks from staining or damage from cleaning operations.
   4. Windows, doors, joints, and other openings from infiltration of water or cleaning materials.
   5. Roofing system components

C. Comply with cleaning-material manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

D. Cover adjacent surfaces with materials that are proven to resist cleaners being used unless cleaners will not damage adjacent surfaces.

E. Take precautions to ensure safety of people (including building users, passers-by, and workers) and protection of property (including adjacent building elements, landscaping, and motor vehicles).

F. Erect temporary protective canopies and walls, as necessary, at walkways and at points of pedestrian and vehicular access that must remain in service during Work.

G. Take precautions to protect against air-borne materials and run-off.

H. Protect paving, sidewalk, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

I. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

J. Limit access to Work areas.

K. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

L. Protect from damage, all elements of completed work and original construction to remain.

## 3.3 EQUIPMENT

A. Spray Equipment: With pressure gages at compressor and spray nozzle, and volume meter at spray nozzle; ability to adjust pressure and volume at nozzle.
   1. For chemical cleaner, use low-pressure tank or pump recommended by chemical cleaner manufacturer, equipped with cone-shaped spray nozzle.

## 3.4 CLEANING, GENERAL

A. Perform cleaning Work in compliance with applicable codes and regulations that govern Work, including city, state, water department, OSHA, and Federal regulations, and with requirements of material manufacturers.

B. Use only cleaning products and methods indicated for wall material and location, and approved by mockups.
   1. Do not use wire brushes or scrapers.

C. Perform cleaning Work in a systematic manner, proceeding from the top of the wall to the bottom in each access area and from one end of the elevation to the other.

D. Perform cleaning Work to achieve uniform coverage of surfaces, including corners, moldings, and interstices, and to produce uniform effect without streaking or damaging wall surface.

E. Keep wall wet below area being cleaned to prevent streaking from runoff.

F. Perform cleaning Work in strict accordance with approved mockup materials and procedures. Propose modifications to materials or methods as necessary to meet or exceed level of cleaning in mockups. Perform mockups of proposed modifications; do not proceed with modifications until approved in writing by Owner's Representative and Architect/Engineer.

G. Prewetting and Rinsing Procedures:
   1. For prewetting and rinsing:
      a. Prewet and rinse surfaces with warm water at minimum flow rate of 4 gallons per minute. Use hot water, if approved, to improve effectiveness of cleaning and rinsing. Do not use higher pressures or lower flow rates unless approved by mock-ups.
         1) Prewet surfaces at maximum pressure of 100 pounds per square inch.
         2) Rinse surfaces at maximum pressure of 400 pounds per square inch.
      b. Use stainless steel nozzle with 45-degree fan spray, held at least 12 inches from surface.
      c. Apply water in a horizontal sweeping motion, overlapping previous strokes vertically to produce uniform coverage.
   2. On hot days, in direct sunlight, or as necessary, prewet multiple times so cleaning solution is applied to wet surface.
   3. Rinse off cleaning solution and soil residue, moving upward from bottom to top of surface at each access location.
      a. Continue rinsing until pH of surface has returned to neutral, 6.5 to 7.5.
      b. Periodically test pH of rinse water running off surface with pH paper.
      c. Repeat application [of neutralizing afterwash if specified]and rinsing as necessary until neutral pH is measured.
      d. Measure pH of surface 48 hours after cleaning has been completed, when wall is dry. If pH is not neutral, rinse surface until neutral pH is achieved.

H. Chemical Cleaner Application Methods: Apply chemical cleaner to surfaces in conformance with chemical cleaner manufacturer's written instructions and approved mockups.
   1. Use brush or spray application methods, at Contractor's option. Use brushes that are resistant to chemical cleaners being used.
   2. Do not spray apply at pressures exceeding 50 pounds per square inch, or less as determined by mockups.
   3. Adjust pressure and volume of spray to ensure that cleaning methods do not damage wall material.
   4. Do not allow chemical cleaners to remain on surface for periods longer than those recommended by chemical-cleaner manufacturer or specified.
   5. Control wind drift of chemical cleaners.

I. Collect and legally dispose of cleaning materials and debris.
   1. Neutralize alkaline and acid wastes for disposal off Owner's property.
   2. Dispose of runoff from cleaning operations by legal means, in manner that prevents soil erosion, undermining of pavement and foundations, damage to landscaping, and water penetration into building interior.

## 3.5 CLEANING MASONRY

A. Removal of Plant Growth: Carefully and completely remove vines, moss, shrubs, and plant growth from wall surfaces.
   1. Cut at roots and allow to dry for as long as possible before removal.
   2. Remove loose soil and debris from open joints.

B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used, including sealant, asphalt, and tar.
   1. Carefully remove heavy accumulations of material from wall surface with wood scraper. Do not scratch or chip wall surface.

C. Cleaning with Detergents, Surfactants, and Chelating Agents:
   1. Prewet surface.
   2. Liberally apply cleaning solution to surface with soft, nylon-bristle brush, being careful to completely cover surface, including crevices.
   3. Allow to dwell for approximately 15 minutes. Keep surface moist by misting as necessary during dwell time.
   4. Immediately prior to rinsing, gently scrub surface with brush.
   5. Rinse thoroughly until pH returns to neutral.
   6. Test pH of surface to confirm surface has returned to neutral.
   7. Repeat cleaning sequence as necessary until cleaning standard is achieved.
   8. Within one hour after first rinse, rinse second time with water at 100 psi pressure or less for at least two minutes to remove cleaner residue.

D. Cleaning with Two-Step Chemical Cleaning System:
   1. Prewet surface.
   2. Liberally apply Prewash with nylon-bristle brush or very-low-pressure spray equipment, being careful to completely cover surface, including crevices.
   3. Allow to dwell for 30 minutes or as determined by trial samples. Keep surface moist by misting as necessary during dwell time.
   4. Immediately prior to rinsing, reapply Prewash and gently scrub surface with brush.
   5. Rinse thoroughly.
   6. Immediately apply Afterwash solution liberally to wet surface with dense, natural-bristle brush, being careful to completely cover surface, including crevices.
   7. Allow to dwell for five minutes. Keep surface moist by misting as necessary during dwell time.
   8. Immediately prior to rinsing, reapply Afterwash solution and gently scrub surface with brush.
   9. Rinse thoroughly to return pH to neutral.
   10. Test pH of surface to confirm surface has returned to neutral.
   11. Repeat cleaning sequence as necessary until cleaning standard is achieved.

E. Cleaning with Biocide:
   1. Dry-brush with soft, nylon-bristle brush to remove dense biological growth.
   2. Prewet surface thoroughly.
   3. Liberally apply biocide with soft, nylon-bristle brush, being careful to completely cover surface, including crevices.

4. Allow to dwell for ten minutes or as determined by trial samples. Keep surface moist by misting as necessary during dwell time.
5. Immediately prior to rinsing, gently scrub surface brush.
6. Rinse thoroughly to return pH to neutral.
7. Test pH of surface to confirm surface has returned to neutral.

## 3.6 FIELD QUALITY CONTROL

A. Architect/Engineer will monitor progress and quality of cleaning Work, possibly including:
   1. Observe completed Work and compare to approved mockups.
   2. Observe wall material with field microscope for damage.
   3. Test pH of runoff and wall surfaces.
   4. Test samples of cleaning products and mixed solutions for conformance with Specifications and approved mockups.

B. Contactor Responsibilities:
   1. Test pH of runoff and wall surfaces to verify neutral pH.
   2. Provide access to Work for Architect/Engineer, Owner's Representative, and other consultants hired by Owner.
   3. Notify Architect/Engineer at least 48 hours in advance of when lift devices or scaffolding will be relocated. Do not relocate lift devices or scaffolding until Architect/Engineer has observed completed Work.
   4. Upon request, provide samples of cleaning products and mixed solutions to Architect/Engineer.

C. Failure to use cleaning products and mix solutions as specified and approved are grounds for immediate termination of Contract Agreement.

D. Remedy areas that do not satisfy requirements at no additional cost to Owner. Modify cleaning procedures as required and approved by Architect/Engineer.

## 3.7 SITE CLEANING

A. At the end of each workday:
   1. At the end of each workday, broom-clean Site and Work areas and place all items to be discarded in appropriate containers.
   2. Thoroughly rinse sidewalks to remove chemicals, dirt, pollutants, and other materials washed off building.

B. After completing cleaning Work:
   1. Carefully remove protection materials, including tape, adhesive marks, and residue.
   2. Clean spillage and soiling from adjacent surfaces using cleaning agents and procedures recommended by manufacturer of affected surface. Exercise care to avoid scratching or damage to surfaces.
   3. Return building surfaces, landscaping, and grounds to condition prior to cleaning Work, including painted and glass surfaces, to satisfaction of Architect/Engineer at no additional cost to Owner.
   4. Repair at no cost to Owner all items damaged during the Work.
   5. Remove debris and surplus materials from Site.

C. Waste Management:
   1. Collect surplus cleaning materials that cannot be reused and deliver to recycling or disposal facility.
   2. Treat materials that cannot be reused as hazardous waste and dispose of per manufacturer's instructions

**END OF SECTION**

# SECTION 04 01 27

# REPOINTING WITH CEMENT-LIME MORTAR

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Repointing brick masonry at locations designated on Drawings; replacement of isolated brick units.

B. Products installed but not supplied under this Section
   1. Masonry mortar: Section 04 05 13.

C. Related Sections:
   1. Section 07 92 00 – Joint Sealants.

### 1.2 REFERENCES

A. The Masonry Society (TMS): TMS 602/ACI 530.1/ASCE 6

B. National Park Service (NPS) Preservation Brief #2: Repointing Mortar Joints in Historic Masonry Buildings

C. American Society of Testing and Materials (ASTM) E2260: Standard Guide for Repointing (Tuckpointing) Historic Masonry

### 1.3 DEFINITIONS

A. Butter joints: Joints between masonry units which are less than 1/8 inch wide.

B. Wide joints: Joints between masonry units that are greater than 1/2 inch wide.

C. Variable joints: Joints between masonry units that vary by more than 100 percent

D. Joint profile: Finished profile of joint following repointing or original installation.

E. Existing mortar: Mortar currently in joint, including original setting mortar and pointing mortar, and subsequent repair mortar.

F. Half-moon: Concave configuration of mortar resulting from removal of mortar by grinding only middle portion of joint.

G. Rake out mortar joint: Removal of hardened mortar from joint.

H. Repointing: Process of raking out mortar joint to specified depth and placing fresh mortar; also called tuckpointing.

I. Deep repointing: Repointing that exceeds 2.5 times the joint width; typically exceeds 1.5 inches and up to half the depth of the masonry unit.

J. Thumbprint hard: Mortar that has reached initial set. Time required to achieve initial set varies based on masonry characteristics, weather conditions, and mortar composition.

K. Low-pressure water spray: 100 to 400 pounds per square inch; 4 to 6 gallons per minute.

L. Very low pressure water spray: less than 100 pounds per square inch.

## 1.4 ADMINISTRATIVE REQUIREMENTS

A. Scheduling:
   1. Order materials at earliest possible date, to avoid delaying completion of Work.
   2. Order sand for repointing mortar immediately after approval of mockups. Take delivery of and store at Site a sufficient quantity of sand to complete Project.

## 1.5 SUBMITTALS

A. Repointing Subcontractor Qualifications: Evidence that Subcontractor's existing company has minimum ten years of continuous experience with masonry restoration work with cement-lime mortar; list of at least five representative, successfully-completed projects of similar scope and size, including:
   1. Project name.
   2. Owner's name.
   3. Owner's Representative name, address, and telephone number.
   4. Description of repointing work.
   5. Project supervisor.
   6. Total cost of repointing work and total cost of project.
   7. Completion date.

## 1.6 QUALITY ASSURANCE

A. Repointing Subcontractor Qualifications: Experienced firm that has successfully completed repointing Work similar in material, design, and extent to that indicated for the Project. Must have successful construction with specified materials in project-based climate zone in use for minimum of five years.
   1. Employ foreman with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during the Work. Do not change foremen during the course of the Project except for reasons beyond the control of Subcontractor; inform Architect in advance of any changes.
   2. Employ masons with minimum two years of experience in placement of repointing mortar. Fully supervise apprentices with experienced masons.

B. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

C. Mockup: Rake out joints in wall area approximately 12 inches high by 2 feet wide and repoint joints in half of area, to demonstrate surface preparation, execution quality, and aesthetic effect while observed by Architect.
   1. Include cleaning mortar from masonry units adjacent to joints.
   2. Allow mockups to cure fourteen days minimum prior to inspection by Architect.

3. If Architect determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved.
4. Approved mockups will be standard for judging completed Work.
5. Approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.

## 1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer's written instructions.

B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which have been exposed to moisture to their detriment.

C. Store and handle materials in accordance with manufacturer's written instructions, safety requirements, and all applicable laws and regulations. Remove from Site, and replace at no cost to Owner, any materials that are damaged or otherwise negatively affected by not being stored or handled in accordance with manufacturer's written instructions.

D. Store materials in original, undamaged containers and packaging in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition.

E. Locate materials in a secure location approved by Owner's Representative.

F. Conspicuously mark damaged containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.

G. Limit stored materials to preclude damage to materials and structures.

H. Maintain copies of all applicable Safety Data Sheets (SDS) with materials in storage area, such that they are available for ready reference on Site.

## 1.8 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of repointing Work. Notify Owner and Architect of conditions found to be different than those indicated in the Contract Documents. Owner will review situation and inform Contractor of how to proceed.

B. Limitations:
   1. Place mortar in joints only when substrate and ambient temperatures are above 40 degrees Fahrenheit and predicted to remain so for at least seven days after completion of Work, unless procedures and precautions approved by Architect are used in response to lower temperatures. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
   2. Place mortar in joints only when substrate and ambient temperatures are at or below 90 degrees Fahrenheit and predicted to remain so for at least seven days after completion

of Work, unless procedures and precautions approved by Architect are used in response to higher temperatures. Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

C. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg Fahrenheit and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

## 1.9 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with or preclude the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
   1. Notify Architect of conditions that may interfere with proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

# PART 2 PRODUCTS

## 2.1 MATERIALS

A. Mortar: Type N; Section 04 05 13.

## 2.2 CLEANING MATERIALS

A. Chemical cleaner. Acetic acid based cleaner. Available products:
   1. Limestone and Masonry Afterwash as manufactured by Prosoco, Inc. of Kansas City, Kansas
   2. Green Clean 250 as manufactured by Diedrich Technologies of Wisconsin
   3. Do not use products containing hydrochloric (muriatic) acid, hydrofluoric acid, or ammonium bifluoride.

B. Clean, potable water.

C. Soft, natural bristle brush or roller.
   1. For acidic cleaners use nylon bristle brushes.
   2. For neutral or alkaline cleaners, use natural bristle brushes.

## 2.3 BRICK

A. For localized brick unit replacement at attic, provide new or salvaged common brick as follows:
   1. ASTM C216, Grade SW, Type FBS.
      a. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 5000 psi.
      b. Initial Rate of Absorption: Less than 25 g/30 sq. in. per minute and greater than 5 grams/30 sq. in. per minute when tested per ASTM C 67.
      c. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
      d. Size: Match size of existing installed units.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements and other conditions affecting installation or performance of repointing Work.
   1. Ensure that work done by other trades is complete and ready for repointing Work.
   2. Verify that areas and conditions under which repointing Work is to be performed permit proper and timely completion of Work.
   3. Notify Architect in writing of conditions which may adversely affect installation or performance of repointing Work and recommend corrections.
   4. Do not proceed with repointing Work until adverse conditions have been corrected and reviewed by Architect.
   5. Commencing repointing Work constitutes acceptance of Work surfaces and conditions.

### 3.2 PROTECTION

A. Prevent mortar from staining face of surrounding masonry and other surfaces.
   1. Cover sills, ledges, and projections to protect from mortar droppings. Do not extend coverings into mortar joints.
   2. Keep wall area wet below rebuilding and repointing Work to discourage mortar from adhering.

B. Remove gutters and downspouts adjacent to and in Work area and store. Reinstall when Work is complete. Provide temporary rain drainage to direct water away from building.

C. Cleaning materials may include chemicals and may be subject to dispersion by wind and other weather features.

D. Protect the following elements in accordance with cleaning-material manufacturer's written instructions:
   1. Surfaces from cleaning chemicals.
   2. Paving and sidewalks from staining or damage.
   3. Windows, doors, joints, and other openings.
   4. Roofing system components.

E. Take precautions to ensure safety of people (including building users, passers-by, and workers).

F. Take precautions to protect against air-borne materials and run-off.

G. Protect paving, sidewalk, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

H. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

I. Limit access to Work areas.

J. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

K. Protect from damage, all elements of completed work and original construction to remain.

## 3.3 REPOINTING MORTAR JOINTS

A. Remove mortar from joints and repoint joints in areas indicated on Drawings.
   1. Do not rake out and repoint joints where not required.

B. Remove existing mortar from joints as demonstrated in approved mockup:
   1. Remove mortar from joints to depth of at least 3/4 inch or 2-1/2 times the minimum joint width, whichever is greater, from face of unit, to expose sound, un-weathered mortar. Do not remove mortar more than 2 inches from face of units.
   2. Remove mortar to provide reveals with square backs and to expose clean masonry surfaces. Do not leave half-moons.
   3. Demonstrate ability of operators to use tools without damaging masonry.

C. Remove sealant from joints and from the edges of adjacent masonry units as demonstrated in approved mockup. Do not damage or alter the surface of the existing masonry.

D. Do not spall edges of masonry units or widen joints. Replace damaged masonry units as directed by Architect.

E. Brush, vacuum, or flush joints with water to remove dirt and loose debris.

F. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose units, rotted wood, rusted metal, and other deteriorated items.

G. When there is the potential for inclement weather within the subsequent 24 hours, protect ground-out areas that have not yet been fully repointed when Work is not in progress.
   1. Extend cover 24 inches minimum beyond ground-out area.
   2. Hold cover securely in place.

H. Masonry units adjacent to repair areas that are damaged during Work shall be removed and replaced at Contractor's expense and to acceptance of Architect.

I. Repoint joints:
   1. Remove loose mortar and dust from prepared joints by approved methods as demonstrated in approved mockup. Rinse joint surfaces with very low pressure water spray to remove residual dust and mortar particles.
      a. Use dust collecting grinders or other means of capturing dust as dictated by local jurisdictions.
   2. Prewet joints such that joints are damp but free of standing water at time of repointing.
   3. Place mortar in areas with greater removal depths than surrounding areas, until uniform depth is achieved.
      a. Fill voids up to 3/4 inch from the surface of the masonry.
      b. Fully compact the mortar fill and allow to become thumbprint hard before applying the outer layers.
   4. After deeper removal areas have been filled, place mortar in joints.

a. Place in layers not greater than 1/4 inch.
b. Fully compact each layer and allow to become thumbprint hard before applying next layer.
c. Where existing masonry has worn or rounded edges, slightly recess finished mortar surface from face of masonry to avoid wider joints.
d. Take care not to spread mortar onto exposed masonry surfaces or to featheredge mortar.

5. Mix and place mortar in accordance with Section 04 05 13.
6. When mortar is thumbprint hard, tool joints as approved in repointing mockup. Remove excess mortar from edges of joints by brushing.

J. Cure mortar by maintaining in damp condition for at least 72 hours, including weekends and holidays.
1. Acceptable curing methods include covering with wet burlap and plastic sheeting; periodic hand misting; or periodic mist spraying using system of pipes, mist heads, and timers.
2. Adjust curing method to ensure that repointing mortar is damp throughout its depth without eroding surface mortar.
3. Allow wall to thoroughly dry prior to re-wetting.
4. Keep mortar from drying out too quickly or from becoming too wet. Protect from direct sun and high winds for 72 hours after installation and from driving rain for 24 hours after installation.
5. Maintain air movement and air circulation, particularly when using plastic.

## 3.4 BRICK UNIT REMOVAL AND REPLACEMENT

A. At locations indicated on the Drawings or designated by the Architect, remove bricks that are cracked, spalled, severely effloresced, displaced, or deteriorated.

B. Carefully demolish and remove entire units and mortar from joint to joint, without damaging the surrounding masonry, in a manner that permits replacement with full-size units. Remove mortar, loose particles, and soil from bricks and masonry surrounding removal area by cleaning with hand chisels, brushes, and water.

C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, displacements, and loose masonry units in existing masonry backup, rotted wood, corroded metal, and other deteriorated items.
1. Remove wood or other organic materials.
2. Repoint cracked or open joints in backup construction, and fill voids with mortar.

D. Cut masonry units with power saw designed for cutting masonry with sharp, unchipped edges. Cut masonry to form special shapes as indicated.

E. Wet the surrounding bricks prior to installing new work. Use wetting methods that ensure that the units are nearly saturated but surface dry when work begins (no visible moisture on the surface).

F. Lay face brick in running bond pattern (or to match existing) to create an interlocked wall to match existing construction.
   1. Brick shall be plumb, true to line, with level courses accurately spaced and joints aligned vertically, to the extent practical given adjacent surfaces. New brickwork shall be flush with adjacent existing surfaces. Drifting of joints shall be cause for rejection of work.
   2. Match existing coursing and bond.
   3. Tooth new brickwork into existing adjacent brickwork.

G. Lay masonry with full bed and head joints, fully buttered and shoved into place. Provide solidly filled collar joint where existing backup construction is masonry.
   1. Lay up masonry with joints slightly raked back. Point joints as part of repointing work.
   2. Maintain the joint width for the replacement units to match the existing joints.

H. Do not pound the corners and jambs to fit stretcher units after they are set in position. Where an adjustment must be made after the brick has been placed, remove and replace the mortar.

I. Remove, clean and reset with fresh mortar all masonry units that are disturbed after laying.

## 3.5 FIELD QUALITY CONTROL

A. Owner may retain qualified independent inspection agency to observe the progress and quality of Work and prepare inspection reports.
   1. Allow inspector use of lift devices and scaffolding to access Work areas.
   2. Notify inspector at least 48 hours in advance of times when lift devices and scaffolding will be relocated.

## 3.6 CLEANING

A. Within one hour of final tooling of an area of repointing, remove mortar from exposed masonry and other surfaces.
   1. Wipe excess mortar from masonry surfaces adjacent to mortar joints with damp sponge or cloth.
      a. Use only sponge or cloth that is damp, not wet or saturated. When tightly squeezed, water should not run from damp sponge or cloth. Surface of masonry shall not have visible accumulation of water immediately following cleaning.
      b. Do not touch or disturb newly-installed repointing mortar during cleaning.
      c. Clean until mortar and mortar haze are removed from adjacent masonry surfaces.
   2. Wash adjacent woodwork and other non-masonry surfaces with detergent and soft brushes or cloths.

B. Within seven days of final tooling, thoroughly rinse wall surfaces affected by repointing Work to remove dust and other surface residue resulting from repointing Work. Use very low pressure water spray.
   1. Remove excess mortar and foreign matter from exposed masonry surfaces with wood scrapers, stiff-nylon or fiber brushes, and water spray.
      a. Do not use metal scrapers or brushes or other non-approved materials or methods.
      b. Do not use acidic or alkaline cleaners unless specified herein or approved by Architect.
   2. Perform small trial of cleaners prior to full cleaning to ensure there is no damage to masonry materials.

C. If mortar remains on wall surface after mortar has fully cured and initial clean-up has been performed, clean with chemical cleaners as follows:
   1. Cleaning equipment:
      a. Use soft, nylon-bristle brush or roller.
      b. Pressure rinsing equipment that can provide controlled application of heated water.
         1) Allowable pressure: 400 to 600 pounds per square inch, or as approved by mockups.
         2) Water flow rate: 4 to 8 gallons per minute.
         3) Water may be heated to 120 degrees F to assist in cleaning.
         4) Use stainless steel nozzle with 15-to-40-degree fan spray.
         5) Equipment shall have no ferrous parts.
   2. Remove large particles of mortar from exposed brick masonry surfaces with wood paddles or scrapers. Do not use metal scrapers or brushes unless approved by Architect.
   3. Clean surfaces with organic acid cleaner.
      a. Saturate brick masonry with water and flush off loose mortar and dirt.
      b. Liberally apply cleaning solution.
      c. Allow to dwell for three to five minutes. Keep surface moist by misting as necessary during dwell time. Do not allow cleaning solution to dry on masonry.
      d. Reapply cleaning solution and gently scrub surface with soft brush.
      e. Rinse thoroughly with low-pressure water, from bottom to top of wall. Keep wall below wet and rinsed free of cleaner and residue. When wall is almost dry, check pH of wall with test paper. Continue to rinse wall until pH is between six and eight.
   4. Clean trial area to determine effectiveness and any necessary modifications to cleaning procedure.

D. Clean mortar splatters from scaffolding at the end of the day.

E. Patch anchor holes as scaffolding is removed.

F. Remove debris from Work from area drains. Flush with clean water.

G. At the end of each workday, broom-clean Site and Work areas and place all items to be discarded in appropriate containers.

H. Return building surfaces, landscaping, and grounds to condition prior to cleaning Work, to satisfaction of Architect and Owner's Representative at no additional cost to Owner.

I. At conclusion of repointing Work, remove scaffolding and equipment used in Work.

J. Repair at no cost to Owner all items damaged during the Work.

K. Remove debris and surplus materials from Site.

**END OF SECTION**

# SECTION 04 05 13

# MASONRY MORTAR

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Supply and preparation of mortar for brick masonry.

B. Related Sections:
   1. Section 04 01 21 – Brick Masonry Repair and Replacement

### 1.2 REFERENCES

A. Reference Standards:
   1. ASTM International
      a. C144 - Standard Specification for Aggregate for Masonry Mortar
      b. C150 - Standard Specification for Portland Cement
      c. C207 - Standard Specification for Hydrated Lime for Masonry Purposes
      d. C270 - Standard Specification for Mortar for Unit Masonry
      e. C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
      f. C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry
      g. C1324 - Standard Test Method for Examination and Analysis of Hardened Mortar
      h. C1586 - Standard Guide for Quality Assurance of Masonry Mortars
      i. C1714 - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry
   2. The Masonry Society (TMS):
      a. TMS 402/602 Building Code Requirements and Specifications for Masonry Structures, the latest edition as required by applicable Building Code.

### 1.3 DEFINITIONS

A. Existing mortar: Mortar present in existing construction.

B. Cement-lime mortar: A mortar containing only portland cement, lime, and sand with strictly no additives, except for pigments to produce a desired color.

C. Preblended cement-lime mortar: A factory-blended product containing only portland cement and lime with strictly no additives, except for pigments to produce a desired color. Sand may be included in the factory preblended product, depending on the regional customs and availability.

D. Repointing: Process of raking out mortar joint to specified depth and replacing mortar.

### 1.4 SUBMITTALS

A. Product Data: Supplier's literature indicating compliance with specified requirements. Include Safety Data Sheets (SDS) for information only.
   1. Pigments: Product name and type, and name of manufacturer.

2. Preblended Mortar: Types and volumetric proportions of ingredients.

B. Certificates: Indicating compliance with specified requirements.
   1. Portland Cement: Product name and type, and name of manufacturer.
   2. Hydrated Lime: Product name and type, and name of manufacturer.

C. Test Reports: For aggregates, indicating type, gradation, impurities, and source.

D. Masonry Subcontractor Qualification Data:
   1. Evidence that Subcontractor's existing company has a minimum of ten years of continuous experience in masonry work with cement-lime mortar.
      a. List at least five representative projects of similar scope and size, including:
         1) Project name
         2) Owner's name
         3) Owner Representative's name and current contact information
         4) Description of the masonry work performed
         5) Project supervisor's name
         6) Total cost of masonry work
         7) Completion date
      b. Supervisory personnel/foreman must have not less than five years' experience in supervising this type of work and must commit to be present at all times. Do not change supervisory personnel during the course of the Project except for reasons beyond the control of Subcontractor; inform Architect in advance of any changes. Supervisory personnel must be fluent in English. Provide the following:
         1) Name(s) of supervisory personnel
         2) Their resumes of experience
      c. Employ masons with a minimum of two years experience in similar work. Fully supervise apprentices with experienced masons.

E. Test Agency Qualification Data: Provide agency name and documentation of accreditation.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer's written instructions.

B. Store and handle materials in accordance with manufacturer's written instructions, safety requirements, and all applicable laws and regulations. Store materials in original, undamaged containers in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition. Manufacturer's standard packaging alone is not considered adequate weather protection.

C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, or handling. Discard any cementitious materials that have been exposed to moisture to their detriment.

D. Locate materials in a secure location approved by Owner's Representative.

E. Limit stored materials on structures so as to preclude damage to materials and structures.

F. Conspicuously mark damaged containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.

G. Maintain copies of all applicable SDS, to be available for ready reference on Site.

## PART 2 PRODUCTS

### 2.1 MATERIALS

A. Cement-Lime Mortar formulated to match color and texture of existing mortar.
   1. Portland Cement: ASTM C150, Type I or II. Provide ordinary (gray) or white cement as required to produce mortar color indicated.
      a. Type III may be used for cold-weather construction with written approval from Architect.
   2. Hydrated Lime: ASTM C207, Type S.
   3. Aggregate: ASTM C144, washed aggregate consisting of natural sand or crushed stone. Aggregate must not contain more than fifty parts per million of chloride ions, and must be free of organic contaminates.
   4. Pigment: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar. Pigment is not to exceed ten percent of portland cement by weight; pigment containing carbon black is not exceed two percent of portland cement by weight.
   5. Water: Clean and potable; free from deleterious amounts of acids, alkalis, or organic materials.

B. Admixtures: Do not use admixtures without prior written approval from Architect. None of the following admixtures may be used:
   1. Calcium chloride or admixtures containing calcium chloride.
   2. Air-entraining admixtures or material containing air-entraining admixtures.
   3. Antifreeze compounds.
   4. Pozzolans, including naturally derived and artificially derived, such as fly ash.

C. Do not substitute masonry cement or mortar cement for the above materials.

### 2.2 MORTAR MIXES

A. Cement-Lime Mortar: ASTM C270; Type N, proportioned by volume as follows:
   1. Portland Cement: 1 part.
   2. Hydrated Lime: 1 to 1-1/4 parts.
      Aggregate: 6 parts.
   3. Water: Maximum amount consistent with optimum workability.

B. Preblended Cement-Lime Mortar: ASTM C270. A factory packaged dry blend of portland cement, lime, and sand may be used in lieu of site-mixed mortar. Preblended cement-lime mortar may not contain any other ingredients, except pigment, if required.

C. Color: Match color of mortar to existing adjacent mortar joints, unless specified otherwise.
   1. Pigmented Mortar: Use colored cement product containing only metallic oxides or select and proportion pigments with other ingredients to produce color required.

## PART 3 EXECUTION

### 3.1 SITE MIXING

A. Develop batching and mixing operations so that quality control is assured.

B. Designate one or two individuals to batch and mix mortar. Fully instruct these individuals on batching and mixing procedures. No other persons shall batch or mix mortar without prior notification to Architect.

C. Maintain accurate mix proportions. Batch materials by volume with containers of known volume. Do not measure materials by shovel.
   1. Incorporate approved admixtures into mix in manner recommended by manufacturer and approved by Architect. Measure with accuracy of +/-3 percent. Add each admixture separately.
   2. Do not top-off sand brought to the site in pre-measured containers as this may result in oversanding of the mortar.

D. Combine and mix materials in appropriate drum-type batch machine mixer to uniform consistency.
   1. Mix mortar for three to five minutes after materials are in mixer.
   2. Provide sufficient number of mixers, including reserve mixers, so that mortar placement operations will proceed uninterrupted.
   3. Hand-mixing is permitted upon prior written approval of Architect.

### 3.2 PRE-BLENDED MORTAR MIXING

A. Develop mixing operations so that quality control is assured.

B. Designate one or two individuals to mix mortar. Fully instruct these individuals on mixing procedures. No other persons shall mix mortar without prior notification to Architect.

C. Mix materials in appropriate drum-type batch machine mixer to uniform consistency as recommended by manufacturer.
   1. Mix mortar for three to five minutes after materials are in mixer.
      a. Dry preblended mortar may require a longer mixing period to overcome the water affinity of oven dry sand and subsequent workability loss in the mortar.
   2. Provide sufficient number of mixers, including reserve mixers, so that mortar placement operations will proceed uninterrupted.
   3. Hand-mixing is permitted upon prior written approval of Architect.

### 3.3 REPOINTING MORTAR MIXING

A. Pre-hydrate mortar:
   1. Thoroughly mix ingredients except water.

2. Continue mixing, adding only enough water to produce damp workable mix which will retain its form when pressed into ball.
3. Maintain mortar in dampened condition for 1 to 1-1/2 hours.

B. Add sufficient water to bring mortar to proper consistency; that is, somewhat drier than conventional masonry mortars.

C. Refer to Section 04 01 27 for repointing process.

## 3.4 MORTAR INSTALLATION LIMITATIONS

A. If mortar begins to stiffen, it may be retempered with water as frequently as needed to restore consistency.

B. Discard mortar not placed within 2-1/2 hours after initial mixing.

## 3.5 FIELD QUALITY CONTROL

A. Testing Requirements:
   1. Contractor to retain an independent testing agency that meets requirements of ASTM C1093.
   2. Mortar: ASTM C780:
      a. At least two weeks prior to start of masonry Work, prepare a batch of mortar with the materials to be used for construction and allow testing agency personnel to make one set of nine cubes.
         1) Three cubes will be tested in compression at three, seven, and twenty-eight days.
         2) Test results will be used for comparison with field test results.
      b. Make one set of nine cubes at a random time each week during the Work, or at an interval determined by the Owner and Architect.
         1) Three cubes will be tested in compression at three, seven, and twenty-eight days.
         2) Field test results should approximate or exceed results from preconstruction testing.
      c. Contractor to pay for retesting of materials failing to comply with the specified requirements.

B. Inspection Requirements:
   1. Contractor to verify daily by observation that the method of measuring material quantities accurately maintains the required proportions. Provide a log to the Owner and Architect at the completion of the project indicating inspection of the mixing process.

**END OF SECTION**

# SECTION 07 21 00

# THERMAL INSULATION

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
   1. Mineral-wool board insulation.

### 1.2 SUBMITTALS

A. Product Data: Insulation and accessories.

B. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.

C. Product Test Reports: For each product, for tests performed by a qualified testing agency.

D. Research Reports: For foam-plastic insulation, from ICC-ES.

### 1.3 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

## PART 2 - PRODUCTS

### 2.1 MINERAL-WOOL BOARD INSULATION

A. Mineral-Wool Board Insulation, Faced: ASTM C612, Type IVB; faced on one side with foil-scrim or foil-scrim-polyethylene vapor retarder.
   1. Nominal Density: 8 lb/cu. ft.
   2. Thickness: 3 inches.

B. Vapor Retarder Tape: Compatible with specified facer and comparable perm rating. For taping insulation joints and repairing tears.

## 2.2 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.
   1. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
   2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation.

B. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.
   1. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap.
   2. Provide plastic safety cap on exposed end of spindle.

C. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to gypsum board substrate without damaging insulation, fasteners, or substrates.

# PART 3 - EXECUTION

## 3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

## 3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units.

E. Use insulation widths and lengths that fill spaces formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.

F. Set insulation boards with vapor retarder facing toward interior of building.

G. Tape all seams, perimeter joints, and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.

## 3.3 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

**END OF SECTION**

# SECTION 07 61 00

# BATTEN SEAM SHEET METAL ROOFING

## PART 1 - GENERAL

### 1.1 WORK INCLUDES

A. Provide all labor and materials for sheet metal roofing for a complete system, listed below and indicated on the Drawings:
   1. Section 04 01 27 – Repointing with Cement-Lime Mortar
   2. New zinc-coated copper architectural batten-seam sheet metal roofing at the main dome and four corner areas.
   3. New fully soldered zinc-coated copper flashings, cornice, trim, crickets, pier caps, and built-in gutters.
   4. New fully soldered zinc-coated copper downspouts.
   5. Waterproofing underlayments and other accessory materials for a complete roofing assembly.
   6. Related flashings, cleats, trim, and accessories, fabricated from zinc-coated copper, or plain copper if fully concealed.

B. Related Work Specified elsewhere:
   1. To be added

### 1.2 REFERENCES

A. ASTM International:
   1. ASTM B32 - Standard Specification for Solder Metal.
   2. ASTM B370 – Standard Specification for Copper Sheet and Strip for Building Construction.

B. CDA (Copper Development Association) – Copper in Architecture – Handbook.

C. National Roofing Contractors Association:
   1. NRCA - The NRCA Roofing and Waterproofing Manual.

D. Sheet Metal and Air Conditioning Contractors:
   1. SMACNA - Architectural Sheet Metal Manual.

E. Underwriters Laboratories Inc.:
   1. UL 580 - Tests for Uplift Resistance of Roof Assemblies.

### 1.3 DEFINITIONS:

A. Gypsum deck: At dome, existing deck consists of gypsum blended with wood fibers and shavings, reinforced with galvanized welded wire fabric; a proprietary product of U.S. Gypsum, trade name "Pyrofill." The cast-in-place gypsum fill is supported on a gypsum board formwork and steel T members, as visible in the attic. The doubly-curved surface of the dome is defined by the gypsum

deck, and all batten seam roofing work shall conform to the existing curvature of the underlying structure.

B. Wood deck: At the four corner roof areas, the existing deck consists of 1x wood planking.

## 1.4 SUBMITTALS

A. Product Data:
   1. Submit data on metal types, finishes, and characteristics.
   2. Submit data for underlayments and all accessories.

B. Samples: Submit the following samples prior to commencing roofing work.
   1. Minimum 6 by 6 inch in size, of coated copper material.
   2. Stepped sample of typical batten-seam assembly mounted to plywood panel, minimum 24 by 24 inches, including underlayment and slip sheet, showing field roofing panel, transverse seam between panels, fasteners, wood batten, and batten cover with one soldered seam.

C. Manufacturer's Installation Instructions: Submit instructions including special procedures for roofing penetrations, flashings, and perimeter conditions requiring special attention.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

E. Sample Warranties.

F. Field Observation Reports: Daily reports prepared by field supervisor, documenting weather conditions, areas of work, tasks completed, and temporary weather protection installed at completion of shift. Include documentary photographs. Send directly to Owner and Architect not more than 48 hours after the end of each shift.

G. Shop Drawings:
   1. Indicate material profile, jointing patterns, jointing details, fastening methods, flashings, terminations, and installation details, minimum 1-1/2 inch per foot scale.

## 1.5 QUALITY ASSURANCE

A. Perform Work in accordance with SMACNA Architectural Sheet Metal Manual and The NRCA Roofing and Waterproofing Manual.

B. Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are specified or indicated on Drawings.

C. For details and typical anchorage not shown on the Drawings, refer to SMACNA Architectural Sheet Metal Manual and provide a complete and watertight metal roofing assembly with provision for positive drainage from all surfaces and areas.

## 1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum ten years documented experience.

B. Installer: Company specializing in performing work of this section with minimum ten years documented experience, and approved by manufacturer.

## 1.7 MOCKUP

A. Construct the following mockups, at a location on site as directed by Owner's Representative. Allow for water testing of mockup prior to beginning roofing work, consisting of flood test for 24 hours to verify watertightness of soldered seams.Provide wood framing and blocking as needed to support mockups. Include all cleats, underlayment, and slip sheets.
   1. Gutter at lowest watertable, including outer cladding, minimum 4 foot segment with one soldered transverse seam at each profile and with soldered expansion joint detail at each end.
   2. Built-in gutter at dome, cornice, and base of dome trim, bent to required radius, minimum 4 foot segment with one transverse soldered seam at each profile and with soldered expansion joint detail at each end.

B. Remove mockups when directed by Owner's Representative.

C. Allow for inspection by Architect and the Owner's Representative during the first-in-place installations of the following details, as a mockup. Coordinate schedule in advance of the work. Approved in-place mockups may remain as part of the finished installation if in conformance with all requirements at Substantial Completion.
   1. Underlayment installation.
   2. Wood batten installation.
   3. Gutter at lowest watertable.
   4. Flashing atop upper limestone watertable.
   5. Corner pier cap and cricket.
   6. Flashing at top of corner roof area.
   7. Transition flashing at octagon level and cornice.
   8. Built-in gutter at base of dome.
   9. Dome perimeter trim and bottom of batten seam dome roofing.
   10. Top of batten seam dome roofing and flashing for skylight perimeter.

## 1.8 PRE-INSTALLATION MEETING

A. Preinstallation Conference: Conduct at project site.
   1. Convene minimum one week prior to commencing work of this section.
   2. Meeting to include Owner, Architect, Contractor, Roofing Installer, and installers whose work interfaces with or affects metal roofing.
   3. Review sequence of work, site logistics, impacts on library operations, and use of the building by the public.
   4. Review methods for temporary weather protection throughout the work, and emergency response plans.
   5. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   6. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
   7. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.

8. Review structural loading limitations of existing structure.
9. Review flashings, special details, drainage, penetrations, and condition of other construction that affect metal panels.
10. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
11. Review temporary protection requirements for metal panel systems during and after installation.
12. Review procedures for repair of metal panels damaged after installation.
13. Document proceedings, including corrective measures and actions required, and furnish copy of meeting minutes to each participant.

## 1.9 DELIVERY, STORAGE, AND HANDLING

A. On site storage limited to area defined by Owner.

B. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

C. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

D. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water.

E. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

F. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

## 1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.
   1. Do not proceed with work when forecasted weather creates a risk of water infiltration through partially incomplete work.

## 1.11 WARRANTY

A. Furnish 10 year manufacturer’s warranty for sheet metal roofing against structural failure, corrosion, and failure of alloy coating.

B. Special Installer’s Warranty: Specified form signed by Installer, covering Work of this Section for a warranty period of two years.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Sheet metal roofing system, including metal roof panels, cleats, anchors and fasteners, sheet metal flashing integral with sheet metal roofing, fascia panels, trim, battens, underlayment and accessories, shall comply with requirements without failure due to defective manufacture, fabrication, or installation, or due to other defects in construction. Sheet metal roofing shall remain watertight.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.
   1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

### 2.2 SHEET METAL MATERIALS

A. Tin-Zinc Alloy Coated Copper Sheet: ASTM B370 cold-rolled copper sheet, H00 temper, coated on both sides with zinc-tin alloy (50% zinc/50% tin), trade name “Freedom Gray.”
   1. Weight (Thickness): 16 oz/sq.ft.

B. Concealed Cleats:
   1. Fabricate from copper or Type 306 or 314 stainless steel.

### 2.3 RELATED MATERIALS - MISCELLANEOUS

A. Slip Sheet: Rosin-sized building paper, 3lb/100 sq. ft. Minimum.

B. Sealant: Sealant as specified in Section 07 92 00.
   1. Butyl rubber sealant at concealed locations and expansion joints: ASTM C1311, single-component, solvent-release, butyl-rubber sealant; polyisobutylene-plasticized; heavy-bodied for hooked-type expansion joints with limited movement.

C. Solder for Zinc-Coated Copper: ASTM B32, Tin-Antimony-Copper-Silver alloy, with maximum lead content of 0.05 percent, solidus temperature of 419 deg F and liquidus temperature of 452 deg F, minimum 5,200 psi shear strength, as recommended by sheet metal manufacturer.

D. Flux: Use flux type as recommended by sheet metal material manufacturer for specified material. For tin-zinc-alloy coated copper, use acid-free inorganic flux pre-mixed with tin powder.

E. Battens: Solid hardwood.
   1. Do not use preservative or fire-retardant treated wood.
   2. On curved surfaces, notch underside of batten to mid-depth if necessary to bend to fit radius.
   3. Fabricate from 2 inch by 2 inch nominal solid pieces. Taper sides minimum 1/16 inch toward bottom. Rout top surface as needed to match original decorative profile of batten cover.

F. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot-long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Fully solder all joints.

1. Terminate at elbow not more than 4 inches above lower roof surface.
2. Provide precast concrete splash blocks at discharge points of all downspouts.

## 2.4 RELATED MATERIALS - FASTENERS

A. Fasteners: Same material and finish as roofing metal.

B. Roofing Nails: ASTM F1667, copper, smooth shanked, wire nails, 0.135 inch minimum thickness, sharp pointed, with 3/8-inch minimum diameter flat head, minimum 1-inch length.
   1. Nails for attaching battens to gypsum deck shall penetrate minimum 2 inches into the gypsum.

C. Screws: stainless steel
   1. Screws for attaching battens to wood roof deck shall be of sufficient length to penetrate 3/4 inch minimum through the structural deck.

D. Bolts, nuts, and washers: stainless steel
   1. Length varies as needed to accommodate variable thickness of existing gypsum deck.

E. Pop Rivets: Pop rivets shall match the sheet metal substrate (brass or bronze for copper substrate). Pop rivets shall be finished using coating to match the color and finish of the sheet metal to which it is attached.

F. Sheet Metal Screws: All exposed screws used in sheet metal applications shall match the substrate metal (brass or bronze for copper substrate).

G. Fasteners into Masonry or Concrete Substrates: stainless steel screw-type fasteners, gasketed as indicated on the Drawings. Nail-in or coated fasteners are not permitted.

## 2.5 RELATED MATERIALS

A. Asphalt Primer: ASTM D 41.

B. Secondary Waterproofing Membrane: Self-Adhering, High-Temperature Sheet, 30 to 40 mils thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl rubber, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer when recommended by underlayment manufacturer.
   1. Thermal Stability: Stable after testing at 300 degrees F; ASTM D 1970.
   2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.
   3. Product: Grace Construction Products; a unit of Grace, W. R. & Co.; Grace Ultra, or approved equal.
   4. Primer: Grace Perma-A-Barrier WB Primer, and other primers recommended by manufacturer for existing substrates.

C. Flashing Cement: A heavy bodied SBS modified trowel grade asphaltic roof flashing cement to embed flanges of metal flashings and to provide seal. Materials shall comply with ASTM D 4586 Asphalt Roof Cement, Asbestos Free, Type I.
   1. Available Products:
      a. Johns Manville: MBR Utility Cement
      b. GAF Matrix SBS: Flashing Cement

c. U.S. Ply, Inc.: DuraFlex #954 Premium SBS Flashing Cement
d. Firestone: MB All Purpose Flashing Cement.

## 2.6 FABRICATION

A. Custom fabricate sheet metal roofing, wall cladding and related accessories to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions (panel width and seam height), geometry, metal thickness, and other characteristics of installation.

B. Obtain field measurements for accurate fit before shop fabrication.

C. Fabricate sheet metal roofing and accessories in shop to greatest extent possible.

D. Form sections to shapes as indicated on Drawings, accurate in size, square, and free from distortion, oil canning, tool marks or other defects, true to line, levels, and slopes; and with exposed edges folded back to form hems.

E. Hem exposed edges on underside 1/2 inch; miter and seam corners.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

G. Fabricate flashings to allow toe to extend 2 inches over adjacent roofing components. Return and break edges.

H. Fabricate fascia, trim, flashing, and other metal components from same material as metal roof panels. Provide exposed metal surfaces with same finish as exposed face of metal roof panels.

I. Fabricate trim for curved elements by brake-forming and rolling as needed to create radiused profiles. Provide minimum 4-foot long segments unless approved in writing by the Architect. Minimize the number of transverse joints in running trim.

J. Fabricate cleats and attachment devices of sizes recommended by SMACNA's "Architectural Sheet Metal Manual" for application, but not less than thickness of metal being secured.

K. Fabricate starter strips of same material as sheet, continuous, to interlock with sheet.

L. Form pieces in longest practical lengths.

M. Tin edges of copper sheet to be soldered. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints.

N. Fabricate corners from one piece with minimum 18 inch long legs; solder for rigidity, seal with sealant.

O. Fabrication Tolerances: Fabricate sheet metal roofing that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

P. Expansion Provisions: Fabricate sheet metal roofing to allow for expansion in running work sufficient to prevent leakage, damage, and deterioration of the Work.

Q. Sealant Joints: Where movable, non-expansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to SMACNA's "Architectural Sheet Metal Manual."

R. Do not use graphite pencils to mark metal surfaces.

S. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces of accessories exposed to view.

## PART 3 - EXECUTION

### 3.1 EXAMINATION AND PREPARATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work:
   1. Gypsum Substrate (dome roof): Verify that existing gypsum deck is sound, free of significant water damage, with no friable or loose material present.
   2. Wood Substrate (corner areas): Verify that existing wood planks are sound, free of significant areas of decay, and fully anchored to underlying framing.

B. Verify that substrate has been prepped for drainage, flashings, and penetrations through sheet metal roofing.

C. Verify damaged shop coatings are repaired with matching touch up material.

D. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set and nailing strips located.

E. Verify roofing termination and base flashings are in place, sealed, and secure.

F. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

G. Proceed with installation only after unsatisfactory conditions have been corrected.

H. If structural steel elements are exposed by removal of existing roofing, notify Owner's Representative and Architect. Do not proceed with roofing work until concealed steel surfaces have been inspected and recoated if necessary.

### 3.2 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering High-Temperature Sheet Underlayment:
   1. Install self-adhering high-temperature sheet underlayment, wrinkle free.
   2. Coat exposed gypsum deck surfaces with Perma Barrier WB Primer as a primer/sealer.
   3. Prime other substrates as recommended by the manufacturer.
   4. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
   5. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches (90 mm).

6. Roll laps and edges with roller.
7. Cover underlayment within 14 days of installation.
8. Where indicated on the Drawings, lap underlayment over sheet metal cleats or flashings, to permit secondary drainage from assembly.
9. Prior to installation of roofing, protect underlayment from the effects of high winds. If necessary, re-adhere underlayment to substrate as recommended by manufacturer.

B. Install slip sheet, wrinkle free, over underlayment before installing sheet metal roofing and related flashing.

## 3.3 INSTALLATION OF SHEET METAL ROOFING

A. Install sheet metal roofing to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to installation characteristics required unless otherwise indicated on Drawings.
1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required for complete roofing system.
2. Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
3. Install sheet metal roofing true to line, levels, slopes, and curves. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
4. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
5. Anchor sheet metal roofing and other components of the Work securely in place, with provisions for thermal and structural movement.
6. Do not field cut sheet metal roofing by torch.
7. Provide metal closures at each end of batten covers and similar details.
8. Flash and seal sheet metal roofing with closure strips at perimeter of all openings.
9. Locate and space fastenings in uniform vertical and horizontal alignment. Predrill panels for fasteners.
10. Install batten covers and caps as sheet metal roofing work proceeds.
11. Lap metal flashing over sheet metal roofing to direct moisture to run over and off roofing.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating, by applying self-adhering sheet underlayment to each contact surface, or by other permanent separation as recommended in SMACNA's "Architectural Sheet Metal Manual."

C. Install sheet metal roofing system with lines and corners of exposed units true and accurate.
1. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks, considering metal temper and reflectivity.
2. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
3. Fold back sheet metal to form hem on concealed side of exposed edges unless otherwise indicated.

D. Install cleats to hold sheet metal roofing and wall panels in position.
1. Attach each cleat with at least two fasteners to prevent rotation.

2. On flat surfaces, provide continuous cleats. On curved surfaces, provide minimum 4 inch long cleats spaces not more than 12 inches on center.
3. Bend tabs over fastener head.
4. Lap underlayment over cleats where indicated on the Drawings.

E. Seal joints as required for watertight construction.

F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.
1. Lightly abrade all coated copper surfaces using a scotch brite pad or similar means to remove the oxidized zinc surface immediately prior to soldering.
2. All seams to be soldered shall be lock joints minimum 3/4-inch wide. Pre-tin to a width of 1-1/2 inches and flux all surfaces to receive solder before engaging the locks.
3. All soldering to be completed within 4 hours after abrading and pre-tinning the surface. If more than 4 hours have elapsed, the joints are to be re-opened, cleaned, and re-fluxed before soldering.
4. Do not use torches for soldering.
5. Heat surfaces to receive solder, and flow solder into joint.
6. Fill joint completely.
7. Completely remove flux and spatter from exposed surfaces.

G. Batten-Seam Roofing:
1. Attach battens to roof substrate by through-bolts at gypsum deck or screws into wood deck. Fasten battens at minimum 12 inches on center, or as needed to fit tightly to curved surfaces.
2. Attach base of batten-seam metal panels to substrate with cleats. Fasten each panel to wood batten.
3. Use soft mallet or similar means to conform panel to curved shape of dome.
4. After panels are in place and before batten cap is installed, apply continuous bead of sealant to top of upturned flanges of each panel.
5. Install batten cap covering batten and panel edges, and fold batten cap and panel together, so batten cap and panel edges are completely engaged in seams. Solder transverse joints in batten cap.
6. Hook each panel to panel below with soldered cleat at transverse seam.
7. Splay upturned edges of panels at a slightly obtuse angle, so pan-bottom width is slightly narrower than space between battens, to provide expansion capability.
8. Close batten ends with metal closures integrated with adjacent flashing and trim. Fold together with panel edges and end of batten cap, and fully solder.

H. Flashing and Trim: Comply with performance requirements and SMACNA's "Architectural Sheet Metal Manual."
1. Provide concealed fasteners where possible, and install units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
3. Install flashing and trim as required to seal against weather and to provide finished appearance, including, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
4. Install continuous strip of self-adhering underlayment at edge of continuous flashing overlapping self-adhering underlayment, where "continuous seal strip" is indicated in SMACNA's "Architectural Sheet Metal Manual" and on Drawings.

5. Install exposed flashing and trim without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
6. Install sheet metal flashing and trim to fit substrates, and to result in waterproof and weather-resistant performance.
7. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.
   a. Space expansion joints as indicated on the Drawings and symmetrically around dome roof.
8. For flashing and trim on curved surfaces, fabricate from sections not less than 48 inches in length. Break form to indicated profile, including hems, drips, and joints. Then, hand work to achieve required radius of three-dimensional assembly.

## 3.4 INSTALLATION - ACCESSORIES

A. Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion
   1. Coordinate installation with flashings and other components.

B. Downspouts: Join sections with fully soldered joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at maximume 60 inches on center in between.
   1. Provide elbows at base of downspouts to direct water away from building.

## 3.5 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal roofing within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

## 3.6 CLEANING

A. On completion of sheet metal roofing and wall installation, clean finished surfaces as recommended by sheet metal roofing manufacturer.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

## 3.7 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal roofing is installed unless otherwise indicated in manufacturer's written installation instructions.

B. Prohibit traffic of any kind on installed sheet metal roofing.

C. Maintain sheet metal roofing in clean condition during construction.

D. Replace sheet metal roofing components that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect/Engineer.

**END OF SECTION**

# SECTION 07 92 00

# JOINT SEALANTS

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: Surface preparation and installation of sealant in masonry and glazing joints.

B. Related Sections:
   1. Section 04 01 27 – Repointing with Cement-Lime Mortar
   2. Section 07 61 16 – Batten Seam Sheet Metal Roofing
   3. Section 08 81 00 – Glass and Glazing

### 1.2 REFERENCES

A. Reference Standards: Latest edition as of Specification date.
   1. ASTM International:
      a. C920: Standard Specification for Elastomeric Joint Sealants.
      b. C1193: Standard Guide for Use of Joint Sealants
      c. C1248: Standard Test Method for Staining of Porous Substrate by Joint Sealants.
      d. C1521: Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.

### 1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that adjacent areas are not adversely affected; that new materials and building interior are kept continuously dry; and that continuous, watertight, new sealant installation is provided. Coordinate:
   1. With Government Representative.
   2. With other trades:
      a. To ensure that work done by other trades is complete and ready for sealant Work.
      b. To avoid or minimize work on, or in immediate vicinity of, sealant Work in progress.
      c. To ensure that subsequent work will not adversely affect completed sealant Work.

### 1.4 SUBMITTALS

A. Product Data: Sealant manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and installation instructions.
   1. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.
   2. SpecData sheet for substrate cleaner and substrate primer recommended by sealant manufacturer for specific substrate surface and conditions.
   3. Include Safety Data Sheets (SDS) for information only; safety restrictions are sole responsibility of Contractor.

B. Samples: Sealant manufacturer's color sample card, either printed or with thin sealant beads, showing range of colors available for each product exposed to view.

C. Manufacturer's Reports and Certifications:
   1. Prior to sealant installation, report from sealant manufacturer with results of sealant compatibility, sealant and substrate staining, and mockup adhesion tests. Report shall:
      a. State that materials which come into contact with or in close proximity to sealant have been tested.
      b. Include sealant manufacturer's interpretation of test results relative to material performance, potential staining of sealant and substrates, dirt accumulation of sealant, and dirt runoff from sealant.
      c. Include sealant manufacturer's recommendations for substrate preparation and primer needed to obtain durable adhesion and installation procedures successfully used in mockups and field tests.
   2. Product Certificates: For each sealant product, accessory, related products, joint type, and substrate, sealant manufacturers' written approval of their products' use for specified conditions; based on mockups and field tests.

D. Installer Qualifications:
   1. Certificate signed by sealant manufacturer, certifying that Installer complies with requirements.
   2. Evidence that Installer's *existing company* has minimum five years of continuous experience in similar sealant work; list of at least five representative, successfully-completed projects of similar scope and size, including:
      a. Project name.
      b. Owner's name.
      c. Owner's Representative name, address, and telephone number.
      d. Description of work.
      e. Sealant used.
      f. Project supervisor.
      g. Total cost of sealant work and total cost of project.
      h. Completion date.

E. Sample Warranty: Copy of sealant manufacturer's warranty, stating obligations, remedies, limitations, and exclusions. Submitted with bid.

F. Following completion of the Work:
   1. Sealant manufacturer's inspection report of completed sealant installation.
   2. Completed warranty from sealant manufacturer.
   3. Completed warranty from Installer.

## 1.5 QUALITY ASSURANCE

A. Installer Qualifications: Experienced firm that has successfully completed sealant work similar in material, design, and extent to that indicated for Project; that is approved, authorized, or licensed by sealant manufacturer to install sealant; and that is eligible to receive sealant manufacturer's warranty. Must have successful installations of specified materials in local area in use for minimum of five years.

1. Employ foreman with minimum five years of experience as foreman on similar projects, to be on Site at all times during Work. Do not change foremen during the course of the Project except for reasons beyond the control of the Installer; inform Government in advance of any changes.

B. Mockups: Install ten feet of sealant in each type of joint to verify and set quality standards for materials and installation procedures, and to demonstrate aesthetic effects.
   1. Include each type of backing material, sealant, primer and other related products.
   2. Mockups shall be accessible or located as indicated by Government Representative.
   3. Notify Government Representative seven days in advance of date when mockups will be constructed.
   4. Field-Adhesion Testing: After sealants have cured, perform field-adhesion tests according to ASTM C1521.
      a. Conduct tests for each type of sealant and joint substrate, with and without primer.
      b. Arrange for tests to take place with sealant manufacturer's technical representative present.
      c. Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Use alternate materials or modify installation procedure, or both, for sealants that fail to adhere to substrates.
   5. If Government Representative determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved.
   6. Mockups, when approved by Government Representative, will become standard for Work.
   7. Approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.
   8. Do not begin joint sealant Work until mockup is accepted by Government Representative.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials according to manufacturer's recommendations and in such a manner as to prevent damage to materials or structure.

B. Deliver materials to Site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.

C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which exhibit evidence of moisture during application or which have been exposed to moisture.

D. Store materials in original, undamaged containers and packaging in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Protect stored materials from direct sunlight. Manufacturer's standard packaging and covering is ***not*** considered adequate weather protection.

E. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.

F. Conspicuously mark wet or damaged materials and remove from Site as soon as possible.

G. Remove and replace materials that cannot be applied within stated shelf life.

## 1.7 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of sealant Work. Notify Government of conditions found to be different than those indicated in the Contract Documents. Government will review situation and inform Contractor and Installer of changes.

B. Environmental Limitations: Install sealant when existing and forecast weather conditions permit sealant to be installed according to sealant manufacturer's written instructions and warranty requirements.
   1. Do not install sealant when ambient or substrate temperatures are below 40 degrees F or are expected to fall below 40 degrees F in next 12 hours.
   2. Do not proceed with installation during inclement weather except for temporary work necessary to protect building interior and installed materials. Remove temporary work and Work that becomes moisture damaged.

C. Handle and install materials in strict accordance with safety requirements required by sealant manufacturer; Safety Data Sheets (SDS); and local, state, and federal rules and regulations. Maintain Safety Data Sheets (SDS) with materials in storage area and available for ready reference on Site.

## 1.8 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
   1. Notify Government of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

## 1.9 WARRANTY

A. Manufacturer's Warranty:
   1. Written warranty, signed by sealant manufacturer, including:
      a. Repair or replace sealant that does not comply with requirements; that does not remain watertight; that fails in adhesion, cohesion, or general durability; or that deteriorates in a manner not clearly specified by submitted sealant manufacturer's data as an inherent quality of the material for the application indicated.
      b. Removal and replacement with new bond breaker materials.
      c. Labor and materials to perform warranty Work.
      d. Warranty does not include sealant deterioration or failure due to the following.
         1) Excessive joint movement caused by structural settlement or errors attributable to design or construction, resulting in stresses in sealant exceeding sealant manufacturer's written specifications for sealant elongation or compression.
         2) Deterioration or failure of sealant due to failure of substrate prepared according to requirements.
         3) Mechanical damage caused by individuals, tools, or other outside agents.

4) Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

2. Warranty Period: Ten years from date of Substantial Completion.

B. Installer's Warranty:
1. Completed warranty form at the end of the Section, signed by sealant Installer, including:
a. Repair or replace sealant that does not comply with requirements; that does not remain watertight; that fails in adhesion, cohesion, or general durability; or that deteriorates in a manner not clearly specified by submitted sealant manufacturer's data as an inherent quality of the material for the application indicated.
b. Removal and replacement with new bond breaker materials.
c. Labor and materials to perform warranty Work.
d. Warranty does not include sealant deterioration or failure due to the following.
1) Excessive joint movement caused by structural settlement or errors attributable to design or construction, resulting in stresses in sealant exceeding sealant manufacturer's written specifications for sealant elongation or compression.
2) Deterioration or failure of sealant due to failure of substrate prepared according to requirements.
3) Mechanical damage caused by individuals, tools, or other outside agents.
4) Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.
2. Warranty Period: Ten years from date of Substantial Completion.

## PART 2 PRODUCTS

### 2.1 ELASTOMERIC JOINT SEALANTS

A. General:
1. Comply with ASTM C920 and other requirements indicated.
2. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing on similar projects, mockups and preconstruction testing for Project, and field experience.
3. Select products based on mockups, preconstruction testing, and sealant manufacturer's previous testing and experience.
4. Source Limitations: Obtain each type of joint sealant through one source from single manufacturer.
5. Colors of Exposed Joint Sealants: Selected and approved in writing by Government Representative, from sealant manufacturer's full range.

B. Single-component, Non-sag, Silicone Sealants, for use at joints in contact with glass, or exposed joints adjacent to sheet metal substrates:
1. 795 Silicone Building Sealant manufactured by Dow Corning Corporation.
2. 864 NST manufactured by Pecora Corporation.
3. SCS2000 SilPruf manufactured by Momentive Performance Materials Inc.

C. Single-component, Non-sag, Silicone Sealants, for use at joints where masonry is the substrate on both sides of joint:
   1. 756 SMS Building Sealant manufactured by Dow Corning Corporation.
   2. SCS9000 SilPruf NB manufactured by Momentive Performance Materials Inc.
   3. Spectrem 3 manufactured by Tremco Commercial Sealants & Waterproofing.

## 2.2 AUXILIARY MATERIALS

A. General: Sealant-backer materials, primers, surface cleaners, masking tape, and other materials recommended by sealant manufacturer, that are non-staining and compatible with substrates; based on mockups, preconstruction testing, and sealant manufacturer's previous testing and experience.
   1. Use bicellular backer rod.

# PART 3 EXECUTION

## 3.1 EXAMINATION

A. Examine substrates and conditions with Installer and sealant manufacturer's representative for compliance with requirements and for other conditions affecting installation or performance of sealant.
   1. Verify dimensions of sealant joints at Site by field measurement so that proper sealant profiles will be accurately maintained.
   2. Ensure that work done by other trades is complete and ready for sealant Work.
   3. Verify that areas and conditions under which sealant Work is to be performed permit proper and timely completion of Work.
   4. Notify Government in writing of conditions which may adversely affect installation or performance of sealant, including joints with widths less than those allowed by sealant manufacturer for applications indicated, and recommend corrections.
   5. Do not proceed with sealant Work until adverse conditions have been corrected and reviewed by Government.
   6. Commencing sealant Work constitutes acceptance of Work surfaces and conditions.

## 3.2 PROTECTION

A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.

B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Limit access to Work areas.

E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.

F. Comply with sealant manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

G. Cover adjacent surfaces with materials that are proven to resist sealant.

H. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Government.

## 3.3 SURFACE PREPARATION

A. Remove existing sealant and other foreign material from joints.
   1. At glazing joints, remove all existing sealant, backing material, and clear plastic joint covers for all surfaces.

B. Repair damaged or deteriorated substrate surfaces according to sealant manufacturer's written instructions and as approved by Government.

C. Clean joint substrates immediately before installing sealant, to comply with sealant manufacturer's written instructions based on mockups and preconstruction testing.
   1. Remove from substrate foreign material that could interfere with adhesion of sealant, including dirt, dust, existing sealant, oil, grease, and surface coatings.
   2. Provide dry substrate; prevent wetting of substrate prior to sealant installation.
   3. Clean porous substrates, such as concrete, masonry, stone, wood, by brushing, grinding, blast-cleaning, mechanical-abrading, or combination of methods to produce clean, sound substrate capable of developing optimum bond with sealant. Remove laitance and form-release agents from concrete. Remove loose particles remaining after cleaning operations by vacuuming or blowing out joints with oil-free, compressed air.
   4. Clean nonporous surfaces, such as metal, with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of sealant.
   5. Joints with silicone sealant and preformed sealant seals should generally be masked as subsequent cleanup of spillage and smears may be very difficult.

D. Install masking tape on adjacent surfaces to prevent permanent staining or damage due to contact with sealant or cleaning methods to remove sealant smears. Remove tape immediately after tooling sealant, without disturbing sealant.

## 3.4 INSTALLATION OF SEALANT

A. General: Comply with sealant manufacturer's written installation instructions for products and applications indicated, based on mockups and preconstruction testing.

B. Joint Priming: Prime joint substrates where recommended in writing by sealant manufacturer, based on mockups and preconstruction testing. Apply primer to comply with sealant manufacturer's written instructions.
   1. Confine primer to areas of sealant bond; do not allow spillage or migration onto adjoining surfaces.
   2. Limit priming to areas that will be covered with sealant in same day. Unless recommended otherwise by sealant manufacturer, reprime areas exposed for more than 24 hours.

C. Install sealant backer and position to produce cross-sectional shape and proper depth of installed sealant.
   1. Use properly-sized backer. Do not use multiple-backer units or braided-backer units to accommodate wide joints.
   2. Install backer with device that will provide consistent depth between substrate surface and outer surface of backer.
   3. Do not leave gaps between ends of sealant backers.
   4. Do not stretch, twist, puncture, or tear sealant backers.
   5. Remove wet backers and replace with dry materials.

D. Install bond-breaker tape at back of designated joints.

E. Install sealant immediately after installing backer material; to produce uniform, cross-sectional shape and depth; to directly contact and fully wet joint sides and backer material; and to completely fill recesses in joint configuration.
   1. Install sealant flush with surface.
   2. Immediately after sealant application and before skinning or curing begins, tool joint with slightly concave surface, compressing sealant into joint to form smooth, uniform sealant bead; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Do not use tooling agent.
   3. Remove excess sealant from surfaces adjacent to joints.

## 3.5 FIELD QUALITY CONTROL

A. At completion of Project, observe installed sealant for damage or deterioration. If damage or deterioration occurs, neatly cut out and remove damaged or deteriorated sealant, prepare and prime surfaces, and install new sealant. Replace sealant immediately so new sealant is indistinguishable from original Work.

## 3.6 CLEANING

A. As sealant Work progresses, clean off excess sealant or sealant smears by methods and with cleaning materials approved in writing by sealant manufacturer and manufacturers of products in which joints occur. Exercise care to avoid scratching or damage to surfaces.

B. At the end of each workday, clean Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.

C. After completing sealant Work:
   1. Repair surfaces stained, marred, or otherwise damaged during sealant Work.
   2. Clean up debris and surplus materials and remove from Site.

## 3.7 PROTECTION

A. Protect sealant during and after curing period from contact with contaminating substances and from damage, so sealants are without deterioration or damage at time of Substantial Completion.

**END OF SECTION**

## SEALANT INSTALLER'S WARRANTY

*Delete or retain this warranty, or include another sealant Installer's warranty form if required.*

WHEREAS <**Insert name**> of <**Insert address**>, herein called ***Sealant Installer***, has performed sealant and associated work, designated ***Work***, on the following project:

Owner: <**Insert name of Owner.**>
Address: <**Insert address**.>
Building Name/Type: <**Insert information.**>
Address: <**Insert address**.>
Area of Work: <**Insert information**.>
Acceptance Date: <**Insert date.**>
Warranty Period: <**Insert warranty period.**>
Expiration Date: <**Insert date.**>

AND WHEREAS Sealant Installer has contracted, either directly with Owner or indirectly as subcontractor, to warrant said Work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Sealant Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period it will, at its own cost and expense, make or cause to be made such repairs to or replacement of said Work as are necessary to correct faulty and defective Work and as are necessary to maintain said Work in watertight condition, and warrants against the following.

1. Components of sealant system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted sealant manufacturer's data as an inherent quality of the material for the application indicated, regardless of whether the Work was previously accepted by Owner.
2. Damage by exposure to foreseeable weather; and damage by intrusion of foreseeable wind-borne moisture.

Warranty is made subject to the following terms and conditions:

1. Specifically excluded from Warranty are damages to Work and other parts of the building, and to building contents, caused by:
    a. lightning;

*Insert required wind speed below.*

    b. peak gust wind speed exceeding <**Insert wind speed**> miles per hour;
    c. fire;
    d. failure of sealant substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    e. activity adjacent to sealant Work by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner's Representative.
2. When Work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Sealant Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.

3. Sealant Installer is responsible for damage to Work covered by Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of Work.
4. During Warranty Period, if Owner allows alteration of Work by anyone other than Sealant Installer, including cutting, patching, and maintenance, Warranty shall become null and void on date of said alterations, but only to extent said alterations affect Work covered by Warranty. If Owner engages Sealant Installer to perform said alterations, Warranty shall not become null and void unless Sealant Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate Work, thereby reasonably justifying limitation or termination of Warranty.
5. Owner will promptly notify Sealant Installer of observed, known, or suspected leaks, defects, or deterioration and will afford reasonable opportunity for Sealant Installer to inspect Work and to examine evidence of such leaks, defects, or deterioration. Sealant Installer shall inspect leak, defect, or deterioration within 24 hours of notification.
6. If permanent repair or replacement of warranted condition cannot be made immediately, due to weather conditions, availability of appropriate labor or materials, building occupancy, etc., Sealant Installer must make, or cause to be made, immediate temporary repairs to prevent any further damage, deterioration, or unsafe conditions. Permanent repair or replacement of warranted condition shall be scheduled as soon thereafter as practical, and with Owner's consent and approval.
7. If Owner notifies Sealant Installer of warranted condition that requires immediate attention to prevent potential injury or damage, and Sealant Installer cannot or does not promptly inspect and repair same, either permanently or temporarily, then Owner may make, or cause to be made, such temporary repairs as may be essential and Sealant Installer will reimburse Owner for cost of such repairs. Such action will not relieve Sealant Installer of its obligation to perform any necessary permanent repairs, and Warranty shall remain in full force and effect for remaining portion of its original term.
9. Sealant Installer shall provide equipment, labor, and material required to remedy warranted conditions, including repair or replacement of damage to other work resulting therefrom, and removal and replacement of other work required to access warranted condition. Additional required work will be at Sealant Installer’s sole expense for full term of Warranty. Warranty includes removal and replacement of sealant-backer material and sealant.
10. Warranty is recognized to be only Warranty of Sealant Installer on said Work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of sealant failure. Specifically, Warranty shall not operate to relieve Sealant Installer of responsibility for performance of original Work according to requirements of Contract Documents, regardless of whether Contract was directly with Owner or with Owner’s General Contractor.

IN WITNESS THEREOF, and intending to be legally bound hereby, Sealant Installer has caused this document to be executed by undersigned, duly-authorized officer.

_____ Corporate Seal:
(Sealant Installer)

By: _____
(Signature)

_____

(Name)

_____

(Date)

Subscribed and sworn to before me this ____day of _____, 20__

_____

Notary Public
My commission expires _____

# SECTION 08 81 00

# GLASS AND GLAZING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes: Replacement of individual glass lights in existing skylight.

B. Related Requirements:
   1. Section 07 61 16 – Batten Seam Roofing
   2. Section 07 92 00 - Joint Sealants

### 1.2 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

### 1.3 COORDINATION

A. Coordinate glazing dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention.

### 1.4 SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For new wire glass; 12 inches square.

C. Qualification Data: For Installer.

D. Product Certificates: For glass.

E. Product Test Reports: For fabricated glass, for tests performed by a qualified testing agency.

F. Preconstruction adhesion and compatibility test report.

G. Sample Warranties: For special warranties.

## 1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified glazing contractor for this Project with 5 years' experience minimum with projects of similar scope.

B. Mockups:
   1. Allow Architect and Owner's Representative to observe the installation of the first new glass light, as a mockup.
   2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.6 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each tape sealant and glass-framing member for adhesion to and compatibility with specified glazing sealants.
   1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
   2. Use ASTM C1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
   3. Test no fewer than three samples of each type of material.
   4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
   5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

## 1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

## 1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

   1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

## 1.9 WARRANTY

A. Manufacturer's Special Warranty for Glass Products: Manufacturer agrees to replace glass units that deteriorate within specified warranty period. Deterioration of glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and

cleaning glass contrary to manufacturer's written instructions. Defects include delamination, cracking, and other indications of deterioration.

1. Warranty Period: 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 GENERAL

A. Source Limitations for Glass: Obtain glass from single source from single manufacturer.

B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

C. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
   1. NGA Publications: "Glazing Manual."
   2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
   3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."

### 2.2 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type II, Class 1 (clear), Quality-Q5, Form 1 (wired glass, polished on both surfaces), Mesh 1 (diamond pattern).
   1. Thickness: Match existing glass.

### 2.3 GLAZING MATERIALS

A. General:
   1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

B. Neutral-Curing Silicone Glazing Sealant, Class 50: Complying with ASTM C920, Type S, Grade NS, Use NT.
   1. 795 Silicone Building Sealant manufactured by Dow Corning Corporation.
   2. 864 NST manufactured by Pecora Corporation.
   3. SCS2000 SilPruf manufactured by Momentive Performance Materials Inc.
   4. Color of Exposed Glazing Sealant: Black.

C. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; and complying with ASTM C1281 and AAMA 800 for products indicated below:
   1. AAMA 804.3 tape.

D. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

E. Edge Blocks:

   1. Silicone with Shore A durometer hardness per manufacturer's written instructions.

F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

## 2.4 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
   1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
      a. Temperature Change: 120 deg F ambient; 180 deg F material surfaces

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lights to produce square edges with slight chamfers at junctions of edges and faces.

# PART 3 - EXECUTION

## 3.1 REMOVAL OF BROKEN GLASS

A. Cut existing sealants at the perimeter of cracked or broken glass lights.

B. Remove existing fasteners and trim pieces.

C. Remove existing cracked glass and all associated glazing sealant or putty, leaving frame clean and ready to receive new glass.

## 3.2 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

   1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
   2. Presence and functioning of weep systems.

3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.3 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

C. Immediately prior to setting new glass, wash and dry all frame and glass surfaces that will be concealed once the new glass is installed.

## 3.4 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lights.

E. Provide edge blocking where indicated or needed to prevent glass lights from moving sideways in glazing channel, in accordance with requirements in referenced glazing publications.

F. Set glass lights in each series with uniform pattern, draw, bow, and similar characteristics.

## 3.5 GLAZING

A. Position tapes on fixed framing so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of framing.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lights in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply tape to trim pieces and other attachments, and reinstall to secure glass in place.

I. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lights and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

J. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and metal surfaces.

K. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

## 3.6 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on exposed surfaces immediately prior to removing scaffolding or similar means of access. Wash glass as recommended in writing by glass manufacturer.

**END OF SECTION**

# SECTION 09 01 20

# MAINTENANCE OF PLASTER

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes:
   1. Removal of deteriorated plaster and patching with new gypsum plaster.
   2. Painting of plaster

### 1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM C 28: Standard Specification for Gypsum Plasters
   2. ASTM C 35: Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster
   3. ASTM C 631: Standard Specification for Bonding Compounds for Interior Gypsum Plastering
   4. ASTM C 841: Standard Specification for Installation of Interior Lathing and Furring.
   5. ASTM C 842: Standard Specification for Application of Interior Gypsum Plaster
   6. ASTM C 847: Standard Specification for Metal Lath
   7. ASTM C 1002: Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
   8. ASTM D16: Standard Terminology for Paint, Related Coatings, Materials, and Applications
   9. ASTM D3359: Standard Test Methods for Measuring Adhesion by Tape Test
   10. ASTM D4214: Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
   11. ASTM D4541: Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
   12. ASTM D5064: Standard Practice for Conducting a Patch Test to Assess Coating Compatibility

B. Master Painters Institute (MPI)
   1. Architectural Painting Specifications Manual
   2. Maintenance Repainting Manual

C. Code of Federal Regulations:
   1. 29 CFR 1910.1000-1500, Subpart Z, "Toxic and Hazardous Substances"
   2. 29 CFR 1910.134, toxic exposure limits
   3. 29 CFR 1910.6200, Lead Exposure in Construction
   4. 29 CFR 1926, OSHA Construction Standards
   5. 29 CFR 1926.62, OSHA Lead Exposure in Construction; Interim Final Rule
   6. 40 CFR Part 59, National Volatile Organic Compound (VOC) Emission Standards for Consumer and Commercial Products
   7. 40 CFR Part 61, EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP)
   8. 40 CFR Part 261, Identification and Listing of Hazardous Waste.

## 1.3 SUBMITTALS

A. Qualifications Data: for Applicator.

B. Product Data: For each type of product.

## 1.4 QUALITY ASSURANCE

A. Qualifications
   1. Applicator shall have 5 years of experience in performing plaster and painting work similar to that in these Drawings and Specifications.
   2. Use adequate number of experienced, qualified and properly trained workers experienced in the necessary crafts and completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

B. Samples: Prepare a stepped sample of the specified plaster system, including lath, to demonstrate surface finishing and installation techniques, primer, and finish coating.

C. Mockups: Install mockups to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Prepare a plaster mockup panel, 12 inches by 12 inches minimum, to demonstrate surface texture for repair work, matching original plaster texture.
   2. Do not proceed with Work until mockup has been approved by Architect and Owner's Representative.

## 1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in the approved manufacturer's original unopened containers and packaging, bearing identification labels.

B. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack gypsum board panels flat and supported on risers on a flat platform to prevent sagging.

## 1.6 FIELD CONDITIONS

A. Environmental Limitations:
   1. Comply with ASTM C 842 requirements or gypsum or cement plaster manufacturer's written recommendations, whichever are more stringent.

B. Room Temperatures: Maintain temperatures at not less than 55 deg F or greater than 80 deg F for at least seven days before application of gypsum plaster, continuously during application, for seven days after plaster has set or until plaster has dried, and during painting operations.
   1. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.

C. Avoid conditions that result in gypsum plaster drying out too quickly.
   1. Distribute heat evenly; prevent concentrated or uneven heat on plaster.
   2. Maintain relative humidity levels for prevailing ambient temperature that produce normal drying conditions.

3. Ventilate building spaces in a manner that prevents drafts of air from contacting surfaces during plaster application and until plaster is dry.

## PART 2 PRODUCTS

### 2.1 EXPANDED-METAL LATH FOR PLASTER

A. Expanded-Metal Lath: ASTM C 847, cold-rolled carbon-steel sheet, ASTM A 653, G60 (Z180), hot-dip galvanized zinc coated.
   1. Diamond-Mesh Lath: 2.5 lb/sq. yd.
   2. Galvanized tie wire.

### 2.2 MISCELLANEOUS MATERIALS FOR PLASTER

A. Accessories: Comply with ASTM C 841 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.

B. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

C. Bonding Compound: ASTM C 631.

### 2.3 GYPSUM PLASTER MATERIALS

A. Base-Coat Plasters: High-strength gypsum plaster with job-mixed sand for scratch and brown coats, complying with ASTM C 28 and with a minimum, average, dry compressive strength of 2800 psi per ASTM C 472 for a mix of 100 lbs. of plaster and 2 cu. ft. of sand.
   1. USG Structo-Base Gypsum Plaster or approved equal.

B. Aggregates for Base-Coat Plasters: ASTM C 35, sand.

C. Finish-Coat Plasters: Premixed blend interior plaster mix of gauging plaster and lime finish,
   1. USG Red Top Finish or approved equal.

D. Plaster Mixing: Comply with ASTM C 842 and manufacturer's written instructions for applications indicated.

### 2.4 INTERIOR PAINT

A. Products:
   1. Primer, new plaster:
      a. Pittsburgh Paints Perma-Crete Alkali Resistant Primer 4-603.
      b. Sherwin Williams: Loxon Concrete & Masonry Primer/Sealer
      c. Benjamin Moore: Ultra Spec Masonry Interior/Exterior 100% Acrylic Sealer 608.
      d. Approved equal.
   2. Finish, new or previously painted plaster:
      a. Pittsburgh Paints Speedhide Interior Satin Acrylic Latex, 6-3511 Series.
      b. Sherwin Williams: Emerald Interior Latex Satin, K37 Series.
      c. Benjamin Moore: Aura Waterborne Interior Paint, Satin, N526.
      d. Approved equal.

B. Material Compatibility:
   1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. Colors for Finish Coats: Matching existing colors.

## PART 3 EXECUTION

### 3.1 REMOVAL OF UNSOUND PLASTER

A. Remove stained or water damaged portions of plaster. Extend repairs over sufficient area such that patching will not be visually apparent. Remove all plaster layers to expose original lath.
   1. Removed areas should be defined by straight lines.
   2. Slightly undercut edges of removal area.
   3. Extend removal areas if unsound or debonded plaster or deteriorated substrate is observed at perimeter of initial removal area.

### 3.2 EXAMINATION AND PREPARATION

A. Examine areas and substrates including framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

D. General: Comply with ASTM C 842.
   1. Do not deviate more than plus or minus 1/8 inch in 10 feet from a true plane in finished plaster surfaces, except as needed to align to existing finished wall surfaces.
   2. Finish plaster flush with existing adjacent plaster surfaces indicated to remain.
   3. Provide plaster surfaces that are ready to receive field-applied painted finishes.

E. If needed, set grounds at perimeter of work area to control thickness and plane of finished plasterwork. If needed, install 4 inch wide plaster screeds, thickness within 1/16 inch of finished surface, to guide work.

F. Verify that plaster is fully cured prior to painting.

G. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

H. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.

I. Prior to painting, examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content, acceptable pH levels, and other conditions affecting performance of the Work.
   1. Maximum Moisture Content of Substrates: Measured with a calibrated electronic moisture meter. Take at least 1 measurement per 100 square feet. Do not paint if moisture content exceeds 12 percent for plaster.
   2. Acceptable pH Level of Substrates: Measured with paper test strips. Take at least 1 measurement per 100 square feet. Do not paint if pH level exceeds 13.

J. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

K. Proceed with coating application only after unsatisfactory conditions have been corrected.
   1. Application of coating indicates acceptance of surfaces and conditions.

## 3.3 PROTECTION

A. Protect work of other trades against damage from paint application

B. Mask edges of work and adjacent surfaces not indicated to be painted with painter's tape.

C. Protect installed products from damage from weather, condensation, direct sunlight, construction, other causes, and the work of other trades during remainder of the construction period.

## 3.4 INSTALLING PLASTER LATH AND ACCESSORIES

A. Where existing lath is corroded, provide new supplemental lath. Retain original lath in place.

B. Expanded-Metal Lath: Install according to ASTM C 841.
   1. Lap adjacent sections of lath minimum 2 inches and tie with 18-ga. tie wire.

C. Accessories: Install according to ASTM C 841.

## 3.5 GYPSUM PLASTER APPLICATION

A. Mix plaster using a mechanical mixer. Prepare only one hour's supply at a time, and do not remix plaster that has begun to set. Add only enough water to achieve a workable consistency.

B. Bonding Compound: Apply on cut edges of adjacent existing plaster.

C. Scratch Coat:
   1. Sanded, 2 cu. ft. sand to 100 lbs. of plaster.
   2. Minimum 5/8 inch thick from face of metal lath.
   3. Apply with sufficient material and pressure to form good full keys into metal lath, and cross-rake.

D. Brown Coat:
   1. Sanded, 3 cu. ft. of sand to 100 lbs. of plaster.
   2. Apply after scratch coat has set firm and hard.
   3. Bring out to grounds and straighten to true surface with rod and darby without use of additional water. Leave rough and open to receive finish coat.

E. Finish Coat:
   1. Allow brown coat to fully set but not completely dry. If needed, lightly mist brown coat with water.
   2. Scratch in thoroughly, then immediately double back to a thickness of not more than 1/16 inch and trowel to a smooth, dense finish.

F. Repair or replace plaster to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

## 3.6 PAINTING

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
   1. Use applicators and techniques suited for paint and substrate indicated.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

D. Prime repair areas; then, paint entire ceiling surface to the corners of the room.

## 3.7 CLEANING

A. Remove temporary protection and enclosure of other work.

B. Repair surfaces stained, marred, or otherwise damaged during plaster or drywall application. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered.

C. Daily: Remove paint cans, trays, tarps, covers, brushes, trash, rags, and other tools and supplies from the grounds and interior spaces at the end of each work day. Post "Wet Paint" signs to warn against freshly painted surfaces. Damage to clothing and personal property due to contact with un-posted, wet paint surfaces shall be remedied with the individuals.

D. At End of Project: Remove supplies from the site. Dispose of empty paint containers in a legal manner, off-site. Clean spills, splatters, and other paint stains at no additional expense to the Owner and to the Owner's satisfaction.

**END OF SECTION**

# DOME ROOF REPLACEMENT

# LAKE FOREST LIBRARY

360 DEERPATH ROAD, LAKE FOREST, IL 60045

WISS, JANNEY, ELSTNER ASSOCIATES, INC.
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## SCOPE OF WORK

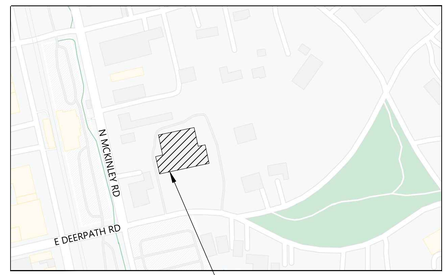
1. PROTECT IN PLACE THE EXISTING SLATE ROOFING, MEMBRANE ROOFING, DRAINS, DOWNSPOUTS, AND SKYLIGHTS; EXISTING EXTERIOR WALLS AND WINDOWS; EXISTING INTERIOR FINISHES; MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS; ADJACENT LANDSCAPING; ADJACENT ROAD, SIDEWALK, AND TERRACE PAVEMENT; AND LIGHT FIXTURES, SCULPTURE, SIGNAGE, AND OTHER APPURTENANCES IN OR ADJACENT TO THE LIMITS OF WORK. EXISTING MATERIALS OR ELEMENTS THAT ARE DAMAGED DURING THE WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
2. SKYLIGHT. REPLACE CRACKED PIECES OF EXISTING WIRE GLASS WITH NEW WIRE GLASS IN THE ORIGINAL FRAME. REMOVE, SALVAGE, AND REINSTALL TRIM PIECES AS NECESSARY FOR THE GLAZING WORK AND TO TIE IN TO THE NEW DOME ROOFING. RE-SEAL ALL JOINERY.
3. DOME ROOF. REMOVE THE EXISTING BATTEN-SEAM SHEET METAL ROOFING ASSEMBLY DOWN TO THE ORIGINAL GYPSUM DECK. INSTALL NEW COATED COPPER BATTEN-SEAM SHEET METAL ROOFING OVER A NEW FULLY ADHERED RUBBERIZED ASPHALT UNDERLAYMENT.
4. DOME PERIMETER TRIM AND CORNICE. REMOVE THE EXISTING SHEET METAL. MODIFY THE WOOD FRAMING SUPPORTING THE CORNICE AS SHOWN TO CREATE A NEW BUILT-IN GUTTER AND DOWNSPOUTS. INSTALL NEW FULLY SOLDERED COATED COPPER PERIMETER TRIM AND CORNICE SHEET METAL WORK, OTHERWISE MATCHING THE EXISTING PROFILES.
5. FOUR (4) CORNER ROOF AREAS. REMOVE THE EXISTING SHEET METAL ROOF ASSEMBLY DOWN TO THE ORIGINAL WOOD DECK. INSTALL A NEW CRICKET AT THE UPSLOPE SIDE OF EACH CORNER PIER. INSTALL NEW COATED COPPER BATTEN-SEAM SHEET METAL ROOFING, MATCHING THE EXISTING PROFILES. AT THE TOP OF EACH AREA, AN EXISTING SURFACE THAT IS FLAT WILL BE GIVEN A SLIGHT SLOPE FOR DRAINAGE.
6. LIMESTONE MASONRY. PROVIDE TRIAL SAMPLES AND MOCKUPS, AND CLEAN ALL LIMESTONE MASONRY BELOW THE SHEET METAL ROOFING. REPLACE JOINT SEALANT.
7. REPLACE THE EXISTING SHEET METAL GUTTER ATOP THE LOWEST WATERTABLE TO MATCH THE EXISTING PROFILE, WITH DOWNSPOUTS MATCHING THE EXISTING CONFIGURATION. INSTALL A SHEET METAL FLASHING ATOP THE SECONDARY LIMESTONE WATERTABLE ABOVE THE GUTTER.
8. BRICK MASONRY. REPOINT THE BRICK MASONRY BELOW THE LIMESTONE ON ALL FOUR SIDES OF THE CENTRAL VOLUME OF THE BUILDING, DOWN TO THE ROOF FLASHING BELOW, OR TO GRADE.
9. IN THE ATTIC, REPOINT THE EXISTING COMMON BRICK MASONRY, AND REPLACE INDIVIDUAL SPALLED BRICKS WITH NEW COMMON BRICK UNITS. REMOVE LOOSE EFFLORESCENCE AND DEBRIS BY SWEEPING AND VACUUMING.
10. IN THE ATTIC, INSTALL NEW FOIL-FACED INSULATION AT THE DOME AND PERIMETER KNEE WALL.
11. REPAIR ISOLATED AREAS OF DAMAGE AT THE PLASTER CEILING OF THE CENTRAL LOBBY (UNDER THE DOME) TO MATCH THE EXISTING TEXTURE. REPAINT THE CEILING TO MATCH THE EXISTING COLORS.

## GENERAL NOTES

1. DRAWINGS AND ASSOCIATED SPECIFICATIONS APPLY ONLY TO THE DOME ROOF REPLACEMENT AT LAKE FOREST LIBRARY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE WITHOUT SPECIFIC WRITTEN CONSENT OF WISS, JANNEY, ELSTNER ASSOCIATES, INC.; AND LAKE FOREST LIBRARY. ANY UNAUTHORIZED USE OF THIS WORK PRODUCT SHALL BE AT USER'S SOLE RISK AND USER SHALL INDEMNIFY WISS, JANNEY, ELSTNER ASSOCIATES, INC., AND LAKE FOREST LIBRARY AGAINST ANY LIABILITY OR LEGAL EXPOSURE RELATED TO THE UNAUTHORIZED USE.
2. MOCKUPS SHALL BE PREPARED FOR EACH REPAIR TYPE. TYPICALLY, THE FIRST INSTALLED WORK OF EACH SCOPE ITEM SHALL BE REVIEWED AS A MOCKUP.
3. DRAWINGS AND NOTES ARE COMPLEMENTARY, ARE TO BE TAKEN AS A WHOLE, AND SHOULD INCLUDE SUFFICIENT INFORMATION NECESSARY FOR THE EXECUTION AND COMPLETION OF THE WORK IN A MANNER CONSISTENT WITH THE DESIGN INTENT. IN THE ABSENCE OF EXPLICIT OR REASONABLY INFERABLE INFORMATION ON DRAWINGS OR IN NOTES, PROMPTLY SEEK CLARIFICATION FROM A/E AS A REQUEST FOR INFORMATION.
4. SPECIFIED PRODUCTS ARE BELIEVED TO HAVE PROPERTIES ADEQUATE FOR THE INTENDED PURPOSE. IF CONTRACTOR HAS PREVIOUSLY FOUND SPECIFIED PRODUCTS TO BE UNACCEPTABLE FOR ANY REASON, CONTRACTOR SHALL PROMPTLY INFORM A/E AS A REQUEST FOR SUBSTITUTION.
5. PROMPTLY REPORT TO A/E AS A REQUEST FOR INFORMATION KNOWN OR SUSPECTED ERRORS, INCONSISTENCIES, OR OMISSIONS WITHIN OR BETWEEN DRAWINGS AND NOTES AS WELL AS KNOWN OR SUSPECTED VARIANCE OF DRAWINGS AND NOTES FROM EXISTING CONDITIONS. FOR BIDDING PURPOSES ONLY AND UNLESS OTHERWISE DIRECTED BY A/E, THE MORE STRINGENT REQUIREMENT OR BETTER QUALITY SHALL TAKE PRECEDENCE.
6. DIMENSIONS, QUANTITIES, AND GEOMETRIES PROVIDED FOR EXISTING CONSTRUCTION ARE BASED ON AVAILABLE DRAWINGS AND LIMITED FIELD DOCUMENTATION. FIELD VERIFY APPLICABLE INFORMATION PRIOR TO SUBMITTING A BID, ORDERING MATERIALS, OR OTHERWISE COMMITTING RESOURCES TO THE WORK. PROVIDED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. DO NOT SCALE DRAWINGS.
7. PROVIDE LABOR, MATERIALS, EQUIPMENT, SUPERVISION, AND COORDINATION DIRECTLY AND INCIDENTALLY NECESSARY TO PERFORM THE WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS.
8. ACTIVITIES OR DUTIES OF A/E OR TESTS, INSPECTIONS, OR APPROVALS REQUIRED OR PERFORMED BY THIRD PARTIES SHALL NOT RELIEVE CONTRACTOR OF ITS OBLIGATION TO PERFORM THE WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS.
9. SECURE AND PAY FOR ALL PERMITS, FEES, LICENSES, AND INSPECTIONS BY GOVERNMENT AGENCIES NECESSARY FOR PROPER AND COMPLIANT EXECUTION AND COMPLETION OF THE WORK.
10. COMPLY WITH AND GIVE NOTICES REQUIRED BY LAWS, STATUTES, ORDINANCES, CODES, RULES AND REGULATIONS, AND LAWFUL ORDERS OF AUTHORITIES HAVING JURISDICTION APPLICABLE TO THE WORK.
11. SUPPLY OWNER WITH SAFETY DATA SHEETS (SDS) FOR EACH CHEMICAL THAT WILL BE BROUGHT ONTO PROPERTY.
12. CONTRACTOR IS SOLELY RESPONSIBLE FOR, AND SHALL HAVE SOLE CONTROL OVER, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES, AND FOR COORDINATING ALL PORTIONS OF THE WORK. A/E AND OWNER HAVE NO SUCH RESPONSIBILITIES. SPECIFIC INSTRUCTION THAT MAY BE GIVEN IN CONTRACT DOCUMENTS CONCERNING CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES SHALL NOT RELIEVE CONTRACTOR OF ITS RESPONSIBILITY FOR CONTROL AND COORDINATION.
13. CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE PERFORMANCE OF THE WORK. A/E AND OWNER HAVE NO SUCH RESPONSIBILITIES BEYOND ITS OWN EMPLOYEES OR CONSULTANTS.
14. THE WORK WILL BE PERFORMED AT AN OCCUPIED AND OPERATIONAL BUILDING. COORDINATE CONSTRUCTION ACTIVITIES AND PROCEDURES WITH OWNER TO (A) MAINTAIN UNOBSTRUCTED EXISTING MEANS OF EGRESS FROM BUILDING; (B) COMPLY WITH OWNER'S SECURITY PROCEDURES AND REQUIREMENTS; AND (C) PROVIDE NOT LESS THAN 48 HOURS ADVANCE NOTICE TO AND GAIN APPROVAL FROM OWNER PRIOR TO CONSTRUCTION ACTIVITIES THAT WILL DISRUPT NORMAL USE OF BUILDING (INCLUDING EXCEPTIONAL NOISE AND/OR VIBRATIONS, UNCONTROLLED DUST, OBTRUSIVE ODORS, OR INTERRUPTIONS OF UTILITIES). WORK NOT COORDINATED AND APPROVED IN ADVANCE THAT DISRUPTS THE NORMAL USE OF THE BUILDING MAY BE STOPPED UNTIL PROPER COORDINATION AND APPROVAL IS ACHIEVED. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COSTS INCURRED AS A CONSEQUENCE OF STOPPAGE.
15. SUBMIT PROPOSED DEMOLITION AND CONSTRUCTION SCHEDULES TO OWNER PRIOR TO BEGINNING WORK. PROCEED WITH THE WORK ONLY AFTER A MUTUALLY AGREEABLE SCHEDULE HAS BEEN ESTABLISHED. REGULARLY REVISE SCHEDULE TO REFLECT PROGRESS OF THE WORK.
16. MAINTAIN PREMISES AND SURROUNDING AREA FREE FROM ACCUMULATIONS OF WASTE MATERIAL AND RUBBISH RESULTING FROM THE WORK.
18. COORDINATE LOCATIONS OF ON-SITE STORAGE OF MATERIALS AND EQUIPMENT WITH OWNER SO AS TO NOT UNREASONABLY ENCUMBER THE SITE. LIMITED ON-SITE STORAGE IS AVAILABLE AT THE SOUTHWEST YARD OF OWNER'S PROPERTY.
19. DO NOT ALLOW CONSTRUCTION MATERIALS, EQUIPMENT, OR PROCEDURES TO OVERLOAD OR EXCEED THE STRUCTURAL CAPACITY OF EXISTING CONSTRUCTION TO REMAIN, PARTIALLY COMPLETED WORK, COMPLETED WORK, OR TEMPORARY STAGING OR CANOPIES. MAKE INSPECTIONS AND/OR PERFORM ANALYSES AND TESTS NECESSARY TO VERIFY THAT EXISTING ELEMENTS HAVE ADEQUATE CAPACITY TO SUPPORT PROPOSED CONSTRUCTION LOADS.
20. DRAWINGS ILLUSTRATE THE COMPLETED WORK WITH ELEMENTS IN THEIR FINAL INTENDED POSITIONS. PROVIDE SHORING, BRACING, SUPPORT, AND SEQUENCE WORK AS REQUIRED TO MAINTAIN THE STRUCTURAL INTEGRITY OF NEW OR EXISTING CONSTRUCTION DURING THE WORK.
21. TEMPORARILY RELOCATE AND RESTORE EXISTING EQUIPMENT AND APPURTENANCES (WHETHER OR NOT SHOWN ON THE DRAWINGS) THAT OBSTRUCT ACCESS TO PORTIONS OF THE WORK.
22. DEVELOP, IMPLEMENT, ERECT, AND MAINTAIN SAFEGUARDS TO PREVENT DAMAGE, INJURY, OR LOSS RESULTING FROM THE WORK TO (A) WORKERS, OCCUPANTS, PASSERS-BY, AND OTHER PERSONS; (B) VEHICULAR TRAFFIC; (C) IN-PROGRESS WORK, MATERIALS, AND EQUIPMENT UNDER CARE, CUSTODY, AND CONTROL OF THE CONTRACTOR (WHETHER ON OR OFF SITE); AND (D) OTHER PROPERTY AT THE SITE OR ADJACENT THERETO NOT DESIGNATED AS PART OF THE WORK FOR REMOVAL, RELOCATION, OR REPLACEMENT. IN THE EVENT OF DAMAGE, INJURY, OR LOSS, PROMPTLY NOTIFY A/E AND PRESENT PROPOSED REMEDY.
23. DEVELOP, IMPLEMENT, ERECT, AND MAINTAIN SAFEGUARDS TO PROVIDE FOR WATERTIGHT INTEGRITY OF WORK IN PROGRESS. IN THE EVENT OF DAMAGE, INJURY, OR LOSS, PROMPTLY NOTIFY A/E AND PRESENT PROPOSED REMEDY.
24. IN AN EMERGENCY AFFECTING SAFETY OF PERSONS OR PROPERTY, ACT TO PREVENT OR STOP FURTHER DAMAGE, INJURY, OR LOSS.
25. ALL WORK SHALL BE SUBJECT TO REVIEW BY A/E BEFORE IT IS CONCEALED BY OTHER WORK AND/OR MEANS OF ACCESS IS REMOVED. COORDINATE MANDATORY REVIEWS WITH A/E PRIOR TO START OF CONSTRUCTION. PROVIDE REASONABLE NOTIFICATION TO A/E TO ALLOW FOR SUCH REVIEW AS WORK PROCEEDS.
26. PROMPTLY CORRECT WORK REJECTED BY A/E OR FAILING TO CONFORM TO REQUIREMENTS OF THE CONTRACT DOCUMENTS. ASSOCIATED COSTS (INCLUDING ADDITIONAL TESTING OR INSPECTIONS, COST OF UNCOVERING AND CORRECTION, AND COMPENSATION FOR PROFESSIONAL SERVICES AND EXPENSES MADE NECESSARY THEREBY) SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
27. IF A HAZARDOUS MATERIAL OR SUBSTANCE NOT ADDRESSED IN THE CONTRACT DOCUMENTS IS ENCOUNTERED, IMMEDIATELY STOP WORK IN AFFECTED AREA AND NOTIFY OWNER OF THE CONDITION.

## DRAWING INDEX






**LOCATION MAP:**
N.T.S.

**Project Location**

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LICENSED ARCHITECT
KENNETH MARK ISAACS
001-019326
STATE OF ILLINOIS

Consultants

Project
Lake Forest Library
Dome Roof Replacement

360 East Deerpath Road
Lake Forest, IL 60045

Client
Lake Forest Library

360 East Deerpath Road
Lake Forest, IL 60045

| Mark | Date | Description |
|---|---|---|
| | 9/2/22 | Issued for Bid and Permit |

0 1/2" 1" 2"
THIS SHEET PLOTS FULL SIZE AT 24x36 (INCHES)

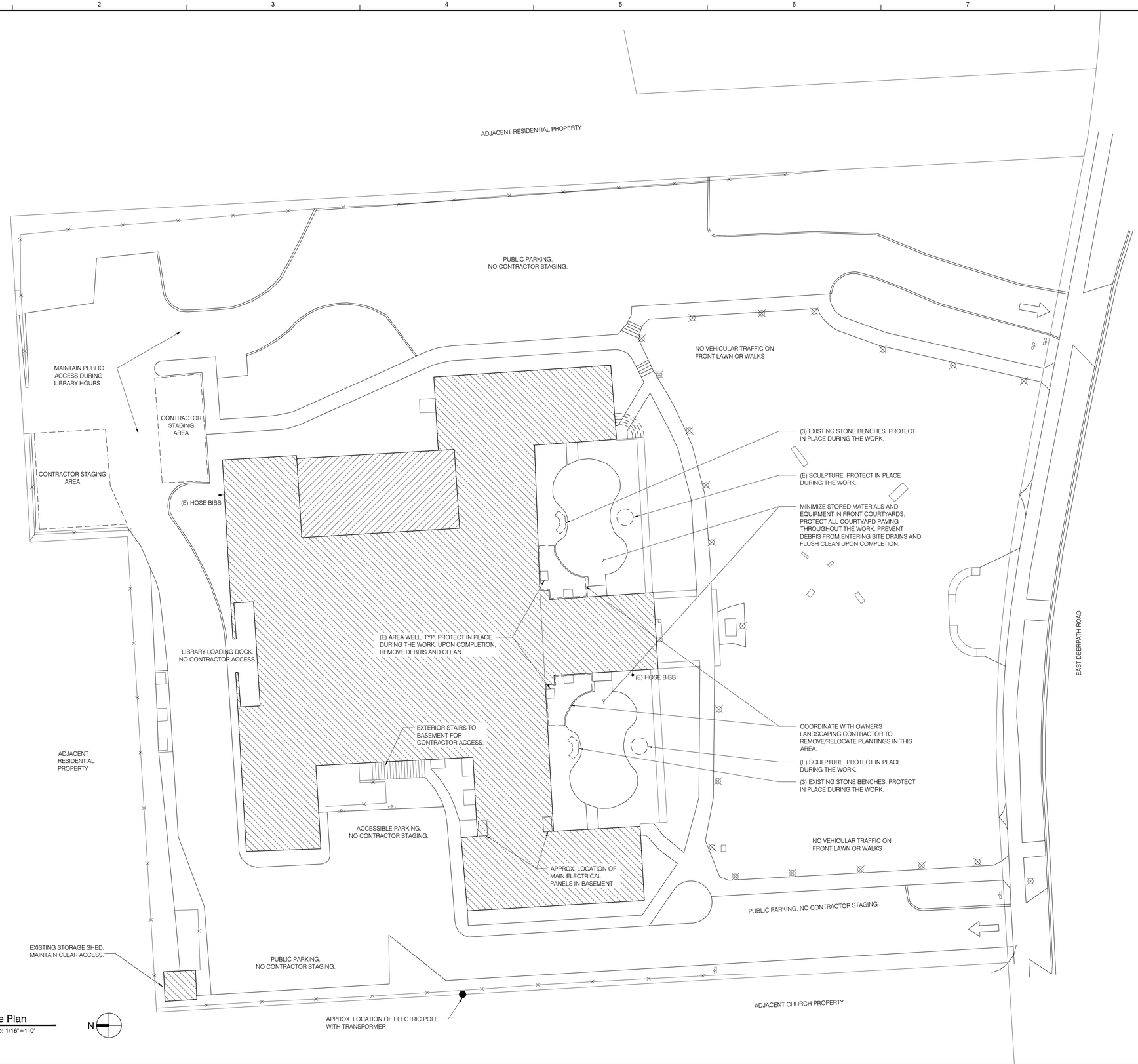
| | |
|---|---|
| Project No. | 2021.5121 |
| Date | September 2, 2022 |
| Drawn | DRS |
| Checked | KMI / RSK |
| Scale | |

Sheet Title: Title Sheet

Sheet No.: **A000**



Plotted: 9/2/2022 12:28 PM by Ide, Ken File Name: C:\WJE Work_Projects\Lake Forest Library\Drawings\All Sheets_Lake Forest Library Dome Roof.dwg




1 Site Plan
Scale: 1/16" = 1'-0"



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LICENSED ARCHITECT
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STATE OF ILLINOIS

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Project
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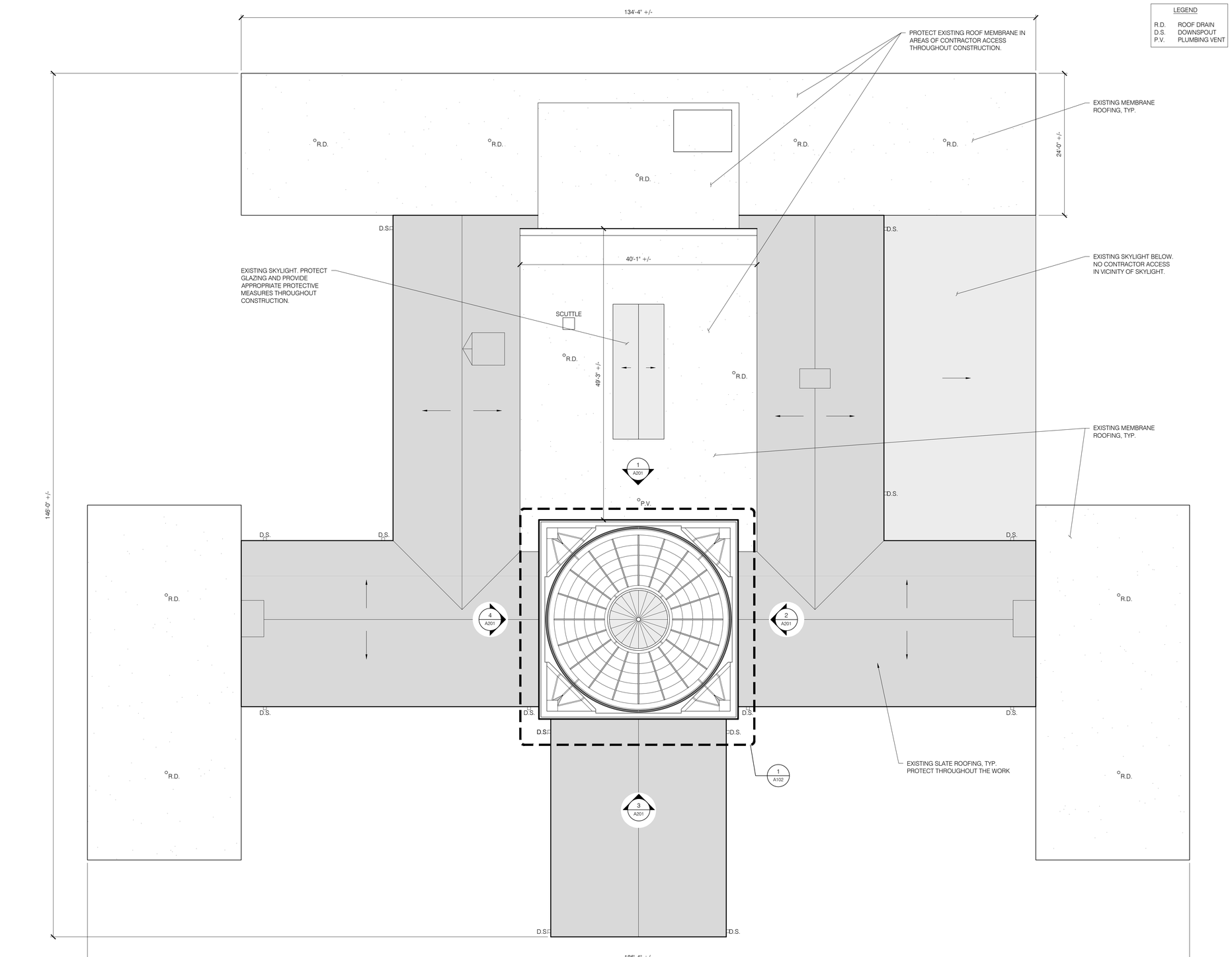
Site Plan
Sheet Title

Sheet No. **A001**




LEGEND

| | |
|---|---|
| R.D. | ROOF DRAIN |
| D.S. | DOWNSPOUT |
| P.V. | PLUMBING VENT |

1 Overall Roof Plan
Scale: 1/8"=1'-0"

N PLAN N TRUE



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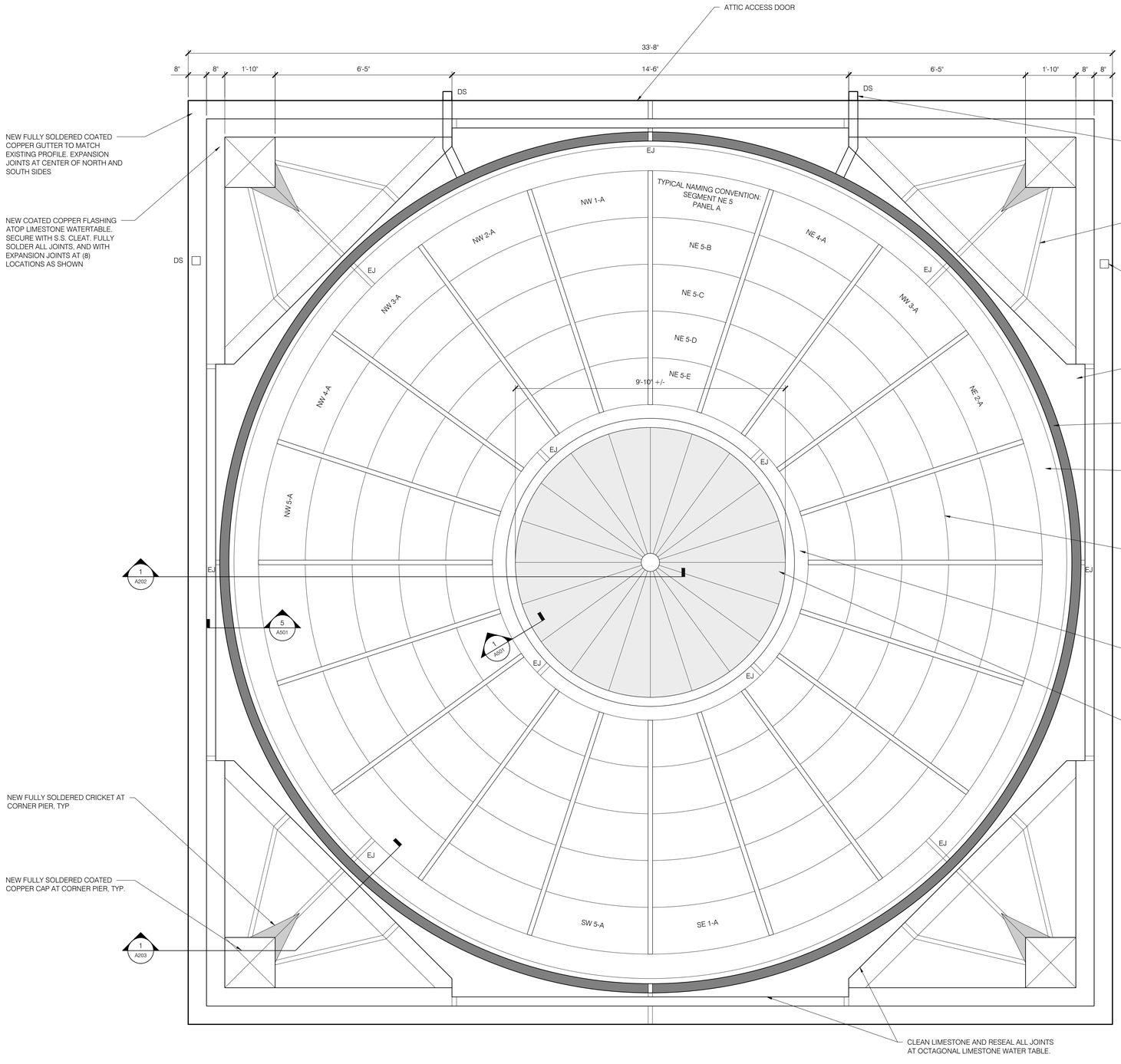
| Scale | |

Sheet Title: Overall Roof Plan

Sheet No.: **A101**




NEW FULLY SOLDERED COATED COPPER GUTTER TO MATCH EXISTING PROFILE. EXPANSION JOINTS AT CENTER OF NORTH AND SOUTH SIDES

NEW COATED COPPER FLASHING ATOP LIMESTONE WATERTABLE. SECURE WITH S.S. CLEAT. FULLY SOLDER ALL JOINTS, AND WITH EXPANSION JOINTS AT (8) LOCATIONS AS SHOWN

NEW FULLY SOLDERED CRICKET AT CORNER PIER, TYP

NEW FULLY SOLDERED COATED COPPER CAP AT CORNER PIER, TYP.

NEW COATED COPPER DOWNSPOUT CONNECTED TO NEW BUILT-IN DOME GUTTER, TYP.

BATTEN SEAM CORNER AREA ROOFING
REMOVE ALL SHEET METAL, UNDERLAYMENT, AND BATTENS. INSTALL NEW PRIMER; HI-TEMP UNDERLAYMENT; WOOD BATTENS SECURED WITH S.S. FASTENERS; FLASHING PLY OF UNDERLAYMENT OVER BATTEN; AND NEW COATED COPPER ROOFING NAILED TO BATTENS. NEW FULLY SOLDERED COATED COPPER BATTEN COVERS TO MATCH EXISTING PROFILES

NEW COATED COPPER DOWNSPOUT CONNECTED TO GUTTER AT WATER TABLE, TYP.

DOME CORNICE AND TRANSITION FLASHING
REPLACE WITH NEW COATED COPPER TO MATCH EXISTING PROFILE. FABRICATE MIN. 4'-0" LONG SECTIONS, THEN FORM TO REQUIRED RADIUS. FULLY SOLDER ALL SEAMS, AND WITH EXPANSION JOINTS AT (4) EQUALLY SPACED LOCATIONS AROUND PERIMETER.

DOME GUTTER NEW BUILT-IN FULLY SOLDERED COATED COPPER GUTTER. EXPANSION JOINTS AT CENTER OF NORTH AND SOUTH SIDES. PROVIDE CROSS-SLOPE FOR DRAINAGE

DOME BASE FLASHING AND BULLNOSE TRIM
NEW COATED COPPER TO MATCH EXISTING PROFILE. FABRICATE MIN. 4'-0" LONG SECTIONS, THEN FORM TO REQUIRED RADIUS. FULLY SOLDER ALL SEAMS, AND WITH EXPANSION JOINTS AT (4) EQUALLY SPACED LOCATIONS AROUND PERIMETER.

BATTEN SEAM DOME ROOFING
REMOVE ALL SHEET METAL, UNDERLAYMENT, AND BATTENS. INSTALL NEW PRIMER; HI-TEMP UNDERLAYMENT; WOOD BATTENS SECURED WITH S.S. THRU BOLTS; FLASHING PLY OF UNDERLAYMENT OVER BATTEN; AND NEW COATED COPPER ROOFING NAILED TO BATTENS. NEW FULLY SOLDERED COATED COPPER BATTEN COVERS TO MATCH EXISTING PROFILES

TOP OF DOME/BASE OF SKYLIGHT FLASHING
NEW COATED COPPER TO MATCH EXISTING PROFILE. FABRICATE MIN. 4'-0" LONG SECTIONS, THEN FORM TO REQUIRED RADIUS. FULLY SOLDER ALL SEAMS, AND WITH EXPANSION JOINTS AT (4) EQUALLY SPACED LOCATIONS AROUND PERIMETER.

EXISTING SKYLIGHT
1. ALLOW FOR REPLACEMENT OF (3) LIGHTS WITH NEW WIRE GLASS TO FIT EXISTING FRAMING.
2. REMOVE ALL EXISTING SEALANT, AND RESEAL ALL FRAME JOINERY AND PERIMETER OF EACH GLASS LIGHT.
3. REMOVE PERIMETER TRIM TO ALLOW ROOF FLASHING TO EXTEND UNDER TRIM, THEN REINSTALL TO MATCH EXISTING.

CLEAN LIMESTONE AND RESEAL ALL JOINTS AT OCTAGONAL LIMESTONE WATER TABLE.

1 Dome Roof Plan
Scale: 1/2" = 1'-0"

N



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LICENSED ARCHITECT KENNETH MARK IDE 001-019326 STATE OF ILLINOIS

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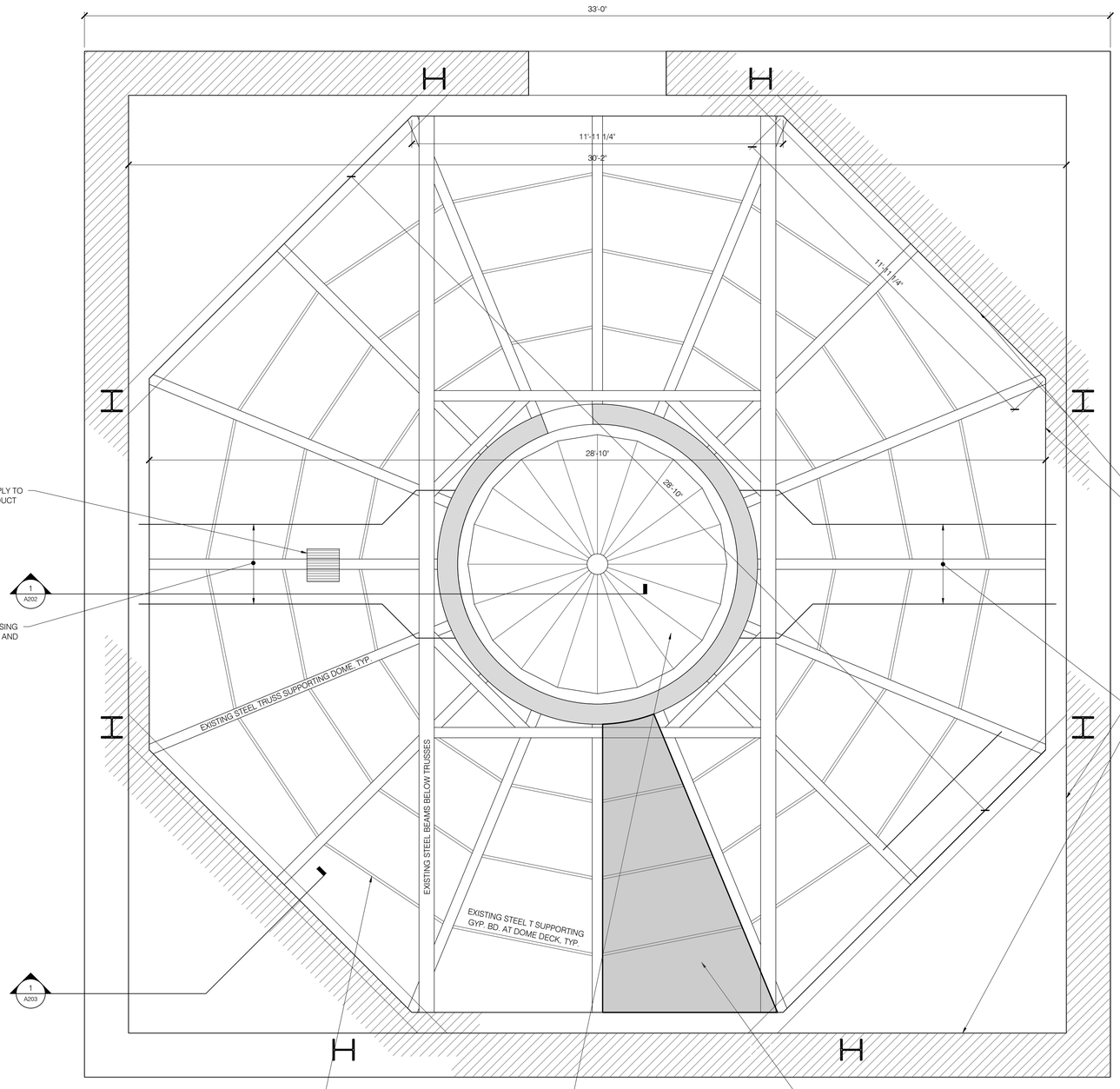
| Checked | KMI / RSK |
| Scale | |

Sheet Title
Enlarged Dome Roof Plan

Sheet No.
**A102**




1 Attic Reflected Ceiling Plan
Scale: 1/2" = 1'-0"

N





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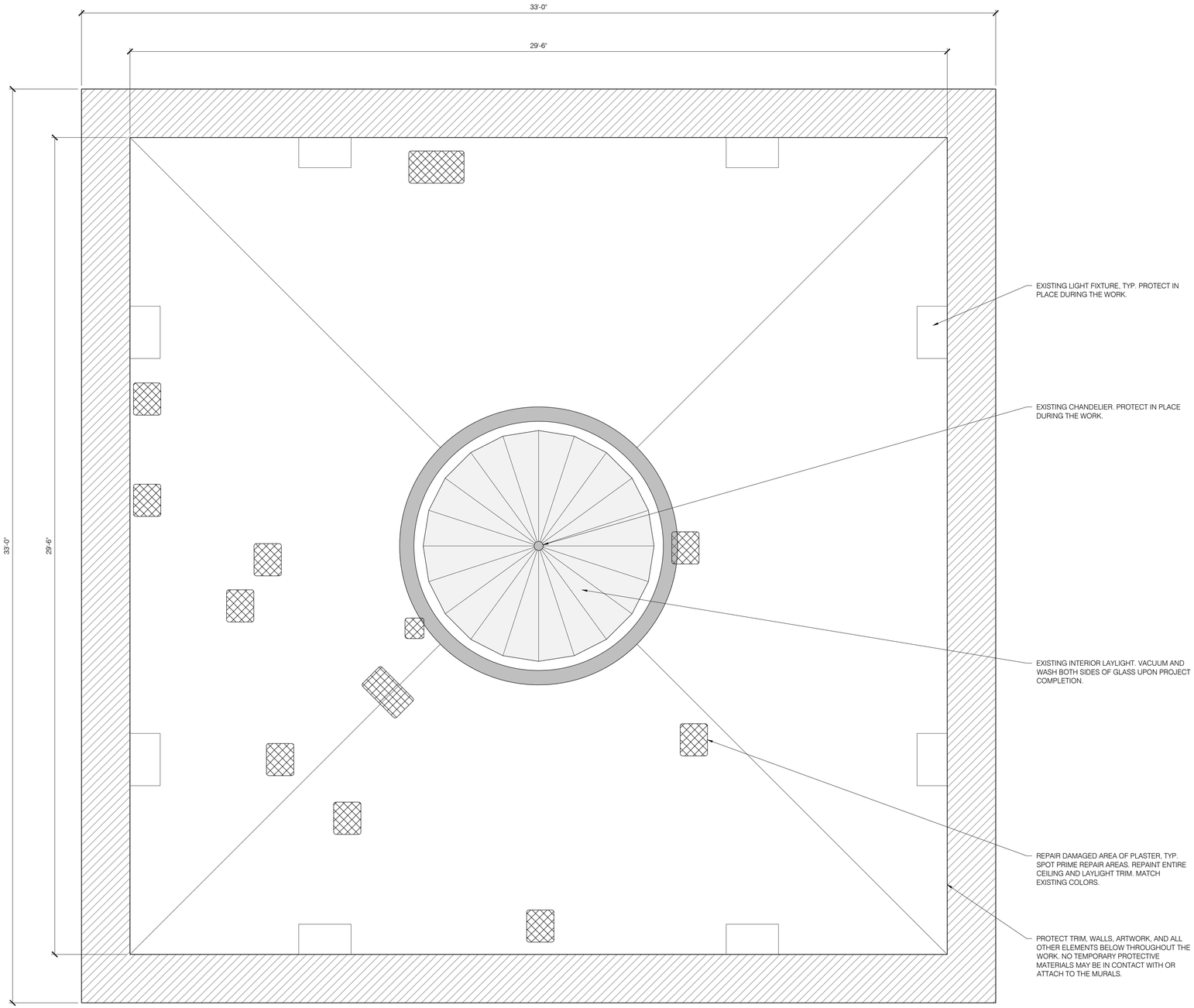
| | 9/2/22 | Issued for Bid and Permit |

0 1/2" 1" 2"
THIS SHEET PLOTS FULL SIZE AT 24x36 (INCHES)

| | |
|---|---|
| Project No. | 2021.5121 |
| Date | September 2, 2022 |
| Drawn | DRS |
| Checked | KMI / RSK |
| Scale | |

Sheet Title: Attic Reflected Ceiling Plan

Sheet No.: **A103**




1 Rotunda Reflected Ceiling Plan
Scale: 1/2"=1'-0"





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LICENSED ARCHITECT KENNETH MARK ISAACSON 001-019326 STATE OF ILLINOIS

Consultants

Project

# Lake Forest Library Dome Roof Replacement

360 East Deerpath Road
Lake Forest, IL 60045

Client

## Lake Forest Library

360 East Deerpath Road
Lake Forest, IL 60045

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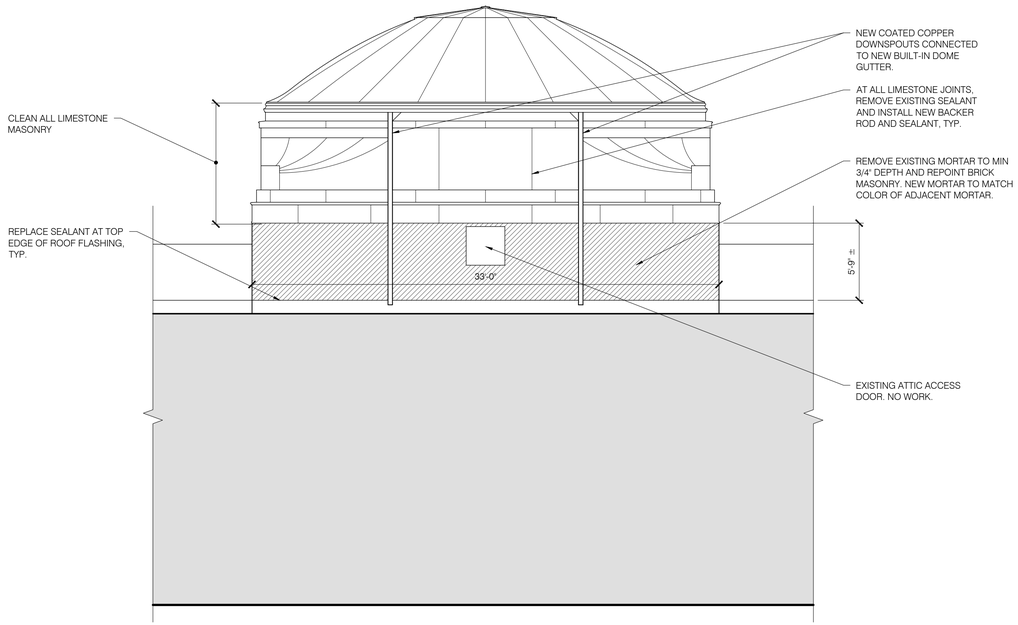
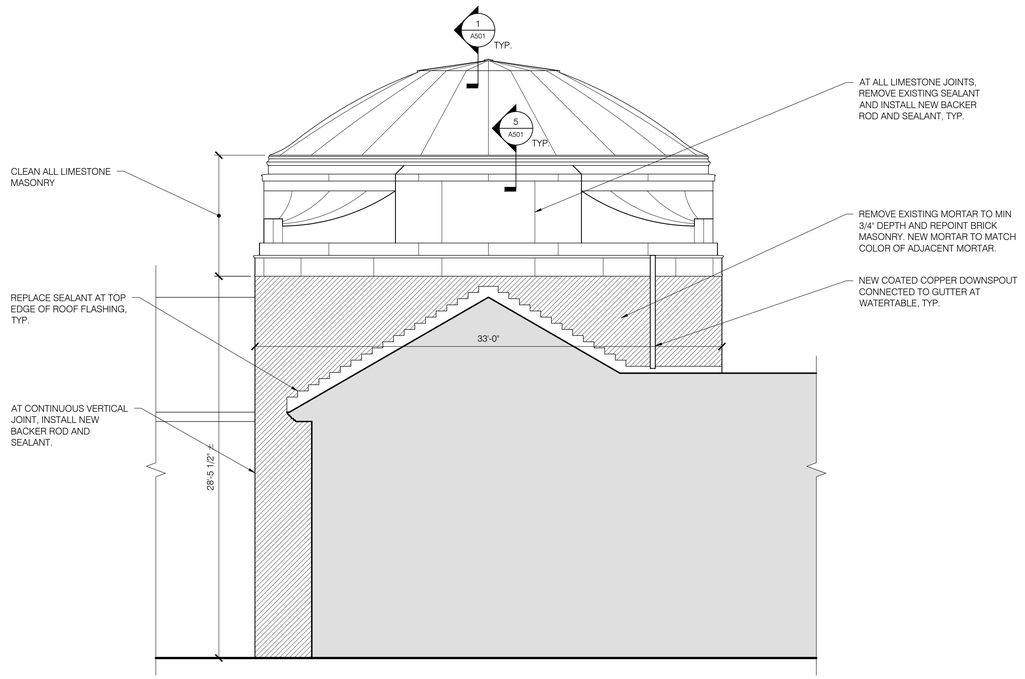
Sheet Title: Rotunda Reflected Ceiling Plan

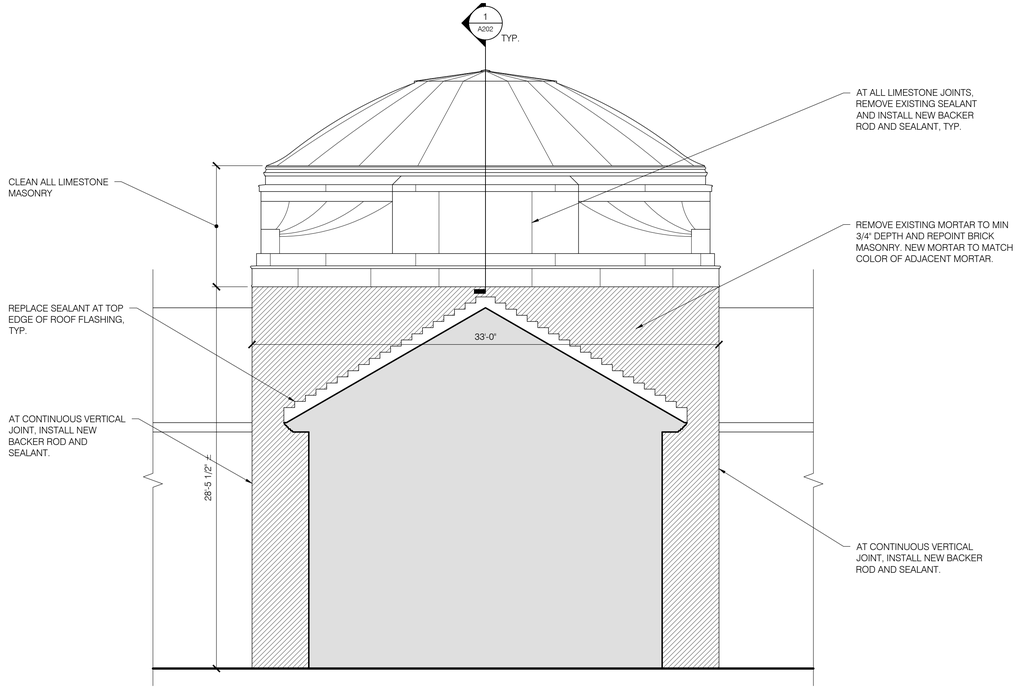
Sheet No.: **A104**



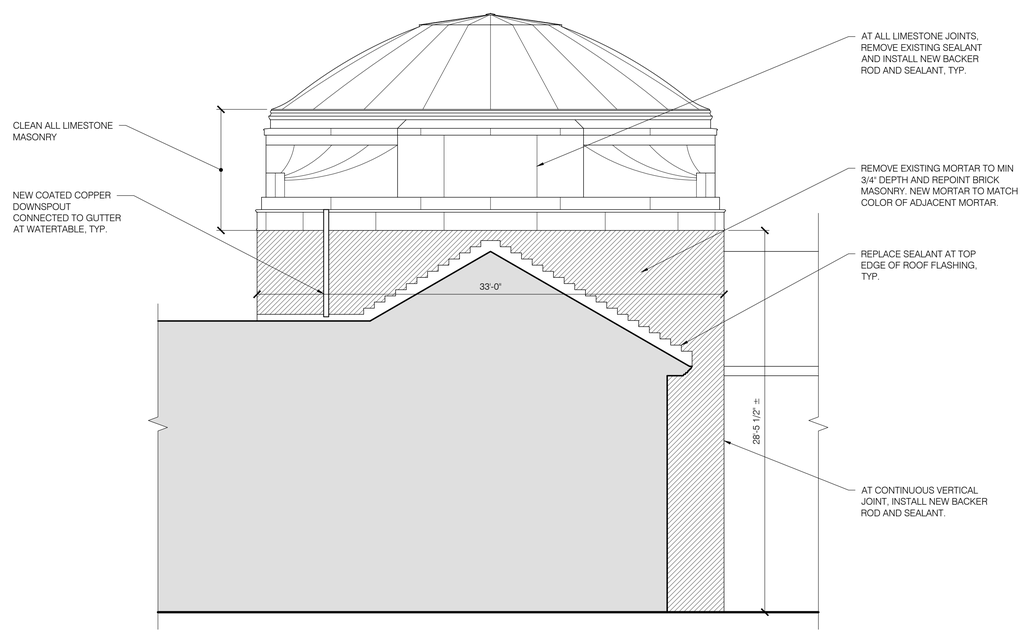

1 Partial North Elevation
Scale: 3/16"=1'-0"




2 Partial East Elevation
Scale: 3/16"=1'-0"




3 Partial South Elevation
Scale: 3/16"=1'-0"




4 Partial West Elevation
Scale: 3/16"=1'-0"



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Project
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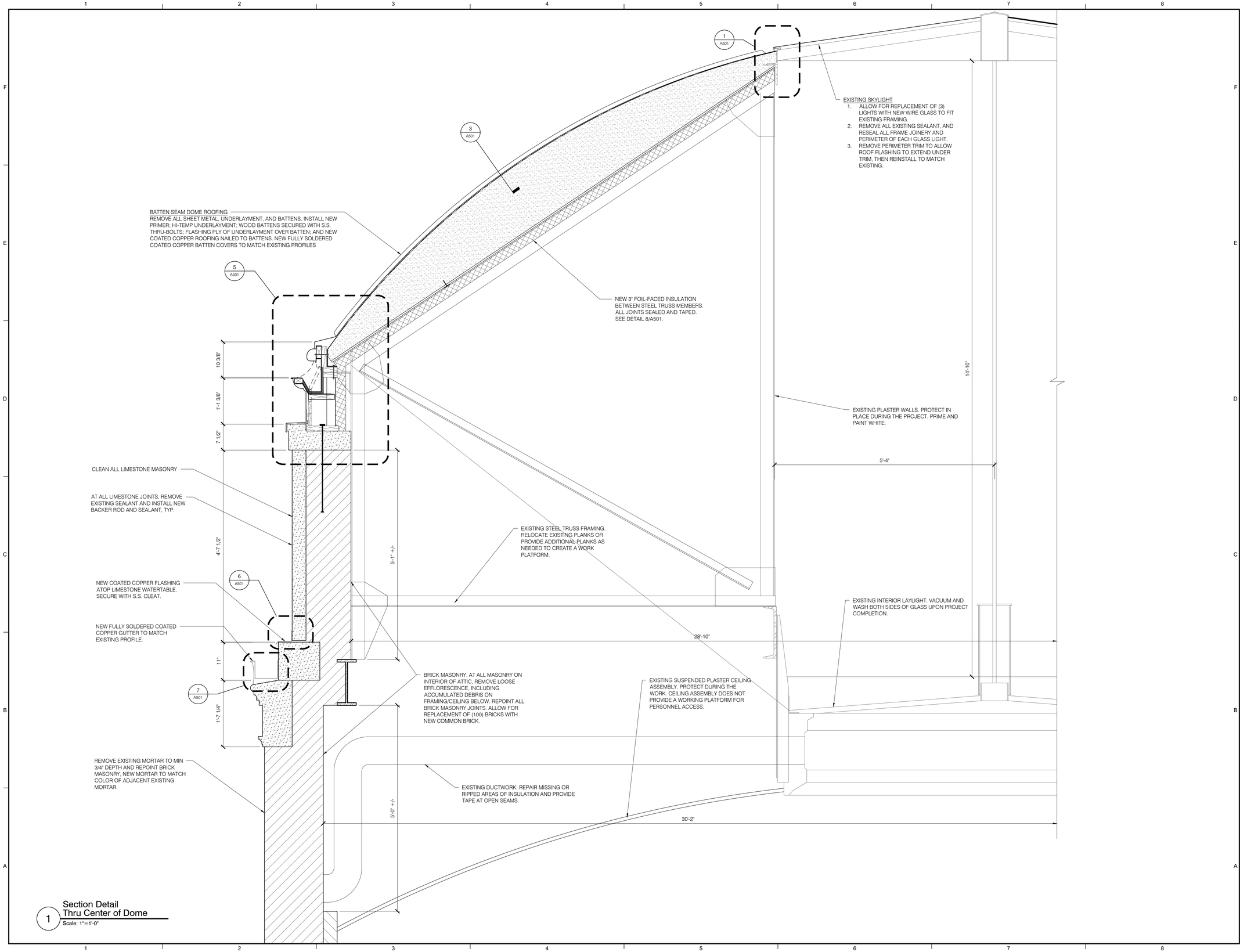
Sheet Title
## Exterior Elevations

Sheet No.
# A201

Plotted: 9/2/2022 12:28 PM by Idc, Ken File Name: C:\WJE Work_Projects\Lake Forest Library\Drawings\All Sheets_Lake Forest Library Dome Roof.dwg




1 Section Detail Thru Center of Dome
Scale: 1"=1'-0"



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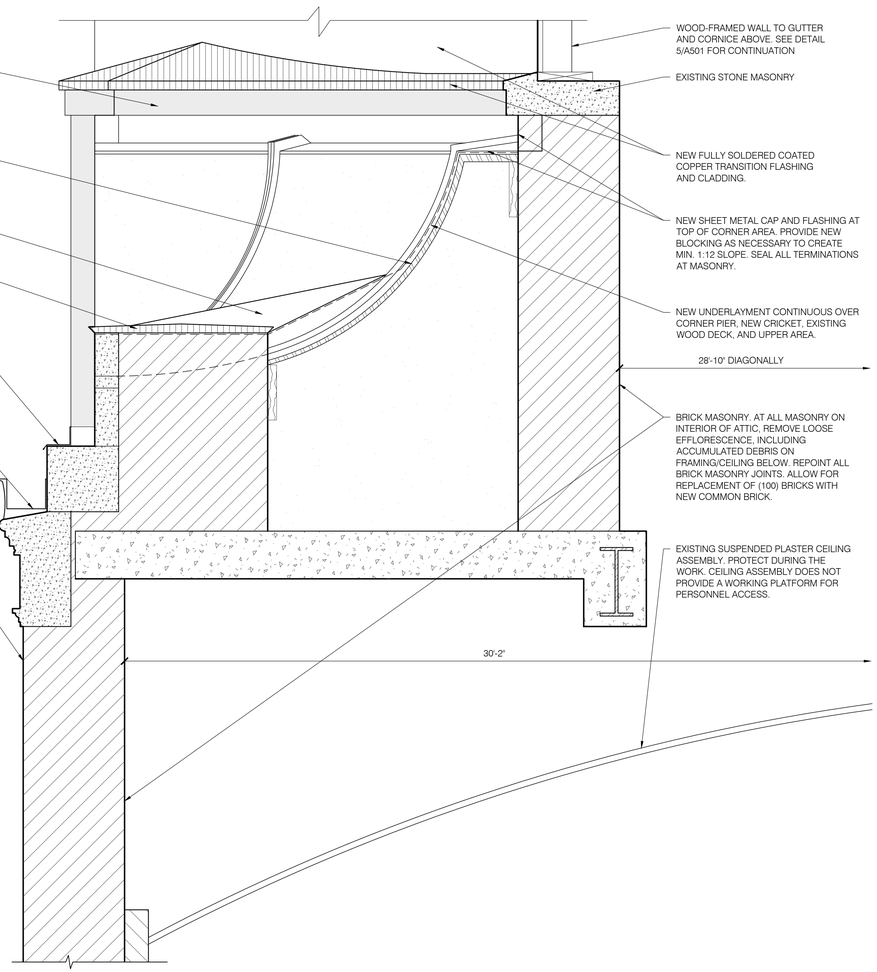
Section Through Center of Dome
Sheet Title

Sheet No. **A202**




1 Section Detail
Corner Area and Pier
Scale: 1"=1'-0"





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KENNETH MARK IDE
001-019326
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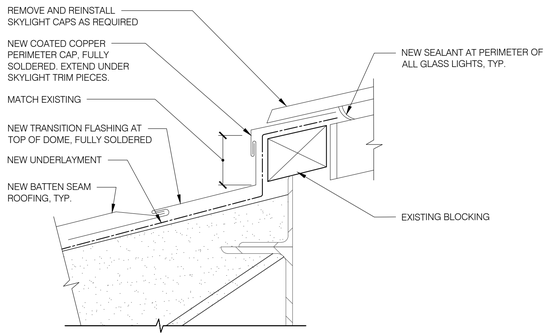
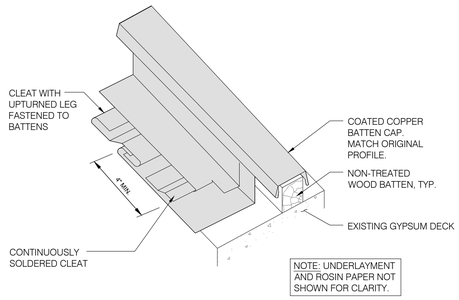
Section Through Corner Pier
Sheet Title

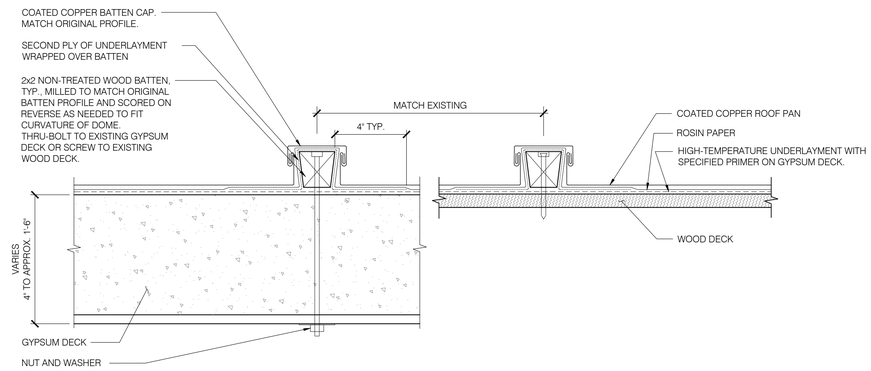
**A203**
Sheet No.



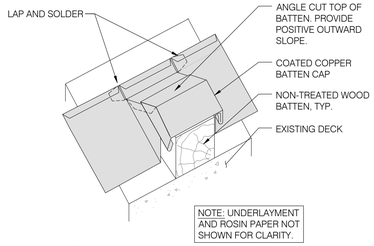

1 Detail at Top of Dome, Base of Skylight
Scale: 3"=1'-0"



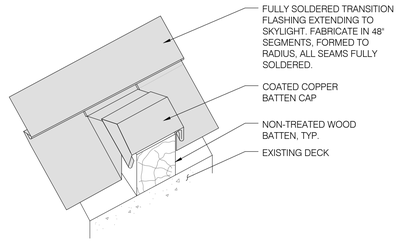

2 Transverse Seam Detail
NTS

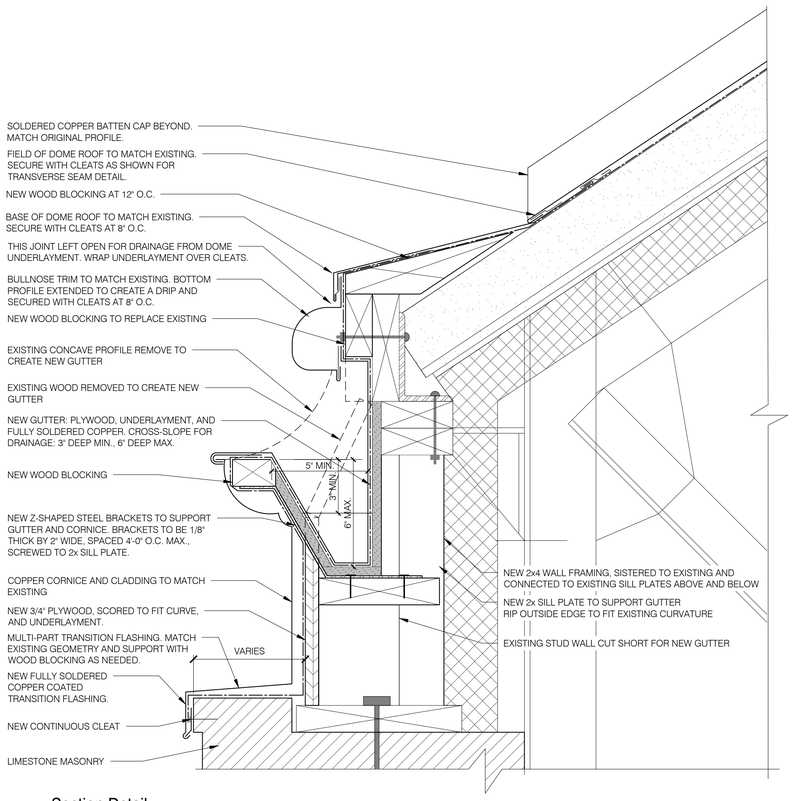



3 Typical Batten Roof Assembly
Scale: 3"=1'-0"

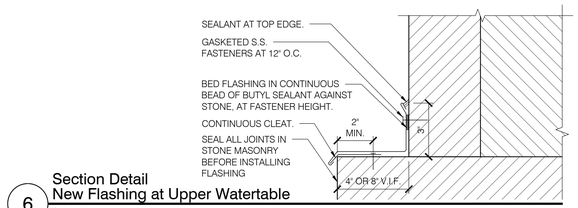



4 Top of Batten Detail
NTS

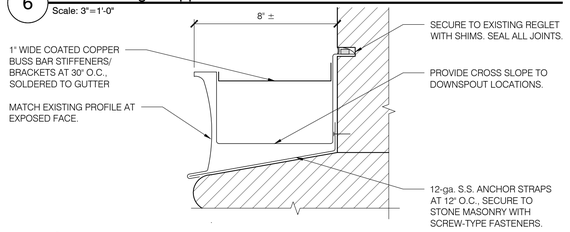


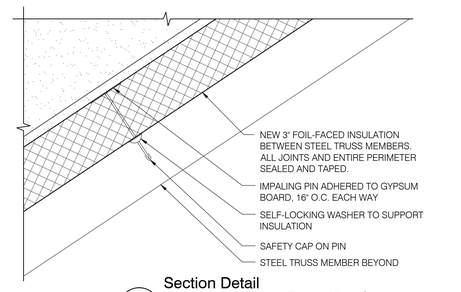

5 Section Detail
New Gutter at Base of Dome
Scale: 3"=1'-0"




6 Section Detail
New Flashing at Upper Watertable
Scale: 3"=1'-0"




7 Section Detail
New Gutter at Lower Watertable
Scale: 3"=1'-0"




8 Section Detail
New Insulation at Dome Roof
Scale: 3"=1'-0"

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Details
Sheet Title

A501
Sheet No.



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