LANDMARKS COMMISSION APPLICATION

LC

Complete all sections of this application, making sure to note the requirements on the accompanying checklist (reverse).

If you need an interpreter, translator, materials in alternate formats or other accommodations to access these forms, please call (608) 266-4635

City of Madison
Planning Division
215 Martin Luther King Jr Blvd, Ste 017
PO Box 2985
Madison, WI 53701-2985
(608) 266-4635

1. LOCATION

Project Address: 123 East Doty St. Alder District: 4

2. PROJECT

Project Title/Description: FESS HOTEL - 2023 Façade Restoration

This is an application for: *(check all that apply)*

- ■ **New Construction/Alteration/Addition in a Local Historic District or Designated Landmark** *(specify)*:
  - ☐ Mansion Hill ☐ Third Lake Ridge ☐ First Settlement
  - ☐ University Heights ☐ Marquette Bungalows ■ Landmark
- ☐ **Land Division/Combination in a Local Historic District or to Designated Landmark Site** *(specify)*:
  - ☐ Mansion Hill ☐ Third Lake Ridge ☐ First Settlement
  - ☐ University Heights ☐ Marquette Bungalows ☐ Landmark
- ☐ **Demolition**
- ☐ **Development adjacent to a Designated Landmark**
- ☐ **Variance from the Historic Preservation Ordinance (Chapter 41)**
- ☐ **Landmark Nomination/Rescission or Historic District Nomination/Amendment**
  (Please contact the Historic Preservation Planner for specific Submission Requirements.)
- ☐ **Informational Presentation**
- ☐ **Other** *(specify)*:

DPCED USE ONLY

Legistar #:

DATE STAMP

RECEIVED

12/19/22
3:57 pm

3. APPLICANT

Applicant's Name: Stephen Mar-Pohl Company: InSite Consulting Architects

Address: 744 Williamson Street, Suite 101 (Street) Madison (City) WI (State) 53703 (Zip)

Telephone: (608) 204-0825 Email: steve@icsarc.com

Property Owner *(if not applicant)*: 123 E DOTY STREET CORP. % Eliot Butler

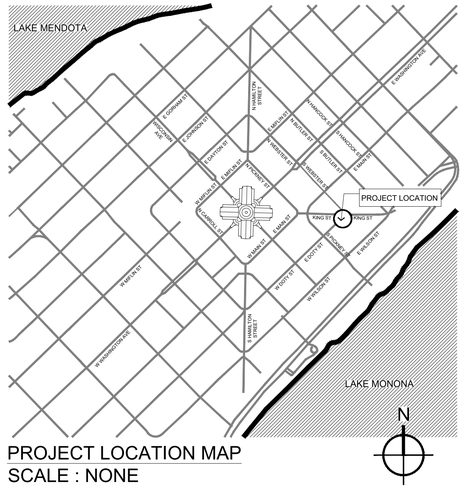
Address: 123 E Doty St. (Street) Madison (City) WI (State) 53703 (Zip)

Property Owner's Signature: Eliot Butler Date: 12/19/2022

NOTICE REGARDING LOBBYING ORDINANCE: If you are seeking approval of a development that has over 40,000 square feet of non-residential space, or a residential development of over 10 dwelling units, or if you are seeking assistance from the City with a value of $10,000 (including grants, loans, TIF or similar assistance), then you likely are subject to Madison's lobbying ordinance (Sec. 2.40, MGO). You are required to register and report your lobbying. Please consult the City Clerk's Office for more information. Failure to comply with the lobbying ordinance may result in fines.

4. APPLICATION SUBMISSION REQUIREMENTS *(see checklist on reverse)*

All applications must be filed by 12:00pm on the submission date with the Preservation Planner. Applications submitted after the submission date *or* incomplete applications will be postponed to the next scheduled filing time. Submission deadlines can be viewed here: https://www.cityofmadison.com/dpced/planning/documents/LC_Meeting_Schedule_Dates.pdf



PROJECT LOCATION MAP
SCALE : NONE

SHEET INDEX

GENERAL

ARCHITECTURAL

123 E DOTY STREET
2022 EXTERIOR RESTORATION
MADISON, WI

THE FOLLOWING GENERAL NOTES SHALL APPLY:

ALL DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STATE OF WISCONSIN BUILDING CODE LATEST EDITION.

CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF, AND COORDINATION WITH, ALL DIMENSIONS SHOWN ON THESE DRAWINGS RELATIVE TO EXISTING CONDITIONS PRIOR TO BEGINNING WORK.

CONTRACTOR SHALL REPORT IMMEDIATELY TO THE ARCHITECT ANY DIMENSION(S) OR DISCREPANCIES VERBALLY, A WRITTEN REPORT SHOULD PROMPTLY FOLLOW. CONTRACTOR SHALL CEASE WORK IN THE AFFECTED AREA UNTIL DIRECTED BY THE ARCHITECT.

THE CONTRACTOR SHALL PROVIDE ALL METHODS AND EQUIPMENT FOR PROTECTING THE BUILDING, ALL MATERIALS, AND PERSONNEL FROM FIRE OR OTHER DAMAGE PRIOR TO STARTING. THE CONTRACTOR SHALL SUBMIT THE APPROVED METHODS AND EQUIPMENT IN WRITING FOR THE OWNER AND ARCHITECT'S REVIEW PRIOR TO STARTING WORK.

THE CONTRACTOR SHALL COMPLY WITH ALL SAFETY AND HEALTH LAWS AND REGULATIONS.

6. THE CONTRACTOR SHALL PROVIDE ALL SHORING, BRACING, SHEATHING, REQUIRED FOR THE SAFETY AND PROPER EXECUTION OF THE WORK.
7. EXECUTION OF THE WORK WILL INVOLVE CONSIDERATION FOR ALLOWING THE OWNER TO CONTINUE THE OPERATION OF THE BUILDING AND THE BUSINESS IN THE FACILITY AND ADJACENT FACILITIES. PRIOR TO THE AWARD OF THE CONTRACT, THE CONSTRUCTION SCHEDULE PREPARED BY THE CONTRACTOR SHALL BE SUBMITTED TO THE ARCHITECT AND SHALL BE COORDINATED WITH THE FACILITIES DEPARTMENT. OWNER'S APPROVAL OF THE PROPOSED SCHEDULE SHALL SUPERCEDE THE CONTRACT, PROVIDED THE OVERALL TIME IS NOT CHANGED.
8. THE CONTRACTOR SHALL REVIEW ALL EXISTING CONDITIONS TO DETERMINE ALL SERVICES (ELECTRICAL, MECHANICAL AND PLUMBING) AFFECTED BY THE REPAIR WORK. THE CONTRACTOR SHALL MAKE NECESSARY TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SERVICES TO ALL AREAS OF THE BUILDING DIRECTLY AND INDIRECTLY AFFECTED BY THE WORK. THE CONTRACTOR SHALL SUBMIT METHODS AND SCHEDULE OF CONNECTIONS TO THE OWNER FOR APPROVAL PRIOR TO BEGINNING WORK.
9. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL PRODUCE "AS-BUILT" DRAWINGS FOR THE INSTALLATION OF ALL REPAIR ITEMS UNDER THE CONTRACT. THE ARCHITECT WILL PROVIDE THE GENERAL CONTRACTOR WITH A SET OF REPRODUCIBLE PLANS FOR THIS PURPOSE. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE AS-BUILT DRAWINGS ACCORDING TO THE JOB PROGRESS. **EACH PAY REQUEST SUBMITTED BY THE CONTRACTOR SHALL BE ACCOMPANIED BY A COPY OF THE UPDATED AS-BUILT DRAWINGS.**
10. THE CONTRACTOR SHALL CALL "DIGGER'S HOTLINE" AT 800-242-8511, 48 HOURS (EXCLUDING WEEKENDS AND/OR HOLIDAYS) PRIOR TO DIGGING ANY EXCAVATION. "DIGGER'S HOTLINE" WILL CONTACT UTILITY COMPANIES TO LOCATE AND MARK THEIR UNDERGROUND FACILITIES. NO SUCH WORK SHALL COMMENCE PRIOR TO VERIFICATION THAT ALL UTILITIES HAVE RESPONDED.
11. PROTECT TREES, SHRUBS, LAWNS, AND OTHER FEATURES WITHIN PROJECT LIMITS. RESTORE DAMAGED FEATURES TO ORIGINAL CONDITION.
12. ALL WORK MUST BE COMPLETED BY WORKERS WHO ARE SPECIFICALLY TRAINED FOR ALL WORK INCLUDED HEREIN - SEE SPECIFICATIONS FOR MORE INFORMATION.

INSITE CONSULTING ARCHITECTS

InSite Consulting Architects
744 Williamson St Suite 101
Madison, Wisconsin 53703
608-204-0825
608-531-1533 (fax)
info@icsarc.com

GREAT DANE PUB & BREWING EST. 1994

GREAT DANE DOWNTOWN
FACADE RESTORATION
123 E DOTY STREET
MADISON, WISCONSIN 53703

NOTE: ALL DIMENSIONS GIVEN SHALL BE CONSIDERED TO BE "V.I.F." OR VERIFY-IN-FIELD

NOT FOR CONSTRUCTION

ICA NO. GRD 22-001

TITLE SHEET

LANDMARKS
12-19-2022

TS

GENERAL DEMOLITION NOTES:

1. PROJECT ENTAILS COMPLETE WINDOW REPLACEMENT. ALL WINDOWS AND FRAMES SHALL BE REMOVED FROM THEIR ROUGH OPENINGS COMPLETE FOR REPLACEMENT WINDOWS
2. ALL ROUGH OPENINGS SHALL BE ACCURATELY MEASURED. TO VERIFY REPLACEMENT WINDOW SIZES PRIOR TO SHOP DRAWINGS
3. PROTECT ADJACENT FINISHES AT THE INTERIOR AND EXTERIOR TO PREVENT DAMAGE TO EXISTING TO REMAIN.

RESTORATION DESIGN NOTES:

- A: REMOVE EXISTING WINDOW AS SHOWN PREPARE OPENING FOR NEW ALUMINUM/ WOOD COMPOSITE CUSTOM ALUMINUM EXTRUSION TO MATCH HISTORIC WOOD INTERIOR CONFIGURATION TO MATCH HISTORIC
- B: CLEAN, PRIME AND RESTORE DECORATIVE IRONWORK
- C: RESTORE EXTERIOR SUBSILL PANELS WITH NEW PAINTED WOOD TO MATCH EXISTING
- D: RESTORE EXTERIOR CONCRETE AND MASONRY AT FOUNDATION
- E: RESTORE EXISTING STAIR
- F: RESTORE EXISTING FASCIA AND CORNICE MATCH EXISTING WOOD AND PAINT TO MATCH EXISTING COLOR SCHEME
- G: REPOINT 10 % OF ALL MASONRY THIS BUILDING
- H: REPOINT 5 % OF ALL MASONRY THIS BUILDING
- J: REPAIR EXISTING WOOD FRAMED STOREFRONT WINDOWS IN SITU, TYP - PROVIDE PAINT PREP AND WOOD REPAIRS TO RECEIVE NEW PAINT. PROVIDE NEW WEATHER STRIPPING, STOPS, AND SEALANT AT WINDOW PERIMETER

1 A301 — 123 E. DOTY ST. NORTH ELEVATION DECONSTRUCTION/PARTIAL DEMOLITION

SCALE: 3/8" = 1'-0"

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NORTH ELEVATION - DEMO

LANDMARKS
12-19-2022

A301

HISTORIC
FESS
MOTEL

HISTORIC
CENTRAL
MOTEL (FESS)

GENERAL NOTES:

1. FIELD VERIFY DIMENSIONS, BRING DISCREPANCIES TO THE ATTENTION OF THE ARCHITECT FOR FINAL DECISIONS.

2. GENERAL CONTRACTOR SHALL PATCH AND REPAIR EXISTING CONSTRUCTION (WALLS, CEILING, FLOOR, ETC) AS REQUIRED FROM DEMOLITION OR CONSTRUCTION TO ALLOW FOR THE PREP WORK AND NEW OR COMPLETION OF EXISTING FINISHES. REPAIRS OR REPLACEMENTS MUST BE DURABLE, SEAMLESS, AND MATCH THE EXISTING MATERIAL.

3. GENERAL CONTRACTOR SHALL PROVIDE BLOCKING, STIFFENERS, AND BRACING NECESSARY FOR NEW CONSTRUCTION.

4. REPLACEMENT DOUBLE-HUNG WINDOWS ARE CUSTOM TRIM, OPERABLE ALUMINUM CLAD WOOD WINDOWS, TYPICAL.

1 / A302 123 E. DOTY STREET NORTH ELEVATION SASH CONFIGURATIONS

SCALE: 3/8" = 1'-0"

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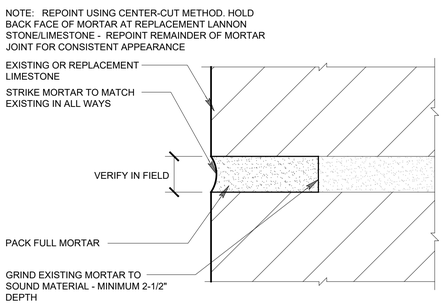
ICA NO. GRD 22-001

NORTH
ELEVATION - NEW

LANDMARKS
12-19-2022

A302

NOTE: REFERENCE PHOTO GRAPH FROM 1905 +/- REMODELED IN 1903
PERIOD OF SIGNIFICANCE = 1825 - 1899



2 / A303 TYPICAL REPOINTING DETAIL AT BRICK
SCALE: FULL SIZE

1 / A303 WEST ELEVATION RESTORATION
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

1. FIELD VERIFY DIMENSIONS, BRING DISCREPANCIES TO THE ATTENTION OF THE ARCHITECT FOR FINAL DECISIONS.

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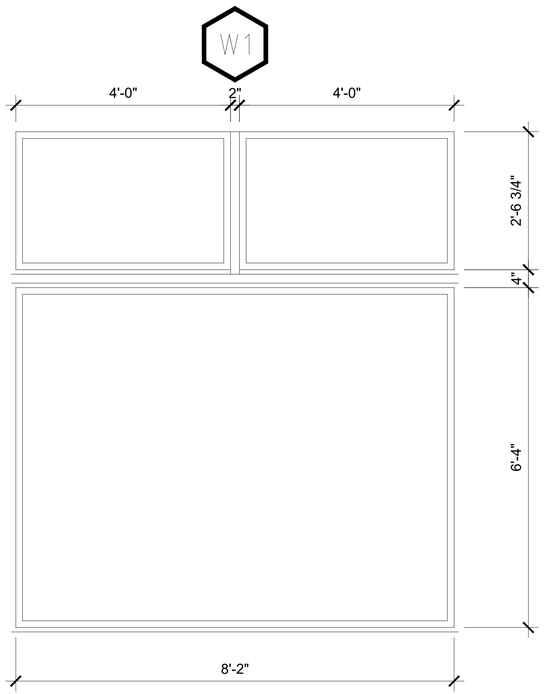
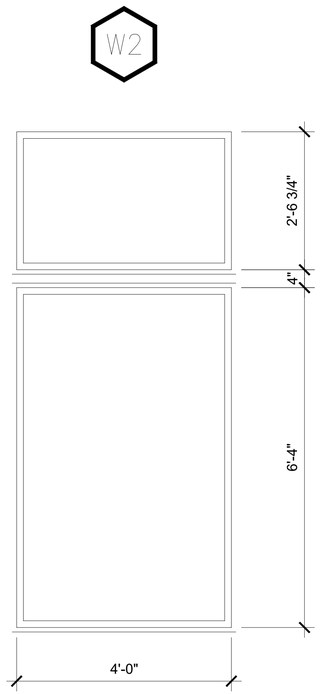
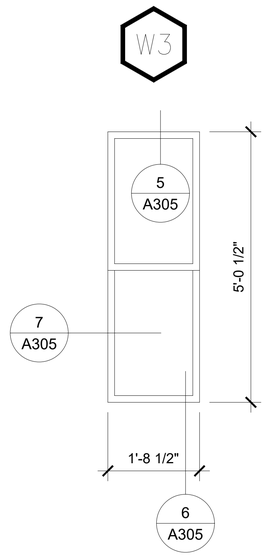
WEST ELEVATION

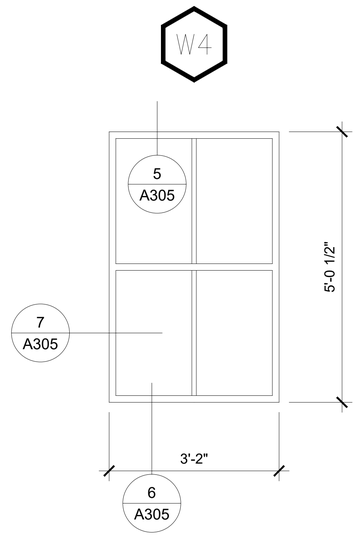
LANDMARKS
12-19-2022

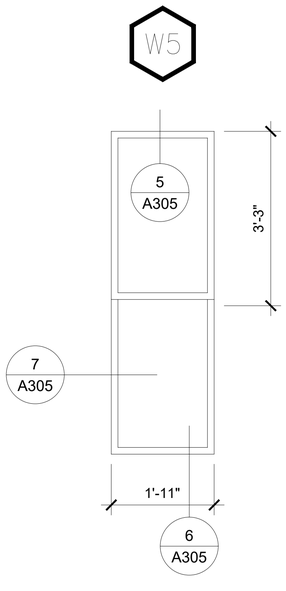
A303

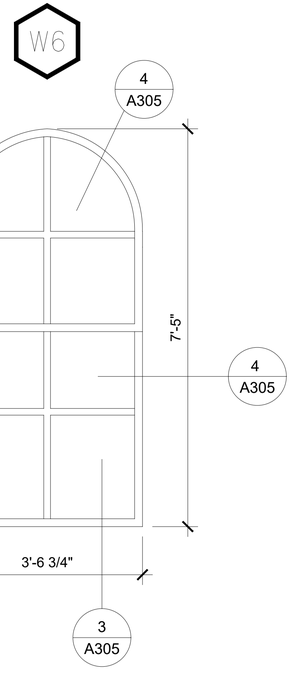


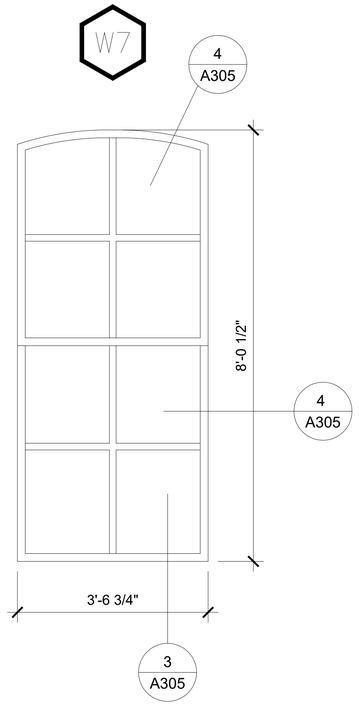












1
A304

SASH REPLACEMENT WINDOW TYPES

SCALE: 3/4" = 1'-0"

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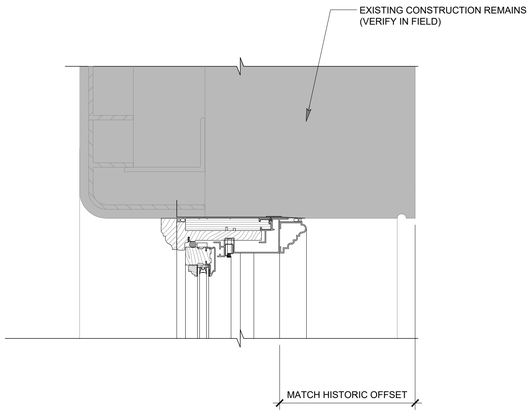
ICA NO. GRD 22-001

WINDOW TYPES

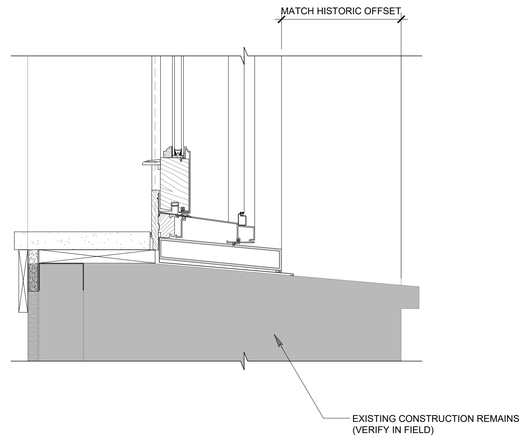
LANDMARKS
12-19-2022

A304



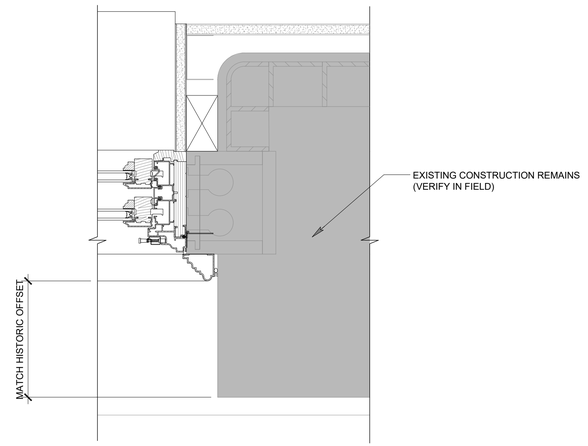
5 A305 TYP. HEAD DETAIL - WOOD BAY WINDOW

SCALE: 3" = 1'-0"



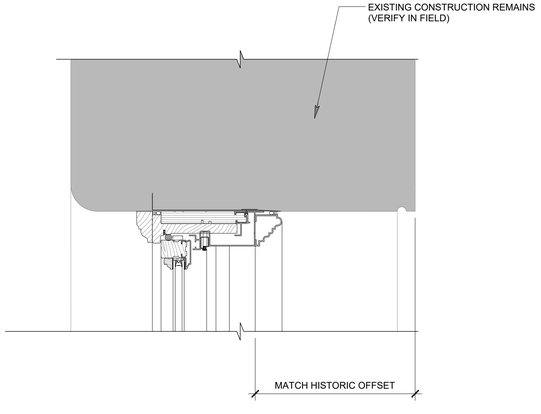
6 A305 TYP. SILL DETAIL - WOOD BAY WINDOW

SCALE: 3" = 1'-0"



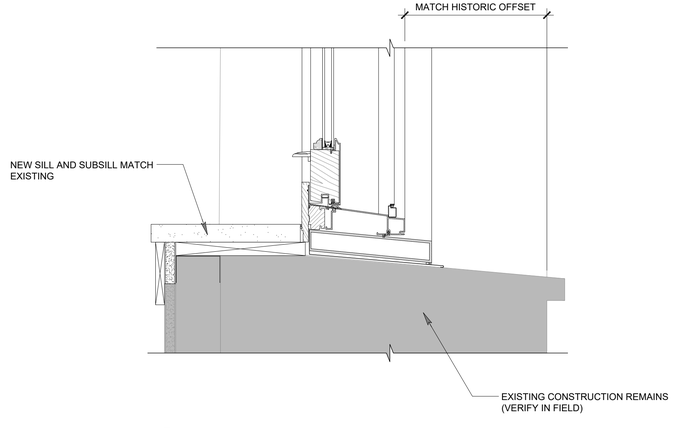
7 A305 TYP. JAMB DETAIL - WOOD BAY WINDOW

SCALE: 3" = 1'-0"



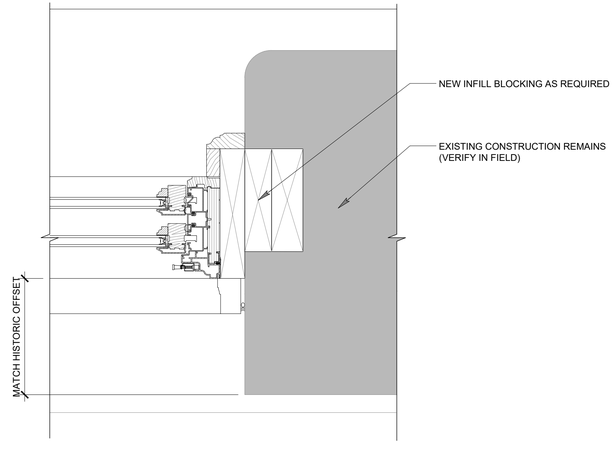
2 A305 TYP. HEAD DETAIL - MASONRY

SCALE: 3" = 1'-0"



3 A305 TYP. SILL DETAIL - MASONRY

SCALE: 3" = 1'-0"



4 A305 TYP. JAMB DETAIL - MASONRY

SCALE: 3" = 1'-0"

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WINDOW DETAILS

LANDMARKS
12-19-2022

A305

PART 1: GENERAL

1.1. WORK INCLUDED

a. Provide all labor, materials, services and incidentals necessary to perform the following work:
   i. Carefully remove and store all materials slated for future reinstallation.
   ii. Remove and dispose of existing materials to the extent shown on the Drawings.

1.2. REGULATORY REQUIREMENTS

a. The following regulatory requirements shall be followed:
   i. Local, State and Regional Building Codes
   ii. Occupational Safety and Health Administration (OSHA).
   iii. United States Department of Transportation (US DOT).
   iv. Environmental Protection Agency (EPA).
   v. National Emission Standards for Hazardous Air Pollutants (NESHAP).

b. The Architect is not an advisor of asbestos-related issues. The Contractor shall consult the Owner's Asbestos Personnel for clarifications.

1.3. PROTECTION

a. When Work involves removal of masonry materials; the following minimum requirements shall be enforced:
   i. The Contractor shall exercise extreme caution and take all necessary precautions to limit exposing his workmen or bystanders to any dangerous conditions.
   ii. Protect all existing utilities against damage. Maintain existing utilities during demolition operations.
   iii. Protect passageways and maintain all exit ways to facilitate the safe passage of persons around the area of demolition. Do not modify the facilities code compliant status in any way that is not specifically addressed in this Project Manual.
   iv. Provide interior and exterior shoring, bracing, or support as required to prevent movement, settlement, or collapse of adjacent construction scheduled to remain.
   v. Protect all remaining portions of the building, landscaping and other property not scheduled for demolition. These areas shall be completely protected during demolition and removal of debris. **Any resulting damage shall be repaired or replaced to like-new condition by the Contractor responsible under the direction and approval of the Owner and Architect.**
   vi. Protect area designated by the Owner and the Architect with necessary framing, plastic sheet, or similar materials to prevent visible dust and debris from entering the building. Remove dust and debris protection materials upon job completion.
   vii. When the Work involves removal of building materials containing asbestos, notify the Owner's Asbestos Consultant immediately.

1.4. OCCUPANCY

a. The Owner shall occupy the building during demolition and construction and the facility shall remain operational.

b. Coordinate all Work in advance with the Owner, the Owner's onsite personnel and the Architect.

1.5. DUST CONTROL

a. The following **minimum** requirements will be enforced:
   i. It is imperative that construction related dust be kept to a minimum during all work related to this project.

PART 2: PRODUCTS

2.1. NOT USED.

PART 3: EXECUTION

3.1. LIMITED DEMOLITION

a. Remove existing construction as required to complete the installation of all new Work as shown or specified. Refer to the Drawings for the extent of the existing construction that is to be removed.
b. Do not start demolition of existing materials when inclement weather is expected.
c. Refer to this section for requirements relating to protection of existing structure and property.
d. If during the course of the demolition Work portions of the existing structure are opened to the weather, it shall be the Contractor's responsibility to close such openings as required in a weathertight manner at the end of each workday.

3.2. DISPOSAL OF MATERIALS

a. The Contractor shall remove all demolition material (that is not scheduled for reuse) from the Owner's site.
    i. No prolonged accumulation of debris will be allowed. Debris shall be removed as it accumulates.
    ii. Sale of removed items on the site will not be allowed.
    iii. Debris shall be transported on covered dumpsters or trucks.
    iv. The site is to be broomed clean at the end of each working day.
b. No burning on site will be permitted.

END OF SECTION

PART 1: GENERAL

1.1. CONDITIONS OF THE CONTRACT

a. The conditions of the Contract (General, Supplementary, and Other Conditions) and the requirements of Division 1 are hereby made a part of this Section. Applicable provisions of Division 1 shall govern Work under this Section.

1.2. WORK INCLUDED

a. Unless otherwise specified, the Contractor shall furnish all materials, tools, equipment, apparatus, transportation, labor and supervision required to furnish and install all the masonry as shown on the Drawings and specified.

1.3. RELATED SECTIONS

a. Section 02 41 00 – Demolition
b. Section 07 62 15 – Copper Flashing and Trim

1.4. QUALITY ASSURANCE

a. There shall be no deviation made from this Specification, the Drawings and on all approved Shop Drawings without prior written approval by the Architect.
    i. Prior to covering newly installed Work with permanent materials, the Contractor shall coordinate with the Architect to review all installed components for compliance with the intent of the design as outlined in the drawings and specification of the Project Manual. In addition, the Contractor shall certify that all work was completed in accordance with the Project Manual.
b. All Work shall be performed by skilled journeyman masons and laborers who are considered specialists in the field of masonry work similar to that required under this Contract.
c. Masons shall have a minimum of five (5) years experience in this type of work.
d. Samples (mock-ups) of typical masonry restoration work required by this Specification and as shown on the Drawings shall be installed in unobtrusive areas using materials and methods specified, and made available for viewing by the Architect and Owner. No related work shall proceed until after mock-ups have been inspected and approved by the Architect.
e. Furnish sample (mock-up) panel 8’ long by 6’ high of the proposed masonry restoration work (new, replaced masonry units and finished repointing) including color range, texture, bond, mortar and workmanship. Erect mock-up panel in the presence of the Architect. Provide separate mock-up panels for each type of brick and mortar. Do not start the Work until the Architect has accepted sample mock-up panel. Use mock-up panel(s) as standard of comparison for all masonry work built of same material. Do not destroy or move the mock-up panel(s) until the Work is completed and accepted by the Owner.
f. During the workday, should the weather conditions appear to be changing adversely, the Foreman and crew shall take preventive measures to allow the work area to be closed to a weathertight condition to avoid exposure to building, equipment, and materials.
g. Repair any Work, damaged by failure to provide proper and adequate protection, to its original state to the satisfaction of the Owner, or remove and replace with new Work at the Contractor’s expense.
h. Use of air entraining admixtures, chlorides, or nitrates, are not allowed and will be sufficient cause to require removal and replacement of all masonry restoration work containing or treated with these materials.
i. It will be the Architect’s prerogative to forbid the use of tools or methods that do not produce the quality of work that is expected and to insist on the use of methods and tools, which will do the Work properly.
j. Construct minimum 12 inch by 12-inch prisms for testing purposes as required by the Architect.

1.5. REFERENCES

a. References shall refer to the most recent standard.
    i. Brick Institute of America (BIA).
    ii. American Society for Testing and Materials (ASTM).
    iii. Masonry Advisory Council (MAC).
    iv. Federal Specifications (FS).

1.6. SUBMITTALS

a. Submit product data and certificates for all replacement masonry units and mortar type.
b. A total of three (3) copies of each submittal are required.
c. Submit not less than two (2) individual samples of proposed replacement face bricks, showing extreme variations in color and texture.
d. Mock-up of a minimum 4' x 4' repointing using new mortar to match existing for approval by Owner and Architect. Mock-up area shall be adjacent to new repointing work.
e. Prism Test Reports (as required)
    i. Test reports are to be submitted to the Architect for approval.
    ii. Testing and reports are to be completed by an independent laboratory.
    iii. Test reports shall show:
        1. Age at test.
        2. Storage conditions.
        3. Dimensions of prism.
        4. Compressive strength of individual prisms.
        5. Coefficient of variation (v).
        6. Ultimate compressive strength of masonry (F'm) that has been corrected for the coefficient of variation (v) and the h/t of the prisms tested.

1.7. PRODUCT DELIVERY, STORAGE AND HANDLING

a. Deliver all materials in their original unopened containers with all markings intact.
b. Store replacement masonry units off ground to prevent contamination by mud, dust or materials likely to cause staining or other defects.
c. Cover materials when necessary to protect from the elements.
d. Protect masonry reinforcing from the elements.

1.8. JOB CONDITIONS

a. Protection of Work
    i. Wall covering:
        1. During erection, cover top of wall with strong waterproof protective covering at end of each day or shutdown.
        2. Cover partially completed walls when Work is not in progress.
        3. Extend protective coverings a minimum of 24 inches (610 mm) down both sides.
        4. Hold protective coverings securely in place.
    ii. Load application:
        1. Do not apply uniform floor or roof loading for at least 12 hours after building masonry columns or walls.
        2. Do not apply concentrated loads for at least three (3) days after building masonry columns or walls.
b. Staining
    i. Prevent grout or mortar from staining the face of the masonry to be left exposed.
        1. Immediately remove grout or mortar in contact with the face of such masonry.
        2. Protect all sills, ledges, and projections from droppings of mortar.
        3. Protect door and window jambs and heads from staining or damage.
c. Cold Weather Protection
    i. Preparation:
        1. If ice or snow has formed on replacement masonry bed, remove by carefully applying heat until the top surface is dry to the touch.
        2. Remove all replacement masonry that is frozen or damaged.
    ii. Products:
        1. When brick suction exceeds the initial rate of absorption, sprinkle with heated water.
            A. When units are 32°F (0°C) heat water above 70°F (21°C).
            B. When units are below 32°F (0°C) heat water above 130°F (54°C).
        2. Use only dry replacement masonry units.
        3. Do not use wet or frozen replacement masonry units.
d. Construction requirements while Work is progressing:
    i. Air temperature 40°F (4°C) to 32°F (0°C):

1. Heat mixing water to produce mortar temperatures between 40°F (4°C) and 120°F (49°C).

ii. Air temperature 32°F (0°C) to 20°F (-7°C):
1. Heat sand or mixing water to produce mortar temperatures between 40°F (4°C) and 120°F (49°C).
2. Maintain temperatures of mortar on board above freezing.
3. Use salamanders or other heat sources on both sides of walls under construction as required to properly protect replacement masonry from freezing.
4. Use windbreaks when wind is in excess of 14 MPH.
5. Air temperatures 20°F (-7°C) and below:
A. Heat mixing water to produce mortar temperatures between 40°F (4°C) and 120°F (49°C).
B. Provide enclosures and auxiliary heat to maintain temperature above 32°F (0°C).
C. Minimum temperature of new masonry units is to be 20°F (-7°C).

iii. Protection requirements for completed replacement masonry and replacement masonry not being worked on.
1. Mean daily air temperature 40°F (4°C) to 32°F (0°C):
A. Protect replacement masonry from rain or snow for 24 hours with weatherproof covering.
2. Mean daily air temperature 32°F (0°C) to 25°F (-4°C):
A. Completely cover replacement masonry with weatherproof covering for 24 hours.
3. Mean daily air temperature 25°F (-4°C) to 20°F (-7°C):
A. Completely cover replacement masonry with insulating blankets or equal protection for 24 hours.
4. Mean daily air temperature 20°F (-7°C) and below:
A. Maintain replacement masonry temperature above 32°F (0°C) for 24 hours by constructing a sufficient enclosure with supplementary heat, electric heating blankets, infrared lamps or approved equal.

1.9. GUARANTEES, WARRANTIES, CERTIFICATES

a. Materials and/or workmanship shall be guaranteed against defects for a period of two (2) years from the date of Substantial Completion as established by the Architect.

PART 2: PRODUCTS

2.1. ACCEPTABLE MANUFACTURERS

a. Provide products by Manufacturers specified herein which meet or exceed standards as set forth in this Section. No products specified or approved shall contain asbestos.
b. All materials shall be new unless noted otherwise.

2.2. MATERIALS

a. New Common Brick: New, severe weathering (SW) face brick units to match size and color of existing masonry. Final size and color selection shall be by Architect. Replacement masonry shall be manufactured by Belden Brick Company, Canton, Ohio, or approved equal.
b. Structural Angle Steel Lintels: hot dipped galvanized ASTM A36 steel.
c. Through-wall Flashing: “Polyguard 400 Thru Wall Flashing,” a 40 mil, self-adhering, self-healing membrane consisting of a rubberized asphalt waterproofing element, bonded to a strong polyethylene film top surface, as manufactured by Polyguard Products Inc, Ennis, Texas, or “Perm-A-Barrier Wall Flashing,” 40-mil, self-adhering membrane wall flashing as manufactured by W.R. Grace & Co., Columbia, Maryland, or approved equal.
d. Through-wall Copper Flashing Drip Edge: See Copper Flashing and Trim for type and thickness, 1-5/8” wide with a 1/2” 90-degree bend at one end.
e. Lime: Pressure hydrated, non-air entraining, Type “N” conforming to ASTM C207 standard.
f. Water: Potable, fresh, clean, clear and free from injurious amounts of sewage, oil, acid, alkali, salts, organic matter or other detrimental substances.
g. Color Admixture (if required for matching): Non air-entraining pure mineral pigment which is light fast, lime proof, and weatherproof, such as DCS mortar colors by DCS Color and Supply Company of Milwaukee, Wisconsin or approved equal.

h. Reinforcement: Standard masonry reinforcement, cold drawn steel wire conforming to ASTM A82 or welded steel wire fabric conforming to ASTM A185.
i. Anchors and Ties: Minimum 20 ga. galvanized, type and spacing as shown on the Drawings.
j. Cement Base Waterproofing: Thoroseal by Standard Dry Wall Products, Inc. of Miami, Florida or approved equal.
k. Weep Vent: "Mortar Net Weep", 90% open polyester mesh, color to match mortar, as manufactured by Mortar Net USA.
l. Weeps: "# 341 Series Round Plastic Weep Holes," medium density polyethylene, 3/8" outside diameter (O.D.) by 4" long with stainless steel screen insert and double cotton wick, as manufactured by H & B Illinois, Chicago, Illinois.
m. Other Materials: All other materials not specifically described but required for a complete and proper installation of the Work in this Section, shall be selected by the Contractor subject to the approval of the Architect.

2.3. BRICK REPAIR MATERIAL

A. Substitute Brick Repair Material: Must use only mineral-based, single component products that contain natural binders; no synthetic polymers or additives are permitted. Substitute brick material must be pre-mixed in a quality controlled factory, with only the addition of water required at the site prior to installation.
B. Acceptable material:
1. Jahn M100 Terra Cotta and Brick Repair Mortar, Cathedral Stone Products, Jessup, Maryland
C. Brick Repair Material shall be custom colored to match the existing brick and produced in a quality controlled factory environment. The contractor will be expected to keep a stock of a range of custom colors that is equal in number to the number of colors in the custom brick blend (up to 6).
D. No field mixing of color pigments into the repair materials is permitted on-site.
E. No color staining of existing brick requiring repairs or newly applied repair materials is permitted.
F. Apply substitute brick materials to areas no more than 2 inches in depth and 3 inches wide or as specifically allowed by the manufacturer.

2.4. ALL MORTAR MATERIALS

A. The basis of the mortar for this project shall be:
1. St. Astier Natural Hydraulic Lime NHL 3.5, distributed by TransMineral USA.
2. Pigment – None.
3. Sand – Sand shall be clean and uncontaminated by clay/silt and shall be a combination of blending sand and torpedo sand, such as by Thelen Materials, Antioch, IL.
4. Final mortar mix shall be determined in the field under the direction of the Architect. For the purposes of this bid use the following lime/sand ratio (1:2.5) by volume.
B. All mortar shall be prepared and placed in accordance with the Department of the Interior National Park Service Cultural Resources Preservation Briefs 2, "Repointing Mortar Joints in Historic Masonry Buildings" (Revised Edition October 1998), and in compliance with the guidelines set forth by the Secretary of the Interior's Standards.
C. The mortar shall match the original in color, grain size and texture. The compressive strength of the repointing mortar shall be equal or less than the compressive strength of the original mortar and surrounding brick. The replacement mortar shall contain approximately the same ingredient proportions of the original mortar and shall have a water vapor transmission rate greater than all adjacent masonry.
D. All replacement mortar ingredients and mortar formulations have been established from test data gathered from the original materials sampled from site, and from performance data observed in the field.
E. Mixing of individual mortar ingredients at the construction site will be permitted.
F. Repointing mortars may be pre-blended (not including water) in single containers in a factory-controlled environment, however the architect shall have FULL authority to reject any process that in his sole discretion will not meet the intent of this specification.
G. All ingredients will be converted from volume measurements to weight measurements to ensure quality production of the mortar. This must be accomplished prior to any mix manufacture with the Natural Hydraulic Lime manufacturer.
H. All mortar materials delivered to the site shall be tested to confirm specification compliance before mortar is installed in the wall.

PART 3: EXECUTION

3.1. EXAMINATION

a. The Masonry Contractor shall have the sole responsibility for the accuracy of all measurements and for the estimate of material quantities required and necessary to satisfy the requirements of the Drawings and these Specifications.

3.2. SEQUENCING/SCHEDULING

a. Perform only as much Work as can be restored to a weathertight condition each day or before showers commence.
b. All related flashing work shall be completed each day.
c. All other work required for a complete and proper installation per the Drawings and these Specifications that constitute a complete and proper installation shall be completed each day

3.3. SUBSTRATE PREPARATION

a. Remove all existing materials as specified to perform the Work.
b. Exterior masonry surfaces to remain in place shall be meticulously inspected for cracks or defects.
c. Any mortar joint that is loose, porous, crumbled, cracked, badly weathered (deeper than 1/8" behind masonry surface), un-bonded to adjacent masonry units, or a potential source of leakage shall be deemed defective. All spalled, cracked, broken, or otherwise defective brick shall be removed and replaced using brick and mortar as specified herein.
d. Included in the definition of defective shall be cracked joints that have been sealed.
e. Any missing brick and/or mortar joints that lack mortar or has lost bond, is spalled, or broken, which can be detected from a maximum distance of ten (10) feet under clear skies during daylight times by an observer with normal vision, shall be deemed profusely defective for this Project.
f. All cracks, defective, or profusely defective mortar joints shall be cut out or ground out the full width of the joint to a minimum depth of 3/4".
g. Where mortar is broken or loose beyond a depth of 3/4", remove unsound mortar to where firm solid mortar is encountered prior to pointing. All joints must be cut clean of unsound mortar material in a square manner full depth of cut. Furrow shaped joints will not be acceptable.
h. The cutting out of joints shall be done with suitable tools, either hand tools or mechanical equipment, in such a manner as will not loosen adjacent joints or injure the edges or corners of the replacement masonry units. Where the mortar is tightly bonded at one side of the joint, and if the contour permits, the cutting shall be done with portable electric grinders with abrasive wheels to minimize spalling at the edges of the replacement masonry units.
i. After the joint has been cut out, all loose material shall be removed by brush, air jet, or water stream. Following this cleaning, the joint shall be thoroughly moistened. The joint shall be damp, but without free water on the surface at the time of pointing.
j. Isolated bricks with cracks larger than 1/32" shall be deemed defective and shall be replaced.
k. Facing brick, which are spalled 1/16" or greater in depth over 10 percent or more of the face area shall be removed and replaced.
l. Wetting Brick: Wet brick with absorption rates in excess of 30 gal. / 30 in^2 / minute (30 gal. / 194 cm^2 / minute) determined by ASTM C67, so that the rate of absorption when laid does not exceed this amount. Recommended procedure to insure that bricks are nearly saturated when laid is to place a hose on the pile of brick until the water runs from the pile. This should be done one day before the brick are to be used. In extremely warm weather, place the hose on the pile several hours before the bricks are to be used.

3.4. GENERAL ERECTION REQUIREMENTS

a. Pattern Bond
    i. Lay new replacement masonry in 1/2 running bond or match existing.
    ii. Bond unexposed replacement masonry units wythe-to-wythe by lapping at least 2" (51 mm).
b. Joining of Work
    i. Where fresh replacement masonry joins partially set masonry:
        1. Remove loose brick and mortar.
        2. Clean and lightly wet exposed surface of set masonry.
    ii. Stop off horizontal run of masonry by racking back 1/2 length of unit in each course.
    iii. Toothing is not permitted except upon written acceptance of the Architect.
c. Tooling

i. Tool exposed joints when “thumb-print” hard with a round jointer, slightly larger than width of joint.
ii. Trowel-point or concave-tool exterior joints below grade.
iii. Following at the proper interval, all new mortar joints shall be compressed and tooled with a smooth rounded iron of selected width to produce a smooth, dense surface, very slightly concave, or similar depth as typically existing, and tightly pressed against the edges of the masonry units. Complete by gently brushing the face of the joint to match existing.

d. Flashing
   i. Clean surface of masonry smooth and free from projections that might puncture flashing material.
      1. Install new thru-wall flashings as shown on the Drawings.
      2. Install thru-wall flashings per the Manufacturers recommendations.

e. Weep Holes
   i. Provide weep holes in head joints in first course immediately above all flashings.
   ii. Maximum spacing: 24 in. (610 mm) on-center.
   iii. Keep weep holes and area above through-wall flashing free of mortar drippings.

f. Sealant Recesses
   i. Leave joints around outside perimeters of exterior doors, window frames and other wall openings.
      1. Depth: Uniform 3/4” (19 mm).
      2. Width: 1/4” (6.4 mm) to 3/8” (9.5 mm).

g. Movement Joints
   i. Locate as shown on the Drawings.
   ii. Keep clean from all mortar and debris.

h. Cutting Brick
   i. Cut bricks with motor driven saw or other methods that provide cuts that are straight and true.

i. Mortar Joint Thickness
   i. Lay brick with joints to match existing but not to exceed 1/2” (12.7 mm).

j. Construction Tolerances
   i. Maximum variation from plumb in vertical lines and surfaces of wall arises:
      1. 1/4” (6.4 mm) in 10 ft. (3 m).
      2. 3/8” (9.6 mm) in a story height not to exceed 20 ft. (6 m).
      3. 1/2” (12.7 mm) in 40 ft. (12 m) or more.
   ii. Maximum variation from plumb for external corners, expansion joints and other conspicuous lines:
      1. 1/4” (6.4 mm) in any story or 20 ft. (6 m) maximum.
      2. 1/2” (12.7 mm) in 40 ft. (12 m) or more.
   iii. Maximum variation from level of grades for exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines:
      1. 1/4” (6.4 mm) in any bay or 20 ft. (6 m).
      2. 1/2” (12.7 mm) in 40 ft. (12 m) or more.
   iv. Maximum variation from plan location or related portion of walls:
      1. 1/2” (12.7 mm) in any bay or 20 ft. (6 m).
      2. 3/4” (19 mm) in 40 ft. (12 m) or more.
   v. Maximum variation in cross-sectional dimensions of columns and thickness of walls from dimensions shown on the Drawings:
      1. Minus 1/4” (6.4 mm).
      2. Plus 1/2” (12.7 mm).

3.5. MORTAR MIXES

a. All equipment for mixing, transporting and applying mortar shall be clean and free from hardened mortar, dirt, ice, or other foreign matter.
b. Follow printed Manufacturers instructions for mixing preblended mortar.
c. Measure materials for mortars by volume, in a manner whereby proportions can be controlled within five percent. The proportions listed hereinafter for conventional mortars are portland cement, lime, and damp loose sand, respectively by volume. The proportions are listed only as a sample for the required type mortar and shall be modified as necessary, within tolerances, to suit the particular masonry sand being used.
d. Mix cementitious materials, powdered coloring admixtures and masonry sand dry. Add water and

bring to proper consistency for use. Mix materials until evenly distributed throughout the batch and the mixture is uniform in color and consistency. No antifreeze ingredient or similar such contaminant will be tolerated.

e. Repointing and brick replacement mortar shall be ASTM C270, Type "N" Lime-Cement Mortar (1:1:6). Mortar shall be mixed and left untouched for one to two hours. Additional water shall then be added and the mortar remixed. Mortar shall be re-tempered as necessary to maintain its workability, but used before it is three (3) hours old or otherwise discarded.

3.6. REPOINTING

a. See "3.03 Substrate Preparation" for repointing general preparation requirements.
b. With joint damp, completely filled with mortar placed in three (3) layers (lifts) and firmly pressed into place. Mortar shall be "thumb-hard" prior to placing next layer (lift).
c. Following at the proper interval, the joint shall be compressed and tooled with a smooth rounded iron of selected width to produce a smooth, dense surface, very slightly concave, or similar depth as typically existing, and tightly pressed against the edges of the masonry units. Complete by gently brushing the face of the joint to match existing adjacent rough texture.
d. All necessary protection shall be provided to prevent damage to the existing roofs.

3.7. CLEANING

a. Cut out any defective joints and holes in exposed masonry and re-point with mortar.
b. Clean all exposed unglazed masonry.
    i. Apply cleaning agent to sample wall area of 20 sq. ft. (2 sq. m) in location acceptable to the Architect.
    ii. Do not proceed with cleaning until the Architect approves sample area.
    iii. Clean initially with stiff brushes and water.
    iv. When cleaning agent is required:
        1. Follow brick Manufacturer's recommendations
        2. Do not use acid solutions to clean light colored brick.
        3. Thoroughly wet surface of masonry on which no green efflorescence (staining) appears.
        4. Scrub with acceptable cleaning agent.
        5. Immediately rinse with clean water.
        6. Do small sections at a time.
        7. Work from top to bottom.
        8. Protect all sash, metal lintels and other corrodible parts when masonry is cleaned with an acid solution.
        9. Remove green efflorescence (staining) in accordance with brick manufacturer's recommendations and BIA "Technical Notes 23 Series."

END OF SECTION

PART 1: GENERAL

1.1. CONDITIONS OF THE CONTRACT

a. The conditions of the Contract (General, Supplementary, and Other Conditions) and the requirements of Division 1 are hereby made a part of this Section. Applicable provisions of Division 1 shall govern Work under this Section.

1.2. WORK INCLUDED

a. Unless otherwise specified, the Contractor shall furnish all materials, tools, equipment, apparatus, transportation, labor and supervision required to furnish and install all the limestone as shown on the Drawings and as specified herein.

1.3. RELATED SECTIONS

a. Section 02 41 00 – Demolition
b. Section 04 01 20 – Masonry Restoration

1.4. QUALITY ASSURANCE

a. There shall be no deviation made from this Specification without prior written approval by the Architect.
b. All proposed shoring plans and details must be approved by the Architect and in place before any load bearing limestone and brick back-up demolition work can proceed. All shoring systems shall be designed by the Contractor who shall be ultimately responsible for same.
c. All limestone restoration work shall be performed by skilled journeymen tradesmen including but not limited to, stonemasons, masons, repointers, concrete installers / finishers, roofers, and laborers who are considered specialists in the field of the work specified in this Section.
d. Journeymen tradesmen shall have a minimum of five (5) years experience in the specified type of work.
e. During the workday should the weather conditions appear to be changing adversely, the Contractor shall take preventative measures to protect any unfinished Work that was to be performed that day and to allow adequate time for the work area to be properly closed to a watertight condition to avoid exposure to the building interior.
f. Repair any Work damaged by failure to provide proper and adequate protection, to its original state to the satisfaction of the Owner, or remove and replace the defective Work with new at the Contractor's expense.
g. Use of air entraining mixtures, chlorides, or nitrates is not to be mixed in with the mortar. Any use of these materials in the mortar will be sufficient cause to require removal and replacement of same.
h. It will be the Architect's prerogative to forbid the use of tools or methods that do not produce the quality of work that is expected and to insist on the use of tools and methods, which will do the Work properly.
i. The Architect reserves the right to approve the material supplier for the new materials specified in this Section.
j. All material and workmanship quality shall be in accordance with current industry standards and practices in conformance with the organizations outlined in 1.5. REFERENCES below.

1.5. REFERENCES

a. References shall refer to the most recent industry standard and recommendations as represented by the organizations listed below.
    i. Indiana Limestone Institute of America (ILI).
    ii. Brick Institute of America (BIA).
    iii. Masonry Advisory Council (MAC).
    iv. American Society for Testing and Materials (ASTM).
    v. Federal Specifications (FS).

1.6. SUBMITTALS

a. Provide all data and sample materials in strict conformance with SECTION 01 33 00 – SUBMITTAL PROCEDURES, and as specified below.
b. Each submittal shall be clearly marked with the specific Specification Section, page number, and item designation that it represents. Each submittal shall be presented in the order that it is outlined in the PROJECT MANUAL – TABLE OF CONTENTS. Failure to do so may result in immediate rejection of the submittal.
c. A total of three (3) copies of each submittal (data sheets) are required.
d. Provide the following unless directed otherwise by the Architect:
    i. Limestone:
        1. Sample areas (mock-ups) of typical limestone restoration including, limestone replacement, limestone repairs, limestone repointing, and limestone cleaning as required, as shown on the Drawings, and per this Specification shall be installed as directed by the Architect using materials and methods specified. The mock-ups shall be made accessible for viewing by the Architect and the Owner. No other Work shall proceed until mock-ups have been inspected and approved by the Architect.
        2. Furnish sample replacement limestone for approval as deemed necessary by the Architect showing the proposed size, profile, grade, color and finish.
        3. Provide written verification from the limestone provider that they can supply the Project with new replacement limestone as specified herein.
    ii. Provide submittal information and Shop Drawings (as applicable) for the following items as specified in PART 2 – PRODUCTS:
        1. Shims: Data sheets and samples.
        2. Strap Anchors: Data sheets and samples.
        3. Dowels (Pins): Data sheets and samples.
        4. Hanging Limestone Anchors: Data sheets and samples.
        5. Back-up Clay Masonry: Data sheets and samples.
        6. Pre-blended Mortar: Data sheets.
        7. Stone Clip Angle: Data sheets and samples.
        8. Masonry Anchor: Data sheets and samples.
        9. Weeps: Data sheets and samples.
        10. Limestone Restoration Mortar: Data sheets and field sample.
        11. Limestone Cleaning Detergent: Data sheets, written description of proposed cleaning procedure and field sample.

1.7. PRODUCT DELIVERY, STORAGE AND HANDLING

a. Deliver all materials in their original unopened packages and/or containers with all markings intact.
b. All materials must be stored in a dry place or otherwise protected from water or extreme humidity.
c. Stack materials on pallets at least 4 inches above the ground and cover with a breathable covering, such as canvas.
d. Store all materials in the manner and temperature range recommended by the Manufacturer.
e. Do not store or transport materials on the roof in a manner that may exceed the live load capacity (30 PSF) of the roof deck system and/or the building structural system. The Architect, during routine inspections, may make recommendations as to loading.
f. Do not transport or store materials on the existing roof surface without adequate protection. The Architect, during routine inspections, may make recommendations as to existing roof protection.

1.8. GUARANTEES, WARRANTIES, CERTIFICATES

a. The Contractor and the material Manufacturer's shall guaranty both material and/or workmanship, and warrant the performance of all items specified in this Section for a period of two (2) years from the date of Substantial Completion as determined by the Architect.

PART 2: PRODUCTS

2.1. ACCEPTABLE MANUFACTURERS

a. Provide Products by Manufacturer's specified herein, which meet or exceed standards as set forth in this Section. No products specified or approved shall contain asbestos.
b. All materials shall be new unless noted otherwise on the Drawings and Specifications.
c. No material substitutions will be accepted unless specified as "or approved equal," and approved in advance by the Architect.

2.2. MATERIALS

a. Replacement WT Limestone: All replacement limestone shall be "Bedford" Indiana Oolitic limestone as quarried in Lawrence County, Indiana. Replacement limestone shall match existing in size, profile, grade, color, and finish.
b. Shims: 2 inch by 4 inch by 1/16 inch, 1/8 inch, and 1/4 inch, plastic shims as manufactured by Racknow Polymers and distributed by Lance Construction Supplies, Inc., Chicago, Illinois, or approved equal.
c. Strap Anchors: "No. 141 U-Type Stone Anchor," 8 inches long by 1-1/4 inch wide with a 7/8 inch bend (Interior dimension). 16 gauge or 0.625 inch (1/16 inch) thickness, stainless steel conforming to ASTM A 167, AISI Type 304, as manufactured by Heckmann Building Products, Inc., Melrose Park, Illinois.
d. Dowels (Pins): 3/8 inch diameter by 4 inch long, smooth finish, stainless steel, conforming to ASTM 267, AISI Type 304 or 316.
e. Hanging Limestone Anchors: "Liebig Superplus 14" stainless sheet, self undercutting, torque controlled, stone anchor, minimum 1-1/2 inch embedment, as manufactured by Liebig International, Inc., or approved equal.
f. Clay Masonry: Standard (3-5/8 inch by 2-1/4 inch by 8 inch) severe weathering (SW), red extruded brick as manufactured by Belden Brick Company, Canton, Ohio, or approved equal.
g. Mortar: Mortar mixture ratio 2.5 to 1.
h. Pre-blended Mortar: Factory blended mortar (preblended) "MASON MIX, Type O Proportion Colored Mortar – P3410/75," as manufactured by QUIKRETE Wisconsin Inc., Sussex, Wisconsin, or approved equal.
i. Portland Cement (as required): Type "I" Conforming to ASTM C150 standard.
j. Lime: St. Astier NHL 3.5 (natural hydraulic lime) by TransMineral USA, Inc., Petaluma, California, (707) 769-0352.
k. Sand (as required): Clean, sharp, free from loam, silt, vegetable matter, salts, and other injurious substances, conforming to ASTM C144 standard.
l. Sand: Clean, sharp, free from loam, silt, vegetable matter, salts, and other injurious substances, conforming to ASTM C144 standard. Such as by Mandt Sandfill, 2079 County Hwy MM, Fitchburg, Wisconsin, 53575. Match existing in size and color.
m. Water: Potable, fresh, clean, clear and free from injurious amounts of sewage, oil, acid, alkali, salts, organic matter or other detrimental substances.
n. Color Admixture (if required for matching): Non air-entraining pure mineral pigment which is light fast, lime proof, and weatherproof, such as DCS mortar colors by DCS Color and Supply Company of Milwaukee, Wisconsin or approved equal.
o. Stone Clip Angle: Type 304 or 316 stainless steel stone clip angle. Length (long leg) varies – field measure. 2" high short leg. 1/8" thick. 7/16" diameter slotted hole at short leg as shown on the Drawings.
p. Masonry Anchor: "BL-523 Brass Expansion Bolt", 7/16" outside diameter by 2" long, type 304 stainless steel masonry anchor as manufactured by H & B Illinois, Chicago, Illinois, or approved equal.
q. Masonry Anchor: "Dur-O-Wal No. DA5410 / DA5610", 7/16" outside diameter by 2" long, type 304 stainless steel masonry anchor as manufactured by Dayton Superior, Dayton, Ohio, or approved equal.
r. Weeps: "# 341 Series Round Plastic Weep Holes," medium density polyethylene, 3/8" outside diameter (O.D.) by 4" long with stainless steel screen insert and double cotton wick, as manufactured by H & B Illinois, Chicago, Illinois.
s. Limestone Restoration Mortar: "Mimic" trowel applied, color matched, single component limestone repair mortar as manufactured by Conproco Corporation, or approved equal.
t. Limestone Restoration Mortar: Jahn M70 Repair Mortar, Cathedral Stone Products, Jessup, Maryland.
u. Limestone Cleaning Detergent (as required): "Stone Soap Ultra" water-based cleaner, pH neutral, containing no abrasives, acids, alkalis, salts, phosphates, d-liminene, artificial colors, fragrances, or

preservatives, as manufactured by Stone Technologies Corp, or approved equal.

v. Through Wall Flashing Membrane and Cap Flashing Membrane (At Coping Stones): "Perm-A-Barrier Wall Flashing," 40-mil, self-adhering membrane wall flashing as manufactured by W.R. Grace & Co., Columbia, Maryland, or approved equal.

w. Through-wall Flashing Drip Edge: "Preformed Stainless Steel Drip Edge." 28 gauge (15 mils thick), 1-5/8" wide with a 3/8" bend at one end made of Type 304 grade, dull finish stainless steel in conformance with ASTM A 167, as manufactured by Polyguard Products inc, Ennis, Texas, or approved equal.

x. Other Items: All other materials not specifically described but required for a complete and proper installation of the Work in this Section, shall be selected by the Contractor subject to approval by the Architect.

PART 3: EXECUTION

3.1. EXAMINATION

a. The Contractor shall have the sole responsibility for the accuracy of all measurements and for the estimate of material quantities required and necessary to satisfy the requirements of these Specifications.

3.1. SEQUENCE/SCHEDULING

a. During demolition, as well as rehabilitation operations, restore all areas to a weathertight condition each day and/or before inclement weather commences.

b. The Contractor shall not proceed with the Work until all unsatisfactory conditions detrimental to the proper and timely completion of the Work have been corrected.

3.2. MORTAR MIXES

a. All equipment for mixing, transporting and applying mortar shall be clean and free from hardened mortar, dirt, ice, or other foreign matter.

b. Follow printed Manufacturers instructions for mixing preblended mortar.

c. Measure materials for mortars by volume, in a manner whereby proportions can be controlled within five percent. The proportions listed hereinafter for conventional mortars are portland cement, lime, and damp loose sand, respectively by volume. The proportions are listed only as a sample for the required type mortar and shall be modified as necessary, within tolerances, to suit the particular masonry sand being used.

d. Mix cementitious materials, powdered coloring admixtures and masonry sand dry. Add water and bring to proper consistency for use. Mix materials until evenly distributed throughout the batch and the mixture is uniform in color and consistency. No antifreeze ingredient or similar such contaminant will be tolerated.

e. Repointing and brick replacement mortar shall be ASTM C270, Type "N" Lime-Cement Mortar (1:1:6). Mortar shall be mixed and left untouched for one to two hours. Additional water shall then be added and the mortar remixed. Mortar shall be re-tempered as necessary to maintain its workability, but used before it is three (3) hours old or otherwise discarded.

3.3. EXISTING LIMESTONE REMOVAL

a. Carefully remove all existing limestone that is shown to be removed and replaced as shown on the Drawings.

b. Extreme caution shall be implemented when grinding and/or cutting out the existing mortar joints as to not damage the existing limestone.

c. Existing limestone shall be removed manually, by mobile hoist, or by crane, as job conditions require, and as deemed necessary by the Contractor. Note: It is not recommended that Lewis pins be used for stones less than 3-1/2 inches thick.

d. As determined by the Architect, existing limestone slated for removal and replacement that is damaged due to mishandling by the Contractor shall be replaced with new or repaired to its original state at the Contractor's expense.

e. Removed limestone shall be stored in predetermined "graveyard" locations as directed by the Architect. All existing limestone stored on the roof of the building shall not exceed existing live loads as specified in 1.7.E.

3.4. BRICK BACK-UP DEMOLITION

a. Remove all existing brick back-up as shown on the Drawings and as required for a complete and proper installation of the Work in this Section.

3.5. LIMESTONE AND BRICK BACK-UP REPLACEMENT

a. Install limestone in strict accordance with Indiana Limestone Institute of America (ILI) specifications and recommendations.
a. Install brick back-up in strict accordance with Brick Institute of America (BIA), and Masonry Advisory Council (MAC) specifications and recommendations.
b. When installing limestone, hold the installation mortar back 3/4 inches as shown on the Drawings.
c. During erection, cover top of wall with strong waterproof protective coverings at end of each day or shutdown.
d. Cover partially completed walls with waterproof protective covering when Work is not in progress.
e. Extend waterproof protective covering a minimum of 24 inches down both sides.
f. Hold waterproof protective covering securely in place.
g. Do not apply uniform floor or roof loading for at least 12 hours after installing load supporting limestone and brick back-up.
h. Do not apply concentrated loads for at least three (3) days after installing load supporting limestone and brick back-up.
i. Prevent mortar from staining the face of the limestone.
j. Immediately remove mortar in contact with the face of the limestone.
k. Protect all windows, doors, sills, ledges, and projections from mortar droppings, staining, or damage.
l. If ice or snow has formed on limestone or brick back-up bed, remove by carefully applying heat until the top surface is dry to the touch.
m. Remove all limestone and brick back-up that was damaged due to freezing.
n. Do not install limestone or brick back-up units when the mean air temperature is below 20°F.
o. When limestone and brick back-up suction exceeds the initial rate of absorption, sprinkle with heated water as follows. When units are 32°F, heat water above 70°F. When units are below 32°F, heat water above 130°F.
p. Use only dry limestone and brick back-up units.
q. Do not use wet or frozen limestone and brick back-up units.
r. If the air temperature range is 20°F to 40°F, heat mortar to a temperature between 40°F and 120°F.
s. Maintain temperatures of mortar on board above freezing at all times.
t. Use salamander-type heaters or other heat sources on both sides of walls under construction when temperatures are below 32°F.
u. Use windbreaks when winds are in excess of 15 MPH.
v. When the mean air temperature range is 32°F to 40°F, protect limestone and/or brick back-up from rain or snow for 24 hours by covering with a strong waterproof protective membrane.
w. When the mean air temperature range is 20°F to 32°F, completely cover limestone and/or brick back-up with supplementary heat and/or insulating blankets as required to maintain the new Work at or above 32°F.
x. Install finish mortar at all limestone units as shown on Drawings and as follows. With joint damp, completely fill with mortar placed in three (3) layers (lifts) firmly pressed in place. The joint shall then be compressed and tooled with a smooth rounded iron of selected width to produce a smooth, dense surface, very slightly concave, tightly pressed against the edges of the limestone. All new limestone mortar joints shall be uniform in appearance.
y. Install new finish mortar per Item 4) through 5) as described below in “D. Repointing:”
z. Repair existing limestone at locations indicated on the Drawings. Install new materials per the detail(s) shown on the Drawings and in strict conformance with the limestone restoration mortar Manufacturer’s specifications.

3.6. REPOINTING

a. Carefully remove all existing mortar to a minimum depth of 3/4 inches. Note: The building is a historic structure. Extreme care must be taken when working adjacent to the existing limestone as not to damage same. Damage to the existing limestone units caused during repointing procedures shall be repaired and/or replaced at the Contractor’s expense.
b. When existing mortar is broken or loose beyond a depth of 3/4 inches, remove to a depth where firm solid mortar is encountered. All joints must be clean of unsound mortar material in a square manner the full depth of the cut. Furrow shaped joints will not be acceptable.
c. The cutting out of joints shall be done with suitable tools, either hand tools or mechanical

equipment, in such a manner as will not loosen adjacent joints or injure the edges or corners of the limestone units. Where the mortar is tightly bonded at one side of the joint, and if the contour permits, the cutting shall be done with portable grinders with abrasive wheels to minimize spalling at edges of the limestone units.

d. After the joint has been cut out, all loose material shall be removed by brush, air jet, or water stream. Following this cleaning the joint shall be thoroughly moistened. The joint shall be damp but without free water on the surface.
e. With joint damp, completely fill with mortar placed in three (3) layers (lifts) firmly pressed into place. Do not place next layer of mortar until previous layer is “thumb hard.”
f. Following at the proper interval, the joint shall be compressed and smoothed with a rounded iron of appropriate width to produce a consistent, dense surface, very slightly concave, or at a similar depth as typically existing, tightly pressed against the edges of the limestone units.

3.7. LIMESTONE CLEANING

a. Clean all limestone per approved written description of proposed cleaning procedure.
b. Clean all limestone per Limestone Industry of America (ILI) Standards.
c. Clean a minimum of 25 sq. ft. sample wall area in a location acceptable to the Architect.
d. Do not proceed with additional cleaning until the Architect approves the sample area.
e. Clean limestone per the approved cleaning techniques.
f. Do small sections at a time.
g. Work from top to bottom.

END OF SECTION 04 01 40

PART 1: GENERAL

1.1. WORK INCLUDED

a. The work shall include, but not be limited to, the furnishing of all labor, materials, equipment, supervision, technical personnel, machinery, tools, transportation, and all other services necessary to install all hollow metal frames, doors and existing finish hardware.

1.2. RELATED DOCUMENTS

a. Metal Door and Frames.
b. Finish Hardware (Reuse Existing)

1.3. QUALITY ASSURANCE

a. Lumber shall be grade by an agency certified by the Board of Review of the American Lumber Standards Committee. A grade stamp indicating the grading association, mill, species, and grade shall be affixed to each full piece.
b. Lumber shall be manufactured in accordance with Product Standard 20-70 as published by the U.S. Department of Commerce.
c. Plywood shall be graded under the rules of the American Plywood Association.
d. Carpenters employed for finish work such as installing hardware, millwork, and trim shall be skilled craftsmen with at least 5 years successful experience in similar types of work.

1.4. SUBMITTALS

a. Furnish certificate from wood treatment applicator stating name of preservative and quantity retained per cubic foot.

1.5. DELIVERY, STORAGE, AND HANDLING

a. Stack framing lumber and plywood to insure proper ventilation and drainage. Protect from the elements.
b. Protect millwork against dampness during and after delivery. Do not store or install millwork in any part of the building until concrete and masonry work is dry.
c. Receive and store hollow metal frames, and wood doors in accordance with manufacturer's instructions.
d. Receive and inventory all finish hardware, and store in a secure area. Tag all keys showing location and key number. Maintain a record of all keys and store in a secure location until delivery to the P.H.A. at the time of substantial completion.

PART 2: PRODUCTS

2.1. MATERIALS

a. Lumber 2" and less shall be seasoned to a moisture content of 19% or less. Surfaced framing lumber over 2" in thickness may be unseasoned.
    i. Wood trim replacement lumber shall be as directed on the drawings.
    ii. 2 x 2 through 4 x 4 lumber shall be Standard or better or stud grade in any commercial species having the following minimum design values:
        1. Fb: 400 (Single)
        2. Fb: 475 (Repetitive)
        3. E: 1,200,000
    iii. 2 x 6 and larger lumber shall exceed the following minimum design values:
        1. Fb: 575 (Single)
        2. Fb: 675 (Repetitive)
        3. E: 1,100,000
    iv. Boards and planks in non-exposed locations shall be 3 and better Common Engelmann Spruce or Ponderosa Pine.
b. Lumber for plates, curbs, nailers at roof edges, cants and that used in contact with exterior masonry or concrete materials shall be vacuum pressure treated with Wolman salts with arsenic

content by Osmosalts or by other approved methods. Treatment shall be in accordance with Standard Specification of American Wood Preservers Association for treating structural timbers.

c. Provide all rough hardware such as bolts, expansion bolts, nails, staples, rough screws, bronze finished screws, screen wire, metal lath clips, and wire door jamb anchors, catches, hooks, etc. Unless otherwise noted, bolts shall be 1/2" at 3'-0" o.c. minimum.

PART 3: EXECUTION

3.1. ROUGH CARPENTRY

a. Install all wood framing, blocking, plates, grounds, etc. as shown on the drawings or required. Nailing shall be well done in accordance with code requirements and industry standards in order to develop the full strength of the members. All joints shall be closely fitted and accurately set to required lines and levels.
b. Provide all temporary shoring, bracing, and blocking required for the installation of the work.
c. The following items are included in rough carpentry work. The work shall not be limited to these items.
    i. Wood furring.
    ii. Wood nailers and blocking.
d. Apply brush coat of preservative to all cuts in treated lumber.

3.2. SETTING HOLLOW METAL FRAMES

a. Set all hollow metal frames for doors. Frames shall be erected prior to walls.
b. Frames shall be properly located, lined up plumb and true and anchored to floors by means of 1/4" diameter screws 1-1/2" long driven into floor anchors or by equivalent fasteners. Frames shall be braced during construction and until there is no danger of movement. Provide temporary intermediate spreaders where necessary to prevent movement or damage to frame.

3.3. APPLICATION OF EXISTING FINISH HARDWARE

a. Install existing finish hardware in accordance with the manufacturer's recommendations, using proper templates and instruction sheets.
b. All hardware shall be installed in a neat manner and be left free of tool marks or defacements of any kind and be in perfect working order.
c. Hardware on field finished items shall be removed or covered until final finish coat is dry, and then reinstalled.

3.4. MISCELLANEOUS FINISH CARPENTRY

a. Furnish and install all wood trim and millwork items as shown on the drawing and not specified elsewhere. All cutting and fitting shall be neatly done to close tolerances. Nail with appropriate size finishing nails, countersunk. Leave work in finished condition ready for painting or staining.

END OF SECTION

PART 1: GENERAL

1.1. SUMMARY

a. Section Includes shop and field formed copper accessories and trim, such as:
   i. Counterflashing
   ii. Wall flashing.
   iii. Miscellaneous accessories.
b. Related Requirements:
   i. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to work of this Section.
   ii. Integral masonry flashings are specified as masonry work in sections of Division 04.
   iii. Sealants are generally specified in Division 07 Section, Sealants.

1.2. COORDINATION

a. Coordinate work of this section with interfacing and adjacent work for proper sequencing. Ensure weather resistance and durability of work and protection of materials and finishes.

1.3. PERFORMANCE REQUIREMENTS

a. Installation Requirements: Fabricator is responsible for installing system, including anchorage to substrate and necessary modifications to meet specified and drawn requirements and maintain visual design concepts in accordance with Contract Documents and following installation methods as stipulated in the "Copper in Architecture" handbook published by the Copper Development Association (CDA) and Revere Copper's "Copper and Common Sense".
   i. Drawings are diagrammatic and are intended to establish basic dimension of units, sight lines, and profiles of units. All profiles must match existing verbatim.
   ii. Make modifications only to meet field conditions and to ensure fitting of system components.
   iii. Obtain Architect's approval of modifications prior to commencement of non-conforming work.
   iv. Provide concealed fastening wherever possible.
   v. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between units and building structure or between components themselves.
   vi. Obtain Architect's approval for connections to building elements at locations other than indicated in Drawings.
   vii. Accommodate building structure deflections in system connections to structure.
b. Performance Requirements:
   i. System shall accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects when subjected to seasonal temperature changes and live loads.
   ii. Design system capable of withstanding building code requirements for negative wind pressure.

1.4. SUBMITTALS

a. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
b. Product data for flashing, metal, and accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.
c. Shop drawings showing layout, profiles, methods of joining, and anchorage details, including major counterflashings, copings, trim/fascia units, and gravel stops systems. Provide layouts at 1/4 inch (1:50) scale and details at 3-inch (1:4) scale.
d. Samples of the following flashing, sheet metal, and accessory items:
   i. 6-inch (150 mm) or 12-inch (300 mm) square samples of specified sheet materials to be exposed as finished surfaces.
   ii. 6-inch (150 mm) or 12-inch (300 mm) long samples of fabricated products exposed as finished work. Provide complete with specified finish.

1.5. CLOSEOUT SUBMITTALS

a. Provide maintenance data in Operations and Maintenance manual for maintaining applied coatings on copper panels.

1.6. QUALITY ASSURANCE

a. Fabricator's Qualifications: Company specializing in copper flashing and trim work with three years' experience in similar size and type of installations.
b. Industry Standard: Except as otherwise shown or specified, comply with applicable recommendations and details of the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Conform to dimensions and profiles shown.

1.7. DELIVERY, STORAGE AND HANDLING

a. Packing, Shipping, Handling, and Unloading: Protect finish metal faces.
b. Acceptance at Site: Examine each component and accessory as delivered and confirm that material and finish is undamaged. Do not accept or install damaged materials.
c. Storage and Protection:

Stack pre-formed material to prevent twisting, bending, and abrasions.
Provide ventilation.
Prevent contact with materials which may cause discoloration or staining.

1.8. WARRANTY

a. Warrant installed flashing, copings, gravel stops, and trim components to be free from defects in material and workmanship for period of 5 years.
b. Include coverage against leakage and damages to finishes.

PART 2: PRODUCTS

2.1. FLASHING AND TRIM MATERIALS

a. Copper: ASTM B370; temper 060 (soft) match existing
    i. 16 oz. per sq. ft. (0.0216-inch thick) (0.55 mm) except as otherwise indicated.

2.2. ACCESSORIES

a. Solder: ASTM B32; Provide 50-50 tin/lead or lead free alternative of similar or greater strength solder. Killed acid flux.
b. Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.
c. Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.
d. Bituminous Coating: SSPC - Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film), nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
e. Joint Sealant: One-part, copper compatible elastomeric polyurethane, polysulfide, butyl or silicone rubber sealant as tested by sealant manufacturer for copper substrates. Refer to Division 07.
f. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of and compatibility with flashing sheet.
g. Reglets: Units of type and profile indicated, compatible with copper, noncorrosive.
h. Metal Accessories: Provide cleats, straps, anchoring devices, and similar accessory units as required for installation of work, noncorrosive, size and gauge required for performance.
i. Rivets:
    i. Pop Rivets: 1/8-inch (3 mm) to 3/16-inch (4.5 mm) diameter, with solid brass mandrels.
    ii. Provide solid copper rivet (tinner's rivets) where structural integrity of seam is required.

2.3. FABRICATION

a. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of Copper Development Association (CDA) "Copper in Architecture" handbook, Revere Copper's "Copper and Common Sense" and other recognized

industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed copper work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

i. Fabricate to allow for adjustments in field for proper anchoring and joining.
ii. Form sections true to shape, accurate in size, square, free from distortion and defects.
iii. Cleats: Fabricate cleats of same material as sheet, interlockable with sheet in accordance with CDA recommendations.
iv. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; solder for rigidity if required; seal non-soldered weather joints with sealant.

b. Seams: Fabricate nonmoving seams with flat-lock seams where possible. Tin edges and cleats to be seamed, form seams, and solder. Where soldered flat-lock seams are not possible, use soldered riveted lap seams joints for additional strength.
c. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1-inch (25 mm) deep, filled with mastic sealant (concealed within joints).
d. Sealant Joints: Where movable, nonexpansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with CDA standards.
e. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.
f. Solder
   i. Solder and seal metal joints except those indicated or required to be expansive type joints.
   ii. Tin edges of copper sheets and cleats at soldered joints.
   iii. After soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing clear water rinse. Wipe and wash solder joints clean.
g. Seams:
   i. Provide following seam types unless noted or detailed otherwise.
   ii. Flat: Flat lock.
   iii. Corner: Single lock corner.
h. Copper Thickness: Comply with CDA recommendations for copper size and shape.
i. Flashing and Counter Flashing:
   i. Fabricate as indicated on Drawings and in accordance with the CDA "Copper in Architecture" handbook.
   ii. Hem exposed flashings on underside 1/2 inch (13 mm); miter and seam corners.
   iii. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.
   iv. Fabricate flashings to allow toe to extend minimum 2 inches (50 mm) over wall surfaces.

PART 3: EXECUTION

3.1. EXAMINATION

a. General: Examine conditions and proceed with work when substrates are ready.
b. Confirm that substrate system is even, smooth, sound, clean, dry, and free from defects.

3.2. INSTALLATION

a. recommendations and with the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
   i. Install units plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction.
   ii. Apply asphalt mastic on copper surfaces of units in contact with dissimilar metals.
   iii. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

iv. Miter, lap seam and close corner joints with solder. Seal seams and joints watertight.
v. Install expansion joints at frequency recommended by CDA. Do not fasten moving seams such that movement is restricted.

b. Install reglets to receive counterflashing in manner and by methods indicated. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division 04 sections.
c. Counterflashing and Reglets:
   i. Fabricate counterflashings and reglets as 2 piece assemblies to permit installation of counterflashing after base flashings are in place.
   ii. Fabricate reglets of same metal and thickness as counterflashings.
   iii. Overlap roof base flashing 4 inches (100 mm) minimum.
   iv. Install bottom edge tight against base flashing.
   v. Lap seam vertical joints 3 inches (75 mm) minimum and apply sealant.
d. Install counterflashing in reglets, either by snap-in seal arrangement, lock seal in accordance with the "Copper in Architecture" handbook published by the Copper Development Association (CDA), or by soldering in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.
   a

3.3. CLEANING

a. Remove protective film (if any) from exposed surfaces of copper promptly upon installation. Strip with care to avoid damage to finishes.
b. Clean exposed copper surfaces, removing substances that might cause abnormal discoloration of metal.
c. Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing with clear water rinse. Use special care to neutralize and clean crevices.
d. Clean exposed metal surfaces of substances that would interfere with normal oxidation and weathering.

3.4. PROTECTION

a. Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

PART 1: GENERAL

1.1. SUMMARY OF WORK

a. This Section includes all labor, materials and equipment necessary to perform the following Work:
   i. Removal of all existing caulking/sealant to be replaced.
   ii. Preparation of all surfaces to receive new sealant work.
   iii. Application of the joint waterproofing sealant.
   iv. Clean up.

1.2. QUALITY CONTROL

a. The Manufacturer of the sealant system shall have a minimum of five (5) years experience in the manufacture of waterproof coatings and sealants.

1.3. SUBMITTALS

a. Manufacturer's Literature: Submit complete sets of Manufacturer's literature and technical data for the sealant system.
b. Contractor's Certificate: Submit copies of "Licensed Applicator's Certificate" issued by the Manufacturer.

1.4. MATERIAL HANDLING

a. Delivery and Storage of Materials
   i. Deliver all materials in their original unopened containers with all markings intact.
   ii. All materials must be stored in a dry place or otherwise protected from water or extreme humidity.
   iii. Stack material on pallets at least 4" above the ground and cover with a breathable covering, such as canvas.
   iv. Store sealants in the manner and temperature range recommended by the Manufacturer.
b. Handling Materials
   i. Do not store or transport materials on the roof in a manner that may exceed the live load capacity of the deck system or the structure. The Architect, during routine inspections, may make recommendations as to loading.
   ii. Do not transport materials over or store materials on a finished section without prior approval of Architect.

1.5. WARRANTIES

a. The sealant Manufacturer and the Contractor shall warrant the performance of the sealant system for a period of five (5) years starting from the date of acceptance by the Architect. Such warranty shall include material as well as labor for application. Damage and/or failure due to acts of God and vandalism, may be excluded from such warranty.

PART 2: PRODUCTS

The Contractor shall provide the following materials, as required.

2.1. MANUFACTURERS

a. Provide materials from the following Manufacturers:
   i. SIKA Corp.
   ii. BASF Corp.
   iii. Tremco, Inc.
   iv. Soudal
b. Materials shall meet all specified standards.
c. All materials shall be new unless noted otherwise.
d. New materials shall not contain asbestos.

2.2. MATERIALS

a. Silicone Sealant: Non-sag, Non-staining, Neutral-Curing Silicone Joint Sealant ASTM C 920, Type

S, Grade NS, such as Spectrem 2 by Tremco, Inc. Color shall be chosen by Owner and Architect. SPECTREM 2 by Tremco, Inc.

b. Sealant: A hybrid multi-component chemically curing polyurethane joint sealant meeting the requirements of ASTM C920 Type M or S, Grade NS. Sealant material shall be polyurethane elastomer based, meeting or exceeding minimum physical properties as listed in Section 2.3, and capable of producing a seamless waterproof joint seal. Color shall be chosen to most closely match that of the adjacent limestone/masonry, or, non-staining and no-tack, soft type with high elongation properties and shall be so designated on the label by the Manufacturer such as “Sikaflex 1a” by SIKA Corp., “Sikaflex - 2c NS” (Class 25) by SIKA Corp., “MasterSeal NP1” (Class 35) by BASF Corp., “DynaTrol II” (Class 50) by Pecora Corp., “Dymonic” (Class 25) by Tremco, Inc. or "SoudaSeal AP" (Class 35) by Soudal. Follow all Manufacturers’ previously submitted recommendations for type required at joints. Use non-sag at all joints. All sealants must take latex and oil base paint.

c. Joint Cleaning Compound: As recommended by the sealant Manufacturer for the joint surfaces to be cleaned.

d. Joint Primer/Sealer: As recommended by the sealant Manufacturer for the joint surface to be primed or sealed. All surfaces to which sealant is intended to bond shall be primed.

e. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant Manufacturer to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

f. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed and polyurethane foam or other flexible, permanent, durable non-absorptive material as recommended for the compatibility with sealant by the sealant Manufacturer; which will control the joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize the possibility of sealant extrusion when the joint is compressed. Backer rod shall be at least larger than the width of the joint. Refer to manufacturer recommendations for backer rod size. Coordinate with Architect.

2.3. TYPICAL PERFORMANCE CHARACTERISTICS

A. T-S-00227E and 19-GP-24 test method:

Adhesion-In-Peel	Mortar 6.3 kg (14 lbs) Anodized aluminum 8.2 kg (18 lbs) Granite 7.3 kg (16 lbs) Minimum requirement 2.26 kg (5 lbs)
Durability (Bond and Cohesion)	Passed (on mortar, granite and anodized aluminum at ± 25% movement)
Sagging	None up to 50°C (122°F)
Hardness	25 (Shore A) after 7 days at 24°C (75°F), plus 21 days at 70°C (158°F)
Percent Solids	96% after 7 days at 24°C (75°F), plus 21 days at 70°C (158°F)
Pot Life	Up to 7 hours at 24°C (75°F)
Tack-Free Time	Less than 72 hours at 24°C (75°F)
Low Temperature Flexibility	-54°C (-65°F)
Staining	None

B. Other Test Methods:

Hardness ASTM D2240	Average 35 (Shore A) after 5 years
Extension and Compression and Cycle TRC-ST/450	1/2” X 1/2” (12 mm X 12 mm) at 24°C (75°F) will withstand 100 cycles of 40% extension and 25% compression
Ultra-Violet Resistance TRC-ST/448	No adverse effects after 5 weeks’ exposure to 14-25 E-Viton of UV energy at 70°C (158°F)
Accelerated Aging ASTM E42, Method E	No adhesive or cohesive failure, nor significant changes at 8,000 hours

PART 3: EXECUTION

3.1. EXAMINATION

a. The Contractor shall have the sole responsibility for the accuracy of all measurements and for the estimate of material quantities required and necessary to satisfy the requirements of these Specifications.

3.2. SEQUENCING/SCHEDULING

a. Remove only as much sealant work as can be restored to a weathertight condition each day and before showers commence.
b. All sealant work shall be completed each day on the section being worked on.
c. The Contractor shall not proceed with the sealant work until all unsatisfactory conditions detrimental to the proper and timely completion of the sealant work have been corrected.

3.3. SUBSTRATE PREPARATION

a. Remove all debris from working surfaces. Remove all loose materials.
b. Thoroughly clean all surface areas involved to remove dirt, oils, grease, heavy laitance, for release agent, curing compound, and other contaminants, which would interfere with the application and performance of the sealant, in accordance with the Manufacturer's recommendations.
c. Remove all foreign projections in the joint by grinding or other suitable methods.
d. Prime all surfaces requiring adhesion of sealant.
e. Install the sealant material under conditions where rain is not anticipated within eight hours of application and substrate surface temperatures are above 40°F and below 110°F.

3.4. SEALANT APPLICATION – SINGLE STAGE

a. All material shall be applied in strict accordance with the Manufacturer's recommendations.
b. All surfaces to receive the sealant system shall be air-dried a minimum of 24 hours immediately prior to performing Work.
c. Where Manufacturer's specifications are more stringent or require more material than specified herein, follow the Manufacturer's specifications.
d. Primer
    i. Apply the concrete primer at the rate of 225 square feet per gallon. Evenly apply two consecutive coats to the joint interface to produce a continuous film.
    ii. Allow the primer to dry for 45 minutes or until tack-free.
    iii. Do not apply more primer than can be coated over within 8 hours.
    iv. Do not apply primer to adjacent surfaces not scheduled for sealant to prevent staining.
e. Joint Backing
    i. Joint backing shall be used to control the depth of joint to the recommended dimension.
    ii. Select a size, to allow for 25% minimum compression of the backing when inserted into the joint.
    iii. Where depth of joint will not permit use of joint backing, a bond-breaker tape must be installed to prevent three-sided adhesion.
f. Sealant
    i. Mix according to Manufacturer's detailed instructions.
    ii. Minimum mixing time: 6 minutes.
    iii. Apply with conventional sealant equipment, filling joint completely.
g. Tooling
    i. Immediately after application, tooling shall be employed to insure firm, full contact with the inner faces of the joint.
    ii. Dry tooling is preferred. Tooling agents can be used.
h. Cleaning
    i. Remove immediately all excess sealant adjacent to the joint with "Xylol" or "Toluol" as work progresses.
    ii. Avoid staining of adjacent areas.
    iii. At the conclusion of the sealant Work, remove all tools, scaffolding, equipment, construction materials and construction debris from the site.

END OF SECTION

PART 1: GENERAL

1.1. RELATED DOCUMENTS

a. Applicable provisions of Division 1 shall govern work under this Section. The Contractor shall consult these provisions in detail prior to proceeding with work.

1.2. SUMMARY

a. This section includes:
   i. Aluminum-clad wood windows.
   ii. Aluminum-clad wood doors.
b. Related Sections:
   i. 06 10 00 - Rough Carpentry for wood blocking and nailers.
   ii. 06 40 23 - Interior Architectural Woodwork
   iii. 07 92 00 - Joint Sealants
   iv. 08 14 33 - Stile and Rail Wood Doors
   v. 08 80 00 - Glazing

1.3. COORDINATION

a. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections, to ensure that interior architectural woodwork can be supported and installed as indicated.
b. Coordinate final stain selection to be consistent across all wood finishes: Interior Architectural Woodwork and Stile and Rail Wood Doors and Frames.

1.4. PREINSTLLATION MEETINGS

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

1.5. ACTION SUBMITTALS

a. Product Data: For each type of product.
   i. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for wood windows.
b. Shop Drawings: For wood windows.
   i. Include window schedule, plans, elevations, full-size sections, mullion details, locations of hardware, accessories, insect screens, operational clearances, and details and methods of installation, including anchoring, connections with other work, flashing, glazing, and sealant installation.
c. Samples: For each exposed product and for each color specified, 2 by 4 inches (50 by 100 mm) in size.
d. Product Schedule: For wood windows. Use same designations indicated on Drawings.

1.6. INFORMATIONAL SUBMITTALS

a. Qualification Data: For Installer.
b. Product Test Reports: For each type of wood window, for tests performed by a qualified testing agency.
c. Field quality-control reports.
d. Sample Warranties: For manufacturer's warranties.

1.7. QUALITY ASSURANCE

a. Manufacturer Qualifications: A manufacturer acceptable for the specifications of units required for this Project.
    i. At least five (5) years of experience working with windows on listed projects on the National Register of Historic Places.
    ii. Provide at least five projects listed on the National Register of Historic Places.
    iii. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
    iv. Engineering Responsibility: Preparation of data for wood windows, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
b. Installer Qualifications: An installer acceptable to wood window manufacturer for installation of units required for this Project.
    i. Provide written pre-qualification acceptance letter from window manufacturer.
    ii. At least five (5) years of experience working with windows on listed projects on the National Register of Historic Places.
    iii. Provide at least five installation projects listed on the National Register of Historic Places.
c. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate specification compliance, aesthetic effects, and to set quality standards for materials and execution for fabrication and installation. Prepare mockups so they are inconspicuous or reversible.
    i. Window manufacturer and installer representatives shall be present for review.
    ii. Build mockup within existing typical wall area as directed by architect.
    iii. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
    iv. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
d. Fenestration Standard: Comply with AAMA/WDMA 101/I.S.2/NAFS, "North American Fenestration Standard Voluntary Performance Specification for Windows, Skylights and Glass Doors," for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
    i. Provide WDMA-certified wood windows with an attached label.
e. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.

1.8. WARRANTY

a. Manufacturer and Installer shall meet the requirements of the State of Wisconsin DFD Glazing system/Window Guarantee.
b. Manufacturer's Warranty: Manufacturer agrees to repair or replace wood windows that fail in materials or workmanship within specified warranty period.
    i. Failures include, but are not limited to, the following:
        1. Failure to meet performance requirements.
        2. Structural failures including excessive deflection, water leakage, and air infiltration.
        3. Faulty operation of movable sash and hardware.
        4. Deterioration of materials and finishes beyond normal weathering.
        5. Failure of insulating glass.
    ii. Warranty Period:
        1. Window: Ten (10) years from date of Substantial Completion.
        2. Glazing Units: Twenty (20) years from date of Substantial Completion.
        3. Aluminum-Cladding Finish: Ten (10) years from date of Substantial Completion.

PART 2: PRODUCTS

2.1. MANUFACTURERS

a. Source Limitations: Obtain wood windows from single source from single manufacturer.

2.2. WINDOW PERFORMANCE REQUIREMENTS

a. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
    i. Window Certification: WDMA certified with label attached to each window.
b. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
    i. Minimum Performance Class: CW.
    ii. Minimum Performance Grade: 40.
c. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.33 Btu/sq. ft. x h x deg F (2.0 W/sq. m x K).
d. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.24.
e. Sound Transmission Class (STC): Rated for not less than 26 STC when tested for laboratory sound transmission loss according to ASTM E 90 and determined by ASTM E 413.
f. Outside-Inside Transmission Class (OITC): Rated for not less than 26 OITC when tested for laboratory sound transmission loss according to ASTM E 90 and determined by ASTM E 1332.
g. No roll form aluminum on the exterior of window shall be permitted.

2.3. WOOD WINDOWS

a. Aluminum-Clad Wood Windows:
    i. Allowable Manufacturers and products:
        1. Marvin Windows and Doors, Clad Ultimate Double Hung, Next Generation 2.0
        2. Weather Shield Widows & Doors, Premium Windows
        3. Kolbe Windows & Doors, Heritage Series
b. Operating Types: Provide the following operating types in locations indicated on Drawings:
    i. Double hung.
    ii. Fixed.
c. Frames and Sashes: Fine-grained wood lumber complying with AAMA/WDMA/CSA 101/I.S.2/A440; kiln dried to a moisture content of not more than 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch (0.8 mm) deep by 2 inches (51 mm) wide; water-repellent preservative treated.
    i. Exterior Finish: Aluminum-clad wood.
        1. Aluminum Finish: Manufacturer's standard fluoropolymer two-coat system with fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight and complying with AAMA 2605.
        2. Exposed Unfinished Wood Surfaces: Manufacturer's standard paint-grade species.
        3. Color: custom
    ii. Interior Finish: Manufacturer's standard stain-and-varnish finish.
        1. Exposed Unfinished Wood Surfaces: Manufacturer's standard species.
        2. Color: To match historic interiors.
        3. Final Stain selection shall be consistent and coordinated across all wood finishes – for Standing Interior Trim and Wood Windows.
d. Insulating-Glass Units: ASTM E 2190.
    i. Glass: ASTM C 1036, Type 1, Class 1, q3. Refer to 08 80 00 Glazing for specific units.
e. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions.
    i. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.
f. Hung Window Hardware:
    i. Counterbalancing Mechanism: Complying with AAMA 902, concealed, of size and capacity to hold sash stationary at any open position.
    ii. Locks and Latches: Allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only. Provide custodial locks.
    iii. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis to facilitate cleaning exterior surfaces from the interior.
g. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

h. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
    i. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4. ACCESSORIES

a. Dividers (False Muntins): Provide divider grilles in designs indicated for each sash lite.
    i. Quantity and Type: Three per sash, two permanently located at exterior and interior lites and one permanently located between insulating-glass lites.
    ii. Material: Manufacturer's standard.
    iii. Pattern: As indicated on Drawings.
    iv. Profile: As selected by Architect from manufacturer's full range.
    v. Color: Match historic paint sample.

2.5. FABRICATION

a. Fabricate wood windows in sizes indicated. Include a complete system for installing and anchoring windows.
b. Glaze wood windows in the factory.
c. Weather strip each operable sash to provide weathertight installation.
d. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.
e. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3: EXECUTION

3.1. EXAMINATION

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

3.2. INSTALLATION

a. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E 2112.
b. Installation training shall be conducted by window or door manufacturer representative, and shall be attended by all installation contractors job-site supervisor and general installers.
c. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

3.3. FIELD QUALITY CONTROL

a. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
    i. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
b. Testing Services: Testing and inspecting of installed windows shall take place as follows:
    i. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502.
    ii. Air-Infiltration Testing:
        1. Test Pressure: That required to determine compliance with

AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.

2. Allowable Air-Leakage Rate: 1.5 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.

iii. Water-Resistance Testing:

1. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
2. Allowable Water Infiltration: No water penetration.

iv. Testing Extent: Ten windows as selected by Architect and a qualified independent testing and inspecting agency. Windows shall be tested after perimeter sealants have cured.

v. Test Reports: Prepared according to AAMA 502.

c. Windows will be considered defective if they do not pass tests and inspections.

d. Prepare test and inspection reports.

3.4. ADJUSTING, CLEANING AND PROTECTION

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

b. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.

c. Keep protective films and coverings in place until final cleaning.

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

e. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 08 52 00

PART 1: GENERAL

1.1. RELATED DOCUMENTS

a. Applicable provisions of Division 1 shall govern work under this Section.

1.2. DESCRIPTION OF WORK

a. Surface preparation, painting, and finishing of existing exposed exterior items and surfaces, unless otherwise noted or specified.
b. Surface preparation, priming, and finish coats specified in this section are in addition to shop-priming and surface treatment specified under other sections.

1.3. RELATED WORK

a. Factory finished items will not require painting or finishing unless otherwise specified. Refer to technical sections for items to be furnished with a factory finish.
b. Nonferrous metal items will not require painting or finishing unless otherwise specified.

1.4. QUALITY ASSURANCE

a. Materials shall be of manufacture, brand and quality as specified. Products of other manufacturers will not be accepted. Provide block fillers, primers and undercoat materials produced by the same manufacturer as the finish coats. All system components shall be compatible with one another and with substrates, as demonstrated by manufacturer based on testing and field experience.
b. Quality workmanship is required. Employ skilled craftsmen experienced in the use of the product involved with a record of successful service performance.

1.5. MOCK-UP

a. Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of painting on the project.
    i. Finish surfaces for verification of products, colors, & sheens.
    ii. Finish area designated by Architect.
    iii. Provide samples that designate prime & finish coats.
    iv. Do not proceed with remaining work until the Architect approves the mock-up samples.

1.6. SUBMITTALS

a. Product Data: Provide manufacturer's technical information, including label analysis and instructions for handling, storing and applying each coating material proposed for use. Include data for all components of each system specified, including fillers, primers, etc. Cross-reference each proposed material to finish system specified.
b. Certification: Provide certification by manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
c. Submit two sample panels of each type finish system for color and texture approval. Label each sample as to finish system.
d. Manufacturer Material Safety Data Sheets for all materials which are not water based shall be readily accessible at the construction site at all times that materials are present at the site.

1.7. DELIVERY, STORAGE & HANDLING

a. Deliver paint ready-mixed to job site in manufacturer's original sealed containers with labels intact.
b. Store materials not in use in tightly covered containers in an approved well-ventilated area at a minimum ambient temperature of 45 degrees F. Maintain containers used in storage in a clean condition, free of foreign materials and residue. Provide adequate floor protection.
c. Remove oily or soiled rags and waste daily or store in sealed metal containers.

1.8. JOB CONDITIONS

a. Paint only in areas which are clean and free of dust.
b. Do not apply materials until moisture content of surface is less than 12 percent as determined by moisture testing meter.
c. Do not apply materials on exterior surfaces during rainy or frosty weather or when temperature is below 50 degrees F.
d. Do not apply materials on surfaces while they are exposed to the sun.

PART 2: PRODUCTS

2.1. COLORS AND FINISHES

a. Acceptable Manufacturers:
    i. The Sherwin-Williams Company or approved equal.
    101 Prospect Avenue NW
    Cleveland, OH 44115
    Tel: (800) 321-8194
    www.sherwin-williams.com
    ii. Substitutions: Requests for substitutions will be considered in accordance with State requirements.
        1. When submitting request for substitution, provide complete product data specified above under Submittals, for each substitute product.
b. WOOD - (Siding, Trim, Shutters, Sashes, Misc., Hardboard-Bare/Primed)
    i. Latex Systems
        1. Satin Finish
            a. 1st Coat: S-W Exterior Latex Wood Primer, B42W8041 (4.0 mils wet, 1.4 mils dry)
            b. 2nd Coat: S-W A-100 Exterior Latex Satin, A82 Series
            c. 3rd Coat: S-W A-100 Exterior Latex Satin, A82 Series (4.0 mils wet, 1.5 mils dry per coat)
        2. Early Moisture Resistant Finish
            a. 1st Coat: S-W Exterior Latex Wood Primer, B42W8041 (4.0 mils wet, 1.4 mils dry)
            b. 2nd Coat: S-W Resilience Latex Satin, K43 Series
            c. 3rd Coat: S-W Resilience Latex Satin, K43 Series (4.0 mils wet, 1.6 mils dry per coat)

PART 3: EXECUTION

3.1. INSPECTION

a. Examine substrates, areas and conditions under which painting will be performed for:
    i. Defects which cannot be corrected by the procedures specified under Surface Preparation.
    ii. Compliance with paint application requirements.
b. Notify Contractor of surfaces requiring corrective work prior to painting.
c. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
d. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
e. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

3.2. SURFACE PREPARATION (IN-SITU/IN THE FIELD AS REQUIRED)

a. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

b. Protect, with suitable protective material, all finished surfaces and items, and existing surfaces and items not scheduled to be painted, that occur in close proximity of the area being painted.
c. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
d. Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
e. Clean and prepare each particular substrate by appropriate methods to proper condition to receive paint according to manufacturer's written construction. Provide barrier coats over incompatible primers or remove and reprime.
f. Fill all holes, scratches, cracks or other irregularities with patching material.
g. Touch up abraded factory applied shop prime coat before applying finish coats. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
h. Prime metal corner and casing beads with an alkyd enamel underbody where water-thinned finish coats are specified.
i. Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
j. Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove "white rust" by wire brushing. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
k. Clean aluminum surfaces with mineral spirits.
l. Prime or seal wood to receive paint or transparent finish immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
m. Seal tops, bottoms and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
n. Remove loose particles and mortar spatters from concrete masonry units with a fiber bristle brush. Remove effloresence, dust, dirt, grease or other foreign substances as recommended by manufacturer.
o. Etch dense, smooth and surface hardened concrete to be painted with a 5 percent solution of muratic acid or other etching cleaner. Flush the concrete with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
p. Fill concrete to a smooth surface with a vinyl-based material similar to USG Joint Compound.
q. Determine alkalinity and moisture content of cementitious surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.

3.3. MATERIALS PREPARATION

a. Mix and prepare paint materials according to manufacturer's written instruction.
b. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
c. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
d. Use only thinners approved by paint manufacturer and only within recommended limits.
e. Tinting: Tint prime and each undercoat a lighter shade to simplify identification of each coat when multiple coats are applied. Tint prime and undercoats to match the color of the finish coat, but provide sufficient differences in shade to distinguish each separate coat.

3.4. APPLICATION

a. Apply materials by brush or roller in accordance with manufacturer's written instructions. Spray application will not be accepted unless specified otherwise herein. **Spray application will not be accepted unless approved by A/E prior to commencing. If spray application is allowed,**

each application shall be backrolled. The number of coats and film thickness required are the same regardless of the application method.

b. Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
c. Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled and backroll.
d. Apply first coat to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
e. Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
f. Allow all coats to thoroughly dry before applying succeeding coats.
g. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, sheet, appearance and coverage. Cloudiness, spotting, holidays, lap, brush marks, runs, sags, ropiness, wrinkles, streaks, shiners, roller stipple, air bubbles, or other surface imperfections will not be acceptable.
h. Finish exterior doors on tops, bottoms and side edges the same as exterior faces.
i. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, louvers and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

3.5. EXTERIOR PAINTING

a. Paint all surfaces listed under the exterior finish system schedule including but not limited to the following:
    i. Exterior surfaces of all windows and doors; all exposed exterior wood surfaces.

3.6. CLEANING

a. At the end of each workday, remove from the premises all rubbish and accumulated material and leave work in clean condition.
b. Remove paint that has been misplaced on other surfaces.
c. Clean, repair and restore all damaged surfaces to their original finish.

END OF SECTION