



**ENCLOSURE REPAIRS**

of

**OLD MAIN BUILDING  
WAYNE STATE UNIVERSITY**

**4841 CASS AVENUE  
DETROIT, MI 48201**

Prepared for

**WAYNE STATE UNIVERSITY  
DESIGN AND CONSTRUCTION SERVICES  
5454 CASS AVENUE  
DETROIT, MI 48202**

Prepared by  
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**45000 HELM STREET, SUITE 200  
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**WSU PROJECT #001-400580  
FEBRUARY 2025**

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SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Project: Wayne State University
- B. Student Center
  - a. 4841 Cass Avenue
  - b. Detroit, MI 48202
- C. Owner (PHA): Wayne State University
- D. Design and Construction Services
- E. 5454 Cass Avenue
- F. Detroit, MI 48202
- G. Roof Designer: Intertek
- H. 45000 Helm Street, Suite 200
- I. Plymouth, MI 48170
- J. Section includes:
  - 1. Project Information
  - 2. Work Covered by Contract Documents
  - 3. Work by Owner
  - 4. Owner-Furnished Products
  - 5. Access to Site
  - 6. Coordination with Occupants
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  - 8. Specification and Drawing Conventions
- K. Related Sections:
  - 1. Division 01 Section 1500 Temporary Facilities and Controls
  - 2. Division 02 Section 4119 Selective Demolition
  - 3. Division 07 Section 7600 Sheet Metal Flashing and Trim
  - 4. Division 07 Section 7920 Joint Sealants

SECTION 01 1000  
SUMMARY

1.3 PROJECT INFORMATION

- A. Project Identification: Old Main Building is located at 4841 Cass Avenue, Detroit, Michigan 48201. The enclosure repair project is limited to portions of the building that is constructed with exterior plaster façade and consists of removal and replacement of all joint sealants, perimeter sealants, new wet glazing, plaster repairs and new elastomeric coating to provide a barrier system at these wall areas. Curtainwall repairs and sheet metal roof edging repairs are also included where designed.
- B. All dimensions provided are approximate and MUST be verified by contractor prior to bid submission. No change orders or allowances will be considered for additional quantities or material required to complete the project.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of the Project is defined by the Contract Documents and consists of the following. The Contractor shall:
1. Provide and maintain all enclosures, fencing of construction area, interior protection, exterior protection, and ground protection as necessary and as required by Division 01 Section 5000 Temporary Facilities and Controls.
  2. Remove **ALL** existing joint sealant and back-up material from all window perimeters within the designed exterior walls indicated on the drawing set for the New Addition and provide new back-up material and silicone joint sealant. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of window perimeter sealant is 1,380 LF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  3. Remove **ALL** existing joint sealant and back-up material from building control joints at the New Addition portion of the building and provide new back-up material and urethane/paintable joint sealant. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of control perimeter sealant is 2,150 LF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  4. Remove **ALL** existing joint sealant and back-up material from all window perimeters within the designed exterior walls indicated on the drawing set for the Original Building and provide new back-up material and silicone joint sealant. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of window perimeter sealant is 18,120 LF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  5. Remove and replace thru-wall flashing at the New Addition stone tower with new. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.
    - a. The approximate lineal footage of thru-wall flashing replacement is 15 LF.
    - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  6. Remove and replace thru-wall flashing at the New Addition penthouse with new. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.

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SUMMARY

- a. The approximate lineal footage of thru-wall flashing replacement is 70 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
7. Remove and replace existing window thru-wall flashing at the New Addition with new, as noted on the drawing set. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.
  - a. The approximate lineal footage of thru-wall flashing replacement is 180 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
8. Provide repairs to the metal roof at the Original Building, which includes providing new flashing at the aluminum cladded battens with proper detailing at transition points, providing new fasteners with washers, to aluminum cladded battens, providing a watertight barrier at the transition from the existing BUR to metal sloped roof, and sealing exposed joints in the metal panels.
  - a. This work is considered unit price.
9. Remove and replace existing shelf angles, where designated on the drawing set, at the New Addition. Removal and replacement of min. three (3) courses of brick will be required to complete the work. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.
  - a. The approximate lineal footage of shelf angle flashing replacement is 230 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
10. Resecure existing snowguards on designated elevations of the Original Building.
  - a. The approximate lineal footage of snowguard replacement is 315 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
11. Cut and tuckpoint damaged and deteriorated mortar joints at the New Addition, where indicated in the drawing set. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate square footage of mortar repointing is 500 SF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for localized and isolated repairs.
12. Cut and tuckpoint damaged and deteriorated mortar joints at the Original Building, where indicated in the drawing set. Drawing indicates both general repointing as well as indicating sections of severe masonry deterioration. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate square footage of general mortar repointing is 16,410 SF.
  - b. The approximate square footage of severe mortar repointing is 1,1014 SF.
  - c. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - d. Provide a unit price for localized and isolated repairs.
13. Remove and replace spalled brick at the New Addition. Brick that is missing shall be replaced with new, where indicated in the drawing set. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate number of brick replacements is 16 units.

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- b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for localized and isolated repairs.
- 14. Remove and replace spalled brick at the Original Building. Brick that is missing shall be replaced with new, where indicated in the drawing set. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate number of brick replacements is 251 units.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for localized and isolated repairs.
- 15. Rout and seal cracks in the brick and stone walls at the Original Building, where indicated in the drawing set. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate lineal footage of brick and stone cracks is 185 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for localized and isolated repairs.
- 16. Repair damaged and/or spalled stone in the limestone bands using Dutchman style repairs at the Original Building, where indicated in the drawing set. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate square footage of limestone repairs is 54 SF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for localized and isolated repairs.
- 17. Repair damaged and/or spalled terracotta stone at the Original Building, where indicated in the drawing set. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate square footage of terracotta repairs is 122 SF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for localized and isolated repairs.
- 18. Rout and seal cracks in the terracotta stone at the Original Building, where indicated in the drawing set. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate lineal footage of terracotta repairs is 48 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for localized and isolated repairs.
- 19. Rout and seal cracks in the terracotta stone at the Original Building, where indicated in the drawing set. Refer to Section 04 0120 – Maintenance of Masonry.
  - a. The approximate lineal footage of terracotta repairs is 48 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for localized and isolated repairs.
- 20. Remove and replace window lintels at the Original Building where section loss or heavy rust pack is visible. If surface corrosion with no section loss is visible,

## SECTION 01 1000 SUMMARY

clean and paint existing lintels. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.

- a. The approximate lineal footage of window lintel repairs is 953 LF.
  - b. This work item (surface corrosion repair, no lintel replacement) is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for removal and replacement of window lintels.
21. Remove and replace shelf angles at the Original Building where section loss or heavy rust pack is visible. If surface corrosion with no section loss is visible, clean and paint existing lintels. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.
- a. The approximate lineal footage of shelf angle repairs is 186 LF.
  - b. This work item (surface corrosion repair, no shelf angle replacement) is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  - c. Provide a unit price for removal and replacement of the shelf angles.
22. Provide repairs to the courtyard terrace concrete steps, as indicated in the drawing set, at the Original Building.
- a. Allow for a lump sum of \$10,000.
23. Provide repairs to the damaged keystone arch at the west elevation entrance at the Original Building, as indicated in the drawing set.
- a. Allow for a lump sum of \$20,000.
24. Re-secure and/or replace the copper flashing at the Original Building, where noted in the drawing set.
- a. Allow for a lump sum of \$15,000.
25. Provide and maintain protection of all materials stored on site.
26. Remove all construction fencing and clean the work area to the satisfaction of the owner.

### 1.5 ALTERNATE WORK

- A. None.

### 1.6 WORK BY OWNER

- A. Preceding Work: None.
- B. Concurrent Work: None.
- C. Subsequent Work: None.

### 1.7 OWNER-FURNISHED PRODUCTS

- A. Owner-Furnished Products: None.



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SUMMARY

1.8 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to the areas identified in the Drawings. Refer to Drawing SP-1 for location of temporary facilities and staging area.
  - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials unless approved in writing by Owner.
    - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather-tight condition throughout construction period. Repair damage caused by construction operations.

1.9 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner and tenants will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
  - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
  - 2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.10 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated.
  - 1. Weekend Hours: As allowed by management with 72-hour notice
  - 2. Early Morning Hours: As allowed by management with 72-hour notice
  - 3. Hours for Utility Shutdowns: To be determined during Pre-Construction Conference, and as agreed to by Owner in writing

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SUMMARY

- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than five (5) business days in advance of proposed utility interruptions.
  - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  - 1. Notify Owner not less than three (3) business days in advance of proposed disruptive operations.
  - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Non-Smoking Building: Smoking is not permitted on the roof, within the building, or on Owner's property.
- F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

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SUMMARY

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 01 1000**

SECTION 01 3233  
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Periodic construction photographs.
- B. Related Requirements:
  - 1. Division 01 Section 3300 "Submittal Procedures" for submitting photographic documentation.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three (3) days of taking photographs.
  - 1. Digital Camera: Minimum sensor resolution of eight (8) megapixels.
  - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
  - 3. Identification: Provide the following information with each image description in file metadata tag:
    - a. Name of Project.
    - b. Name and contact information for photographer.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Date photograph was taken.
    - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
    - g. Unique sequential identifier keyed to accompanying key plan.

1.4 USAGE RIGHTS

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

SECTION 01 3233  
PHOTOGRAPHIC DOCUMENTATION

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

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

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Date and Time: Include date and time in file name for each image.
  - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Construction Manager.
- C. Periodic Construction Photographs: Take 12 photographs daily coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

**END OF SECTION 01 3233**

01 3300  
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Consultant's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require consultant's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Consultant's and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

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SUBMITTAL PROCEDURES

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
  - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal category: Action; informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for consultants' final release or approval.
  - g. Scheduled date of fabrication.
  - h. Scheduled dates for purchasing.
  - i. Scheduled dates for installation.
  - j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. consultant's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Consultant's for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Consultant's reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on consultants' receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  1. Initial Review: Allow 5 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Consultant's will advise Contractor when a submittal being processed must be delayed for coordination.

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SUBMITTAL PROCEDURES

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow 5 days for review of each resubmittal.
  4. Sequential Review: Where sequential review of submittals by consultant's consultants, Owner, or other parties is indicated, allow 10 days for initial review of each submittal.
  5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
1. Submit a minimum of two copies of each submittal, except as otherwise indicated.
    - a. Owner/Consultant's will retain one copy; remainder will be returned. Mark up and retain the returned copies for inclusion in the Operation and Maintenance Manuals.
    - b. At least one set of material samples shall be submitted for color selection.
  2. The Contracting Officer, or their designated representative, will not accept submittals received from sources other than Contractor.
  3. Identify deviations from the Contract Documents on submittals.
  4. Indicate name of firm or entity that prepared each submittal on label or title block.
  5. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Consultant's.
  6. Include the following information for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name of Consultant's.
    - d. Name of Contractor.
    - e. Name of subcontractor.
    - f. Name of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.
      - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
    - i. Number and title of appropriate Specification Section.
    - j. Drawing number and detail references, as appropriate.
    - k. Location(s) where product is to be installed, as appropriate.
    - l. Other necessary identification.



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SUBMITTAL PROCEDURES

7. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections, deviations, and field dimensions. Mark with approval stamp before submitting to the Contracting Officer, or their designated representative.
  8. The Contracting Officer, or their designated representative, will review each action submittal, make marks to indicate corrections or modifications required, stamp and mark as appropriate to indicate action taken, and return copies less those retained. Compliance with specified requirements remains Contractor's responsibility.
  9. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Consultant's observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
    - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Consultant's.
  10. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Consultant's will return without review submittals received from sources other than Contractor.
    - a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
      - 1) Project name.
      - 2) Date.
      - 3) Destination To:
      - 4) Source From:
      - 5) Name and address of Consultant's.
      - 6) Name of Contractor.
      - 7) Name of firm or entity that prepared submittal.
      - 8) Names of subcontractor, manufacturer, and supplier.
      - 9) Category and type of submittal.
      - 10) Submittal purpose and description.
      - 11) Specification Section number and title.
      - 12) Specification paragraph number or drawing designation and generic name for each of multiple items.
      - 13) Drawing number and detail references, as appropriate.
      - 14) Indication of full or partial submittal.
      - 15) Transmittal number numbered consecutively.
      - 16) Submittal and transmittal distribution record.
      - 17) Remarks.
      - 18) Signature of transmitter.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

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1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Consultant's.
  4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Consultant's.
    - d. Name of Contractor.
    - e. Name of firm or entity that prepared submittal.
    - f. Names of subcontractor, manufacturer, and supplier.
    - g. Category and type of submittal.
    - h. Submittal purpose and description.
    - i. Specification Section number and title.
    - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - k. Drawing number and detail references, as appropriate.
    - l. Location(s) where product is to be installed, as appropriate.
    - m. Related physical samples submitted directly.
    - n. Indication of full or partial submittal.
    - o. Transmittal number numbered consecutively.
    - p. Submittal and transmittal distribution record.
    - q. Other necessary identification.
    - r. Remarks.
- F. Options: Identify options requiring selection by Consultant's.
- G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Consultant's on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.

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3. Resubmit submittals until they are marked with approval notation from consultants' action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers and authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from consultant's action stamp.
- K. Proposed Substitutions
  1. Substitutions will not be considered.

1.6 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  1. Submit electronic submittals via email as PDF electronic files.
    - a. Consultant's will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  2. Action Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will return one copy.
  3. Informational Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will not return copies.
  4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show applicable products and options.
  3. Include the following information, as applicable:

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- a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications and installation instructions.
    - c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Availability and delivery time information.
    - i. Print performance curves and operational range diagrams.
    - j. Wiring diagrams showing factory installed diagrams.
  4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples.
  6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Submit at least two (2) opaque copies. The contracting officer or their designated representative will retain one copy and return the remainder.
  2. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimension and Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
    - h. Wiring diagrams showing field installed wiring.
    - i. Fabrication and installation drawings and rough in and setting diagram.
  3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
  4. Submit Shop Drawings in the following format:
    - a. PDF electronic file if 8-1/2 by 11inch format.

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- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a comparison of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Consultant's will return submittal with options selected.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit three sets of Samples. Consultant's will retain two sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

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- 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
  - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Number and name of room or space.
  4. Location within room or space.
  5. Submit product schedule in the following format:
    - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- H. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- I. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Consultant's and owners, and other information specified.
- J. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- L. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- M. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- N. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

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- O. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- P. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.
- Q. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- R. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- S. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- U. Information Submittals:
  - 1. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of Consultant's and owners, and other information specified.
  - 2. Product Certificates: Prepare written statements on manufacturer's letterhead, including signature of entity responsible for preparing certification, certifying that product complies with requirements in the Contract Documents.
- V. Delegated Design:
  - 1. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract

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Documents, provide products and systems complying with specific performance and design criteria indicated.

- a. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.
2. Delegated - Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, and where required by the authorities having jurisdiction, submit three copies of a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - a. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 2 - EXECUTION

### 2.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Consultant's.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 2.2 CONSULTANT'S ACTION

- A. Action Submittals: Consultant's will review each submittal, make marks to indicate corrections or revisions required, and return it. Consultant's will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Consultant's will review each submittal and will not return it or will return it if it does not comply with requirements. Consultant's will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Consultant's.



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- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Consultant's without action.

**END OF SECTION 01 3300**

SECTION 01 4000  
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

- A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Testing and inspecting services are specified in other Sections of these Specifications or are required by authorities having jurisdiction and shall be performed by independent testing agencies.
  - 2. Where quality - control services are indicated or required, the Contractor shall engage a qualified testing agency to perform these services.
  - 3. Contractor is responsible for scheduling times for tests, inspections, and obtaining samples and notifying testing agency.
  - 4. Retesting and Re-inspecting: Contractor shall pay for additional testing and inspecting required as a result of tests and inspections indicating noncompliance with requirements.
- B. Performance and Design Criteria: Where design services or certifications by a professional engineer are required by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
  - 2. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

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2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.4 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

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1.5 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

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1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. Testing agency shall submit a certified written report of each test and inspection to Contractor, Owner, Contracting Officer, or their designated representative, and to authorities having jurisdiction when they so direct. Reports of each inspection, test, or similar service shall include the following:
  1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data, test and inspection results, an interpretation of test results and comments or professional opinion on whether tested or inspected work complies with the Contract Document requirements.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  11. Name and signature of laboratory inspector.
  12. Recommendations on retesting and reinspecting.

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- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of the technical representative that authored report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

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- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated; as documented according to ASTM E 329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

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- f. When testing is complete, remove test specimens and assemblies; do not reuse products on Project.
- 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.



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- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Testing agency shall cooperate with the Contracting Officer, or their designated representative, and Contractor in performing its duties and shall provide qualified personnel to perform inspections and tests.
  - 1. Promptly notify the Contracting Officer or its designated representative of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Does not release, revoke, alter, or increase the requirements of the Contract Document nor approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- G. Auxiliary Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits.
- I. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

SECTION 01 4000  
QUALITY REQUIREMENTS

- J. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner and Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - EXECUTION

2.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

2.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

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QUALITY REQUIREMENTS

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 01 4000**

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for work restrictions and limitations on utility interruptions.
  - 2. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Retain "Sewer, Water, and Electric Power Service" Paragraph below if multiple contracts are required. If needed, insert use-charge requirements for other utilities needed for construction operations.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
  - 1. Locations of dust-control partitions at each phase of work.
  - 2. HVAC system isolation schematic drawing.
  - 3. Location of proposed air-filtration system discharge.
  - 4. Waste handling procedures.
  - 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 EQUIPMENT

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

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with regulations and health codes, and with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
  - 1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At

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TEMPORARY FACILITIES AND CONTROLS

Substantial Completion, restore these facilities to condition existing before initial use.

- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed, and that is self-contained with thermostatic control.
  - 1. Use of gasoline - burning space heaters, open - flame heaters, or salamander - type heating units is prohibited.
  - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
  - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
    - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
  - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
  - 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Field Offices: Provide field offices, storage and fabrication sheds, and other support facilities as necessary for construction operations.
- B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  2. Remove snow and ice as required to minimize accumulations.
- D. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Collect waste daily and, when containers are full, legally dispose of waste off - site. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- F. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
  1. Do not load elevators beyond their rated weight capacity.
  2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- G. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
  1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.



SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide temporary environmental protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Section 01 1000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
  - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Protect existing landscaping and restore any areas damaged during construction to original condition prior to start of project.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction and workers from inclement weather and for containment of heat.
- H. Security Enclosure and Lockup: **Install temporary enclosure (fencing) around the entire staging area.** Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions and/or other approved measures to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
  - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
  - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  - 3. Insulate partitions to control noise transmission to occupied areas.
  - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  - 5. Protect air-handling equipment.
  - 6. Provide walk-off mats at each entrance through temporary partition.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
  - 1. Prohibit smoking in on CMHA property.
  - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
- M. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

3.4 OPERATION TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Termination and Removal: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 7700 "Closeout Procedures."

**END OF SECTION 01 5000**

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 3300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, the Architect, with Owner's approval, will determine which products will be used.

SECTION 01 6000  
PRODUCT REQUIREMENTS

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- B. Submittal Time: Comply with requirements in Section 01 7700 "Closeout Procedures."

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "As selected", the Owner will make the selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
  6. Or Equal: For products specified by name and accompanied by the term "Or Equal," or "Or Approved Equal", or "Approved", comply with requirements in Section 01 3300, Submittal Procedures.
- B. Product Selection Procedures:
1. Where Specifications name a single product or manufacturer, provide the item indicated that complies with requirements.
  2. Where Specifications include a list of names of products or manufacturers, provide one of the items indicated that complies with requirements.
  3. Where Specifications include a list of names of products or manufacturers, accompanied by the term "available products" or "available manufacturers," provide one of the named items that complies with requirements. Comply with provisions for "comparable product requests" for consideration of an unnamed product.
  4. Where Specifications name a product as the "basis - of - design" and include a list of manufacturers, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by the other named manufacturers.
  5. Where Specifications name a single product as the "basis - of - design" and no other manufacturers are named, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by another manufacturer.
  6. Unless otherwise indicated, the Contracting Officer, or its designated representative, will select color, pattern, and texture of each product from manufacturer's full range of standard options.
  7. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for

SECTION 01 6000  
PRODUCT REQUIREMENTS

Contractor's convenience will not be considered unless otherwise indicated.

- b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements.

2. Manufacturers:

- a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
- b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements.

- 3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.

- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision, with Owner's approval, will be final on whether a proposed product matches.

- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. The Owner will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

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

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

SECTION 01 6000  
PRODUCT REQUIREMENTS

B. Product Substitution and Comparable Product Requests:

1. Submit three copies of each request for product substitution or comparable product.
2. Do not submit unapproved substitutions or products on Shop Drawings or other submittals.
3. Identify product to be replaced and show compliance with requirements. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified.
4. Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - a. For Substitution requests, provide a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.
5. The Contracting Officer, or its designated representative, will review the proposed substitution and notify the Contractor of its acceptance or rejection.

**END OF SECTION 01 6000**



SECTION 01 6000  
PRODUCT REQUIREMENTS

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SECTION 01 7300  
EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Installation of the Work.
  - 3. Cutting and patching.
  - 4. Progress cleaning.
  - 5. Starting and adjusting.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for limits on use of Project site.
  - 2. Section 01 3300 "Submittal Procedures" for submitting surveys.
  - 3. Section 01 7700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 DEFINITIONS

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

1.4 INFORMATIONAL SUBMITTALS

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

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect

SECTION 01 7300  
EXECUTION

before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Fire-detection and -alarm systems.
    - i. Conveying systems.
    - j. Electrical wiring systems.
    - k. Operating systems of special construction.
  3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
    - a. Water, moisture, or vapor barriers.
    - b. Membranes and flashings.
    - c. Exterior curtain-wall construction.
    - d. Sprayed fire-resistive material.
    - e. Equipment supports.
    - f. Piping, ductwork, vessels, and equipment.
    - g. Noise- and vibration-control elements and systems.
  4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.
- D. The Contractor shall review means, methods, techniques, sequences and procedures indicated in the Contract Documents either directly or by reference to standards or

SECTION 01 7300  
EXECUTION

manufacturer's instructions; and advise the Contracting Officer, or their designated representative, (1) if the specified procedure deviates from good construction practice, (2) if following the procedure will affect warranties including the Contractor's general warranty, or (3) of objections the Contractor may have to the procedure and propose alternative procedures the Contractor will warrant.

- E. Examine substrates and conditions for compliance with manufacturer's written requirements including, but not limited to, surfaces that are sound, level, plumb, smooth, clean, and free of deleterious substances; substrates within installation tolerances; and application conditions within environmental limits. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to property survey and existing benchmarks.
- G. Do not scale the Drawings. Follow indicated dimensions. In case of discrepancy in the figures, bring the matter to the attention of the Contracting Officer, or their designated representative, for interpretation before proceeding with the Work. Failure to follow this procedure shall be at the Contractor's own risk, and the Contracting Officer, or their designated representative, interpretation shall be final.
- H. Take field measurements as required to fit the Work properly. Where fabricated products are to be fitted to other construction, verify dimensions by field measurement before fabrication and, when possible, allow for fitting and trimming during installation.
- I. Unless specifically identified, the terms "repair, replace, repair or replace" shall mean repair in a workmanlike manner, and "install or furnish and install", shall be understood to mean "Furnish all material required and Install".
- J. Installation General: Comply with manufacturer's written instructions for installation. Anchor each product securely in place, accurately located and aligned with other portions of the Work. Clean exposed surfaces and protect from damage.
  - 1. All work shall be executed only by artisans and mechanics qualified through experience in their respective trades.
- K. Maintenance: The following site maintenance shall be performed for the entire duration of the construction/renovation process.
  - 1. Clean Project site and work areas daily, including common areas.
  - 2. The cutting of grass and proper disposal of clippings, to be performed on a regular weekly basis and/or as dictated by need.
  - 3. The removal of snow from public access walkways and adjacent site walkways.
- L. Complete the cleaning operations before requesting inspection for certification of Substantial Completion:

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

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

## SECTION 01 7300 EXECUTION

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

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EXECUTION

4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
  - B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
  - C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
  - D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
  - E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
  - F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
  - G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
  - H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
    1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
    2. Allow for building movement, including thermal expansion and contraction.
    3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
  - I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
  - J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- 3.5 CUTTING AND PATCHING
- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

SECTION 01 7300  
EXECUTION

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Do not cut structural members or operational elements without prior written approval of the Contracting Officer, or their designated representative.
- F. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
  - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
2. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
- H. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
- I. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- J. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.



SECTION 01 7300  
EXECUTION

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Proceed with patching after construction operations requiring cutting are complete.
- K. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- L. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

SECTION 01 7300  
EXECUTION

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80° F (27° C).
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Use containers intended for holding waste materials of type to be stored.
  - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

SECTION 01 7300  
EXECUTION

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

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION 01 7300**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Disposing of nonhazardous demolition and construction waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within seven (7) days of date established for the Notice to Proceed.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

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CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
1. Review and discuss waste management plan including responsibilities of waste management coordinator.
  2. Review requirements for documenting quantities of each type of waste and its disposition.
  3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, locations for waste to be held until picked up for disposal and how often waste is to be picked up.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
1. Comply with operation, termination, and removal requirements in Section 01 5000 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
1. Distribute waste management plan to everyone concerned within three (3) days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

2. Comply with Section 01 5000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

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

**END OF SECTION 017419**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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SECTION 01 7700  
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for progress cleaning of Project site.
  - 2. Section 01 7839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.



SECTION 01 7700  
CLOSEOUT PROCEDURES

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, maintenance service agreements, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Submit Record Drawings, operation and maintenance manuals, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items.
  - 7. Make final changeover of permanent locks and deliver keys to Owner.
  - 8. Complete startup testing of systems.
  - 9. Remove temporary facilities and controls.
  - 10. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  - 11. Complete final cleaning requirements, including touchup painting. a. The Project shall be turned over in "move - in" condition.
  - 12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- D. Record Drawings: Maintain a set of prints of the Contract Drawings as Record Drawings. Mark to show actual installation where installation varies from that shown originally.
  1. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- E. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
- F. Operation and Maintenance Data: Submit three copies of manual. Organize data into three - ring binders with Project identification on front and spine of each binder, and envelopes for folded drawings. Include the following in tabbed sections:
  1. Table of Contents.
  2. General Contractor name, phone number and contact person.
  3. Subcontractor names, phone numbers, and contact persons.
  4. Equipment and fabricated material supplier/fabricators names, phone numbers, and contact persons.
  5. Copies of approved Shop Drawings.
  6. Manufacturer's operation and maintenance documentation.
  7. Maintenance and service schedules.
  8. Maintenance service contracts.
  9. Emergency instructions.
  10. Spare parts list.
  11. Key biting lists (if applicable).
  12. Wiring diagrams.
  13. Copies of warranties.
    - a. 1 - Year (from date of final approval) Contractor's Warranty Certification.
    - b. All Manufacturer's Warranty Certifications (for all material and equipment warranted/guaranteed beyond 1 year of the date of final approval).
  14. Other information on installed materials or equipment that will be required to maintain or sustain the Project.
  15. Advise Owner of pending insurance changeover requirements.
  16. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  17. Complete startup and testing of systems and equipment.
  18. Perform preventive maintenance on equipment used prior to Substantial Completion.

SECTION 01 7700  
CLOSEOUT PROCEDURES

19. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 7900 "Demonstration and Training."
  20. Advise Owner of changeover in heat and other utilities.
  21. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  22. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  23. Complete final cleaning requirements, including touchup painting.
  24. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- G. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- C. The Contracting Officer, or their designated representative, will prepare the Certificate of Substantial Completion after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.
- D. When items must be completed or corrected, request inspection for Final Completion/Approval, once the following are complete:

SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Submit a signed copy of Substantial Completion inspection list stating that each item has been completed or otherwise resolved for acceptance.
2. Submit all final waivers, final Certificate for Payment, wage reports, warranties, consent of Surety, and other outstanding items.
3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

a. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Include a detailed review of the following:

- 1) Basis of system design and operational requirements, review of documentation, emergency procedures, operations, adjustments, troubleshooting, maintenance, and repairs.

E. The Contracting Officer, or their designated representative, will approve the Contractor's final Certificate for Payment after inspection and receipt of required items and training or will advise Contractor of items that must be completed or corrected before certificate will be issued.

1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
  - a. Project name.
  - b. Date.
  - c. Name of Architect.
  - d. Name of Contractor.
  - e. Page number.
4. Submit list of incomplete items in the following format:
  - a. PDF electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
  - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
  - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - e. Remove snow and ice to provide safe access to building.
  - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - h. Sweep concrete floors broom clean in unoccupied spaces.
  - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
  - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - k. Remove labels that are not permanent.
  - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
  - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

SECTION 01 7700  
CLOSEOUT PROCEDURES

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to original condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION 01 7700**

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Miscellaneous record submittals.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for final property survey.
  - 2. Section 01 7700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one (1) set of marked-up record prints.
- B. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one (1) paper copy of each submittal.
- C. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.



SECTION 01 7839  
PROJECT RECORD DOCUMENTS

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

2. Identification: As follows:

- a. Project name.
- b. Date.
- c. Designation "PROJECT RECORD DRAWINGS."
- d. Name of Architect.
- e. Name of Contractor.

2.2 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as paper copy.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for reference during normal working hours.

**END OF SECTION 01 7839**

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

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SECTION 02 4119  
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
  - 2. Demolition and removal of selected site elements.
  - 3. Cutting and alterations.
  - 4. Protecting of adjacent surfaces.

- B. Related Requirements:

- 1. Section 01 1000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
  - 2. Section 01 7300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items

SECTION 02 4119  
SELECTIVE DEMOLITION

of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

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

1.5 PREINSTALLATION MEETINGS

A. Pre-demolition Conference: Conduct conference at Project site

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.
6. Review temporary enclosures to prevent dust and debris from entering other occupied spaces of the building.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician.

B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

E. Pre-demolition Photographs or Video: Written documentation, with associated photographs, of existing conditions of areas / item that are not scheduled to be repaired, adjoining construction, landscaping in the area of work, etc., including finish surfaces, which might be misconstrued as damage caused by the demolition

SECTION 02 4119  
SELECTIVE DEMOLITION

operations. Do not proceed to the work until the report is submitted and approved by the Owner.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  - 1. Before selective demolition, Owner will remove the following items:
    - a. None.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

SECTION 02 4119  
SELECTIVE DEMOLITION

- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Consultant.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
  - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
  - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Comply with requirements for existing services/systems interruptions specified in Section 01 1000 "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. Arrange to shut off indicated utilities with utility companies.

SECTION 02 4119  
SELECTIVE DEMOLITION

3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
  - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.



SECTION 02 4119  
SELECTIVE DEMOLITION

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 PROTECTION OF SURFACES

- A. When weather threatens, cease work under this Section and return building to a water-tight condition. Contractor must have sufficient materials on site to provide a temporary waterproof system in the event of unexpected rain/snow.
- B. Contractor shall not remove any more materials than is intended to have replaced water-tight that same day. Contractor shall maintain on site temporary tarps and/or rolls of membrane that can be used in emergencies to provide a method of temporary waterproofing in case of unexpected threatening weather.
- C. Contractor shall restore to original condition any damages caused during work performed in this Section.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 7419 "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
  1. Clean salvaged items.

SECTION 02 4119  
SELECTIVE DEMOLITION

2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Consultant, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- B. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

SECTION 02 4119  
SELECTIVE DEMOLITION

3.8 CLEANING

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

3.9 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Construction to Be Removed: Designated portions of concrete topping slab, insulation and waterproofing, plaster from designated interior walls, and resilient floor trim and acoustical fabric from designated interior walls.
- B. Existing Items to Be Removed and Salvaged: None.
- C. Existing Items to Be Removed and Reinstalled: Suspended ceiling grid and ceiling tiles, projector screens and related equipment, electrical conduit and junction boxes, and networking equipment and conduit.

**END OF SECTION 02 4119**

SECTION 02 8000  
LANDSCAPE REPAIR

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Removal of damaged turf and plantings and replacement of materials damaged by the Contractor during the performance of Work is included in this Section.
- B. Repair of damaged concrete, damaged by the contractor during the performance of the Work.
- C. Repair of damaged hot mix asphalt paving, damaged by the contractor during the performance of the Work. **[NOTE: Contractor is expected to protect the concrete and asphalt paving from damage from construction traffic and materials.]**

1.2 QUALITY ASSURANCE

- A. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods for their installation, and who shall direct all work performed under this Section.
- B. Standards:
  - 1. All plants and planting material shall meet or exceed the specifications of federal, state, and county laws requiring inspection for plant disease and insect control.
  - 2. Quality and size shall conform to the current edition of *Horticultural Standards* for number one grade nursery stock as adopted by the American Association of Nurserymen.
  - 3. State of Michigan, Department of Transportation (MDOT) Standards, latest edition for Asphalt Repair Work.
  - 4. American concrete Institute (ACI) Standards for Concrete Work

1.3 SUBMITTALS

- A. General: Comply with the provisions of Section 01 3300.

1.4 PRODUCT HANDLING

- A. Delivery and Storage:
  - 1. Deliver all items to the job site in their original containers with all labels intact and legible.
  - 2. Use all means necessary to protect plant materials before, during, and after installation and to protect the work and materials of all other trades.

SECTION 02 8000  
LANDSCAPE REPAIR

- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's representative and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Protect structures, utilities, roads, trees and vegetation from damages caused by landscaping operations.
- B. Topsoil required to complete the work of planting shall be natural, friable topsoil, characteristic of representative soils in the vicinity that produce heavy growths of crops, grass or other vegetation. It shall not be extremely acidic nor alkaline nor contain toxic substances, harmful to plant growth. All topsoil used for this project shall be without admixtures of subsoil; free from clay lumps, stones, roots, debris and other objects over one inch in diameter.

2.2 FERTILIZER

- A. Fertilizer shall meet the applicable sections of the State Highway Specifications.
- B. Fertilizer shall be uniform in composition, free flowing and suitable for application with approved equipment.

2.3 SOD

- A. Product Delivery and Handling:
  - 1. Sod shall be placed within 48 hours of cutting and shall be protected and maintained during transit or storage on site as necessary to ensure vigorous growth after placement.
  - 2. Sod remaining on the site unplaced after 48 hours will be rejected. All yellowing or otherwise discolored sod will be rejected.
  - 3. The Contractor shall inform the Owner's representative 24 hours in advance of any delivery of sod.
- B. Description
  - 1. Sod shall be well established and shall contain all the dense root system of the grasses and shall exhibit vigorous healthy root growth free of noxious weeds, objectionable grasses, grubs, diseases or injurious insects.
  - 2. Sod shall meet the applicable sections of the State Highway Specifications unless specifically called for otherwise by the Owner's Representative.

SECTION 02 8000  
LANDSCAPE REPAIR

2.4 CONCRETE

- A. Concrete shall be commercially produced material and shall be air entrained, with a minimum compressive strength of 3500 psi at 28 days.
- B. Accessories such as expansion joint materials and tie bars shall be installed in the repaired concrete to match the materials damaged during the work.
- C. All products shall meet current ACI and MDOT standards for new construction.
- D. Concrete curing compound shall be white pigmented, free of paraffin or petroleum, Type 2 curing compound conforming to AASHTO M148 "Standard Specification for Liquid Membrane – Forming Compounds".

2.5 HOT MIX ASPHALT

- A. Hot mix asphalt shall be commercially produced material and shall be an 1100 or 1300 mix design for both the bottom (leveling course) and the top (wearing course) materials.
- B. Tack coat shall be SS-1h material.

2.6 COLD MIX ASPHALT

- A. Cold mix asphalt materials for contained holes shall be POUR-PATCH as manufactured by Revere Products (800) 343-7318.
- B. Cold mix asphalt materials for depressions and chipped out areas shall be EPOXI-TAR PATCH as manufactured by Revere Products (800) 343-7318.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Ground preparation shall not be started until all stones, debris, and similar material larger than "1" in diameter have been removed, depressions and ruts filled and the entire area to be seeded and/or sodded has been accepted by the Owner's Representative.

3.2 PROTECTION OF PERSON AND PROPERTY

- A. Protection of Existing Plant Materials
  - 1. Existing trees, shrubs, and plant materials to remain shall be protected by acceptable means.
  - 2. Damage to above plant material shall be repaired by qualified nurserymen or replaced with approved equal material.

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3.3 SODDING

- A. General lawn repair shall be performed by personnel familiar with the accepted procedures of planting and under the supervision of a qualified planting foreman.
- B. Preparation of Sod:
  - 1. Immediately prior, but not in excess of 24 hours before sod is to be placed, the soil surface shall be worked until it is relatively free from debris, washes, gullies, clods and stones and is in satisfactory condition.
  - 2. The surface shall be worked to depth of not less than 3" with a disc, tiller, or other equipment approved by the Owner's representative.
  - 3. Prepared surfaces that become crusted shall be reworked to an acceptable condition for sodding.
- C. Application of Fertilizer
  - 1. Commercial fertilizer shall be applied in accordance with the State Highway Specifications.
- D. Application of Sod
  - 1. Laying: Fit sod pieces tightly together so that no joint is visible, alternate courses staggered, and tap firmly to eliminate all air pockets, provide a true and even surface and ensure knitting without displacement of sod or deformation of the surface of sodded areas. Edges shall be buried flush with adjacent soil. Following compaction, screened topsoil shall be used to fill all cracks between sod pieces. Excess soil shall be worked into grass.
  - 2. Watering: Within five hours after the sod has been placed, it shall be saturated to a depth of 2" by watering with a fine spray.
  - 3. Maintenance: Sod shall be watered each day such that it shall be saturated to a depth of ½" by watering with a fine spray until project is accepted by the Owner, but not for a period of more than 21 days. If after 21 days the sod is determined to not be acceptable to the Owner it shall be removed and replaced.

3.4 CONCRETE REPAIR

- A. Damaged concrete shall be saw cut a distance of at least 1 foot beyond the damaged areas. The saw cut shall be at least 1/3<sup>rd</sup> the depth of the material being removed.
- B. The exposed subgrade materials shall be leveled and compacted prior to the application of the new concrete. Subgrade materials shall also be moistened to prevent quick loss of moisture soon after application.

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- C. Forms shall be provided to maintain a clean and vertical face for the installation of new materials, as needed.
  - D. New joints shall be laid out in areas of replaced materials. Spacing of joints shall not exceed 15 times the depth of the concrete.
  - E. Expansion joint material shall be installed at all locations where the repaired concrete meets a structure, curb, sidewalk, forms an intersection or at 50-ft. intervals in a continuous slab. Expansion joint materials shall cover the entire gap of the joint. The top of the expansion joint materials must be slightly below concrete grade. Anchor expansion joint material to prevent displacing during concrete placing and finishing.
  - F. Materials shall be delivered and installed in accordance with the American Concrete Institute (ACI) Standards.
  - G. Concrete curing compound shall be applied within 1 hour or final finishing or before the concrete has dried.
  - H. Apply pigmented, membrane forming, curing compound in two coats at right angles to each other. Apply compound by spray only. Rate of application shall be 200 square feet per gallon for each coat.
  - I. Any areas covered with compound that is disturbed during curing shall be re-sprayed immediately.
  - J. Contractors shall provide protection from rapid curing and from physical damage for a period of not less than 3 days following the application of the new concrete.
  - K. Replacement of any existing pavement marking within the repaired area will be included as part of any repair.
- 3.4 HOT ASPHALT REPAIRS - To be performed in all areas where asphalt damage occurs. (Cold patch repairs shall be installed as a temporary measure only until hot asphalt repairs can be scheduled and performed.)
- A. Damaged bituminous concrete shall be saw cut a distance of at least 1 foot beyond the limits of damage. The saw cut shall be a minimum of 2" in depth, but not less than  $\frac{3}{4}$  of the depth of the existing materials.
  - B. The old pavement shall be carefully removed for its full depth, but not less than 4 inches.
  - C. The exposed substrate material shall be leveled and compacted prior to the application of the new hot mix asphalt. Subgrade materials that are too soft (due to moisture) shall be allowed to dry or removed and replaced with dryer materials.
  - D. The exposed edges of the surrounding asphalt shall be brush coated with tack coat prior to the application of the new hot mix asphalt.



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- E. The hot mix asphalt shall be delivered and installed in accordance with MDOT standards. The placement of asphalt shall be as follows:
    - 1. The top course of thickness shall be not less than 1.5" compacted thickness, nor more than 2.5" compacted thickness.
    - 2. The bottom course thickness shall not be less than 2.0" thickness, and shall not be installed in any thickness greater than 3.0" compacted thickness for any one layer.
    - 3. The total thickness of the pavement shall meet or exceed the surrounding materials, but shall not be less than 4.0" total compacted thickness.
    - 4. If dirt is allowed to lie on any one layer, the layer must be swept and a tack coat applied prior to the application of a subsequent layer.
  - F. Contractor shall provide protection for the new hot mix asphalt for a minimum of 4 hours following application.
  - G. Contractor is responsible for the proper drainage of the patched asphalt. Any water in excess of 1/8" in depth following 30 minutes after a rain will be considered as unacceptable.
  - H. Replacement of any stripping or other pavement marking shall be included as part of the repair work.
- 3.5 Clean Up
- A. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.

**END OF SECTION 02 8000**

PART ONE – GENERAL

1.01 DESCRIPTION

A. Section includes maintenance of unit masonry and cleaning as follows:

1. Repairing unit masonry, including replacing units.
2. Cutting and repointing joints.
3. Stone patching
4. Saw-cut existing masonry expansion joints to widen for new sealants.
5. Saw-cut new expansion joints in masonry wall system.
6. Restoration cleaning of wall surfaces.
7. Painting of designated steel components

1.02 RELATED SECTIONS

- A. Section 02220 – Selective Demolition
- B. Section 07920 – Joint Sealants

1.03 DEFINITIONS

- A. Very Low-Pressure Spray: Under 100 psi (690 kPa).
- B. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- C. Medium-Pressure Spray: 400 to 800 psi (2750 to 5510 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- D. High-Pressure Spray: 800 to 1200 psi (5510 to 8250 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- E. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.
- F. Significant cracking: extent of cracking observed in sandstone which would not allow proper installation of water proofing/sealant materials.

1.04 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced, masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.
- B. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that restoration and cleaning work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm.
- C. Restoration Worker Qualifications: Persons who are experienced in restoration work of types they will be performing. When masonry units are being patched, assign at least

one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products.

- D. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with factory-trained representatives who are available for consultation and Project-site inspection and assistance at no additional cost.
- E. Source Limitations: Obtain each type of material for masonry restoration (cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- F. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage due to worker fatigue.
- G. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials and Project site.
  - 1. Include methods for keeping pointing mortar damp during curing period.
  - 2. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- H. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used, protection of surrounding materials, and control of runoff during operations.
  - 1. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- I. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from 20 feet (6 m) away by Owner or Owners Representative.
- J. Field Samples: Prepare test areas of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
  - 1. Masonry Repair: Complete test sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each test area not smaller than 2 adjacent whole units or approximately 32 inches (1200 mm) in least dimension. Perform test sample areas in existing walls at areas as directed by Owners Representative unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

- a. Stone Patching:
  - 1) Provide at two (2) areas, minimum 1 ft x 1ft, to determine the required patching material color and texture.
2. Repointing: Rake out joints in designated area, approximately 36 inches (900 mm) high by 48 inches (1200 mm) wide and repoint; cleaned and finished.
  - a. Install mortar sample that contains a close color range, aggregate type, and finish that will produce a mortar matching the cleaned masonry when cured and dry.
  - b. Install up to three (3) samples with varying shades of color, aggregate, and finish.
  - c. Repeat process, up to 3 times, until acceptable.
3. Cleaning: Clean two (2) areas approximately 25 sq. ft. (2.3 sq. m) for each type of masonry and surface condition.
  - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not use cleaners and methods known to have deleterious effect without providing all appropriate protections.
  - b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.
  - c. Repeat, using same of different leaning methods up to 3 times, until acceptable.
4. Approval of test areas does not constitute approval of deviations from the Contract Documents contained in test areas unless Owners Representative specifically approves such deviations in writing.
5. Approved test areas may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.05 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Samples for Verification: For the following:
  1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.
- C. Hardware List: Submit a complete list of incidental materials to be provided under this Section.
- D. Repair Procedures: Submit written procedures for the remedial work including materials, methods, and equipment that will be used.
- E. As provided in Section 01300.

#### 1.06 DELIVERY, STORAGE, AND PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be

stored in a protected area between 40 - 80 degrees F.

- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- B. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- E. Store sand where grading and other required characteristics can be maintained and contamination avoided.

#### 1.06 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.
- B. Repair masonry units and repoint mortar joints only when air temperature is between 40 and 90 deg F (4 and 32 deg C) and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for masonry repair and mortar-joint pointing unless otherwise indicated:
  - 1. When air temperature is below 40 deg F (4 deg C), heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F (4 and 49 deg C).
  - 2. When mean daily air temperature is below 40 deg F (4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 7 days after repair and pointing.
- D. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F (32 deg C) and above unless otherwise indicated.
- E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.
- F. Clean masonry surfaces only when air temperature is 40 deg F (4 deg C) and above and is predicted to remain so for at least 7 days after completion of cleaning.

#### 1.07 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the

materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.

## PART TWO – PRODUCTS

### 2.01 MORTAR

- A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.
  - a. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Mortar Sand: ASTM C 144 unless otherwise indicated.
  - 1. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color with no more than 50 parts per million chloride ions and free of organic contaminants.
  - 2. For pointing mortar, provide sand with rounded edges.
  - 3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
  - 4. For joints narrower than 1/4 inch, use aggregate graded with 100 percent passing the No. 8 sieve and 95 percent passing the No. 16 sieve.
- D. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars. Pigments shall conform to ASTM C 270 and C 979. Integral coloring material shall consist of inert, non-fading, finely ground, alkali-fast mineral oxides, made specifically for cement/lime mortars. Limit coloring additive so as to no exceed 10% of the weight of Portland cement. Do not use carbon black as a coloring additive.
- E. Water: Potable.
- F. Admixtures
  - 1. Admixtures such as air-entraining agents, accelerators, retardants, water repellent agents, antifreeze compounds, and other admixtures shall not be added to mortar unless specified.
  - 2. Do not use admixtures containing more than 0.2% chloride ions.

### 2.02 STONE PATCHING AND REPAIR MATERIALS

#### A. Limestone Units

- 1. Fast-drying, non-shrink, pre-mixed patching material designed for repairing vertical and horizontal masonry surfaces. Proprietary mortar compound must be colored to match

and blend with original stonework, and compressive strength shall be balanced to match original stones.

- a. Jahn M70 Stone Patching Mortar, Cathedral Stone Products, Inc., Jessup, MD.
- b. MIMIC by Charger Corporation, Hamden, CT
- c. or Owner's Representative approved equivalent.

## 2.03 MORTAR MIXES

- A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C 5 and manufacturer's written instructions.
- B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
  1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Owners Representatives approval.
  1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.
- D. Do not use admixtures in mortar unless otherwise indicated.
- E. Mortar Proportions: Mix mortar materials in the following proportions:
  1. Pointing Mortar for Brick: Proportions shall be consistent with those identified in preconstruction testing.
    - a. Add mortar pigments to produce mortar colors required.
  2. Rebuilding (Setting) Mortar: Same as pointing mortar.
    - a. Add mortar pigments to produce mortar colors required.

## 2.04 MASONRY UNITS

- A. Face Brick (Solid Masonry Units Made from Clay or Shale):
  1. ASTM C 216, Grade SW, Type FBS, unless otherwise indicated.
  2. Size, Texture and Color: To match adjacent, existing masonry units as approved by owner.
  3. Properties:
    - a. Initial Rate of Absorption: 6 to 15 grams of water per minute per 30 square

- inches.
- b. Efflorescence: Perform as described in ASTM C 67. Units shall have a rating of "Not Effloresced".
- 4. Use: Provide as needed for replacement of existing damaged units.
- 5. Provide special units for corners and other similar exposed applications.

## 2.05 CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).
- C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.
- D. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.
- E. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Light Duty Cleaner
    - b. Dominion Restoration Products, Inc; Bio-Cleanse
    - c. Dumond Chemicals, Inc.; Safe n' Easy Architectural Cleaner/Restorer.
    - d. Prosoco; Enviro Klean 2010 All Surface Cleaner.
- F. Mild Acidic Cleaner: Manufacturer's standard mildly acidic cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Bio Cleaner
    - b. Dominion Restoration Products, Inc; DR-60 Stone and Masonry Cleaner
    - c. Diedrich Technologies Inc.; Envirorestore 100.
    - d. Prosoco; Enviro Klean Biowash
- G. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:



- a. Cathedral Stone Products; Heavy Duty Cleaner
- b. Diedrich Technologies Inc.; Diedrich 101 Masonry Restorer
- c. Dumond Chemicals, Inc.; Safe n' Easy Ultimate Stone and Masonry Cleaner.
- d. Prosoco; Enviro Klean Restoration Cleaner

## 2.04 PAINT MATERIALS

- A. Steel Primer Coat: Urethane-based, zinc rich primer
  - 1. Tneme-Zinc Series 90-97 by Tnemec Company
  - 2. Corothane I Galvapac 1K by Sherwin Williams
  - 3. or Owner's Representative approved substitute
- B. Steel Top Coat: Acrylic polyurethane top coat. Color to be selected by the Owner
  - 1. Endura-Shield Series 73 by Tnemec Company
  - 2. Fast Clad DTM Urethane by Sherwin Williams
  - 3. or Owner's Representative approved substitute

## 2.05 ACCESSORY MATERIALS

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
- B. Reinforcement and Anchorage: All screws, bolts, nuts, washers, rivets, ties, and pins shall be hot-dipped galvanized steel (ASTM A 153, Class B), or Type 304 stainless steel

## PART THREE – EXECUTION

### 3.01 GENERAL

- A. Examine each area of work and verify that existing conditions are acceptable for the specified installation procedures. Report, in writing, adverse conditions that could affect the performance of the Work within five calendar days. Absence of written notification will indicate the Contractor's acceptance of existing project conditions.
- B. Masonry workmanship shall comply with all applicable recommendations of the Brick Industry Association (BIA, formerly the Brick Institute of America), the Indiana Limestone Institute of America, and Masonry Structures ACI 530.1, except as modified below. Report any damage to new or existing flashings within the work area to the Owner's Representative, and provide for repairs by appropriately skilled tradesmen, at no cost to the Owner.
- C. Manufacturer's Recommendations: Comply with the manufacturer's written approved installation instructions and with any governing regulations and industry standards applicable to the work.

- D. Proceed when project conditions are acceptable and implement any cold / hot weather provisions specified herein.
- E. Conduct all masonry work in a neat and workmanlike manner, to prevent staining any surface with mortar or other spills. Avoid dropping mortar on completed masonry work or other elements of the building. If mortar drops or spills, spot-clean immediately using a sponge and clean water.
- F. Tolerances:
  - 1. External corners and other conspicuous lines and levels: Maximum deviation from plumb or level  $\pm 1/4$  inch in any 10 ft section with a maximum cumulative amount of  $3/8$  inch in any one direction beyond 10 ft.
  - 2. Variation from Level: Maximum  $1/2$  inch in 20 feet, or  $3/4$  inch in 40 feet or more.
  - 3. Mortar bed joint thickness:  $3/8$  inch or match existing adjacent construction. Maximum deviation  $\pm 1/16$  inch
  - 4. Mortar head joint thickness:  $3/8$  inch or match existing adjacent construction. Maximum deviation  $\pm 1/16$  inch
  - 5. Vertical alignment of the center line of corresponding head joints in alternate courses when using other than stacked bond. Maximum deviation  $\pm 1/4$  inch
  - 6. Vertical alignment of the center line of all head joints in total assemblage height when using other than stacked bond. Maximum deviation  $\pm 1$  inch

### 3.02 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
  - 1. Erect temporary protective covers over walkways and at points of pedestrian entrance and exit that must remain in service during course of restoration and cleaning work, as required.
- B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- C. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.

2. Keep wall wet below area being cleaned to prevent streaking from runoff.
  3. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
  4. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
  5. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
- D. Prevent mortar from staining face of surrounding masonry and other surfaces.
1. Cover sills, ledges, and projections to protect from mortar droppings.
  2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
  3. Immediately remove mortar in contact with exposed masonry and other surfaces.
  4. Clean mortar splatters from scaffolding at end of each day.
- D. Prevent mortar from staining face of surrounding masonry and other surfaces.

### 3.03 REPOINTING MASONRY

- A. General: Tuckpoint mortar joints containing static cracks, deterioration, holes or voids. New bedding and pointing mortar mix should not have a compressive strength that exceeds existing mortar or masonry materials.
- B. Rake out and repoint joints to the following extent:
1. Joints where mortar is missing or where they contain holes.
  2. Cracked joints where cracks can be penetrated at least 1/4 inch (6 mm) by a knife blade 0.027 inch (0.7 mm) thick.
  3. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
  4. Joints where they have been filled with substances other than mortar.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved test area:
1. Remove mortar from joints to depth of 2-1/2 times joint width, but not less than 1/2 inch (13 mm) or not less than that required to expose sound, unweathered mortar.
  2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
  3. Do not spall edges of masonry units or widen joints. Replace any masonry units which become damaged.
- D. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.
- E. Notify Owner's Representative of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other

deteriorated items.

F. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
  2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
  3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch (9 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
  4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
  5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.
- G. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
- H. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
- I. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.
- J. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.04 MASONRY UNIT REPLACEMENT

- A. Match existing construction tolerances, corners, and recess. Install masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line.
- B. Provide shoring and support, as required, prior to removing existing masonry units.
- C. Use full units without cutting whenever possible. Cut new masonry units as required to fit adjoining work neatly. Avoid the use of less than half size units at corners, jambs, and at other locations. Perform job site cutting of masonry units with proper masonry saw to provide straight, clean, unchipped edges. Prevent broken masonry unit corner or edges. Do not break masonry units with a hammer.
- D. Mortar Bedding and Jointing
1. Provide new ties to replace damaged ties, in like-kind. All masonry reinforcement

- and anchors should be completely bedded in mortar. Direct masonry unit-to-anchor contact is not permitted.
2. Lay new units with completely filled bed and head joints. Butter ends with sufficient mortar to fill head joints and lay into place. Do not slush head joints. Tooth new units into existing masonry work, to match existing bonding patterns.
  3. Spaces between masonry units and backup materials are to remain free and clear of mortar.
  4. Repoint head joints and top joints where new work adjoins existing masonry work.
- E. Establish lines, levels, and coursing indicated. Protect from displacement.
- F. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- G. Placing and Bonding
1. Do not lay mortar bed more than 2 ft ahead of work.
  2. Do not furrow bed joints.
  3. Completely butter the ends and head of each unit with mortar and shove the unit into place so that mortar squeezes out the top of the head joint and bed joint. Do not slush head joints.
  4. At cavity wall sections, cut off and scoop out the mortar that extrudes from bed and head joints on outer and inner faces of the wythe.
  5. Do not disturb, tap, shove or push units once they are laid in their final position. Where adjustment must be made, remove mortar and replace.
  6. Tooth masonry at intersections and external corners.
  7. Strike exterior of mortar joints flush during laying. When mortar is thumb print hard on exposed surfaces, tool joints concave with a cylindrical pointing tool slightly larger than the masonry joint to compact the mortar thoroughly.
  8. Slightly bevel bed joint mortar away from the cavity space before placing the unit to minimize mortar protrusions into any cavity space intended to be free of mortar. Back purge or strike mortar extrusions in the cavity space.

### 3.05 STONE PATCHING

- A. Hairline cracks: For areas that are not spalled, but are cracked, ensure that the area around each crack is sound. If not, chip out unsound material and repair. If the crack is visible from the ground level, chip or cut out existing stone slightly wider than crack taking care to ensure all edges are square and at a 90-degree angle. Seal hairline cracks with epoxy injection prior to patching with repair mortar. If the crack is not directly visible from the ground level rout the hairline crack using hand tools and fill with sealant.
- B. Remove all loose and spalled materials, as well as contaminants or bond breaking substances including, but not limited to laitance, mildew, loose debris, existing coatings and oils.
- C. Report any rusted anchors and ties encountered during preparation work to the Owner's Representative prior to proceeding.
- D. Cut out unsound/deficient material by hand with chisel and mallet. Care must be taken to

ensure edges of all patches are square cut, maintaining 90-degree angles.

- E. All patches must be a minimum of 1/4" deep. The surface must be sound and free of ice and frost.
- F. For stone patches/repairs greater than two inches deep, or at embedded masonry anchors, dutchman repairs are acceptable.
- G. Repair mortar for stone
  - 1. Use the recommended mix design and product from the manufacturer for the particular type of stone work being repaired.
  - 2. Prior to application, lightly mist the surface with water. Next, apply a slurry coat with a brush or trowel, working material into the pores of the surface. With a trowel, apply repair mortar with firm pressure. Overbuild the patch by at least 1/4 inch and approximately to the desired shape. Finished with a hard rubber float or shaved to the final shape with the edge of a trowel, miter rod, or margin trowel.
  - 3. Match texture to existing using conventional plastering techniques. After completing patch, wipe down adjacent areas with a wet cloth or sponge to remove excess patching material.
  - 4. Curing Procedure: Lightly mist the patch with water to wet the entire surface of the finished patch approximately 30 minutes to 1 hour after completion on hot sunny days and approximately 2 hours on cool or cloudy days. Time will vary with temperature and humidity. Mist at least once a day, but as often as possible on the two days following the patch installation.
- H. Limestone Dutchman Repairs
  - 1. Saw cut a predetermine area of existing stone slightly larger than required to produce the smallest possible glueline for epoxy adhesion.
  - 2. Ensure that prepared surfaces are clean, dry and free of dust. Mix and apply epoxy adhesive in accordance with the manufacturer's instructions. Epoxy should be applied to cover all mating surfaces and provide a continuous weathertight seal.
  - 3. Where the dutchman is unsupported, as in overhangs and soffit stones, insert a stainless steel threaded rod or dowel between mating surfaces, prior to applying epoxy adhesive.
  - 4. Finish sand any uneven edges or excess epoxy bulk.

### 3.06 CLEANING, GENERAL

- A. Proceed with cleaning in an orderly manner; work from bottom to top or top to bottom in a manner as specified by product manufacturers requirements, of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.
- B. Perform cleaning to the extent necessary to remove existing mildew, efflorescence, dirt, plant fungi, etc. so that the wall appearance is uniform, and acceptable to the water repellent sealer manufacturer. Begin with the least caustic cleaning method. Adjust cleaning methods as required. In general:
  - 1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist

- chemical cleaner being used.
2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
    - a. Equip units with pressure gages.
  3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
  4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
  5. For high-pressure water-spray application, use fan-shaped spray tip that disperses water at an angle of at least 40 degrees.
  6. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F (60 and 71 deg C) at flow rates indicated.
  7. For steam application, use steam generator capable of delivering live steam at nozzle.
- C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- D. Water Application Methods:
1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
  2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- E. Steam Cleaning: Apply steam to masonry surfaces at the very low pressures indicated for each type of masonry material. Hold nozzle at least 6 inches (150 mm) from surface of masonry and apply steam in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- F. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush application. Do not spray apply at pressures exceeding 50 psi (345 kPa). Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.
- G. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- H. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

### 3.07 PRELIMINARY CLEANING

- A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing too dry as long as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.
- B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, caulking, asphalt, tar and various other roof coatings.
  - 1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
  - 2. Remove paint and caulking with alkaline paint remover.
    - a. Comply with requirements in "Paint Removal" Article.
    - b. Repeat application up to two times if needed.

### 3.08 FINAL CLEANING

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

### 3.08 PAINTING

- A. Clean existing steel surfaces removing scaling and rust.
- B. Prepare existing deteriorated steel surface to receive coating in accordance with paint manufacturer's recommendations and with the The Society of Protective Coatings (SSPC) guidelines as follows:
  - 1. SP-2, "Hand Tool Cleaning"
  - 2. SP-3, "Power Tool Cleaning"
- C. Inspect the condition of the exposed steel sections and connections (anchors and welds). Where section loss is greater than 10 percent of the nominal thickness, report to the Owner's Representative for review and corrective procedure. Do not proceed with coating work without written authorization form the Owner's Representative.
  - 1. Primer: 3 mils (dry) / 5 mils (wet)



- 2. Top Coat: 2.5 mils (dry) / 4.5 mils (wet)
- D. Mix coating components following the manufacturer's written instructions.
- E. Maintain coating thickness during application within the manufacturer's published maximum and minimum thickness ranges.
- F. If additional coats are required to obtain the required coating thickness, apply additional coats after the initial coat is completely dry/cured.

3.09 FIELD QUALITY CONTROL

- A. Owners Representatives: Owner will assign Project representatives to help carry out responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Owner's Representative use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Notify Owner's Representative in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Owner's Representative have had reasonable opportunity to make observations of work areas at lift device or scaffold location.
- C. Contractor shall maintain or exceed levels of workmanship and material acceptability in regard to surface preparation, cleaning, and coating application as established by mock up/test samples.

- End of Section -

SECTION 07 9200  
JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Remove and replace joint sealant and back-up material where shown on the drawings and elsewhere as required to provide a positive barrier against passage of air and passage of moisture.
- B. Related Work Described Elsewhere
  - 1. Adhere strictly to the caulking and sealant specifications and to the detail drawings.

1.2 RELATED SECTIONS

- A. Section 02 4119 – Selective Demolition

1.3 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Products used in this work shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner's Representative.
- B. In acceptance or rejection of the work of this Section, the Owner's Representative will make no allowance for lack of skill on the part of the workmen.
- C. Mock-ups: Prepare sample for each type of sealant joint at each substrate to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Locate mock-ups on existing surfaces where directed by the Owner and Consultant.
    - a. Provide mockup of at least 2 lineal feet to include surface preparation, cleaning, sealant joint, and back-up materials.
    - b. Pre-Construction Field-Adhesion Testing: Before installing sealants, field test their adhesion to project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
    - c. Manufacturer's representative will review technical aspects, surface preparation, application, and workmanship.
  - 2. Approval of mock-ups does not constitute approval of deviations from the Contract Documents unless specifically approved by the Owner's Representative.
  - 3. Maintain field sample during construction for workmanship comparison.
  - 4. Subject to compliance with requirements, approved mock-ups may become part of the completed Work.

SECTION 07 9200  
JOINT SEALANTS

1.4 SUBMITTALS

- A. As provided in Section 01 3000.
- B. Product data and a color chart for each sealant will be delivered to the Owner's Representative. The Owner will select colors for each sealant from the manufacturer's standard colors.
- C. Submit manufacturer's technical data sheet for each product indicated including chemical analysis and recommendations for their application and use. Include test reports and certifications indicating that products comply with requirements.
- D. Pre-Construction: Field adhesion test reports.
- E. Field adhesion test reports.

1.5 PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be stored in a protected area between 40 - 80 degrees F.
- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- C. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.

1.6 JOB CONDITIONS

- A. Do not apply sealants when the surface temperature is below 40 degrees F. or above 125 degrees F. Do not apply materials when surface is damp or during cold, rainy, or frosty weather.

1.7 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.
- B. Provide sealant manufacturer's standard limited watertight warranty for period of ten (10) years from the date of completion of the Work.

SECTION 07 9200  
JOINT SEALANTS

PART 2 - PRODUCTS

2.1 SEALANTS

- A. General: Except as specifically otherwise directed by the Owner's Representative. Use only the type of sealants described in this Section.
- B. Window Perimeter Sealant and Building Joints: Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
  - 1. Spectrum 1 as manufactured by Tremco.
  - 2. DOWSIL 790/791 as manufactured by The Dow Chemical Company.
  - 3. Sikasil WS-290 as manufactured by Sika
  - 4. Or Owner's Representative approved equivalent.

2.2 BACK-UP MATERIALS

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
  - 1. Provide sealant backing by same manufacturer as sealant or by a manufacturer that is approved by the sealant manufacturer.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints

PART THREE - EXECUTION

3.1 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

## SECTION 07 9200 JOINT SEALANTS

### 3.2 PREPARATION

- A. Remove all existing sealant and backing materials from the horizontal and vertical joints in the limestone cladding, metal fascia panels, brick masonry expansion or control joints, and window, door and equipment perimeters.
- B. Remove all existing window wet glazing and frame joint sealants and backing material. Trim existing glazing gaskets flush with frame as detailed.
- C. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Clean joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- D. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- E. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

### 3.3 INSTALLATION OF BACK-UP MATERIAL

- A. Use only the back-up material recommended by the manufacturer of the sealant and approved by the Owner's Representative for the particular installation, compressing the back-up material 25% to 50% to secure a positive and secure fit. When using back-up of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

### 3.4 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply. Verify the joint type according to the details in the drawings and verify that the required proportion of width of joint to depth of joint has been secured.

SECTION 07 9200  
JOINT SEALANTS

- B. Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.
- C. Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surfaces would be objectionable.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.5 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
  - 1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 5 tests for each kind of sealant, joint profile, and joint substrate.
  - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.6 Cleaning Up

- A. Remove masking tape immediately after joints have been tooled.
- B. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.

SECTION 07 9200  
JOINT SEALANTS

- C. Keep adjacent surfaces clean and free from sealant as the installation progresses.  
Use solvent or cleaning agent as recommended by the sealant manufacturer.

**END OF SECTION 07 9200**



## PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Provide new sheet metal work in connection with the exterior restoration.
  - 2. New masonry through wall flashing

### 1.2 RELATED SECTIONS

- A. Section 04012 – Maintenance of Masonry
- B. Section 07920 – Joint Sealants

### 1.3 REFERENCES

- A. Copper, Brass, and Bronze Handbook Sheet Copper Applications, published by the Copper development Associations, Inc., (CED), New York, NY.
- B. Factory Mutual Loss Prevention Data Sheet 1-49.
- C. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)

### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For sheet metal flashing and trim.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Distinguish between shop- and field-assembled work.
  - 3. Include identification of finish for each item.
  - 4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.
- C. Samples:
  - 1. For each exposed product and for each color and texture specified.

### 1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.





## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

### 2.2 SHEET METAL MATERIALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Through Wall Flashing:
  - 1. Stainless-Steel Sheet: Minimum 22 gage, ASTM A 240/A 240M, Type 304, dead soft, fully annealed; 2D (dull, cold rolled), or 2B (bright, cold rolled are approved finishes).
- C. Metal Coping
  - 1. Metallic-Coated Steel Sheet: Minimum 24 gage, zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation; prepainted by coil-coating process to comply with ASTM A 755/A 755M.
  - 2. Surface: Manufacturer's standard clear acrylic coating on both sides.
  - 3. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 4. Color: As selected by Owners Representative from manufacturer's full range.
  - 5. Cleats: Minimum 22 gage continuous.
- D. Termination Bar: Aluminum, 1/8 inch by 1 inch (minimum), slotted holes 4 inches on center, top edge flat or with caulk dip depending on application.



## 2.3 UNDERLAYMENT MATERIALS

- A. Flexible Sheet Flashing for Through Wall Flashing: Self, adhering, reinforced, rubberized asphalt sheet membrane; minimum 40 mil thick;
  - 1. Perma-A-Barrier Wall Flashing by WR Grace or approved substitute.
  - 2. Primer: "Perma-A-Barrier Surface Conditioner" or as recommended by the sheet Manufacturer.
  - 3. Seam and lap Joints Membrane: Rubberized, asphalt based liquid membrane
    - a. Bituthene Liquid Membrane by WR Grace or approved substitute.

## 2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
  - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
    - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  - 2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
  - 3. Fasteners for Zinc-Coated (Galvanized): Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.
- C. Solder:
  - 1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
  - 2. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.



- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

## 2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  - 1. Obtain field measurements for accurate fit before shop fabrication.
  - 2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  - 3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
  - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
  - 2. Use lapped expansion joints only where indicated on Drawings.
- C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.



1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  3. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
  4. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
  2. Use lapped expansion joints where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not solder metallic-coated steel or aluminum sheet.
  2. Do not use torches for soldering.
  3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
  4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
  5. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.
- H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.



### 3.2 THROUGH WALL FLASHING INSTALLATION

- A. Remove existing mortar and clean surfaces that are to receive flashings.
- B. Install prefabricated pan flashings with maximum 24 inch legs with soldered seams at transitions and corners. Incorporate soldered end dams at all flashing terminations. Otherwise, fabricate and install flashings with maximum available lengths.
- C. In field of walls, overlap pan flashing ends a minimum four (4) inches. Set overlapped ends in full bed of waterproofing liquid mastic compatible with flexible sheet membrane.
- D. Fully adhere flexible sheet membrane to horizontal leg of metal pans and to clean, sound inboard wall surfaces. Use primer on inboard wall surfaces as required for proper adhesion. Lap ends of sheet flashing a minimum six (6) inches. Seal all flashing ends and terminations with compatible liquid mastic.
- E. Install termination bar to top of flexible sheet membrane with masonry anchors at maximum 12 inches on center and encapsulate top edge with compatible liquid mastic.
- F. At masonry expansion joints, flashing system shall run continuously through without termination.

### 3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

- End of Section -



**ENCLOSURE REPAIRS**

of

**STUDENT CENTER  
WAYNE STATE UNIVERSITY**

**5221 GULLEN MALL  
DETROIT, MI 48202**

Prepared for

**WAYNE STATE UNIVERSITY  
DESIGN AND CONSTRUCTION SERVICES  
5454 CASS AVENUE  
DETROIT, MI 48202**

Prepared by  
**INTERTEK**

**45000 HELM STREET, SUITE 200  
PLYMOUTH, MICHIGAN 48170**

**WSU PROJECT #034-350347  
FEBRUARY 2025**

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SECTION 01 1000  
SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Project: Wayne State University
- B. Student Center
- a. 5221 Gullen Mall
  - b. Detroit, MI 48202
- C. Owner (PHA): Wayne State University
- D. Design and Construction Services
- E. 5454 Cass Avenue
- F. Detroit, MI 48202
- G. Roof Designer: Intertek
- H. 45000 Helm Street, Suite 200
- I. Plymouth, MI 48170
- J. Section includes:
- 1. Project Information
  - 2. Work Covered by Contract Documents
  - 3. Work by Owner
  - 4. Owner-Furnished Products
  - 5. Access to Site
  - 6. Coordination with Occupants
  - 7. Work Restrictions
  - 8. Specification and Drawing Conventions
- K. Related Sections:
- 1. Division 01 Section 1500 Temporary Facilities and Controls
  - 2. Division 02 Section 4119 Selective Demolition
  - 3. Division 07 Section 7600 Sheet Metal Flashing and Trim
  - 4. Division 07 Section 7920 Joint Sealants
  - 5. Division 09 Section 9653 Elastomeric Coatings



SECTION 01 1000  
SUMMARY

1.3 PROJECT INFORMATION

- A. Project Identification: The Student Center is located at 5221 Gullen Mall, Detroit, Michigan 48202. The enclosure repair project is limited to portions of the building that is constructed with exterior plaster façade and consists of removal and replacement of all joint sealants, perimeter sealants, new wet glazing, plaster repairs and new elastomeric coating to provide a barrier system at these wall areas. Curtainwall repairs and sheet metal roof edging repairs are also included where designed. All dimensions provided are approximate and MUST be verified by contractor prior to bid submission. No change orders or allowances will be considered for additional quantities or material required to complete the project.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of the Project is defined by the Contract Documents and consists of the following. The Contractor shall:
1. Provide and maintain all enclosures, fencing of construction area, interior protection, exterior protection, and ground protection as necessary and as required by Division 01 Section 5000 Temporary Facilities and Controls.
  2. Remove **ALL** existing joint sealant and back-up material from all window perimeters within the designed exterior walls with plaster wall cladding and provide new back-up material and silicone joint sealant. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of window perimeter sealant is 2,700 LF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  3. Remove **ALL** existing joint sealant and back-up material from building control joints within the exterior plaster wall cladding and provide new back-up material and urethane/paintable joint sealant. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of control joint sealant is 4,000 LF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  4. Apply new pigmented elastomeric coating to **ALL** exterior plaster walls (after crack repairs have been completed). Refer to Section 09 96 53 – Elastomeric Coatings.
    - a. The approximate square footage of plaster surface to be coated is 31,069 SF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  5. Trim **ALL** existing gaskets and provide wet glazing seals to **ALL** glazing frame joints at designated windows. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of wet glazing sealant, glass to frame joints, is 2,700 LF
    - b. The approximate lineal footage of wet glazing sealant, frame to frame joints, is 720 LF.
    - c. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.

SECTION 01 1000  
SUMMARY

6. Provide repairs to the designated roof perimeter edge above the plaster walls. Remove existing fascia metal. Apply new SBS modified roof flashing and secondary underlayment as detailed. Provide new gravel stop fascia and cleat.
  - a. The approximate lineal footage of roof edge repair is 400 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
7. Replace missing curtainwall snap covers to closely match existing type, material and color.
  - a. This work is considered Unit Price.
8. Rout and seal cracks in the existing plaster wall prior to application of new elastomeric coating. Refer to Section 09 96 53 – Elastomeric Coatings.
  - a. The approximate lineal footage of crack repair is 24 LF.
  - b. This work is considered Unit Price.
9. Provide and maintain protection of all materials stored on site.
10. Remove all construction fencing and clean the work area to the satisfaction of the owner.

1.5 ALTERNATE WORK

- A. None.

1.6 WORK BY OWNER

- A. Preceding Work: None.
- B. Concurrent Work: None.
- C. Subsequent Work: None.

1.7 OWNER-FURNISHED PRODUCTS

- A. Owner-Furnished Products: None.

1.8 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  1. Limits: Confine construction operations to the areas identified in the Drawings. Refer to Drawing SP-1 for location of temporary facilities and staging area.
  2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials unless approved in writing by Owner.

SECTION 01 1000  
SUMMARY

- a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
  - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather-tight condition throughout construction period. Repair damage caused by construction operations.

1.9 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner and tenants will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
- 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
  - 2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.10 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
- 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated.
- 1. Weekend Hours: As allowed by management with 72-hour notice
  - 2. Early Morning Hours: As allowed by management with 72-hour notice
  - 3. Hours for Utility Shutdowns: To be determined during Pre-Construction Conference, and as agreed to by Owner in writing
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
- 1. Notify Owner not less than five (5) business days in advance of proposed utility interruptions.
  - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
- 1. Notify Owner not less than three (3) business days in advance of proposed disruptive operations.
  - 2. Obtain Owner's written permission before proceeding with disruptive operations.

## SECTION 01 1000 SUMMARY

- E. Non-Smoking Building: Smoking is not permitted on the roof, within the building, or on Owner's property.
- F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

### 1.11 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 01 1000**

SECTION 01 3233  
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Periodic construction photographs.
- B. Related Requirements:
  - 1. Division 01 Section 3300 "Submittal Procedures" for submitting photographic documentation.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three (3) days of taking photographs.
  - 1. Digital Camera: Minimum sensor resolution of eight (8) megapixels.
  - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
  - 3. Identification: Provide the following information with each image description in file metadata tag:
    - a. Name of Project.
    - b. Name and contact information for photographer.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Date photograph was taken.
    - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
    - g. Unique sequential identifier keyed to accompanying key plan.

1.4 USAGE RIGHTS

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

SECTION 01 3233  
PHOTOGRAPHIC DOCUMENTATION

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

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

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Date and Time: Include date and time in file name for each image.
  - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Construction Manager.
- C. Periodic Construction Photographs: Take 12 photographs daily coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

**END OF SECTION 01 3233**

01 3300  
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Consultant's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require consultant's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Consultant's and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

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SUBMITTAL PROCEDURES

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
  - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal category: Action; informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for consultants' final release or approval.
  - g. Scheduled date of fabrication.
  - h. Scheduled dates for purchasing.
  - i. Scheduled dates for installation.
  - j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. consultant's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Consultant's for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Consultant's reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on consultants' receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  1. Initial Review: Allow 5 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Consultant's will advise Contractor when a submittal being processed must be delayed for coordination.



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SUBMITTAL PROCEDURES

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow 5 days for review of each resubmittal.
  4. Sequential Review: Where sequential review of submittals by consultant's consultants, Owner, or other parties is indicated, allow 10 days for initial review of each submittal.
  5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
1. Submit a minimum of two copies of each submittal, except as otherwise indicated.
    - a. Owner/Consultant's will retain one copy; remainder will be returned. Mark up and retain the returned copies for inclusion in the Operation and Maintenance Manuals.
    - b. At least one set of material samples shall be submitted for color selection.
  2. The Contracting Officer, or their designated representative, will not accept submittals received from sources other than Contractor.
  3. Identify deviations from the Contract Documents on submittals.
  4. Indicate name of firm or entity that prepared each submittal on label or title block.
  5. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Consultant's.
  6. Include the following information for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name of Consultant's.
    - d. Name of Contractor.
    - e. Name of subcontractor.
    - f. Name of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.
      - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
- i. Number and title of appropriate Specification Section.
  - j. Drawing number and detail references, as appropriate.
  - k. Location(s) where product is to be installed, as appropriate.
  - l. Other necessary identification.

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SUBMITTAL PROCEDURES

7. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections, deviations, and field dimensions. Mark with approval stamp before submitting to the Contracting Officer, or their designated representative.
  8. The Contracting Officer, or their designated representative, will review each action submittal, make marks to indicate corrections or modifications required, stamp and mark as appropriate to indicate action taken, and return copies less those retained. Compliance with specified requirements remains Contractor's responsibility.
  9. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Consultant's observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
    - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Consultant's.
  10. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Consultant's will return without review submittals received from sources other than Contractor.
    - a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
      - 1) Project name.
      - 2) Date.
      - 3) Destination To:
      - 4) Source From:
      - 5) Name and address of Consultant's.
      - 6) Name of Contractor.
      - 7) Name of firm or entity that prepared submittal.
      - 8) Names of subcontractor, manufacturer, and supplier.
      - 9) Category and type of submittal.
      - 10) Submittal purpose and description.
      - 11) Specification Section number and title.
      - 12) Specification paragraph number or drawing designation and generic name for each of multiple items.
      - 13) Drawing number and detail references, as appropriate.
      - 14) Indication of full or partial submittal.
      - 15) Transmittal number numbered consecutively.
      - 16) Submittal and transmittal distribution record.
      - 17) Remarks.
      - 18) Signature of transmitter.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

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SUBMITTAL PROCEDURES

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Consultant's.
  4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Consultant's.
    - d. Name of Contractor.
    - e. Name of firm or entity that prepared submittal.
    - f. Names of subcontractor, manufacturer, and supplier.
    - g. Category and type of submittal.
    - h. Submittal purpose and description.
    - i. Specification Section number and title.
    - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - k. Drawing number and detail references, as appropriate.
    - l. Location(s) where product is to be installed, as appropriate.
    - m. Related physical samples submitted directly.
    - n. Indication of full or partial submittal.
    - o. Transmittal number numbered consecutively.
    - p. Submittal and transmittal distribution record.
    - q. Other necessary identification.
    - r. Remarks.
- F. Options: Identify options requiring selection by Consultant's.
- G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Consultant's on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.

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SUBMITTAL PROCEDURES

3. Resubmit submittals until they are marked with approval notation from consultants' action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers and authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from consultant's action stamp.
- K. Proposed Substitutions
  1. Substitutions will not be considered.

1.6 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  1. Submit electronic submittals via email as PDF electronic files.
    - a. Consultant's will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  2. Action Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will return one copy.
  3. Informational Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will not return copies.
  4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show applicable products and options.
  3. Include the following information, as applicable:

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SUBMITTAL PROCEDURES

- a. Manufacturer's catalog cuts.
  - b. Manufacturer's product specifications and installation instructions.
  - c. Standard color charts.
  - d. Statement of compliance with specified referenced standards.
  - e. Testing by recognized testing agency.
  - f. Application of testing agency labels and seals.
  - g. Notation of coordination requirements.
  - h. Availability and delivery time information.
  - i. Print performance curves and operational range diagrams.
  - j. Wiring diagrams showing factory installed diagrams.
4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples.
  6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Submit at least two (2) opaque copies. The contracting officer or their designated representative will retain one copy and return the remainder.
  2. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimension and Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
    - h. Wiring diagrams showing field installed wiring.
    - i. Fabrication and installation drawings and rough in and setting diagram.
  3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
  4. Submit Shop Drawings in the following format:
    - a. PDF electronic file if 8-1/2 by 11inch format.

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- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a comparison of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Consultant's will return submittal with options selected.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit three sets of Samples. Consultant's will retain two sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

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- 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
  - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Number and name of room or space.
  4. Location within room or space.
  5. Submit product schedule in the following format:
    - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- H. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- I. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Consultant's and owners, and other information specified.
- J. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- L. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- M. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- N. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

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- O. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- P. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.
- Q. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- R. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- S. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- U. Information Submittals:
  - 1. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of Consultant's and owners, and other information specified.
  - 2. Product Certificates: Prepare written statements on manufacturer's letterhead, including signature of entity responsible for preparing certification, certifying that product complies with requirements in the Contract Documents.
- V. Delegated Design:
  - 1. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract



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Documents, provide products and systems complying with specific performance and design criteria indicated.

- a. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.
2. Delegated - Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, and where required by the authorities having jurisdiction, submit three copies of a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - a. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 2 - EXECUTION

### 2.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Consultant's.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 2.2 CONSULTANT'S ACTION

- A. Action Submittals: Consultant's will review each submittal, make marks to indicate corrections or revisions required, and return it. Consultant's will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Consultant's will review each submittal and will not return it or will return it if it does not comply with requirements. Consultant's will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Consultant's.

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- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Consultant's without action.

**END OF SECTION 01 3300**

SECTION 01 4000  
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

- A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Testing and inspecting services are specified in other Sections of these Specifications or are required by authorities having jurisdiction and shall be performed by independent testing agencies.
  - 2. Where quality - control services are indicated or required, the Contractor shall engage a qualified testing agency to perform these services.
  - 3. Contractor is responsible for scheduling times for tests, inspections, and obtaining samples and notifying testing agency.
  - 4. Retesting and Re-inspecting: Contractor shall pay for additional testing and inspecting required as a result of tests and inspections indicating noncompliance with requirements.
- B. Performance and Design Criteria: Where design services or certifications by a professional engineer are required by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
  - 2. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

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2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.4 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

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1.5 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

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1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. Testing agency shall submit a certified written report of each test and inspection to Contractor, Owner, Contracting Officer, or their designated representative, and to authorities having jurisdiction when they so direct. Reports of each inspection, test, or similar service shall include the following:
  1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data, test and inspection results, an interpretation of test results and comments or professional opinion on whether tested or inspected work complies with the Contract Document requirements.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  11. Name and signature of laboratory inspector.
  12. Recommendations on retesting and reinspecting.

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- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of the technical representative that authored report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

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- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated; as documented according to ASTM E 329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.



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- f. When testing is complete, remove test specimens and assemblies; do not reuse products on Project.
- 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

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- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Testing agency shall cooperate with the Contracting Officer, or their designated representative, and Contractor in performing its duties and shall provide qualified personnel to perform inspections and tests.
  - 1. Promptly notify the Contracting Officer or its designated representative of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Does not release, revoke, alter, or increase the requirements of the Contract Document nor approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- G. Auxiliary Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits.
- I. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

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- J. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner and Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - EXECUTION

2.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

2.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

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QUALITY REQUIREMENTS

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 01 4000**

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for work restrictions and limitations on utility interruptions.
  - 2. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Retain "Sewer, Water, and Electric Power Service" Paragraph below if multiple contracts are required. If needed, insert use-charge requirements for other utilities needed for construction operations.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
  - 1. Locations of dust-control partitions at each phase of work.
  - 2. HVAC system isolation schematic drawing.
  - 3. Location of proposed air-filtration system discharge.
  - 4. Waste handling procedures.
  - 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

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1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 EQUIPMENT

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

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with regulations and health codes, and with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
  - 1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At

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Substantial Completion, restore these facilities to condition existing before initial use.

- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed, and that is self-contained with thermostatic control.
  - 1. Use of gasoline - burning space heaters, open - flame heaters, or salamander - type heating units is prohibited.
  - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
  - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
    - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
  - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
  - 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.



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TEMPORARY FACILITIES AND CONTROLS

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Field Offices: Provide field offices, storage and fabrication sheds, and other support facilities as necessary for construction operations.
- B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  2. Remove snow and ice as required to minimize accumulations.
- D. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Collect waste daily and, when containers are full, legally dispose of waste off - site. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- F. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
  1. Do not load elevators beyond their rated weight capacity.
  2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- G. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
  1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

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TEMPORARY FACILITIES AND CONTROLS

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide temporary environmental protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Section 01 1000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
  - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Protect existing landscaping and restore any areas damaged during construction to original condition prior to start of project.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction and workers from inclement weather and for containment of heat.
- H. Security Enclosure and Lockup: **Install temporary enclosure (fencing) around the entire staging area.** Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

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- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions and/or other approved measures to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
  - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
  - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  - 3. Insulate partitions to control noise transmission to occupied areas.
  - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  - 5. Protect air-handling equipment.
  - 6. Provide walk-off mats at each entrance through temporary partition.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
  - 1. Prohibit smoking in on CMHA property.
  - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
- M. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

3.4 OPERATION TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Termination and Removal: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 7700 "Closeout Procedures."

**END OF SECTION 01 5000**

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 3300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, the Architect, with Owner's approval, will determine which products will be used.

SECTION 01 6000  
PRODUCT REQUIREMENTS

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- B. Submittal Time: Comply with requirements in Section 01 7700 "Closeout Procedures."

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "As selected", the Owner will make the selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
  6. Or Equal: For products specified by name and accompanied by the term "Or Equal," or "Or Approved Equal", or "Approved", comply with requirements in Section 01 3300, Submittal Procedures.
- B. Product Selection Procedures:
1. Where Specifications name a single product or manufacturer, provide the item indicated that complies with requirements.
  2. Where Specifications include a list of names of products or manufacturers, provide one of the items indicated that complies with requirements.
  3. Where Specifications include a list of names of products or manufacturers, accompanied by the term "available products" or "available manufacturers," provide one of the named items that complies with requirements. Comply with provisions for "comparable product requests" for consideration of an unnamed product.
  4. Where Specifications name a product as the "basis - of - design" and include a list of manufacturers, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by the other named manufacturers.
  5. Where Specifications name a single product as the "basis - of - design" and no other manufacturers are named, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by another manufacturer.
  6. Unless otherwise indicated, the Contracting Officer, or its designated representative, will select color, pattern, and texture of each product from manufacturer's full range of standard options.
  7. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for

SECTION 01 6000  
PRODUCT REQUIREMENTS

Contractor's convenience will not be considered unless otherwise indicated.

- b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements.

2. Manufacturers:

- a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
- b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements.

- 3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.

- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision, with Owner's approval, will be final on whether a proposed product matches.

- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. The Owner will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

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

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



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PRODUCT REQUIREMENTS

B. Product Substitution and Comparable Product Requests:

1. Submit three copies of each request for product substitution or comparable product.
2. Do not submit unapproved substitutions or products on Shop Drawings or other submittals.
3. Identify product to be replaced and show compliance with requirements. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified.
4. Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - a. For Substitution requests, provide a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.
5. The Contracting Officer, or its designated representative, will review the proposed substitution and notify the Contractor of its acceptance or rejection.

**END OF SECTION 01 6000**

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PRODUCT REQUIREMENTS

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SECTION 01 7300  
EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Installation of the Work.
  - 3. Cutting and patching.
  - 4. Progress cleaning.
  - 5. Starting and adjusting.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for limits on use of Project site.
  - 2. Section 01 3300 "Submittal Procedures" for submitting surveys.
  - 3. Section 01 7700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 DEFINITIONS

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

1.4 INFORMATIONAL SUBMITTALS

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

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect

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EXECUTION

before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Fire-detection and -alarm systems.
    - i. Conveying systems.
    - j. Electrical wiring systems.
    - k. Operating systems of special construction.
  3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
    - a. Water, moisture, or vapor barriers.
    - b. Membranes and flashings.
    - c. Exterior curtain-wall construction.
    - d. Sprayed fire-resistive material.
    - e. Equipment supports.
    - f. Piping, ductwork, vessels, and equipment.
    - g. Noise- and vibration-control elements and systems.
  4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.
- D. The Contractor shall review means, methods, techniques, sequences and procedures indicated in the Contract Documents either directly or by reference to standards or

SECTION 01 7300  
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manufacturer's instructions; and advise the Contracting Officer, or their designated representative, (1) if the specified procedure deviates from good construction practice, (2) if following the procedure will affect warranties including the Contractor's general warranty, or (3) of objections the Contractor may have to the procedure and propose alternative procedures the Contractor will warrant.

- E. Examine substrates and conditions for compliance with manufacturer's written requirements including, but not limited to, surfaces that are sound, level, plumb, smooth, clean, and free of deleterious substances; substrates within installation tolerances; and application conditions within environmental limits. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to property survey and existing benchmarks.
- G. Do not scale the Drawings. Follow indicated dimensions. In case of discrepancy in the figures, bring the matter to the attention of the Contracting Officer, or their designated representative, for interpretation before proceeding with the Work. Failure to follow this procedure shall be at the Contractor's own risk, and the Contracting Officer, or their designated representative, interpretation shall be final.
- H. Take field measurements as required to fit the Work properly. Where fabricated products are to be fitted to other construction, verify dimensions by field measurement before fabrication and, when possible, allow for fitting and trimming during installation.
- I. Unless specifically identified, the terms "repair, replace, repair or replace" shall mean repair in a workmanlike manner, and "install or furnish and install", shall be understood to mean "Furnish all material required and Install".
- J. Installation General: Comply with manufacturer's written instructions for installation. Anchor each product securely in place, accurately located and aligned with other portions of the Work. Clean exposed surfaces and protect from damage.
  - 1. All work shall be executed only by artisans and mechanics qualified through experience in their respective trades.
- K. Maintenance: The following site maintenance shall be performed for the entire duration of the construction/renovation process.
  - 1. Clean Project site and work areas daily, including common areas.
  - 2. The cutting of grass and proper disposal of clippings, to be performed on a regular weekly basis and/or as dictated by need.
  - 3. The removal of snow from public access walkways and adjacent site walkways.
- L. Complete the cleaning operations before requesting inspection for certification of Substantial Completion:

SECTION 01 7300  
EXECUTION

PART 2 - PRODUCTS

2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

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

## SECTION 01 7300 EXECUTION

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

SECTION 01 7300  
EXECUTION

4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
  - B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
  - C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
  - D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
  - E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
  - F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
  - G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
  - H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
    1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
    2. Allow for building movement, including thermal expansion and contraction.
    3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
  - I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
  - J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- 3.5 CUTTING AND PATCHING
- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.



SECTION 01 7300  
EXECUTION

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Do not cut structural members or operational elements without prior written approval of the Contracting Officer, or their designated representative.
- F. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
  - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
2. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
- H. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
- I. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- J. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

SECTION 01 7300  
EXECUTION

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Proceed with patching after construction operations requiring cutting are complete.
- K. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- L. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

SECTION 01 7300  
EXECUTION

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80° F (27° C).
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Use containers intended for holding waste materials of type to be stored.
  - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

SECTION 01 7300  
EXECUTION

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

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION 01 7300**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Disposing of nonhazardous demolition and construction waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within seven (7) days of date established for the Notice to Proceed.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

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CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
1. Review and discuss waste management plan including responsibilities of waste management coordinator.
  2. Review requirements for documenting quantities of each type of waste and its disposition.
  3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, locations for waste to be held until picked up for disposal and how often waste is to be picked up.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
1. Comply with operation, termination, and removal requirements in Section 01 5000 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
1. Distribute waste management plan to everyone concerned within three (3) days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

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CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

2. Comply with Section 01 5000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

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

**END OF SECTION 017419**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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SECTION 01 7700  
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for progress cleaning of Project site.
  - 2. Section 01 7839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

SECTION 01 7700  
CLOSEOUT PROCEDURES

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, maintenance service agreements, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Submit Record Drawings, operation and maintenance manuals, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items.
  - 7. Make final changeover of permanent locks and deliver keys to Owner.
  - 8. Complete startup testing of systems.
  - 9. Remove temporary facilities and controls.
  - 10. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  - 11. Complete final cleaning requirements, including touchup painting. a. The Project shall be turned over in "move - in" condition.
  - 12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- D. Record Drawings: Maintain a set of prints of the Contract Drawings as Record Drawings. Mark to show actual installation where installation varies from that shown originally.
  1. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- E. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
- F. Operation and Maintenance Data: Submit three copies of manual. Organize data into three - ring binders with Project identification on front and spine of each binder, and envelopes for folded drawings. Include the following in tabbed sections:
  1. Table of Contents.
  2. General Contractor name, phone number and contact person.
  3. Subcontractor names, phone numbers, and contact persons.
  4. Equipment and fabricated material supplier/fabricators names, phone numbers, and contact persons.
  5. Copies of approved Shop Drawings.
  6. Manufacturer's operation and maintenance documentation.
  7. Maintenance and service schedules.
  8. Maintenance service contracts.
  9. Emergency instructions.
  10. Spare parts list.
  11. Key biting lists (if applicable).
  12. Wiring diagrams.
  13. Copies of warranties.
    - a. 1 - Year (from date of final approval) Contractor's Warranty Certification.
    - b. All Manufacturer's Warranty Certifications (for all material and equipment warranted/guaranteed beyond 1 year of the date of final approval).
  14. Other information on installed materials or equipment that will be required to maintain or sustain the Project.
  15. Advise Owner of pending insurance changeover requirements.
  16. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  17. Complete startup and testing of systems and equipment.
  18. Perform preventive maintenance on equipment used prior to Substantial Completion.

SECTION 01 7700  
CLOSEOUT PROCEDURES

19. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 7900 "Demonstration and Training."
  20. Advise Owner of changeover in heat and other utilities.
  21. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  22. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  23. Complete final cleaning requirements, including touchup painting.
  24. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- G. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- C. The Contracting Officer, or their designated representative, will prepare the Certificate of Substantial Completion after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.
- D. When items must be completed or corrected, request inspection for Final Completion/Approval, once the following are complete:

SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Submit a signed copy of Substantial Completion inspection list stating that each item has been completed or otherwise resolved for acceptance.
2. Submit all final waivers, final Certificate for Payment, wage reports, warranties, consent of Surety, and other outstanding items.
3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

a. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Include a detailed review of the following:

- 1) Basis of system design and operational requirements, review of documentation, emergency procedures, operations, adjustments, troubleshooting, maintenance, and repairs.

E. The Contracting Officer, or their designated representative, will approve the Contractor's final Certificate for Payment after inspection and receipt of required items and training or will advise Contractor of items that must be completed or corrected before certificate will be issued.

1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
  - a. Project name.
  - b. Date.
  - c. Name of Architect.
  - d. Name of Contractor.
  - e. Page number.
4. Submit list of incomplete items in the following format:
  - a. PDF electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
  - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
  - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - e. Remove snow and ice to provide safe access to building.
  - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - h. Sweep concrete floors broom clean in unoccupied spaces.
  - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
  - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - k. Remove labels that are not permanent.
  - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
  - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

SECTION 01 7700  
CLOSEOUT PROCEDURES

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to original condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION 01 7700**



SECTION 01 7839  
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Miscellaneous record submittals.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for final property survey.
  - 2. Section 01 7700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one (1) set of marked-up record prints.
- B. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one (1) paper copy of each submittal.
- C. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

2. Identification: As follows:

- a. Project name.
- b. Date.
- c. Designation "PROJECT RECORD DRAWINGS."
- d. Name of Architect.
- e. Name of Contractor.

2.2 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as paper copy.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for reference during normal working hours.

**END OF SECTION 01 7839**

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

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SECTION 02 4119  
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
  - 2. Demolition and removal of selected site elements.
  - 3. Cutting and alterations.
  - 4. Protecting of adjacent surfaces.

- B. Related Requirements:

- 1. Section 01 1000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
  - 2. Section 01 7300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items

SECTION 02 4119  
SELECTIVE DEMOLITION

of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

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

1.5 PREINSTALLATION MEETINGS

A. Pre-demolition Conference: Conduct conference at Project site

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.
6. Review temporary enclosures to prevent dust and debris from entering other occupied spaces of the building.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician.

B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

E. Pre-demolition Photographs or Video: Written documentation, with associated photographs, of existing conditions of areas / item that are not scheduled to be repaired, adjoining construction, landscaping in the area of work, etc., including finish surfaces, which might be misconstrued as damage caused by the demolition

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operations. Do not proceed to the work until the report is submitted and approved by the Owner.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  - 1. Before selective demolition, Owner will remove the following items:
    - a. None.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

SECTION 02 4119  
SELECTIVE DEMOLITION

- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Consultant.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
  - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
  - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Comply with requirements for existing services/systems interruptions specified in Section 01 1000 "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. Arrange to shut off indicated utilities with utility companies.



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3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
  - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

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SELECTIVE DEMOLITION

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 PROTECTION OF SURFACES

- A. When weather threatens, cease work under this Section and return building to a water-tight condition. Contractor must have sufficient materials on site to provide a temporary waterproof system in the event of unexpected rain/snow.
- B. Contractor shall not remove any more materials than is intended to have replaced water-tight that same day. Contractor shall maintain on site temporary tarps and/or rolls of membrane that can be used in emergencies to provide a method of temporary waterproofing in case of unexpected threatening weather.
- C. Contractor shall restore to original condition any damages caused during work performed in this Section.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 7419 "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
  1. Clean salvaged items.

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2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Consultant, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- B. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

SECTION 02 4119  
SELECTIVE DEMOLITION

3.8 CLEANING

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

3.9 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Construction to Be Removed: Designated portions of concrete topping slab, insulation and waterproofing, plaster from designated interior walls, and resilient floor trim and acoustical fabric from designated interior walls.
- B. Existing Items to Be Removed and Salvaged: None.
- C. Existing Items to Be Removed and Reinstalled: Suspended ceiling grid and ceiling tiles, projector screens and related equipment, electrical conduit and junction boxes, and networking equipment and conduit.

**END OF SECTION 02 4119**

SECTION 02 8000  
LANDSCAPE REPAIR

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Removal of damaged turf and plantings and replacement of materials damaged by the Contractor during the performance of Work is included in this Section.
- B. Repair of damaged concrete, damaged by the contractor during the performance of the Work.
- C. Repair of damaged hot mix asphalt paving, damaged by the contractor during the performance of the Work. **[NOTE: Contractor is expected to protect the concrete and asphalt paving from damage from construction traffic and materials.]**

1.2 QUALITY ASSURANCE

- A. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods for their installation, and who shall direct all work performed under this Section.
- B. Standards:
  - 1. All plants and planting material shall meet or exceed the specifications of federal, state, and county laws requiring inspection for plant disease and insect control.
  - 2. Quality and size shall conform to the current edition of *Horticultural Standards* for number one grade nursery stock as adopted by the American Association of Nurserymen.
  - 3. State of Michigan, Department of Transportation (MDOT) Standards, latest edition for Asphalt Repair Work.
  - 4. American concrete Institute (ACI) Standards for Concrete Work

1.3 SUBMITTALS

- A. General: Comply with the provisions of Section 01 3300.

1.4 PRODUCT HANDLING

- A. Delivery and Storage:
  - 1. Deliver all items to the job site in their original containers with all labels intact and legible.
  - 2. Use all means necessary to protect plant materials before, during, and after installation and to protect the work and materials of all other trades.

SECTION 02 8000  
LANDSCAPE REPAIR

- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's representative and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Protect structures, utilities, roads, trees and vegetation from damages caused by landscaping operations.
- B. Topsoil required to complete the work of planting shall be natural, friable topsoil, characteristic of representative soils in the vicinity that produce heavy growths of crops, grass or other vegetation. It shall not be extremely acidic nor alkaline nor contain toxic substances, harmful to plant growth. All topsoil used for this project shall be without admixtures of subsoil; free from clay lumps, stones, roots, debris and other objects over one inch in diameter.

2.2 FERTILIZER

- A. Fertilizer shall meet the applicable sections of the State Highway Specifications.
- B. Fertilizer shall be uniform in composition, free flowing and suitable for application with approved equipment.

2.3 SOD

- A. Product Delivery and Handling:
  - 1. Sod shall be placed within 48 hours of cutting and shall be protected and maintained during transit or storage on site as necessary to ensure vigorous growth after placement.
  - 2. Sod remaining on the site unplaced after 48 hours will be rejected. All yellowing or otherwise discolored sod will be rejected.
  - 3. The Contractor shall inform the Owner's representative 24 hours in advance of any delivery of sod.
- B. Description
  - 1. Sod shall be well established and shall contain all the dense root system of the grasses and shall exhibit vigorous healthy root growth free of noxious weeds, objectionable grasses, grubs, diseases or injurious insects.
  - 2. Sod shall meet the applicable sections of the State Highway Specifications unless specifically called for otherwise by the Owner's Representative.

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LANDSCAPE REPAIR

2.4 CONCRETE

- A. Concrete shall be commercially produced material and shall be air entrained, with a minimum compressive strength of 3500 psi at 28 days.
- B. Accessories such as expansion joint materials and tie bars shall be installed in the repaired concrete to match the materials damaged during the work.
- C. All products shall meet current ACI and MDOT standards for new construction.
- D. Concrete curing compound shall be white pigmented, free of paraffin or petroleum, Type 2 curing compound conforming to AASHTO M148 "Standard Specification for Liquid Membrane – Forming Compounds".

2.5 HOT MIX ASPHALT

- A. Hot mix asphalt shall be commercially produced material and shall be an 1100 or 1300 mix design for both the bottom (leveling course) and the top (wearing course) materials.
- B. Tack coat shall be SS-1h material.

2.6 COLD MIX ASPHALT

- A. Cold mix asphalt materials for contained holes shall be POUR-PATCH as manufactured by Revere Products (800) 343-7318.
- B. Cold mix asphalt materials for depressions and chipped out areas shall be EPOXI-TAR PATCH as manufactured by Revere Products (800) 343-7318.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Ground preparation shall not be started until all stones, debris, and similar material larger than "1" in diameter have been removed, depressions and ruts filled and the entire area to be seeded and/or sodded has been accepted by the Owner's Representative.

3.2 PROTECTION OF PERSON AND PROPERTY

- A. Protection of Existing Plant Materials
  - 1. Existing trees, shrubs, and plant materials to remain shall be protected by acceptable means.
  - 2. Damage to above plant material shall be repaired by qualified nurserymen or replaced with approved equal material.

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LANDSCAPE REPAIR

3.3 SODDING

- A. General lawn repair shall be performed by personnel familiar with the accepted procedures of planting and under the supervision of a qualified planting foreman.
- B. Preparation of Sod:
  - 1. Immediately prior, but not in excess of 24 hours before sod is to be placed, the soil surface shall be worked until it is relatively free from debris, washes, gullies, clods and stones and is in satisfactory condition.
  - 2. The surface shall be worked to depth of not less than 3" with a disc, tiller, or other equipment approved by the Owner's representative.
  - 3. Prepared surfaces that become crusted shall be reworked to an acceptable condition for sodding.
- C. Application of Fertilizer
  - 1. Commercial fertilizer shall be applied in accordance with the State Highway Specifications.
- D. Application of Sod
  - 1. Laying: Fit sod pieces tightly together so that no joint is visible, alternate courses staggered, and tap firmly to eliminate all air pockets, provide a true and even surface and ensure knitting without displacement of sod or deformation of the surface of sodded areas. Edges shall be buried flush with adjacent soil. Following compaction, screened topsoil shall be used to fill all cracks between sod pieces. Excess soil shall be worked into grass.
  - 2. Watering: Within five hours after the sod has been placed, it shall be saturated to a depth of 2" by watering with a fine spray.
  - 3. Maintenance: Sod shall be watered each day such that it shall be saturated to a depth of ½" by watering with a fine spray until project is accepted by the Owner, but not for a period of more than 21 days. If after 21 days the sod is determined to not be acceptable to the Owner it shall be removed and replaced.

3.4 CONCRETE REPAIR

- A. Damaged concrete shall be saw cut a distance of at least 1 foot beyond the damaged areas. The saw cut shall be at least 1/3<sup>rd</sup> the depth of the material being removed.
- B. The exposed subgrade materials shall be leveled and compacted prior to the application of the new concrete. Subgrade materials shall also be moistened to prevent quick loss of moisture soon after application.



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LANDSCAPE REPAIR

- C. Forms shall be provided to maintain a clean and vertical face for the installation of new materials, as needed.
  - D. New joints shall be laid out in areas of replaced materials. Spacing of joints shall not exceed 15 times the depth of the concrete.
  - E. Expansion joint material shall be installed at all locations where the repaired concrete meets a structure, curb, sidewalk, forms an intersection or at 50-ft. intervals in a continuous slab. Expansion joint materials shall cover the entire gap of the joint. The top of the expansion joint materials must be slightly below concrete grade. Anchor expansion joint material to prevent displacing during concrete placing and finishing.
  - F. Materials shall be delivered and installed in accordance with the American Concrete Institute (ACI) Standards.
  - G. Concrete curing compound shall be applied within 1 hour or final finishing or before the concrete has dried.
  - H. Apply pigmented, membrane forming, curing compound in two coats at right angles to each other. Apply compound by spray only. Rate of application shall be 200 square feet per gallon for each coat.
  - I. Any areas covered with compound that is disturbed during curing shall be re-sprayed immediately.
  - J. Contractors shall provide protection from rapid curing and from physical damage for a period of not less than 3 days following the application of the new concrete.
  - K. Replacement of any existing pavement marking within the repaired area will be included as part of any repair.
- 3.4 HOT ASPHALT REPAIRS - To be performed in all areas where asphalt damage occurs. (Cold patch repairs shall be installed as a temporary measure only until hot asphalt repairs can be scheduled and performed.)
- A. Damaged bituminous concrete shall be saw cut a distance of at least 1 foot beyond the limits of damage. The saw cut shall be a minimum of 2" in depth, but not less than  $\frac{3}{4}$  of the depth of the existing materials.
  - B. The old pavement shall be carefully removed for its full depth, but not less than 4 inches.
  - C. The exposed substrate material shall be leveled and compacted prior to the application of the new hot mix asphalt. Subgrade materials that are too soft (due to moisture) shall be allowed to dry or removed and replaced with dryer materials.
  - D. The exposed edges of the surrounding asphalt shall be brush coated with tack coat prior to the application of the new hot mix asphalt.

SECTION 02 8000  
LANDSCAPE REPAIR

- E. The hot mix asphalt shall be delivered and installed in accordance with MDOT standards. The placement of asphalt shall be as follows:
    - 1. The top course of thickness shall be not less than 1.5" compacted thickness, nor more than 2.5" compacted thickness.
    - 2. The bottom course thickness shall not be less than 2.0" thickness, and shall not be installed in any thickness greater than 3.0" compacted thickness for any one layer.
    - 3. The total thickness of the pavement shall meet or exceed the surrounding materials, but shall not be less than 4.0" total compacted thickness.
    - 4. If dirt is allowed to lie on any one layer, the layer must be swept and a tack coat applied prior to the application of a subsequent layer.
  - F. Contractor shall provide protection for the new hot mix asphalt for a minimum of 4 hours following application.
  - G. Contractor is responsible for the proper drainage of the patched asphalt. Any water in excess of 1/8" in depth following 30 minutes after a rain will be considered as unacceptable.
  - H. Replacement of any stripping or other pavement marking shall be included as part of the repair work.
- 3.5 Clean Up
- A. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.

**END OF SECTION 02 8000**

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide new sheet metal work in connection with roofing as indicated on the drawings and specified herein.
- B. Work includes but is not limited to
  - 1. Roof edging above the existing plaster exterior walls.

1.2 RELATED SECTIONS

- A. Section 02 4119 – Selective Demolition
- B. Section 07 9200 – Joint Sealants
- C. Section 09 9653 – Elastomeric Coatings

1.3 REFERENCES

- A. Copper, Brass, and Bronze Handbook Sheet Copper Applications, published by the Copper development Associations, Inc., (CED), New York, NY.
- B. Factory Mutual Loss Prevention Data Sheet 1-49.
- C. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) Architectural Sheet Metal Manual - Fourth Edition

1.4 SUBMITTALS

- A. As provided in Section 01 3300.
- B. Product samples
  - 1. Color chips for pre-painted steel.

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

C. Shop drawings

1. Dimensioned drawings, and details, including gauges, fasteners, and construction data.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
10. Include details of special conditions.
11. Include details of connections to adjoining work.

D. Mock-Up for Verification: For each type of metal profile.

1. Sheet Metal Edge Flashing and Counterflashings: Min. 20 feet long by actual width of unit, including at least one (1) finished seam and in required profile, and at least one inside corner and one outside corner. Include underlayment, fasteners, cleats, clips, closures, splice plates, and other accessories for a complete detail.
  - a). Do not install roof flashing strippings over deck flanges.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.
4. Mock-Ups shall be constructed from the specified metal and approved metal color.
5. Re-build mock-ups as required until approved by Consultant. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Consultant specifically approves such deviations in writing.
6. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

1.5 QUALITY ASSURANCE

- A. Standards: Comply with standards specified in this Section and as listed in the general requirements.
- B. Qualifications of Manufacturer: Products used in the work included in this Section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner.
- C. Qualifications of Contractor: The contractor and his personnel shall be currently approved by the manufacturer of these approved products as qualified to install the materials of this Section.
- D. Qualifications of Installers: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this Section.
- E. Roofing Inspections: Make all required notifications and secure all required inspections by the manufacturer of the approved materials to facilitate issuance of the specified roof warranty.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. As designed in Section 01610.
- B. Coordinate delivery with Owner's on-site representative.
- C. Prevent wrappers and packaging materials from inclusion in the roofing system.
- D. Ensure that materials are properly stored on dunnage on roof surfaces in such a manner that none of the existing or new roof membrane is damaged as result of the storage and handling procedures.
- E. Ensure that all materials stored on the roof are adequately tied and ballasted at all time to prevent blow off.
- F. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.
- G. Material containers, mixing, and dilution
  - 1. Containers shall be closed and sealed except when materials are being removed.
  - 2. Follow Manufacturers' instructions for mixing and stirring.

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

3. Cements, adhesives, primers, coatings, and sealants which have been diluted or cut-back, after their manufacture shall not be incorporated into the Work.

1.7 SEQUENCING AND SCHEDULING

- A. Proceed with permanent sheet metal installations concurrently with membrane roofing.
- B. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- C. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.8 GUARANTEE AND WARRANTIES

- A. Contractor shall warrant all sheet metal against defects in materials and workmanship for a period of not less than 2 years.
- B. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a). Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b). Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c). Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

- A. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- B. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- C. Edging
  - 1. Minimum 24 gage pre-finished (Kynar coated), galvanized steel as shown on the drawings. Color shall be selected by the Owner.
  - 2. Minimum 22 gage galvanized steel continuous cleat where detailed.

2.2 SOLDER

- A. Not Applicable this project.

2.3 FASTENERS

- A. All fasteners must have corrosion resistant coating.
- B. Nail systems
  - 1. Galvanized roofing nail, 12-gauge, 3/8 inch head.
- C. Screw, screw/plate, anchor systems
  - 1. HWH Teks Series by Buildex
  - 2. Wafer head Teks/3 series by Buildex.
  - 3. Flat head Teks/4 series by Buildex.
  - 4. HWH Trupgrip series with EPDM washers by Buildex.
  - 5. Tapcon series by Buildex.
  - 6. Screws to be #12, minimum size

2.4 ROOF RELATED ACCESSORIES

- A. Asphalt Primer: ASTM D41

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

B. Self-Adhering Underlayment

1. High Temperature: Minimum 40 mil thick, self-adhering rubberized asphalt with a polymeric film such as Grace Ice and Water Shield HT, or approved substitute.
2. Provide manufacture's recommended primer and termination sealant for a complete system.

C. Modified Bitumen Flashing

1. SBS: One layer of 90lb modified bitumen base ply with another layer of 180lb white granulated cap sheet for flashing perimeter edge metal.
2. Manufacturer's standard cold SBS trowel-grade adhesive for installation of flashing.

2.5 SHEET METAL - FABRICATION PROCEDURES

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim to fit substrates without oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
5. Edge face size shall be as required to cover the exterior face of the wall to prevent water entry by wind driven rain and shall be no shorter than the old metal which is being replaced.

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

C. Cleats

1. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.



SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

2. When applied as an exposed covering, fasten sheet metal to wood nailers with continuous cleats as detailed.

D. Seams

1. Fabricate nonmoving seams with flat-lock seams. Finish seams neatly with lines trimmed true and sharp. Number of joints shall be as few as is consistent with commercial size of materials. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use
2. Join parts with rivets or sheet metal screws where necessary for strength and stiffness.

E. Soldering

1. Not applicable this project.

F. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch- long, but not exceeding 12-foot- long sections. Shall have a nominal 4" nailing flange. Shop fabricate interior and exterior corners.

1. Joint Style: Butted with expansion space and 6-inch-wide, concealed backup plate as indicated on the drawings.

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

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION SITE INSPECTION

- A. Examine site and determine satisfactory conditions for work.
- B. Write Consultant to notify of defects and conditions which may adversely influence performance or completion of Work.
- C. Absence of written notice will constitute the Contractor's acceptance of site.
- D. Verify
  1. Dry and acceptable surfaces to receive the Work.
  2. Undamaged surfaces, straight and true, and free from defects which may lead to distortion of the metal work
  3. Curbs, pipes, sleeves, ducts, vents, nailers, and blocking as secure and

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

acceptable.

4. Cut reglets and receivers are in place and acceptable.

### 3.2 SELECTIVE DEMOLITION AND SURFACE PREPARATION

- A. As specified in Section 02 4119 – Selective Demolition.
- B. Existing perimeter edge metal scheduled to be removed where designated, carefully leaving the existing roofing system in place.
- C. Ensure roof flashings or specified underlayment is in place and completely covering perimeter wood blocking as detailed.

### 3.3 SHEET METAL – INSTALLATION

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  3. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
  4. Torch cutting of sheet metal flashing and trim is not permitted.
  5. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
  1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
  3. Asphalt Priming: Apply primer to nailing flange of gravel stop flashing

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

where in contact with SBS asphalt repair flashing or other asphalt based products.

- C. Seal joints as required for watertight construction.
  - 1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
  - 2. Prepare joints and apply sealants to comply with requirements in Section 07 9200 "Joint Sealants."
- D. Edging: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.
  - 1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate as detailed.
  - 2. Lock metal edging/coping onto cleat and secure as shown on the detail drawings.

### 3.4 PROTECTION

- A. Roof surfaces shall be adequately protected to prevent damage. Keep scrap metal off of roof surface at all times.

### 3.5 CLEANUP

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean off excess sealants.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

SECTION 07 6200  
SHEET METAL FLASHING AND TRIM

- E. Debris from sheet metal work shall be removed from the roof and grounds on a daily basis.
- F. Leave job site absolutely clean at completion of work and properly dispose of all construction debris.

**END OF SECTION 07 6200**

SECTION 07 9200  
JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Remove and replace joint sealant and back-up material where shown on the drawings and elsewhere as required to provide a positive barrier against passage of air and passage of moisture.
- B. Related Work Described Elsewhere
  - 1. Adhere strictly to the caulking and sealant specifications and to the detail drawings.

1.2 RELATED SECTIONS

- A. Section 02 4119 – Selective Demolition
- B. Section 09 9653 – Elastomeric Coatings

1.3 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Products used in this work shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner's Representative.
- B. In acceptance or rejection of the work of this Section, the Owner's Representative will make no allowance for lack of skill on the part of the workmen.
- C. Mock-ups: Prepare sample for each type of sealant joint at each substrate to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Locate mock-ups on existing surfaces where directed by the Owner and Consultant.
    - a. Provide mockup of at least 2 lineal feet to include surface preparation, cleaning, sealant joint, and back-up materials.
    - b. Pre-Construction Field-Adhesion Testing: Before installing sealants, field test their adhesion to project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
    - c. Manufacturer's representative will review technical aspects, surface preparation, application, and workmanship.
  - 2. Approval of mock-ups does not constitute approval of deviations from the Contract Documents unless specifically approved by the Owner's Representative.
  - 3. Maintain field sample during construction for workmanship comparison.
  - 4. Subject to compliance with requirements, approved mock-ups may become part of the completed Work.

SECTION 07 9200  
JOINT SEALANTS

1.4 SUBMITTALS

- A. As provided in Section 01 3000.
- B. Product data and a color chart for each sealant will be delivered to the Owner's Representative. The Owner will select colors for each sealant from the manufacturer's standard colors.
- C. Submit manufacturer's technical data sheet for each product indicated including chemical analysis and recommendations for their application and use. Include test reports and certifications indicating that products comply with requirements.
- D. Pre-Construction: Field adhesion test reports.
- E. Field adhesion test reports.

1.5 PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be stored in a protected area between 40 - 80 degrees F.
- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- C. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.

1.6 JOB CONDITIONS

- A. Do not apply sealants when the surface temperature is below 40 degrees F. or above 125 degrees F. Do not apply materials when surface is damp or during cold, rainy, or frosty weather.

1.7 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.
- B. Provide sealant manufacturer's standard limited watertight warranty for period of ten (10) years from the date of completion of the Work.

SECTION 07 9200  
JOINT SEALANTS

PART 2 - PRODUCTS

2.1 SEALANTS

- A. General: Except as specifically otherwise directed by the Owner's Representative. Use only the type of sealants described in this Section.
- B. Wet Glazing and Window Perimeter Sealant: Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
  - 1. Spectrum 1 as manufactured by Tremco.
  - 2. DOWSIL 790/791 as manufactured by The Dow Chemical Company.
  - 3. Sikasil WS-290 as manufactured by Sika
  - 4. Or Owner's Representative approved equivalent.
- C. Plaster and Building Joints to be over-coated with elastomeric coating: Polyurethane, S, NS, Class 50, NT; single-component, nonsag;
  - 1. Dymonic 100 as manufactured by Tremco.
  - 2. SikaFlex NP 2 as manufactured by Sika
  - 3. StoSeal STPE Sealant as manufactured by Sto
  - 4. Or Owner's Representative approved equivalent.

2.2 BACK-UP MATERIALS

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
  - 1. Provide sealant backing by same manufacturer as sealant or by a manufacturer that is approved by the sealant manufacturer.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints

SECTION 07 9200  
JOINT SEALANTS

PART THREE - EXECUTION

3.1 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove all existing sealant and backing materials from the horizontal and vertical joints in the limestone cladding, metal fascia panels, brick masonry expansion or control joints, and window, door and equipment perimeters.
- B. Remove all existing window wet glazing and frame joint sealants and backing material. Trim existing glazing gaskets flush with frame as detailed.
- C. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Clean joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- D. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- E. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.3 INSTALLATION OF BACK-UP MATERIAL

- A. Use only the back-up material recommended by the manufacturer of the sealant and approved by the Owner's Representative for the particular installation, compressing the back-up material 25% to 50% to secure a positive and secure fit. When using back-up of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.



SECTION 07 9200  
JOINT SEALANTS

3.4 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply. Verify the joint type according to the details in the drawings and verify that the required proportion of width of joint to depth of joint has been secured.
- B. Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.
- C. Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surfaces would be objectionable.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.5 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
  - 1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 5 tests for each kind of sealant, joint profile, and joint substrate.
  - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

SECTION 07 9200  
JOINT SEALANTS

3.6 Cleaning Up

- A. Remove masking tape immediately after joints have been tooled.
- B. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.
- C. Keep adjacent surfaces clean and free from sealant as the installation progresses. Use solvent or cleaning agent as recommended by the sealant manufacturer.

**END OF SECTION 07 9200**

SECTION 09 9653  
ELASTOMERIC COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Exterior elastomeric coating applied to above-grade exterior plaster wall surfaces.

1.3 REFERENCES

- A. ASTM International (ASTM):
  - 1. D412 - Standard Test Method for Rubber Properties in Tension.
  - 2. D1653 - Standard Test Method for Water Vapor Transmission of Organic Coatings Films.
  - 3. D4258 - Standard Practice for Surface Cleaning Concrete for Coating.
  - 4. D4259 - Standard Practice for Abrading Concrete.
  - 5. D4261 - Standard Practice for Surface Cleaning Concrete Unit Masonry for Coating.

1.4 SUBMITTALS

- A. Submittals for Review:
  - 1. Product Data: Include product description, mixing, and application procedures.
  - 2. Samples:
    - a. 3 x 3 inch samples showing available colors.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Minimum 5 years documented experience in work of this Section in commercial coating application and shall be completed at least 3 projects of similar size and complexity.
- B. Mockup:
  - 1. Size: Minimum 100 square feet.

SECTION 09 9653  
ELASTOMERIC COATINGS

2. Show: Surface preparation, priming, color, and texture.
3. Locate where directed.
4. Approved mockup may remain as part of the Work.

C. Field Quality Control Tests:

1. Conduct tests in accordance with ASTM D4541 on mock-up to verify adhesion of installed coating to prepared substrate.
2. Conduct daily adhesion testing during coating installation as directed by the Consultant to verify adhesion throughout the course of installation.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store materials in protected, dry area, at temperature between 40 and 90 degrees F. or as otherwise described in the manufacturer's literature.

1.7 PROJECT CONDITIONS

- A. Apply coating under following prevailing conditions:
1. Ambient temperature: 40 to 90 degrees F.
  2. Relative humidity: Maximum 85 percent; surface temperature at least 5degrees F above dew point.
  3. Wind velocity: Under 20 MPH.
  4. During hot weather, do not apply in direct sunlight.
  5. Or as otherwise described in the manufacturer's literature.

1.8 WARRANTIES

- A. Furnish manufacturer's 10-year warranty providing coverage against loss of adhesion, fading, or through-water penetration. Warranty to include, at a minimum, the cost of replacement coating and for the cost of labor to apply such replacement coating.

1.9 MAINTENANCE

- A. Extra Materials: 5 gallons of each color.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Elastomeric Acrylic-based, breathable elastomeric coating containing. Provide one of the following systems:
1. Basis of Design: Sika Thorolastic-750
  2. StoColor Lastic
  3. Neoflex by Neogard
- B. Substitutions: Under provisions of Division 01.

SECTION 09 9653  
ELASTOMERIC COATINGS

2.2 ACCESSORIES

- A. Primer: Type recommended by coating manufacturer for the applicable substrate.
- B. Patching Compound: Type recommended by coating manufacturer; compatible with substrate materials.

2.3 MIXES

- A. Mix in accordance with manufacturer's instructions.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Cleaning: Surfaces should be clean and free of oil or grease. Remove loose and foreign matter, mildew, algae or other contaminants that could impede adhesion or performance of coating by pressure washing, solution cleaning, wire brush and/or grinding as required following the manufacturer's written instructions.
- B. Cracks and Cold Joints: Visible hairline cracks over 1/16 inch in width and construction joints should be detailed following the manufacturer's instructions.
- C. Control Joints: Replace sealants and provide manufacturer approved backer materials and sealant that can be overcoated.
- D. Ensure wall substrate is dry prior to application of the coating system. Protect install product from rain, freezing, and continuous high humidity until dry.

3.2 APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Apply recommended primer per manufacturer's written instructions.
- C. Apply minimum two coats of elastomeric coating to minimum dry film thickness recommended by manufacturer.
- D. Work material into surface voids and hairline cracks.
- E. Cut edges in clean and sharp where work joins other materials.
- F. Apply to uniform texture and color without streaks, laps, heavy buildup, runs, and missed areas.

3.3 ADJUSTING

- A. Touch up as required to obtain uniform color and texture.

SECTION 09 9653  
ELASTOMERIC COATINGS

3.4 CLEANING

- A. Remove coatings from adjacent surfaces.

**END OF SECTION 09 9653**



**ENCLOSURE REPAIRS**

of

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**45000 HELM STREET, SUITE 200  
PLYMOUTH, MICHIGAN 48170**

**WSU PROJECT #089-353764  
FEBRUARY 2025**

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SECTION 01 1000  
SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Project: Wayne State University
- B. Student Center
  - a. 5047 Gullen Mall
  - b. Detroit, MI 48202
- C. Owner (PHA): Wayne State University
- D. Design and Construction Services
- E. 5454 Cass Avenue
- F. Detroit, MI 48202
- G. Roof Designer: Intertek
- H. 45000 Helm Street, Suite 200
- I. Plymouth, MI 48170
- J. Section includes:
  - 1. Project Information
  - 2. Work Covered by Contract Documents
  - 3. Work by Owner
  - 4. Owner-Furnished Products
  - 5. Access to Site
  - 6. Coordination with Occupants
  - 7. Work Restrictions
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- K. Related Sections:
  - 1. Division 01 Section 1500 Temporary Facilities and Controls
  - 2. Division 02 Section 4119 Selective Demolition
  - 3. Division 04 Section 0120 Maintenance of Masonry
  - 4. Division 07 Section 7600 Sheet Metal Flashing and Trim
  - 5. Division 07 Section 7920 Joint Sealants
  - 6.

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1.3 PROJECT INFORMATION

- A. Project Identification: The Biological Sciences Building is located at 5047 Gullen Mall, Detroit, Michigan 48202. The enclosure repair project is **XX**. All dimensions provided are approximate and MUST be verified by contractor prior to bid submission. No change orders or allowances will be considered for additional quantities or material required to complete the project.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of the Project is defined by the Contract Documents and consists of the following. The Contractor shall:
1. Provide and maintain all enclosures, fencing of construction area, interior protection, exterior protection, and ground protection as necessary and as required by Division 01 Section 5000 Temporary Facilities and Controls.
  2. Remove **ALL** existing joint sealant and back-up material from all window perimeters within the designed exterior walls with plaster wall cladding and provide new back-up material and silicone joint sealant. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of window perimeter sealant is 5,150 LF. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
  3. Remove **ALL** existing joint sealant and back-up material from building expansion joints within brick and limestone and provide new back-up material. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of control perimeter sealant is 2,450 LF. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
  4. Trim **ALL** existing gaskets and provide wet glazing seals to **ALL** glazing frame joints at designated windows. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of wet glazing sealant, glass to frame joints, is **XXXX LF**
    - b. The approximate lineal footage of wet glazing sealant, frame to frame joints, is **XXXX LF**.
    - c. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
  5. Remove and replace **ALL** existing through-wall flashing at window heads as noted on the drawings. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.
    - a. The approximate lineal footage of through-wall flashing replacement is 1,500 LF.
    - b. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
  6. Remove **ALL** existing joint sealant from the concrete parapet walls and provide new joint sealant. Refer to Section 07 92 00 – Joint Sealants.

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SUMMARY

- a. The approximate lineal footage of concrete parapet sealant is 1,220 LF. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
7. Cut and tuckpoint damaged and deteriorated mortar joints, where designated on the drawings. Refer to Section 04 01 20 – Maintenance of Masonry.
  - a. The approximate square footage of masonry repair is 900 SF. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
8. Remove and replace spalled brick with new, where designated on the drawings. Refer to Section 04 01 20 – Maintenance of Masonry.
  - a. The approximate number of spalled bricks is 12 bricks. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
9. Repair damaged and/or spalled stone in the limestone bands using Dutchman style repairs, where designated on the drawings. Refer to Section 04 01 20 – Maintenance of Masonry.
  - a. The approximate square footage of stone repair is XXXX SF. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
10. Clean and coat **ALL** existing lintels with visible surface corrosion. If heavy rust pack and section loss is present in the window lintel, provide a unit price to remove and replace existing lintel.
  - a. The approximate lineal footage of lintel restoration is 1,500 LF. A portion of this work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
  - b. Work related to removing and replacing window lintels is considered Unit Price.
11. Remove and replace **ALL** failed insulated glazing units in like kind.
  - a. This work is considered Unit Price.
12. Investigate bowing in the brick at the expansion joints along the north elevation. Exact anchor and repair method will need to be field determined.
  - a. The approximate cost for this work is \$7,500. This work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
13. Re-secure detached mechanical fixtures above greenhouse roof and fill voids visible on the interior wall. Additionally, clear debris from valleys in between greenhouse windows/roof.
  - a. This work is considered Unit Price.
14. Repair tears to the roof membrane on the northeast corner of the building, where indicated on the drawings.
  - a. The approximate square footage of repairs is 15 SF. A portion of this work item is considered lump sum pricing, and the Contractor shall field verify all quantities prior to submitting a bid.
15. Provide and maintain protection of all materials stored on site.
16. Remove all construction fencing and clean the work area to the satisfaction of the owner.

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SUMMARY

1.5 ALTERNATE WORK

- A. None.

1.6 WORK BY OWNER

- A. Preceding Work: None.
- B. Concurrent Work: None.
- C. Subsequent Work: None.

1.7 OWNER-FURNISHED PRODUCTS

- A. Owner-Furnished Products: None.

1.8 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to the areas identified in the Drawings. Refer to Drawing SP-1 for location of temporary facilities and staging area.
  - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials unless approved in writing by Owner.
    - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather-tight condition throughout construction period. Repair damage caused by construction operations.

1.9 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner and tenants will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

## SECTION 01 1000 SUMMARY

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.

### 1.10 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated.
  1. Weekend Hours: As allowed by management with 72-hour notice
  2. Early Morning Hours: As allowed by management with 72-hour notice
  3. Hours for Utility Shutdowns: To be determined during Pre-Construction Conference, and as agreed to by Owner in writing
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  1. Notify Owner not less than five (5) business days in advance of proposed utility interruptions.
  2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  1. Notify Owner not less than three (3) business days in advance of proposed disruptive operations.
  2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Non-Smoking Building: Smoking is not permitted on the roof, within the building, or on Owner's property.
- F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

### 1.11 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

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SUMMARY

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 01 1000**

SECTION 01 3233  
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Periodic construction photographs.
- B. Related Requirements:
  - 1. Division 01 Section 3300 "Submittal Procedures" for submitting photographic documentation.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three (3) days of taking photographs.
  - 1. Digital Camera: Minimum sensor resolution of eight (8) megapixels.
  - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
  - 3. Identification: Provide the following information with each image description in file metadata tag:
    - a. Name of Project.
    - b. Name and contact information for photographer.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Date photograph was taken.
    - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
    - g. Unique sequential identifier keyed to accompanying key plan.

1.4 USAGE RIGHTS

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

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PHOTOGRAPHIC DOCUMENTATION

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

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

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Date and Time: Include date and time in file name for each image.
  - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Construction Manager.
- C. Periodic Construction Photographs: Take 12 photographs daily coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

**END OF SECTION 01 3233**



01 3300  
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Consultant's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require consultant's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Consultant's and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

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SUBMITTAL PROCEDURES

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
  - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal category: Action; informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for consultants' final release or approval.
  - g. Scheduled date of fabrication.
  - h. Scheduled dates for purchasing.
  - i. Scheduled dates for installation.
  - j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. consultant's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Consultant's for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Consultant's reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on consultants' receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  1. Initial Review: Allow 5 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Consultant's will advise Contractor when a submittal being processed must be delayed for coordination.

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2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow 5 days for review of each resubmittal.
  4. Sequential Review: Where sequential review of submittals by consultant's consultants, Owner, or other parties is indicated, allow 10 days for initial review of each submittal.
  5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
1. Submit a minimum of two copies of each submittal, except as otherwise indicated.
    - a. Owner/Consultant's will retain one copy; remainder will be returned. Mark up and retain the returned copies for inclusion in the Operation and Maintenance Manuals.
    - b. At least one set of material samples shall be submitted for color selection.
  2. The Contracting Officer, or their designated representative, will not accept submittals received from sources other than Contractor.
  3. Identify deviations from the Contract Documents on submittals.
  4. Indicate name of firm or entity that prepared each submittal on label or title block.
  5. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Consultant's.
  6. Include the following information for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name of Consultant's.
    - d. Name of Contractor.
    - e. Name of subcontractor.
    - f. Name of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.
      - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
- i. Number and title of appropriate Specification Section.
  - j. Drawing number and detail references, as appropriate.
  - k. Location(s) where product is to be installed, as appropriate.
  - l. Other necessary identification.

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7. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections, deviations, and field dimensions. Mark with approval stamp before submitting to the Contracting Officer, or their designated representative.
  8. The Contracting Officer, or their designated representative, will review each action submittal, make marks to indicate corrections or modifications required, stamp and mark as appropriate to indicate action taken, and return copies less those retained. Compliance with specified requirements remains Contractor's responsibility.
  9. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Consultant's observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
    - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Consultant's.
  10. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Consultant's will return without review submittals received from sources other than Contractor.
    - a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
      - 1) Project name.
      - 2) Date.
      - 3) Destination To:
      - 4) Source From:
      - 5) Name and address of Consultant's.
      - 6) Name of Contractor.
      - 7) Name of firm or entity that prepared submittal.
      - 8) Names of subcontractor, manufacturer, and supplier.
      - 9) Category and type of submittal.
      - 10) Submittal purpose and description.
      - 11) Specification Section number and title.
      - 12) Specification paragraph number or drawing designation and generic name for each of multiple items.
      - 13) Drawing number and detail references, as appropriate.
      - 14) Indication of full or partial submittal.
      - 15) Transmittal number numbered consecutively.
      - 16) Submittal and transmittal distribution record.
      - 17) Remarks.
      - 18) Signature of transmitter.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

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1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Consultant's.
  4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Consultant's.
    - d. Name of Contractor.
    - e. Name of firm or entity that prepared submittal.
    - f. Names of subcontractor, manufacturer, and supplier.
    - g. Category and type of submittal.
    - h. Submittal purpose and description.
    - i. Specification Section number and title.
    - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - k. Drawing number and detail references, as appropriate.
    - l. Location(s) where product is to be installed, as appropriate.
    - m. Related physical samples submitted directly.
    - n. Indication of full or partial submittal.
    - o. Transmittal number numbered consecutively.
    - p. Submittal and transmittal distribution record.
    - q. Other necessary identification.
    - r. Remarks.
- F. Options: Identify options requiring selection by Consultant's.
- G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Consultant's on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.

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3. Resubmit submittals until they are marked with approval notation from consultants' action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers and authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from consultant's action stamp.
- K. Proposed Substitutions
  1. Substitutions will not be considered.

1.6 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  1. Submit electronic submittals via email as PDF electronic files.
    - a. Consultant's will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  2. Action Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will return one copy.
  3. Informational Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will not return copies.
  4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show applicable products and options.
  3. Include the following information, as applicable:

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- a. Manufacturer's catalog cuts.
  - b. Manufacturer's product specifications and installation instructions.
  - c. Standard color charts.
  - d. Statement of compliance with specified referenced standards.
  - e. Testing by recognized testing agency.
  - f. Application of testing agency labels and seals.
  - g. Notation of coordination requirements.
  - h. Availability and delivery time information.
  - i. Print performance curves and operational range diagrams.
  - j. Wiring diagrams showing factory installed diagrams.
4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples.
  6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Submit at least two (2) opaque copies. The contracting officer or their designated representative will retain one copy and return the remainder.
  2. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimension and Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
    - h. Wiring diagrams showing field installed wiring.
    - i. Fabrication and installation drawings and rough in and setting diagram.
  3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
  4. Submit Shop Drawings in the following format:
    - a. PDF electronic file if 8-1/2 by 11inch format.

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- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a comparison of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Consultant's will return submittal with options selected.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit three sets of Samples. Consultant's will retain two sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.



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- 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
  - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Number and name of room or space.
  4. Location within room or space.
  5. Submit product schedule in the following format:
    - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- H. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- I. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Consultant's and owners, and other information specified.
- J. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- L. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- M. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- N. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

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- O. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- P. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.
- Q. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- R. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- S. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- U. Information Submittals:
  - 1. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of Consultant's and owners, and other information specified.
  - 2. Product Certificates: Prepare written statements on manufacturer's letterhead, including signature of entity responsible for preparing certification, certifying that product complies with requirements in the Contract Documents.
- V. Delegated Design:
  - 1. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract

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Documents, provide products and systems complying with specific performance and design criteria indicated.

- a. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.
2. Delegated - Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, and where required by the authorities having jurisdiction, submit three copies of a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - a. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 2 - EXECUTION

### 2.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Consultant's.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 2.2 CONSULTANT'S ACTION

- A. Action Submittals: Consultant's will review each submittal, make marks to indicate corrections or revisions required, and return it. Consultant's will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Consultant's will review each submittal and will not return it or will return it if it does not comply with requirements. Consultant's will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Consultant's.

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- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Consultant's without action.

**END OF SECTION 01 3300**

SECTION 01 4000  
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

- A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Testing and inspecting services are specified in other Sections of these Specifications or are required by authorities having jurisdiction and shall be performed by independent testing agencies.
  - 2. Where quality - control services are indicated or required, the Contractor shall engage a qualified testing agency to perform these services.
  - 3. Contractor is responsible for scheduling times for tests, inspections, and obtaining samples and notifying testing agency.
  - 4. Retesting and Re-inspecting: Contractor shall pay for additional testing and inspecting required as a result of tests and inspections indicating noncompliance with requirements.
- B. Performance and Design Criteria: Where design services or certifications by a professional engineer are required by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
  - 2. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

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QUALITY REQUIREMENTS

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.4 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

SECTION 01 4000  
QUALITY REQUIREMENTS

1.5 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

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1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. Testing agency shall submit a certified written report of each test and inspection to Contractor, Owner, Contracting Officer, or their designated representative, and to authorities having jurisdiction when they so direct. Reports of each inspection, test, or similar service shall include the following:
  1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data, test and inspection results, an interpretation of test results and comments or professional opinion on whether tested or inspected work complies with the Contract Document requirements.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  11. Name and signature of laboratory inspector.
  12. Recommendations on retesting and reinspecting.



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- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of the technical representative that authored report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

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- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated; as documented according to ASTM E 329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

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- f. When testing is complete, remove test specimens and assemblies; do not reuse products on Project.
- 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

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QUALITY REQUIREMENTS

- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Testing agency shall cooperate with the Contracting Officer, or their designated representative, and Contractor in performing its duties and shall provide qualified personnel to perform inspections and tests.
  - 1. Promptly notify the Contracting Officer or its designated representative of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Does not release, revoke, alter, or increase the requirements of the Contract Document nor approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- G. Auxiliary Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits.
- I. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

SECTION 01 4000  
QUALITY REQUIREMENTS

- J. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner and Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - EXECUTION

2.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

2.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

SECTION 01 4000  
QUALITY REQUIREMENTS

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 01 4000**

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for work restrictions and limitations on utility interruptions.
  - 2. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Retain "Sewer, Water, and Electric Power Service" Paragraph below if multiple contracts are required. If needed, insert use-charge requirements for other utilities needed for construction operations.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
  - 1. Locations of dust-control partitions at each phase of work.
  - 2. HVAC system isolation schematic drawing.
  - 3. Location of proposed air-filtration system discharge.
  - 4. Waste handling procedures.
  - 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.



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TEMPORARY FACILITIES AND CONTROLS

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 EQUIPMENT

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

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with regulations and health codes, and with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
  - 1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At

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Substantial Completion, restore these facilities to condition existing before initial use.

- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed, and that is self-contained with thermostatic control.
  - 1. Use of gasoline - burning space heaters, open - flame heaters, or salamander - type heating units is prohibited.
  - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
  - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
    - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
  - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
  - 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

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TEMPORARY FACILITIES AND CONTROLS

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Field Offices: Provide field offices, storage and fabrication sheds, and other support facilities as necessary for construction operations.
- B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  2. Remove snow and ice as required to minimize accumulations.
- D. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Collect waste daily and, when containers are full, legally dispose of waste off - site. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- F. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
  1. Do not load elevators beyond their rated weight capacity.
  2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- G. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
  1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

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TEMPORARY FACILITIES AND CONTROLS

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide temporary environmental protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Section 01 1000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
  - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Protect existing landscaping and restore any areas damaged during construction to original condition prior to start of project.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction and workers from inclement weather and for containment of heat.
- H. Security Enclosure and Lockup: **Install temporary enclosure (fencing) around the entire staging area.** Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

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- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions and/or other approved measures to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
  - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
  - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  - 3. Insulate partitions to control noise transmission to occupied areas.
  - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  - 5. Protect air-handling equipment.
  - 6. Provide walk-off mats at each entrance through temporary partition.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
  - 1. Prohibit smoking in on CMHA property.
  - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
- M. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

3.4 OPERATION TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Termination and Removal: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 7700 "Closeout Procedures."

**END OF SECTION 01 5000**

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 3300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, the Architect, with Owner's approval, will determine which products will be used.

SECTION 01 6000  
PRODUCT REQUIREMENTS

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- B. Submittal Time: Comply with requirements in Section 01 7700 "Closeout Procedures."



SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "As selected", the Owner will make the selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
  6. Or Equal: For products specified by name and accompanied by the term "Or Equal," or "Or Approved Equal", or "Approved", comply with requirements in Section 01 3300, Submittal Procedures.
- B. Product Selection Procedures:
1. Where Specifications name a single product or manufacturer, provide the item indicated that complies with requirements.
  2. Where Specifications include a list of names of products or manufacturers, provide one of the items indicated that complies with requirements.
  3. Where Specifications include a list of names of products or manufacturers, accompanied by the term "available products" or "available manufacturers," provide one of the named items that complies with requirements. Comply with provisions for "comparable product requests" for consideration of an unnamed product.
  4. Where Specifications name a product as the "basis - of - design" and include a list of manufacturers, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by the other named manufacturers.
  5. Where Specifications name a single product as the "basis - of - design" and no other manufacturers are named, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by another manufacturer.
  6. Unless otherwise indicated, the Contracting Officer, or its designated representative, will select color, pattern, and texture of each product from manufacturer's full range of standard options.
  7. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for

SECTION 01 6000  
PRODUCT REQUIREMENTS

Contractor's convenience will not be considered unless otherwise indicated.

- b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements.

2. Manufacturers:

- a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
- b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements.

- 3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.

- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision, with Owner's approval, will be final on whether a proposed product matches.

- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. The Owner will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

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

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

SECTION 01 6000  
PRODUCT REQUIREMENTS

B. Product Substitution and Comparable Product Requests:

1. Submit three copies of each request for product substitution or comparable product.
2. Do not submit unapproved substitutions or products on Shop Drawings or other submittals.
3. Identify product to be replaced and show compliance with requirements. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified.
4. Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - a. For Substitution requests, provide a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.
5. The Contracting Officer, or its designated representative, will review the proposed substitution and notify the Contractor of its acceptance or rejection.

**END OF SECTION 01 6000**

SECTION 01 6000  
PRODUCT REQUIREMENTS

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SECTION 01 7300  
EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Installation of the Work.
  - 3. Cutting and patching.
  - 4. Progress cleaning.
  - 5. Starting and adjusting.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for limits on use of Project site.
  - 2. Section 01 3300 "Submittal Procedures" for submitting surveys.
  - 3. Section 01 7700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 DEFINITIONS

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

1.4 INFORMATIONAL SUBMITTALS

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

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect

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EXECUTION

before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Fire-detection and -alarm systems.
    - i. Conveying systems.
    - j. Electrical wiring systems.
    - k. Operating systems of special construction.
  3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
    - a. Water, moisture, or vapor barriers.
    - b. Membranes and flashings.
    - c. Exterior curtain-wall construction.
    - d. Sprayed fire-resistive material.
    - e. Equipment supports.
    - f. Piping, ductwork, vessels, and equipment.
    - g. Noise- and vibration-control elements and systems.
  4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.
- D. The Contractor shall review means, methods, techniques, sequences and procedures indicated in the Contract Documents either directly or by reference to standards or

SECTION 01 7300  
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manufacturer's instructions; and advise the Contracting Officer, or their designated representative, (1) if the specified procedure deviates from good construction practice, (2) if following the procedure will affect warranties including the Contractor's general warranty, or (3) of objections the Contractor may have to the procedure and propose alternative procedures the Contractor will warrant.

- E. Examine substrates and conditions for compliance with manufacturer's written requirements including, but not limited to, surfaces that are sound, level, plumb, smooth, clean, and free of deleterious substances; substrates within installation tolerances; and application conditions within environmental limits. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to property survey and existing benchmarks.
- G. Do not scale the Drawings. Follow indicated dimensions. In case of discrepancy in the figures, bring the matter to the attention of the Contracting Officer, or their designated representative, for interpretation before proceeding with the Work. Failure to follow this procedure shall be at the Contractor's own risk, and the Contracting Officer, or their designated representative, interpretation shall be final.
- H. Take field measurements as required to fit the Work properly. Where fabricated products are to be fitted to other construction, verify dimensions by field measurement before fabrication and, when possible, allow for fitting and trimming during installation.
- I. Unless specifically identified, the terms "repair, replace, repair or replace" shall mean repair in a workmanlike manner, and "install or furnish and install", shall be understood to mean "Furnish all material required and Install".
- J. Installation General: Comply with manufacturer's written instructions for installation. Anchor each product securely in place, accurately located and aligned with other portions of the Work. Clean exposed surfaces and protect from damage.
  - 1. All work shall be executed only by artisans and mechanics qualified through experience in their respective trades.
- K. Maintenance: The following site maintenance shall be performed for the entire duration of the construction/renovation process.
  - 1. Clean Project site and work areas daily, including common areas.
  - 2. The cutting of grass and proper disposal of clippings, to be performed on a regular weekly basis and/or as dictated by need.
  - 3. The removal of snow from public access walkways and adjacent site walkways.
- L. Complete the cleaning operations before requesting inspection for certification of Substantial Completion:

SECTION 01 7300  
EXECUTION

PART 2 - PRODUCTS

2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

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



## SECTION 01 7300 EXECUTION

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

SECTION 01 7300  
EXECUTION

4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
  - B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
  - C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
  - D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
  - E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
  - F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
  - G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
  - H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
    1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
    2. Allow for building movement, including thermal expansion and contraction.
    3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
  - I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
  - J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- 3.5 CUTTING AND PATCHING
- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

SECTION 01 7300  
EXECUTION

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Do not cut structural members or operational elements without prior written approval of the Contracting Officer, or their designated representative.
- F. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
  - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
2. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
- H. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
- I. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- J. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

SECTION 01 7300  
EXECUTION

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Proceed with patching after construction operations requiring cutting are complete.
- K. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- L. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

SECTION 01 7300  
EXECUTION

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80° F (27° C).
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Use containers intended for holding waste materials of type to be stored.
  - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

SECTION 01 7300  
EXECUTION

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

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION 01 7300**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Disposing of nonhazardous demolition and construction waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within seven (7) days of date established for the Notice to Proceed.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

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CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
1. Review and discuss waste management plan including responsibilities of waste management coordinator.
  2. Review requirements for documenting quantities of each type of waste and its disposition.
  3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, locations for waste to be held until picked up for disposal and how often waste is to be picked up.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
1. Comply with operation, termination, and removal requirements in Section 01 5000 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
1. Distribute waste management plan to everyone concerned within three (3) days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.



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CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

2. Comply with Section 01 5000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

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

**END OF SECTION 017419**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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SECTION 01 7700  
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for progress cleaning of Project site.
  - 2. Section 01 7839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

SECTION 01 7700  
CLOSEOUT PROCEDURES

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, maintenance service agreements, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Submit Record Drawings, operation and maintenance manuals, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items.
  - 7. Make final changeover of permanent locks and deliver keys to Owner.
  - 8. Complete startup testing of systems.
  - 9. Remove temporary facilities and controls.
  - 10. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  - 11. Complete final cleaning requirements, including touchup painting. a. The Project shall be turned over in "move - in" condition.
  - 12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
- 5. Submit test/adjust/balance records.
- 6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- D. Record Drawings: Maintain a set of prints of the Contract Drawings as Record Drawings. Mark to show actual installation where installation varies from that shown originally.
  - 1. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- E. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
- F. Operation and Maintenance Data: Submit three copies of manual. Organize data into three - ring binders with Project identification on front and spine of each binder, and envelopes for folded drawings. Include the following in tabbed sections:
  - 1. Table of Contents.
  - 2. General Contractor name, phone number and contact person.
  - 3. Subcontractor names, phone numbers, and contact persons.
  - 4. Equipment and fabricated material supplier/fabricators names, phone numbers, and contact persons.
  - 5. Copies of approved Shop Drawings.
  - 6. Manufacturer's operation and maintenance documentation.
  - 7. Maintenance and service schedules.
  - 8. Maintenance service contracts.
  - 9. Emergency instructions.
  - 10. Spare parts list.
  - 11. Key biting lists (if applicable).
  - 12. Wiring diagrams.
  - 13. Copies of warranties.
    - a. 1 - Year (from date of final approval) Contractor's Warranty Certification.
    - b. All Manufacturer's Warranty Certifications (for all material and equipment warranted/guaranteed beyond 1 year of the date of final approval).
  - 14. Other information on installed materials or equipment that will be required to maintain or sustain the Project.
  - 15. Advise Owner of pending insurance changeover requirements.
  - 16. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  - 17. Complete startup and testing of systems and equipment.
  - 18. Perform preventive maintenance on equipment used prior to Substantial Completion.

SECTION 01 7700  
CLOSEOUT PROCEDURES

19. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 7900 "Demonstration and Training."
  20. Advise Owner of changeover in heat and other utilities.
  21. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  22. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  23. Complete final cleaning requirements, including touchup painting.
  24. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- G. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- C. The Contracting Officer, or their designated representative, will prepare the Certificate of Substantial Completion after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.
- D. When items must be completed or corrected, request inspection for Final Completion/Approval, once the following are complete:

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CLOSEOUT PROCEDURES

1. Submit a signed copy of Substantial Completion inspection list stating that each item has been completed or otherwise resolved for acceptance.
2. Submit all final waivers, final Certificate for Payment, wage reports, warranties, consent of Surety, and other outstanding items.
3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

a. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Include a detailed review of the following:

- 1) Basis of system design and operational requirements, review of documentation, emergency procedures, operations, adjustments, troubleshooting, maintenance, and repairs.

E. The Contracting Officer, or their designated representative, will approve the Contractor's final Certificate for Payment after inspection and receipt of required items and training or will advise Contractor of items that must be completed or corrected before certificate will be issued.

1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
  - a. Project name.
  - b. Date.
  - c. Name of Architect.
  - d. Name of Contractor.
  - e. Page number.
4. Submit list of incomplete items in the following format:
  - a. PDF electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

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- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
  - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.



SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
  - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - e. Remove snow and ice to provide safe access to building.
  - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - h. Sweep concrete floors broom clean in unoccupied spaces.
  - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
  - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - k. Remove labels that are not permanent.
  - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
  - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

SECTION 01 7700  
CLOSEOUT PROCEDURES

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to original condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION 01 7700**

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Miscellaneous record submittals.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for final property survey.
  - 2. Section 01 7700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one (1) set of marked-up record prints.
- B. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one (1) paper copy of each submittal.
- C. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

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PROJECT RECORD DOCUMENTS

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

2. Identification: As follows:

- a. Project name.
- b. Date.
- c. Designation "PROJECT RECORD DRAWINGS."
- d. Name of Architect.
- e. Name of Contractor.

2.2 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as paper copy.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for reference during normal working hours.

**END OF SECTION 01 7839**

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

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SECTION 02 4119  
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
  - 2. Demolition and removal of selected site elements.
  - 3. Cutting and alterations.
  - 4. Protecting of adjacent surfaces.

- B. Related Requirements:

- 1. Section 01 1000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
  - 2. Section 01 7300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items

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SELECTIVE DEMOLITION

of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

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

1.5 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.
6. Review temporary enclosures to prevent dust and debris from entering other occupied spaces of the building.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.

- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

- C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

- E. Pre-demolition Photographs or Video: Written documentation, with associated photographs, of existing conditions of areas / item that are not scheduled to be repaired, adjoining construction, landscaping in the area of work, etc., including finish surfaces, which might be misconstrued as damage caused by the demolition



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operations. Do not proceed to the work until the report is submitted and approved by the Owner.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  - 1. Before selective demolition, Owner will remove the following items:
    - a. None.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

SECTION 02 4119  
SELECTIVE DEMOLITION

- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Consultant.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
  - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
  - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Comply with requirements for existing services/systems interruptions specified in Section 01 1000 "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. Arrange to shut off indicated utilities with utility companies.

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3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
  - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

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SELECTIVE DEMOLITION

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 PROTECTION OF SURFACES

- A. When weather threatens, cease work under this Section and return building to a water-tight condition. Contractor must have sufficient materials on site to provide a temporary waterproof system in the event of unexpected rain/snow.
- B. Contractor shall not remove any more materials than is intended to have replaced water-tight that same day. Contractor shall maintain on site temporary tarps and/or rolls of membrane that can be used in emergencies to provide a method of temporary waterproofing in case of unexpected threatening weather.
- C. Contractor shall restore to original condition any damages caused during work performed in this Section.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 7419 "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
  1. Clean salvaged items.

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SELECTIVE DEMOLITION

2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Consultant, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- B. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

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SELECTIVE DEMOLITION

3.8 CLEANING

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

3.9 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Construction to Be Removed: Designated portions of concrete topping slab, insulation and waterproofing, plaster from designated interior walls, and resilient floor trim and acoustical fabric from designated interior walls.
- B. Existing Items to Be Removed and Salvaged: None.
- C. Existing Items to Be Removed and Reinstalled: Suspended ceiling grid and ceiling tiles, projector screens and related equipment, electrical conduit and junction boxes, and networking equipment and conduit.

**END OF SECTION 02 4119**

SECTION 02 8000  
LANDSCAPE REPAIR

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Removal of damaged turf and plantings and replacement of materials damaged by the Contractor during the performance of Work is included in this Section.
- B. Repair of damaged concrete, damaged by the contractor during the performance of the Work.
- C. Repair of damaged hot mix asphalt paving, damaged by the contractor during the performance of the Work. **[NOTE: Contractor is expected to protect the concrete and asphalt paving from damage from construction traffic and materials.]**

1.2 QUALITY ASSURANCE

- A. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods for their installation, and who shall direct all work performed under this Section.
- B. Standards:
  - 1. All plants and planting material shall meet or exceed the specifications of federal, state, and county laws requiring inspection for plant disease and insect control.
  - 2. Quality and size shall conform to the current edition of *Horticultural Standards* for number one grade nursery stock as adopted by the American Association of Nurserymen.
  - 3. State of Michigan, Department of Transportation (MDOT) Standards, latest edition for Asphalt Repair Work.
  - 4. American concrete Institute (ACI) Standards for Concrete Work

1.3 SUBMITTALS

- A. General: Comply with the provisions of Section 01 3300.

1.4 PRODUCT HANDLING

- A. Delivery and Storage:
  - 1. Deliver all items to the job site in their original containers with all labels intact and legible.
  - 2. Use all means necessary to protect plant materials before, during, and after installation and to protect the work and materials of all other trades.

SECTION 02 8000  
LANDSCAPE REPAIR

- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's representative and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Protect structures, utilities, roads, trees and vegetation from damages caused by landscaping operations.
- B. Topsoil required to complete the work of planting shall be natural, friable topsoil, characteristic of representative soils in the vicinity that produce heavy growths of crops, grass or other vegetation. It shall not be extremely acidic nor alkaline nor contain toxic substances, harmful to plant growth. All topsoil used for this project shall be without admixtures of subsoil; free from clay lumps, stones, roots, debris and other objects over one inch in diameter.

2.2 FERTILIZER

- A. Fertilizer shall meet the applicable sections of the State Highway Specifications.
- B. Fertilizer shall be uniform in composition, free flowing and suitable for application with approved equipment.

2.3 SOD

- A. Product Delivery and Handling:
  - 1. Sod shall be placed within 48 hours of cutting and shall be protected and maintained during transit or storage on site as necessary to ensure vigorous growth after placement.
  - 2. Sod remaining on the site unplaced after 48 hours will be rejected. All yellowing or otherwise discolored sod will be rejected.
  - 3. The Contractor shall inform the Owner's representative 24 hours in advance of any delivery of sod.
- B. Description
  - 1. Sod shall be well established and shall contain all the dense root system of the grasses and shall exhibit vigorous healthy root growth free of noxious weeds, objectionable grasses, grubs, diseases or injurious insects.
  - 2. Sod shall meet the applicable sections of the State Highway Specifications unless specifically called for otherwise by the Owner's Representative.



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LANDSCAPE REPAIR

2.4 CONCRETE

- A. Concrete shall be commercially produced material and shall be air entrained, with a minimum compressive strength of 3500 psi at 28 days.
- B. Accessories such as expansion joint materials and tie bars shall be installed in the repaired concrete to match the materials damaged during the work.
- C. All products shall meet current ACI and MDOT standards for new construction.
- D. Concrete curing compound shall be white pigmented, free of paraffin or petroleum, Type 2 curing compound conforming to AASHTO M148 "Standard Specification for Liquid Membrane – Forming Compounds".

2.5 HOT MIX ASPHALT

- A. Hot mix asphalt shall be commercially produced material and shall be an 1100 or 1300 mix design for both the bottom (leveling course) and the top (wearing course) materials.
- B. Tack coat shall be SS-1h material.

2.6 COLD MIX ASPHALT

- A. Cold mix asphalt materials for contained holes shall be POUR-PATCH as manufactured by Revere Products (800) 343-7318.
- B. Cold mix asphalt materials for depressions and chipped out areas shall be EPOXI-TAR PATCH as manufactured by Revere Products (800) 343-7318.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Ground preparation shall not be started until all stones, debris, and similar material larger than "1" in diameter have been removed, depressions and ruts filled and the entire area to be seeded and/or sodded has been accepted by the Owner's Representative.

3.2 PROTECTION OF PERSON AND PROPERTY

- A. Protection of Existing Plant Materials
  - 1. Existing trees, shrubs, and plant materials to remain shall be protected by acceptable means.
  - 2. Damage to above plant material shall be repaired by qualified nurserymen or replaced with approved equal material.

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LANDSCAPE REPAIR

3.3 SODDING

- A. General lawn repair shall be performed by personnel familiar with the accepted procedures of planting and under the supervision of a qualified planting foreman.
- B. Preparation of Sod:
  - 1. Immediately prior, but not in excess of 24 hours before sod is to be placed, the soil surface shall be worked until it is relatively free from debris, washes, gullies, clods and stones and is in satisfactory condition.
  - 2. The surface shall be worked to depth of not less than 3" with a disc, tiller, or other equipment approved by the Owner's representative.
  - 3. Prepared surfaces that become crusted shall be reworked to an acceptable condition for sodding.
- C. Application of Fertilizer
  - 1. Commercial fertilizer shall be applied in accordance with the State Highway Specifications.
- D. Application of Sod
  - 1. Laying: Fit sod pieces tightly together so that no joint is visible, alternate courses staggered, and tap firmly to eliminate all air pockets, provide a true and even surface and ensure knitting without displacement of sod or deformation of the surface of sodded areas. Edges shall be buried flush with adjacent soil. Following compaction, screened topsoil shall be used to fill all cracks between sod pieces. Excess soil shall be worked into grass.
  - 2. Watering: Within five hours after the sod has been placed, it shall be saturated to a depth of 2" by watering with a fine spray.
  - 3. Maintenance: Sod shall be watered each day such that it shall be saturated to a depth of ½" by watering with a fine spray until project is accepted by the Owner, but not for a period of more than 21 days. If after 21 days the sod is determined to not be acceptable to the Owner it shall be removed and replaced.

3.4 CONCRETE REPAIR

- A. Damaged concrete shall be saw cut a distance of at least 1 foot beyond the damaged areas. The saw cut shall be at least 1/3<sup>rd</sup> the depth of the material being removed.
- B. The exposed subgrade materials shall be leveled and compacted prior to the application of the new concrete. Subgrade materials shall also be moistened to prevent quick loss of moisture soon after application.

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- C. Forms shall be provided to maintain a clean and vertical face for the installation of new materials, as needed.
  - D. New joints shall be laid out in areas of replaced materials. Spacing of joints shall not exceed 15 times the depth of the concrete.
  - E. Expansion joint material shall be installed at all locations where the repaired concrete meets a structure, curb, sidewalk, forms an intersection or at 50-ft. intervals in a continuous slab. Expansion joint materials shall cover the entire gap of the joint. The top of the expansion joint materials must be slightly below concrete grade. Anchor expansion joint material to prevent displacing during concrete placing and finishing.
  - F. Materials shall be delivered and installed in accordance with the American Concrete Institute (ACI) Standards.
  - G. Concrete curing compound shall be applied within 1 hour or final finishing or before the concrete has dried.
  - H. Apply pigmented, membrane forming, curing compound in two coats at right angles to each other. Apply compound by spray only. Rate of application shall be 200 square feet per gallon for each coat.
  - I. Any areas covered with compound that is disturbed during curing shall be re-sprayed immediately.
  - J. Contractors shall provide protection from rapid curing and from physical damage for a period of not less than 3 days following the application of the new concrete.
  - K. Replacement of any existing pavement marking within the repaired area will be included as part of any repair.
- 3.4 HOT ASPHALT REPAIRS - To be performed in all areas where asphalt damage occurs. (Cold patch repairs shall be installed as a temporary measure only until hot asphalt repairs can be scheduled and performed.)
- A. Damaged bituminous concrete shall be saw cut a distance of at least 1 foot beyond the limits of damage. The saw cut shall be a minimum of 2" in depth, but not less than  $\frac{3}{4}$  of the depth of the existing materials.
  - B. The old pavement shall be carefully removed for its full depth, but not less than 4 inches.
  - C. The exposed substrate material shall be leveled and compacted prior to the application of the new hot mix asphalt. Subgrade materials that are too soft (due to moisture) shall be allowed to dry or removed and replaced with dryer materials.
  - D. The exposed edges of the surrounding asphalt shall be brush coated with tack coat prior to the application of the new hot mix asphalt.

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LANDSCAPE REPAIR

- E. The hot mix asphalt shall be delivered and installed in accordance with MDOT standards. The placement of asphalt shall be as follows:
    - 1. The top course of thickness shall be not less than 1.5" compacted thickness, nor more than 2.5" compacted thickness.
    - 2. The bottom course thickness shall not be less than 2.0" thickness, and shall not be installed in any thickness greater than 3.0" compacted thickness for any one layer.
    - 3. The total thickness of the pavement shall meet or exceed the surrounding materials, but shall not be less than 4.0" total compacted thickness.
    - 4. If dirt is allowed to lie on any one layer, the layer must be swept and a tack coat applied prior to the application of a subsequent layer.
  - F. Contractor shall provide protection for the new hot mix asphalt for a minimum of 4 hours following application.
  - G. Contractor is responsible for the proper drainage of the patched asphalt. Any water in excess of 1/8" in depth following 30 minutes after a rain will be considered as unacceptable.
  - H. Replacement of any stripping or other pavement marking shall be included as part of the repair work.
- 3.5 Clean Up
- A. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.

**END OF SECTION 02 8000**

PART ONE – GENERAL

1.01 DESCRIPTION

A. Section includes maintenance of unit masonry and cleaning as follows:

1. Repairing unit masonry, including replacing units.
2. Cutting and repointing joints.
3. Stone patching
4. Saw-cut existing masonry expansion joints to widen for new sealants.
5. Saw-cut new expansion joints in masonry wall system.
6. Restoration cleaning of wall surfaces.
7. Painting of designated steel components

1.02 RELATED SECTIONS

- A. Section 02220 – Selective Demolition
- B. Section 07920 – Joint Sealants

1.03 DEFINITIONS

- A. Very Low-Pressure Spray: Under 100 psi (690 kPa).
- B. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- C. Medium-Pressure Spray: 400 to 800 psi (2750 to 5510 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- D. High-Pressure Spray: 800 to 1200 psi (5510 to 8250 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- E. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.
- F. Significant cracking: extent of cracking observed in sandstone which would not allow proper installation of water proofing/sealant materials.

1.04 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced, masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.
- B. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that restoration and cleaning work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm.
- C. Restoration Worker Qualifications: Persons who are experienced in restoration work of types they will be performing. When masonry units are being patched, assign at least

one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products.

- D. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with factory-trained representatives who are available for consultation and Project-site inspection and assistance at no additional cost.
- E. Source Limitations: Obtain each type of material for masonry restoration (cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- F. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage due to worker fatigue.
- G. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials and Project site.
  - 1. Include methods for keeping pointing mortar damp during curing period.
  - 2. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- H. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used, protection of surrounding materials, and control of runoff during operations.
  - 1. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- I. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from 20 feet (6 m) away by Owner or Owners Representative.
- J. Field Samples: Prepare test areas of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
  - 1. Masonry Repair: Complete test sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each test area not smaller than 2 adjacent whole units or approximately 32 inches (1200 mm) in least dimension. Perform test sample areas in existing walls at areas as directed by Owners Representative unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

- a. Stone Patching:
  - 1) Provide at two (2) areas, minimum 1 ft x 1ft, to determine the required patching material color and texture.
2. Repointing: Rake out joints in designated area, approximately 36 inches (900 mm) high by 48 inches (1200 mm) wide and repoint; cleaned and finished.
  - a. Install mortar sample that contains a close color range, aggregate type, and finish that will produce a mortar matching the cleaned masonry when cured and dry.
  - b. Install up to three (3) samples with varying shades of color, aggregate, and finish.
  - c. Repeat process, up to 3 times, until acceptable.
3. Cleaning: Clean two (2) areas approximately 25 sq. ft. (2.3 sq. m) for each type of masonry and surface condition.
  - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not use cleaners and methods known to have deleterious effect without providing all appropriate protections.
  - b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.
  - c. Repeat, using same of different leaning methods up to 3 times, until acceptable.
4. Approval of test areas does not constitute approval of deviations from the Contract Documents contained in test areas unless Owners Representative specifically approves such deviations in writing.
5. Approved test areas may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.05 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Samples for Verification: For the following:
  1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.
- C. Hardware List: Submit a complete list of incidental materials to be provided under this Section.
- D. Repair Procedures: Submit written procedures for the remedial work including materials, methods, and equipment that will be used.
- E. As provided in Section 01300.

#### 1.06 DELIVERY, STORAGE, AND PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be

stored in a protected area between 40 - 80 degrees F.

- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- B. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- E. Store sand where grading and other required characteristics can be maintained and contamination avoided.

#### 1.06 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.
- B. Repair masonry units and repoint mortar joints only when air temperature is between 40 and 90 deg F (4 and 32 deg C) and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for masonry repair and mortar-joint pointing unless otherwise indicated:
  - 1. When air temperature is below 40 deg F (4 deg C), heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F (4 and 49 deg C).
  - 2. When mean daily air temperature is below 40 deg F (4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 7 days after repair and pointing.
- D. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F (32 deg C) and above unless otherwise indicated.
- E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.
- F. Clean masonry surfaces only when air temperature is 40 deg F (4 deg C) and above and is predicted to remain so for at least 7 days after completion of cleaning.

#### 1.07 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the



materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.

## PART TWO – PRODUCTS

### 2.01 MORTAR

- A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.
  - a. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Mortar Sand: ASTM C 144 unless otherwise indicated.
  - 1. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color with no more than 50 parts per million chloride ions and free of organic contaminants.
  - 2. For pointing mortar, provide sand with rounded edges.
  - 3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
  - 4. For joints narrower than 1/4 inch, use aggregate graded with 100 percent passing the No. 8 sieve and 95 percent passing the No. 16 sieve.
- D. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars. Pigments shall conform to ASTM C 270 and C 979. Integral coloring material shall consist of inert, non-fading, finely ground, alkali-fast mineral oxides, made specifically for cement/lime mortars. Limit coloring additive so as to no exceed 10% of the weight of Portland cement. Do not use carbon black as a coloring additive.
- E. Water: Potable.
- F. Admixtures
  - 1. Admixtures such as air-entraining agents, accelerators, retardants, water repellent agents, antifreeze compounds, and other admixtures shall not be added to mortar unless specified.
  - 2. Do not use admixtures containing more than 0.2% chloride ions.

### 2.02 STONE PATCHING AND REPAIR MATERIALS

#### A. Limestone Units

- 1. Fast-drying, non-shrink, pre-mixed patching material designed for repairing vertical and horizontal masonry surfaces. Proprietary mortar compound must be colored to match

and blend with original stonework, and compressive strength shall be balanced to match original stones.

- a. Jahn M70 Stone Patching Mortar, Cathedral Stone Products, Inc., Jessup, MD.
- b. MIMIC by Charger Corporation, Hamden, CT
- c. or Owner's Representative approved equivalent.

## 2.03 MORTAR MIXES

- A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C 5 and manufacturer's written instructions.
- B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
  1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Owners Representatives approval.
  1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.
- D. Do not use admixtures in mortar unless otherwise indicated.
- E. Mortar Proportions: Mix mortar materials in the following proportions:
  1. Pointing Mortar for Brick: Proportions shall be consistent with those identified in preconstruction testing.
    - a. Add mortar pigments to produce mortar colors required.
  2. Rebuilding (Setting) Mortar: Same as pointing mortar.
    - a. Add mortar pigments to produce mortar colors required.

## 2.04 MASONRY UNITS

- A. Face Brick (Solid Masonry Units Made from Clay or Shale):
  1. ASTM C 216, Grade SW, Type FBS, unless otherwise indicated.
  2. Size, Texture and Color: To match adjacent, existing masonry units as approved by owner.
  3. Properties:
    - a. Initial Rate of Absorption: 6 to 15 grams of water per minute per 30 square

- inches.
- b. Efflorescence: Perform as described in ASTM C 67. Units shall have a rating of "Not Effloresced".
- 4. Use: Provide as needed for replacement of existing damaged units.
- 5. Provide special units for corners and other similar exposed applications.

## 2.05 CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).
- C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.
- D. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.
- E. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Light Duty Cleaner
    - b. Dominion Restoration Products, Inc; Bio-Cleanse
    - c. Dumond Chemicals, Inc.; Safe n' Easy Architectural Cleaner/Restorer.
    - d. Prosoco; Enviro Klean 2010 All Surface Cleaner.
- F. Mild Acidic Cleaner: Manufacturer's standard mildly acidic cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Bio Cleaner
    - b. Dominion Restoration Products, Inc; DR-60 Stone and Masonry Cleaner
    - c. Diedrich Technologies Inc.; Envirorestore 100.
    - d. Prosoco; Enviro Klean Biowash
- G. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Cathedral Stone Products; Heavy Duty Cleaner
- b. Diedrich Technologies Inc.; Diedrich 101 Masonry Restorer
- c. Dumond Chemicals, Inc.; Safe n' Easy Ultimate Stone and Masonry Cleaner.
- d. Prosoco; Enviro Klean Restoration Cleaner

## 2.04 PAINT MATERIALS

- A. Steel Primer Coat: Urethane-based, zinc rich primer
  - 1. Tneme-Zinc Series 90-97 by Tnemec Company
  - 2. Corothane I Galvapac 1K by Sherwin Williams
  - 3. or Owner's Representative approved substitute
- B. Steel Top Coat: Acrylic polyurethane top coat. Color to be selected by the Owner
  - 1. Endura-Shield Series 73 by Tnemec Company
  - 2. Fast Clad DTM Urethane by Sherwin Williams
  - 3. or Owner's Representative approved substitute

## 2.05 ACCESSORY MATERIALS

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
- B. Reinforcement and Anchorage: All screws, bolts, nuts, washers, rivets, ties, and pins shall be hot-dipped galvanized steel (ASTM A 153, Class B), or Type 304 stainless steel

## PART THREE – EXECUTION

### 3.01 GENERAL

- A. Examine each area of work and verify that existing conditions are acceptable for the specified installation procedures. Report, in writing, adverse conditions that could affect the performance of the Work within five calendar days. Absence of written notification will indicate the Contractor's acceptance of existing project conditions.
- B. Masonry workmanship shall comply with all applicable recommendations of the Brick Industry Association (BIA, formerly the Brick Institute of America), the Indiana Limestone Institute of America, and Masonry Structures ACI 530.1, except as modified below. Report any damage to new or existing flashings within the work area to the Owner's Representative, and provide for repairs by appropriately skilled tradesmen, at no cost to the Owner.
- C. Manufacturer's Recommendations: Comply with the manufacturer's written approved installation instructions and with any governing regulations and industry standards applicable to the work.

- D. Proceed when project conditions are acceptable and implement any cold / hot weather provisions specified herein.
- E. Conduct all masonry work in a neat and workmanlike manner, to prevent staining any surface with mortar or other spills. Avoid dropping mortar on completed masonry work or other elements of the building. If mortar drops or spills, spot-clean immediately using a sponge and clean water.
- F. Tolerances:
  - 1. External corners and other conspicuous lines and levels: Maximum deviation from plumb or level  $\pm 1/4$  inch in any 10 ft section with a maximum cumulative amount of  $3/8$  inch in any one direction beyond 10 ft.
  - 2. Variation from Level: Maximum  $1/2$  inch in 20 feet, or  $3/4$  inch in 40 feet or more.
  - 3. Mortar bed joint thickness:  $3/8$  inch or match existing adjacent construction. Maximum deviation  $\pm 1/16$  inch
  - 4. Mortar head joint thickness:  $3/8$  inch or match existing adjacent construction. Maximum deviation  $\pm 1/16$  inch
  - 5. Vertical alignment of the center line of corresponding head joints in alternate courses when using other than stacked bond. Maximum deviation  $\pm 1/4$  inch
  - 6. Vertical alignment of the center line of all head joints in total assemblage height when using other than stacked bond. Maximum deviation  $\pm 1$  inch

### 3.02 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
  - 1. Erect temporary protective covers over walkways and at points of pedestrian entrance and exit that must remain in service during course of restoration and cleaning work, as required.
- B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- C. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.

2. Keep wall wet below area being cleaned to prevent streaking from runoff.
  3. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
  4. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
  5. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
- D. Prevent mortar from staining face of surrounding masonry and other surfaces.
1. Cover sills, ledges, and projections to protect from mortar droppings.
  2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
  3. Immediately remove mortar in contact with exposed masonry and other surfaces.
  4. Clean mortar splatters from scaffolding at end of each day.
- D. Prevent mortar from staining face of surrounding masonry and other surfaces.

### 3.03 REPOINTING MASONRY

- A. General: Tuckpoint mortar joints containing static cracks, deterioration, holes or voids. New bedding and pointing mortar mix should not have a compressive strength that exceeds existing mortar or masonry materials.
- B. Rake out and repoint joints to the following extent:
1. Joints where mortar is missing or where they contain holes.
  2. Cracked joints where cracks can be penetrated at least 1/4 inch (6 mm) by a knife blade 0.027 inch (0.7 mm) thick.
  3. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
  4. Joints where they have been filled with substances other than mortar.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved test area:
1. Remove mortar from joints to depth of 2-1/2 times joint width, but not less than 1/2 inch (13 mm) or not less than that required to expose sound, unweathered mortar.
  2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
  3. Do not spall edges of masonry units or widen joints. Replace any masonry units which become damaged.
- D. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.
- E. Notify Owner's Representative of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other

deteriorated items.

F. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
  2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
  3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch (9 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
  4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
  5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.
- G. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
- H. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
- I. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.
- J. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.04 MASONRY UNIT REPLACEMENT

- A. Match existing construction tolerances, corners, and recess. Install masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line.
- B. Provide shoring and support, as required, prior to removing existing masonry units.
- C. Use full units without cutting whenever possible. Cut new masonry units as required to fit adjoining work neatly. Avoid the use of less than half size units at corners, jambs, and at other locations. Perform job site cutting of masonry units with proper masonry saw to provide straight, clean, unchipped edges. Prevent broken masonry unit corner or edges. Do not break masonry units with a hammer.
- D. Mortar Bedding and Jointing
1. Provide new ties to replace damaged ties, in like-kind. All masonry reinforcement

- and anchors should be completely bedded in mortar. Direct masonry unit-to-anchor contact is not permitted.
2. Lay new units with completely filled bed and head joints. Butter ends with sufficient mortar to fill head joints and lay into place. Do not slush head joints. Tooth new units into existing masonry work, to match existing bonding patterns.
  3. Spaces between masonry units and backup materials are to remain free and clear of mortar.
  4. Repoint head joints and top joints where new work adjoins existing masonry work.
- E. Establish lines, levels, and coursing indicated. Protect from displacement.
- F. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- G. Placing and Bonding
1. Do not lay mortar bed more than 2 ft ahead of work.
  2. Do not furrow bed joints.
  3. Completely butter the ends and head of each unit with mortar and shove the unit into place so that mortar squeezes out the top of the head joint and bed joint. Do not slush head joints.
  4. At cavity wall sections, cut off and scoop out the mortar that extrudes from bed and head joints on outer and inner faces of the wythe.
  5. Do not disturb, tap, shove or push units once they are laid in their final position. Where adjustment must be made, remove mortar and replace.
  6. Tooth masonry at intersections and external corners.
  7. Strike exterior of mortar joints flush during laying. When mortar is thumb print hard on exposed surfaces, tool joints concave with a cylindrical pointing tool slightly larger than the masonry joint to compact the mortar thoroughly.
  8. Slightly bevel bed joint mortar away from the cavity space before placing the unit to minimize mortar protrusions into any cavity space intended to be free of mortar. Back purge or strike mortar extrusions in the cavity space.

### 3.05 STONE PATCHING

- A. Hairline cracks: For areas that are not spalled, but are cracked, ensure that the area around each crack is sound. If not, chip out unsound material and repair. If the crack is visible from the ground level, chip or cut out existing stone slightly wider than crack taking care to ensure all edges are square and at a 90-degree angle. Seal hairline cracks with epoxy injection prior to patching with repair mortar. If the crack is not directly visible from the ground level rout the hairline crack using hand tools and fill with sealant.
- B. Remove all loose and spalled materials, as well as contaminants or bond breaking substances including, but not limited to laitance, mildew, loose debris, existing coatings and oils.
- C. Report any rusted anchors and ties encountered during preparation work to the Owner's Representative prior to proceeding.
- D. Cut out unsound/deficient material by hand with chisel and mallet. Care must be taken to



ensure edges of all patches are square cut, maintaining 90-degree angles.

- E. All patches must be a minimum of 1/4" deep. The surface must be sound and free of ice and frost.
- F. For stone patches/repairs greater than two inches deep, or at embedded masonry anchors, dutchman repairs are acceptable.
- G. Repair mortar for stone
  - 1. Use the recommended mix design and product from the manufacturer for the particular type of stone work being repaired.
  - 2. Prior to application, lightly mist the surface with water. Next, apply a slurry coat with a brush or trowel, working material into the pores of the surface. With a trowel, apply repair mortar with firm pressure. Overbuild the patch by at least 1/4 inch and approximately to the desired shape. Finished with a hard rubber float or shaved to the final shape with the edge of a trowel, miter rod, or margin trowel.
  - 3. Match texture to existing using conventional plastering techniques. After completing patch, wipe down adjacent areas with a wet cloth or sponge to remove excess patching material.
  - 4. Curing Procedure: Lightly mist the patch with water to wet the entire surface of the finished patch approximately 30 minutes to 1 hour after completion on hot sunny days and approximately 2 hours on cool or cloudy days. Time will vary with temperature and humidity. Mist at least once a day, but as often as possible on the two days following the patch installation.
- H. Limestone Dutchman Repairs
  - 1. Saw cut a predetermine area of existing stone slightly larger than required to produce the smallest possible glue line for epoxy adhesion.
  - 2. Ensure that prepared surfaces are clean, dry and free of dust. Mix and apply epoxy adhesive in accordance with the manufacturer's instructions. Epoxy should be applied to cover all mating surfaces and provide a continuous weathertight seal.
  - 3. Where the dutchman is unsupported, as in overhangs and soffit stones, insert a stainless steel threaded rod or dowel between mating surfaces, prior to applying epoxy adhesive.
  - 4. Finish sand any uneven edges or excess epoxy bulk.

### 3.06 CLEANING, GENERAL

- A. Proceed with cleaning in an orderly manner; work from bottom to top or top to bottom in a manner as specified by product manufacturers requirements, of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.
- B. Perform cleaning to the extent necessary to remove existing mildew, efflorescence, dirt, plant fungi, etc. so that the wall appearance is uniform, and acceptable to the water repellent sealer manufacturer. Begin with the least caustic cleaning method. Adjust cleaning methods as required. In general:
  - 1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist

- chemical cleaner being used.
2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
    - a. Equip units with pressure gages.
  3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
  4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
  5. For high-pressure water-spray application, use fan-shaped spray tip that disperses water at an angle of at least 40 degrees.
  6. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F (60 and 71 deg C) at flow rates indicated.
  7. For steam application, use steam generator capable of delivering live steam at nozzle.
- C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- D. Water Application Methods:
1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
  2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- E. Steam Cleaning: Apply steam to masonry surfaces at the very low pressures indicated for each type of masonry material. Hold nozzle at least 6 inches (150 mm) from surface of masonry and apply steam in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- F. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush application. Do not spray apply at pressures exceeding 50 psi (345 kPa). Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.
- G. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- H. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

### 3.07 PRELIMINARY CLEANING

- A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing too dry as long as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.
- B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, tar and various other roof coatings.
  - 1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
  - 2. Remove paint and caulking with alkaline paint remover.
    - a. Comply with requirements in "Paint Removal" Article.
    - b. Repeat application up to two times if needed.

### 3.08 FINAL CLEANING

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

### 3.08 PAINTING

- A. Clean existing steel surfaces removing scaling and rust.
- B. Prepare existing deteriorated steel surface to receive coating in accordance with paint manufacturer's recommendations and with the The Society of Protective Coatings (SSPC) guidelines as follows:
  - 1. SP-2, "Hand Tool Cleaning"
  - 2. SP-3, "Power Tool Cleaning"
- C. Inspect the condition of the exposed steel sections and connections (anchors and welds). Where section loss is greater than 10 percent of the nominal thickness, report to the Owner's Representative for review and corrective procedure. Do not proceed with coating work without written authorization form the Owner's Representative.
  - 1. Primer: 3 mils (dry) / 5 mils (wet)

- 2. Top Coat: 2.5 mils (dry) / 4.5 mils (wet)
- D. Mix coating components following the manufacturer's written instructions.
- E. Maintain coating thickness during application within the manufacturer's published maximum and minimum thickness ranges.
- F. If additional coats are required to obtain the required coating thickness, apply additional coats after the initial coat is completely dry/cured.

3.09 FIELD QUALITY CONTROL

- A. Owners Representatives: Owner will assign Project representatives to help carry out responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Owner's Representative use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Notify Owner's Representative in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Owner's Representative have had reasonable opportunity to make observations of work areas at lift device or scaffold location.
- C. Contractor shall maintain or exceed levels of workmanship and material acceptability in regard to surface preparation, cleaning, and coating application as established by mock up/test samples.

- End of Section -



## **PART 1 - GENERAL**

### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Provide new sheet metal work in connection with the exterior restoration.
  - 2. New masonry through wall flashing

### **1.2 RELATED SECTIONS**

- A. Section 04012 – Maintenance of Masonry
- B. Section 07920 – Joint Sealants

### **1.3 REFERENCES**

- A. Copper, Brass, and Bronze Handbook Sheet Copper Applications, published by the Copper development Associations, Inc., (CED), New York, NY.
- B. Factory Mutual Loss Prevention Data Sheet 1-49.
- C. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)

### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For sheet metal flashing and trim.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Distinguish between shop- and field-assembled work.
  - 3. Include identification of finish for each item.
  - 4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.
- C. Samples:
  - 1. For each exposed product and for each color and texture specified.



1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

**PART 2 - PRODUCTS**

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

2.2 SHEET METAL MATERIALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Through Wall Flashing:
  - 1. Stainless-Steel Sheet: Minimum 22 gage, ASTM A 240/A 240M, Type 304, dead soft, fully annealed; 2D (dull, cold rolled), or 2B (bright, cold rolled are approved finishes).
- C. Metal Coping
  - 1. Metallic-Coated Steel Sheet: Minimum 24 gage, zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation; prepainted by coil-coating process to comply with ASTM A 755/A 755M.
  - 2. Surface: Manufacturer's standard clear acrylic coating on both sides.
  - 3. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply



coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

4. Color: As selected by Owners Representative from manufacturer's full range.
5. Cleats: Minimum 22 gage continuous.

- D. Termination Bar: Aluminum, 1/8 inch by 1 inch (minimum), slotted holes 4 inches on center, top edge flat or with caulk dip depending on application.

## 2.3 UNDERLAYMENT MATERIALS

- A. Flexible Sheet Flashing for Through Wall Flashing: Self, adhering, reinforced, rubberized asphalt sheet membrane; minimum 40 mil thick;
1. Perma-A-Barrier Wall Flashing by WR Grace or approved substitute.
  2. Primer: "Perma-A-Barrier Surface Conditioner" or as recommended by the sheet Manufacturer.
  3. Seam and lap Joints Membrane: Rubberized, asphalt based liquid membrane
    - a. Bituthene Liquid Membrane by WR Grace or approved substitute.

## 2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
    - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
  3. Fasteners for Zinc-Coated (Galvanized): Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.
- C. Solder:
1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.



2. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

## 2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  1. Obtain field measurements for accurate fit before shop fabrication.
  2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
  1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
  2. Use lapped expansion joints only where indicated on Drawings.
- C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.





- F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION, GENERAL**

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  - 3. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
  - 4. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
  - 1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  - 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
  - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
  - 2. Use lapped expansion joints where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.



- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.
  - 1. Do not solder metallic-coated steel or aluminum sheet.
  - 2. Do not use torches for soldering.
  - 3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
  - 4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
  - 5. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.
- H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

### 3.2 THROUGH WALL FLASHING INSTALLATION

- A. Remove existing mortar and clean surfaces that are to receive flashings.
- B. Install prefabricated pan flashings with maximum 24 inch legs with soldered seams at transitions and corners. Incorporate soldered end dams at all flashing terminations. Otherwise, fabricate and install flashings with maximum available lengths.
- C. In field of walls, overlap pan flashing ends a minimum four (4) inches. Set overlapped ends in full bed of waterproofing liquid mastic compatible with flexible sheet membrane.
- D. Fully adhere flexible sheet membrane to horizontal leg of metal pans and to clean, sound inboard wall surfaces. Use primer on inboard wall surfaces as required for proper adhesion. Lap ends of sheet flashing a minimum six (6) inches. Seal all flashing ends and terminations with compatible liquid mastic.
- E. Install termination bar to top of flexible sheet membrane with masonry anchors at maximum 12 inches on center and encapsulate top edge with compatible liquid mastic.
- F. At masonry expansion joints, flashing system shall run continuously through without termination.

### 3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.



SECTION 07620  
SHEET METAL FLASHING AND TRIM

- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

- End of Section -

SECTION 07 9200  
JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Remove and replace joint sealant and back-up material where shown on the drawings and elsewhere as required to provide a positive barrier against passage of air and passage of moisture.
- B. Related Work Described Elsewhere
  - 1. Adhere strictly to the caulking and sealant specifications and to the detail drawings.

1.2 RELATED SECTIONS

- A. Section 02 4119 – Selective Demolition

1.3 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Products used in this work shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner's Representative.
- B. In acceptance or rejection of the work of this Section, the Owner's Representative will make no allowance for lack of skill on the part of the workmen.
- C. Mock-ups: Prepare sample for each type of sealant joint at each substrate to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Locate mock-ups on existing surfaces where directed by the Owner and Consultant.
    - a. Provide mockup of at least 2 lineal feet to include surface preparation, cleaning, sealant joint, and back-up materials.
    - b. Pre-Construction Field-Adhesion Testing: Before installing sealants, field test their adhesion to project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
    - c. Manufacturer's representative will review technical aspects, surface preparation, application, and workmanship.
  - 2. Approval of mock-ups does not constitute approval of deviations from the Contract Documents unless specifically approved by the Owner's Representative.
  - 3. Maintain field sample during construction for workmanship comparison.
  - 4. Subject to compliance with requirements, approved mock-ups may become part of the completed Work.

SECTION 07 9200  
JOINT SEALANTS

1.4 SUBMITTALS

- A. As provided in Section 01 3000.
- B. Product data and a color chart for each sealant will be delivered to the Owner's Representative. The Owner will select colors for each sealant from the manufacturer's standard colors.
- C. Submit manufacturer's technical data sheet for each product indicated including chemical analysis and recommendations for their application and use. Include test reports and certifications indicating that products comply with requirements.
- D. Pre-Construction: Field adhesion test reports.
- E. Field adhesion test reports.

1.5 PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be stored in a protected area between 40 - 80 degrees F.
- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- C. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.

1.6 JOB CONDITIONS

- A. Do not apply sealants when the surface temperature is below 40 degrees F. or above 125 degrees F. Do not apply materials when surface is damp or during cold, rainy, or frosty weather.

1.7 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.
- B. Provide sealant manufacturer's standard limited watertight warranty for period of ten (10) years from the date of completion of the Work.

SECTION 07 9200  
JOINT SEALANTS

PART 2 - PRODUCTS

2.1 SEALANTS

- A. General: Except as specifically otherwise directed by the Owner's Representative. Use only the type of sealants described in this Section.
- B. Wet Glazing and Window Perimeter Sealant: Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
  - 1. Spectrum 1 as manufactured by Tremco.
  - 2. DOWSIL 790/791 as manufactured by The Dow Chemical Company.
  - 3. Sikasil WS-290 as manufactured by Sika
  - 4. Or Owner's Representative approved equivalent.
- C. Building Control Joints: Polyurethane, S, NS, Class 50, NT; single-component, nonsag;
  - 1. Dymonic 100 as manufactured by Tremco.
  - 2. SikaFlex NP 2 as manufactured by Sika
  - 3. StoSeal STPE Sealant as manufactured by Sto
  - 4. Or Owner's Representative approved equivalent.

2.2 BACK-UP MATERIALS

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
  - 1. Provide sealant backing by same manufacturer as sealant or by a manufacturer that is approved by the sealant manufacturer.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints

SECTION 07 9200  
JOINT SEALANTS

PART THREE - EXECUTION

3.1 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove all existing sealant and backing materials from the horizontal and vertical joints in the limestone cladding, metal fascia panels, brick masonry expansion or control joints, and window, door and equipment perimeters.
- B. Remove all existing window wet glazing and frame joint sealants and backing material. Trim existing glazing gaskets flush with frame as detailed.
- C. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Clean joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- D. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- E. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.3 INSTALLATION OF BACK-UP MATERIAL

- A. Use only the back-up material recommended by the manufacturer of the sealant and approved by the Owner's Representative for the particular installation, compressing the back-up material 25% to 50% to secure a positive and secure fit. When using back-up of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

SECTION 07 9200  
JOINT SEALANTS

3.4 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply. Verify the joint type according to the details in the drawings and verify that the required proportion of width of joint to depth of joint has been secured.
- B. Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.
- C. Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surfaces would be objectionable.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.5 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
  - 1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 5 tests for each kind of sealant, joint profile, and joint substrate.
  - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.



SECTION 07 9200  
JOINT SEALANTS

3.6 Cleaning Up

- A. Remove masking tape immediately after joints have been tooled.
- B. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.
- C. Keep adjacent surfaces clean and free from sealant as the installation progresses. Use solvent or cleaning agent as recommended by the sealant manufacturer.

**END OF SECTION 07 9200**



**ENCLOSURE REPAIRS**

of

**ENGINEERING TECHNOLOGY  
WAYNE STATE UNIVERSITY**

**4855 4<sup>TH</sup> STREET  
DETROIT, MI 48201**

Prepared for

**WAYNE STATE UNIVERSITY  
DESIGN AND CONSTRUCTION SERVICES  
5454 CASS AVENUE  
DETROIT, MI 48202**

Prepared by  
**INTERTEK**

**45000 HELM STREET, SUITE 200  
PLYMOUTH, MICHIGAN 48170**

**WSU PROJECT #167-409636  
FEBRUARY 2025**

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SECTION 01 1000  
SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Project: Wayne State University
- B. Student Center
- a. 4855 4<sup>th</sup> Street
  - b. Detroit, MI 48202
- C. Owner (PHA): Wayne State University
- D. Design and Construction Services
- E. 5454 Cass Avenue
- F. Detroit, MI 48202
- G. Roof Designer: Intertek
- H. 45000 Helm Street, Suite 200
- I. Plymouth, MI 48170
- J. Section includes:
- 1. Project Information
  - 2. Work Covered by Contract Documents
  - 3. Work by Owner
  - 4. Owner-Furnished Products
  - 5. Access to Site
  - 6. Coordination with Occupants
  - 7. Work Restrictions
  - 8. Specification and Drawing Conventions
- K. Related Sections:
- 1. Division 01 Section 1500 Temporary Facilities and Controls
  - 2. Division 02 Section 4119 Selective Demolition
  - 3. Division 07 Section 7600 Sheet Metal Flashing and Trim
  - 4. Division 07 Section 7920 Joint Sealants
  - 5.

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1.3 PROJECT INFORMATION

Project Identification: The Engineering Technology Building is located at 4855 4<sup>th</sup> Street, Detroit, Michigan 48202. The enclosure repair project consists of removal and replacement of the existing EIFS cladding with a new EIFS cladding with drainage. Patching and repairs to both the concrete and brick structure will be required once the existing EIFS cladding is removed and a new membrane sheet is to be installed over all elevations. Additionally, the work consists of new wet glazing, replacing failed IGU units, removing and replacing building signage on the north and west elevations, partial removal of the bulkhead on the north elevation, and constructing a concrete barrier along the north elevation at grade. All dimensions provided are approximate and MUST be verified by contractor prior to bid submission. No change orders or allowances will be considered for additional quantities or material required to complete the project.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of the Project is defined by the Contract Documents and consists of the following. The Contractor shall:
1. Provide and maintain all enclosures, fencing of construction area, interior protection, exterior protection, and ground protection as necessary and as required by Division 01 Section 5000 Temporary Facilities and Controls.
  2. Trim **ALL** existing gaskets and provide wet glazing seals to **ALL** glazing frame joints at designated windows. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of wet glazing sealant, glass to frame joints, is 1,843 LF
    - b. The approximate lineal footage of wet glazing sealant, frame to frame joints, is 980 LF.
    - c. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  3. Remove all existing EIFS cladding from all elevations and replace with a new EIFS drainage system. Refer to drawing set for details.
    - a. The approximate square footage of EIFS cladding is 11,360 SF.
    - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  4. Partially remove existing bulkhead on the north elevation. Refer to drawing set for location.
    - a. The approximate square footage to be removed is 35 SF.
    - b. This work is considered Unit Price.
  5. Clean existing efflorescence from brick masonry and rout and seal cracks. Refer to Section 04 012 – Maintenance of Masonry.
    - a. This work is considered Unit Price.
  6. Rout and seal cracks in the concrete back-up wall. Refer to Section 04 012 – Maintenance of Masonry.
    - a. This work is considered Unit Price.
  7. Remove and dispose of localized spalled/damaged masonry units and replace with new brick units. Refer to Section 04 012 – Maintenance of Masonry.

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- a. This work is considered Unit Price.
- 8. Clean exposed rebar and patch concrete. Refer to Section 04 012 – Maintenance of Masonry.
  - a. This work is considered Unit Price.
- 9. Apply new membrane sheet to concrete and brick back-up wall. Refer to Section
  - a. The approximate square footage of membrane sheeting is 11,360 SF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
- 10. Remove and replace failed IGU units.
  - a. The approximate total of failed IGU units is two (2).
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
- 11. Remove and replace north and west elevation building signage with new, in like kind.
  - a. This work is considered Unit Price.
- 12. Remove existing concrete barrier and construct a new 2ft high concrete barrier wall, to match the existing, along the north elevation. Refer to drawing set.
  - a. The approximate lineal footage of concrete wall is 100 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
- 13. Provide and maintain protection of all materials stored on site.
- 14. Remove all construction fencing and clean the work area to the satisfaction of the owner.

1.5 ALTERNATE WORK

- A. None.

1.6 WORK BY OWNER

- A. Preceding Work: None.
- B. Concurrent Work: None.
- C. Subsequent Work: None.

1.7 OWNER-FURNISHED PRODUCTS

- A. Owner-Furnished Products: None.

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1.8 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to the areas identified in the Drawings. Refer to Drawing SP-1 for location of temporary facilities and staging area.
  - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials unless approved in writing by Owner.
    - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather-tight condition throughout construction period. Repair damage caused by construction operations.

1.9 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner and tenants will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
  - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
  - 2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.10 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated.
  - 1. Weekend Hours: As allowed by management with 72-hour notice
  - 2. Early Morning Hours: As allowed by management with 72-hour notice
  - 3. Hours for Utility Shutdowns: To be determined during Pre-Construction Conference, and as agreed to by Owner in writing

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SUMMARY

- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than five (5) business days in advance of proposed utility interruptions.
  - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  - 1. Notify Owner not less than three (3) business days in advance of proposed disruptive operations.
  - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Non-Smoking Building: Smoking is not permitted on the roof, within the building, or on Owner's property.
- F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.



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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 01 1000**

SECTION 01 3233  
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Periodic construction photographs.
- B. Related Requirements:
  - 1. Division 01 Section 3300 "Submittal Procedures" for submitting photographic documentation.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three (3) days of taking photographs.
  - 1. Digital Camera: Minimum sensor resolution of eight (8) megapixels.
  - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
  - 3. Identification: Provide the following information with each image description in file metadata tag:
    - a. Name of Project.
    - b. Name and contact information for photographer.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Date photograph was taken.
    - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
    - g. Unique sequential identifier keyed to accompanying key plan.

1.4 USAGE RIGHTS

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

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PHOTOGRAPHIC DOCUMENTATION

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

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

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Date and Time: Include date and time in file name for each image.
  - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Construction Manager.
- C. Periodic Construction Photographs: Take 12 photographs daily coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

**END OF SECTION 01 3233**

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Consultant's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require consultant's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Consultant's and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

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3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
  - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal category: Action; informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for consultants' final release or approval.
  - g. Scheduled date of fabrication.
  - h. Scheduled dates for purchasing.
  - i. Scheduled dates for installation.
  - j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. consultant's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Consultant's for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Consultant's reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on consultants' receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  1. Initial Review: Allow 5 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Consultant's will advise Contractor when a submittal being processed must be delayed for coordination.

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2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow 5 days for review of each resubmittal.
  4. Sequential Review: Where sequential review of submittals by consultant's consultants, Owner, or other parties is indicated, allow 10 days for initial review of each submittal.
  5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
1. Submit a minimum of two copies of each submittal, except as otherwise indicated.
    - a. Owner/Consultant's will retain one copy; remainder will be returned. Mark up and retain the returned copies for inclusion in the Operation and Maintenance Manuals.
    - b. At least one set of material samples shall be submitted for color selection.
  2. The Contracting Officer, or their designated representative, will not accept submittals received from sources other than Contractor.
  3. Identify deviations from the Contract Documents on submittals.
  4. Indicate name of firm or entity that prepared each submittal on label or title block.
  5. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Consultant's.
  6. Include the following information for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name of Consultant's.
    - d. Name of Contractor.
    - e. Name of subcontractor.
    - f. Name of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.
      - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
- i. Number and title of appropriate Specification Section.
  - j. Drawing number and detail references, as appropriate.
  - k. Location(s) where product is to be installed, as appropriate.
  - l. Other necessary identification.

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7. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections, deviations, and field dimensions. Mark with approval stamp before submitting to the Contracting Officer, or their designated representative.
  8. The Contracting Officer, or their designated representative, will review each action submittal, make marks to indicate corrections or modifications required, stamp and mark as appropriate to indicate action taken, and return copies less those retained. Compliance with specified requirements remains Contractor's responsibility.
  9. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Consultant's observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
    - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Consultant's.
  10. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Consultant's will return without review submittals received from sources other than Contractor.
    - a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
      - 1) Project name.
      - 2) Date.
      - 3) Destination To:
      - 4) Source From:
      - 5) Name and address of Consultant's.
      - 6) Name of Contractor.
      - 7) Name of firm or entity that prepared submittal.
      - 8) Names of subcontractor, manufacturer, and supplier.
      - 9) Category and type of submittal.
      - 10) Submittal purpose and description.
      - 11) Specification Section number and title.
      - 12) Specification paragraph number or drawing designation and generic name for each of multiple items.
      - 13) Drawing number and detail references, as appropriate.
      - 14) Indication of full or partial submittal.
      - 15) Transmittal number numbered consecutively.
      - 16) Submittal and transmittal distribution record.
      - 17) Remarks.
      - 18) Signature of transmitter.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

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1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Consultant's.
  4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Consultant's.
    - d. Name of Contractor.
    - e. Name of firm or entity that prepared submittal.
    - f. Names of subcontractor, manufacturer, and supplier.
    - g. Category and type of submittal.
    - h. Submittal purpose and description.
    - i. Specification Section number and title.
    - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - k. Drawing number and detail references, as appropriate.
    - l. Location(s) where product is to be installed, as appropriate.
    - m. Related physical samples submitted directly.
    - n. Indication of full or partial submittal.
    - o. Transmittal number numbered consecutively.
    - p. Submittal and transmittal distribution record.
    - q. Other necessary identification.
    - r. Remarks.
- F. Options: Identify options requiring selection by Consultant's.
- G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Consultant's on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.



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3. Resubmit submittals until they are marked with approval notation from consultants' action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers and authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from consultant's action stamp.
- K. Proposed Substitutions
  1. Substitutions will not be considered.

1.6 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  1. Submit electronic submittals via email as PDF electronic files.
    - a. Consultant's will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  2. Action Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will return one copy.
  3. Informational Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will not return copies.
  4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show applicable products and options.
  3. Include the following information, as applicable:

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- a. Manufacturer's catalog cuts.
  - b. Manufacturer's product specifications and installation instructions.
  - c. Standard color charts.
  - d. Statement of compliance with specified referenced standards.
  - e. Testing by recognized testing agency.
  - f. Application of testing agency labels and seals.
  - g. Notation of coordination requirements.
  - h. Availability and delivery time information.
  - i. Print performance curves and operational range diagrams.
  - j. Wiring diagrams showing factory installed diagrams.
4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples.
  6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Submit at least two (2) opaque copies. The contracting officer or their designated representative will retain one copy and return the remainder.
  2. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimension and Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
    - h. Wiring diagrams showing field installed wiring.
    - i. Fabrication and installation drawings and rough in and setting diagram.
  3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
  4. Submit Shop Drawings in the following format:
    - a. PDF electronic file if 8-1/2 by 11inch format.

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- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a comparison of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Consultant's will return submittal with options selected.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit three sets of Samples. Consultant's will retain two sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

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- 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
  - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Number and name of room or space.
  4. Location within room or space.
  5. Submit product schedule in the following format:
    - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- H. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- I. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Consultant's and owners, and other information specified.
- J. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- L. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- M. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- N. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

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- O. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- P. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.
- Q. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- R. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- S. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- U. Information Submittals:
  - 1. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of Consultant's and owners, and other information specified.
  - 2. Product Certificates: Prepare written statements on manufacturer's letterhead, including signature of entity responsible for preparing certification, certifying that product complies with requirements in the Contract Documents.
- V. Delegated Design:
  - 1. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract

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Documents, provide products and systems complying with specific performance and design criteria indicated.

- a. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.
2. Delegated - Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, and where required by the authorities having jurisdiction, submit three copies of a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - a. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 2 - EXECUTION

### 2.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Consultant's.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 2.2 CONSULTANT'S ACTION

- A. Action Submittals: Consultant's will review each submittal, make marks to indicate corrections or revisions required, and return it. Consultant's will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Consultant's will review each submittal and will not return it or will return it if it does not comply with requirements. Consultant's will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Consultant's.

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- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Consultant's without action.

**END OF SECTION 01 3300**

SECTION 01 4000  
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

- A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Testing and inspecting services are specified in other Sections of these Specifications or are required by authorities having jurisdiction and shall be performed by independent testing agencies.
  - 2. Where quality - control services are indicated or required, the Contractor shall engage a qualified testing agency to perform these services.
  - 3. Contractor is responsible for scheduling times for tests, inspections, and obtaining samples and notifying testing agency.
  - 4. Retesting and Re-inspecting: Contractor shall pay for additional testing and inspecting required as a result of tests and inspections indicating noncompliance with requirements.
- B. Performance and Design Criteria: Where design services or certifications by a professional engineer are required by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
  - 2. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.



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QUALITY REQUIREMENTS

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.4 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

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QUALITY REQUIREMENTS

1.5 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

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1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. Testing agency shall submit a certified written report of each test and inspection to Contractor, Owner, Contracting Officer, or their designated representative, and to authorities having jurisdiction when they so direct. Reports of each inspection, test, or similar service shall include the following:
  1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data, test and inspection results, an interpretation of test results and comments or professional opinion on whether tested or inspected work complies with the Contract Document requirements.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  11. Name and signature of laboratory inspector.
  12. Recommendations on retesting and reinspecting.

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- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of the technical representative that authored report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

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- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated; as documented according to ASTM E 329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

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- f. When testing is complete, remove test specimens and assemblies; do not reuse products on Project.
- 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

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- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Testing agency shall cooperate with the Contracting Officer, or their designated representative, and Contractor in performing its duties and shall provide qualified personnel to perform inspections and tests.
  - 1. Promptly notify the Contracting Officer or its designated representative of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Does not release, revoke, alter, or increase the requirements of the Contract Document nor approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- G. Auxiliary Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits.
- I. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

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QUALITY REQUIREMENTS

- J. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
  - 1. Distribution: Distribute schedule to Owner and Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:
  - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
  - 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
  - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - 6. Retesting and reinspecting corrected work.

PART 2 - EXECUTION

2.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Architect.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

2.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.



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1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 01 4000**

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for work restrictions and limitations on utility interruptions.
  - 2. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Retain "Sewer, Water, and Electric Power Service" Paragraph below if multiple contracts are required. If needed, insert use-charge requirements for other utilities needed for construction operations.

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TEMPORARY FACILITIES AND CONTROLS

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
  - 1. Locations of dust-control partitions at each phase of work.
  - 2. HVAC system isolation schematic drawing.
  - 3. Location of proposed air-filtration system discharge.
  - 4. Waste handling procedures.
  - 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

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TEMPORARY FACILITIES AND CONTROLS

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 EQUIPMENT

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

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with regulations and health codes, and with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
  - 1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At

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Substantial Completion, restore these facilities to condition existing before initial use.

- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed, and that is self-contained with thermostatic control.
  - 1. Use of gasoline - burning space heaters, open - flame heaters, or salamander - type heating units is prohibited.
  - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
  - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
    - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
  - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
  - 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Field Offices: Provide field offices, storage and fabrication sheds, and other support facilities as necessary for construction operations.
- B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  2. Remove snow and ice as required to minimize accumulations.
- D. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Collect waste daily and, when containers are full, legally dispose of waste off - site. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- F. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
  1. Do not load elevators beyond their rated weight capacity.
  2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- G. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
  1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide temporary environmental protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Section 01 1000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
  - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Protect existing landscaping and restore any areas damaged during construction to original condition prior to start of project.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction and workers from inclement weather and for containment of heat.
- H. Security Enclosure and Lockup: **Install temporary enclosure (fencing) around the entire staging area.** Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions and/or other approved measures to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
  - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
  - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  - 3. Insulate partitions to control noise transmission to occupied areas.
  - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  - 5. Protect air-handling equipment.
  - 6. Provide walk-off mats at each entrance through temporary partition.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
  - 1. Prohibit smoking in on CMHA property.
  - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
- M. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

3.4 OPERATION TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.



SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Termination and Removal: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 7700 "Closeout Procedures."

**END OF SECTION 01 5000**

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 3300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, the Architect, with Owner's approval, will determine which products will be used.

SECTION 01 6000  
PRODUCT REQUIREMENTS

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- B. Submittal Time: Comply with requirements in Section 01 7700 "Closeout Procedures."

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "As selected", the Owner will make the selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
  6. Or Equal: For products specified by name and accompanied by the term "Or Equal," or "Or Approved Equal", or "Approved", comply with requirements in Section 01 3300, Submittal Procedures.
- B. Product Selection Procedures:
1. Where Specifications name a single product or manufacturer, provide the item indicated that complies with requirements.
  2. Where Specifications include a list of names of products or manufacturers, provide one of the items indicated that complies with requirements.
  3. Where Specifications include a list of names of products or manufacturers, accompanied by the term "available products" or "available manufacturers," provide one of the named items that complies with requirements. Comply with provisions for "comparable product requests" for consideration of an unnamed product.
  4. Where Specifications name a product as the "basis - of - design" and include a list of manufacturers, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by the other named manufacturers.
  5. Where Specifications name a single product as the "basis - of - design" and no other manufacturers are named, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by another manufacturer.
  6. Unless otherwise indicated, the Contracting Officer, or its designated representative, will select color, pattern, and texture of each product from manufacturer's full range of standard options.
  7. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for

SECTION 01 6000  
PRODUCT REQUIREMENTS

Contractor's convenience will not be considered unless otherwise indicated.

- b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements.

2. Manufacturers:

- a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
- b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements.

- 3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.

- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision, with Owner's approval, will be final on whether a proposed product matches.

- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. The Owner will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

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

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

SECTION 01 6000  
PRODUCT REQUIREMENTS

B. Product Substitution and Comparable Product Requests:

1. Submit three copies of each request for product substitution or comparable product.
2. Do not submit unapproved substitutions or products on Shop Drawings or other submittals.
3. Identify product to be replaced and show compliance with requirements. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified.
4. Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - a. For Substitution requests, provide a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.
5. The Contracting Officer, or its designated representative, will review the proposed substitution and notify the Contractor of its acceptance or rejection.

**END OF SECTION 01 6000**

SECTION 01 6000  
PRODUCT REQUIREMENTS

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## SECTION 01 7300 EXECUTION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Installation of the Work.
  - 3. Cutting and patching.
  - 4. Progress cleaning.
  - 5. Starting and adjusting.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for limits on use of Project site.
  - 2. Section 01 3300 "Submittal Procedures" for submitting surveys.
  - 3. Section 01 7700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

#### 1.3 DEFINITIONS

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

#### 1.4 INFORMATIONAL SUBMITTALS

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

#### 1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect



SECTION 01 7300  
EXECUTION

before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Fire-detection and -alarm systems.
    - i. Conveying systems.
    - j. Electrical wiring systems.
    - k. Operating systems of special construction.
  3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
    - a. Water, moisture, or vapor barriers.
    - b. Membranes and flashings.
    - c. Exterior curtain-wall construction.
    - d. Sprayed fire-resistive material.
    - e. Equipment supports.
    - f. Piping, ductwork, vessels, and equipment.
    - g. Noise- and vibration-control elements and systems.
  4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.
- D. The Contractor shall review means, methods, techniques, sequences and procedures indicated in the Contract Documents either directly or by reference to standards or

## SECTION 01 7300 EXECUTION

manufacturer's instructions; and advise the Contracting Officer, or their designated representative, (1) if the specified procedure deviates from good construction practice, (2) if following the procedure will affect warranties including the Contractor's general warranty, or (3) of objections the Contractor may have to the procedure and propose alternative procedures the Contractor will warrant.

- E. Examine substrates and conditions for compliance with manufacturer's written requirements including, but not limited to, surfaces that are sound, level, plumb, smooth, clean, and free of deleterious substances; substrates within installation tolerances; and application conditions within environmental limits. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to property survey and existing benchmarks.
- G. Do not scale the Drawings. Follow indicated dimensions. In case of discrepancy in the figures, bring the matter to the attention of the Contracting Officer, or their designated representative, for interpretation before proceeding with the Work. Failure to follow this procedure shall be at the Contractor's own risk, and the Contracting Officer, or their designated representative, interpretation shall be final.
- H. Take field measurements as required to fit the Work properly. Where fabricated products are to be fitted to other construction, verify dimensions by field measurement before fabrication and, when possible, allow for fitting and trimming during installation.
- I. Unless specifically identified, the terms "repair, replace, repair or replace" shall mean repair in a workmanlike manner, and "install or furnish and install", shall be understood to mean "Furnish all material required and Install".
- J. Installation General: Comply with manufacturer's written instructions for installation. Anchor each product securely in place, accurately located and aligned with other portions of the Work. Clean exposed surfaces and protect from damage.
  - 1. All work shall be executed only by artisans and mechanics qualified through experience in their respective trades.
- K. Maintenance: The following site maintenance shall be performed for the entire duration of the construction/renovation process.
  - 1. Clean Project site and work areas daily, including common areas.
  - 2. The cutting of grass and proper disposal of clippings, to be performed on a regular weekly basis and/or as dictated by need.
  - 3. The removal of snow from public access walkways and adjacent site walkways.
- L. Complete the cleaning operations before requesting inspection for certification of Substantial Completion:

SECTION 01 7300  
EXECUTION

PART 2 - PRODUCTS

2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

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

## SECTION 01 7300 EXECUTION

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

SECTION 01 7300  
EXECUTION

4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
  - B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
  - C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
  - D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
  - E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
  - F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
  - G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
  - H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
    1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
    2. Allow for building movement, including thermal expansion and contraction.
    3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
  - I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
  - J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- 3.5 CUTTING AND PATCHING
- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

SECTION 01 7300  
EXECUTION

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Do not cut structural members or operational elements without prior written approval of the Contracting Officer, or their designated representative.
- F. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
  - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
2. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
- H. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
- I. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- J. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

SECTION 01 7300  
EXECUTION

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Proceed with patching after construction operations requiring cutting are complete.
- K. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- L. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

SECTION 01 7300  
EXECUTION

3.6      PROGRESS CLEANING

- A.    General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1.    Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2.    Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80° F (27° C).
  - 3.    Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a.    Use containers intended for holding waste materials of type to be stored.
  - 4.    Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B.    Site: Maintain Project site free of waste materials and debris.
- C.    Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1.    Remove liquid spills promptly.
  - 2.    Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D.    Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E.    Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F.    Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G.    Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H.    During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I.    Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.



SECTION 01 7300  
EXECUTION

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

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION 01 7300**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Disposing of nonhazardous demolition and construction waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within seven (7) days of date established for the Notice to Proceed.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
1. Review and discuss waste management plan including responsibilities of waste management coordinator.
  2. Review requirements for documenting quantities of each type of waste and its disposition.
  3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, locations for waste to be held until picked up for disposal and how often waste is to be picked up.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
1. Comply with operation, termination, and removal requirements in Section 01 5000 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
1. Distribute waste management plan to everyone concerned within three (3) days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

2. Comply with Section 01 5000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

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

**END OF SECTION 017419**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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SECTION 01 7700  
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for progress cleaning of Project site.
  - 2. Section 01 7839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

SECTION 01 7700  
CLOSEOUT PROCEDURES

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, maintenance service agreements, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Submit Record Drawings, operation and maintenance manuals, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items.
  - 7. Make final changeover of permanent locks and deliver keys to Owner.
  - 8. Complete startup testing of systems.
  - 9. Remove temporary facilities and controls.
  - 10. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  - 11. Complete final cleaning requirements, including touchup painting. a. The Project shall be turned over in "move - in" condition.
  - 12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- D. Record Drawings: Maintain a set of prints of the Contract Drawings as Record Drawings. Mark to show actual installation where installation varies from that shown originally.
  1. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- E. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
- F. Operation and Maintenance Data: Submit three copies of manual. Organize data into three - ring binders with Project identification on front and spine of each binder, and envelopes for folded drawings. Include the following in tabbed sections:
  1. Table of Contents.
  2. General Contractor name, phone number and contact person.
  3. Subcontractor names, phone numbers, and contact persons.
  4. Equipment and fabricated material supplier/fabricators names, phone numbers, and contact persons.
  5. Copies of approved Shop Drawings.
  6. Manufacturer's operation and maintenance documentation.
  7. Maintenance and service schedules.
  8. Maintenance service contracts.
  9. Emergency instructions.
  10. Spare parts list.
  11. Key biting lists (if applicable).
  12. Wiring diagrams.
  13. Copies of warranties.
    - a. 1 - Year (from date of final approval) Contractor's Warranty Certification.
    - b. All Manufacturer's Warranty Certifications (for all material and equipment warranted/guaranteed beyond 1 year of the date of final approval).
  14. Other information on installed materials or equipment that will be required to maintain or sustain the Project.
  15. Advise Owner of pending insurance changeover requirements.
  16. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  17. Complete startup and testing of systems and equipment.
  18. Perform preventive maintenance on equipment used prior to Substantial Completion.



SECTION 01 7700  
CLOSEOUT PROCEDURES

19. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 7900 "Demonstration and Training."
  20. Advise Owner of changeover in heat and other utilities.
  21. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  22. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  23. Complete final cleaning requirements, including touchup painting.
  24. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- G. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- C. The Contracting Officer, or their designated representative, will prepare the Certificate of Substantial Completion after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.
- D. When items must be completed or corrected, request inspection for Final Completion/Approval, once the following are complete:

SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Submit a signed copy of Substantial Completion inspection list stating that each item has been completed or otherwise resolved for acceptance.
2. Submit all final waivers, final Certificate for Payment, wage reports, warranties, consent of Surety, and other outstanding items.
3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

a. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Include a detailed review of the following:

- 1) Basis of system design and operational requirements, review of documentation, emergency procedures, operations, adjustments, troubleshooting, maintenance, and repairs.

E. The Contracting Officer, or their designated representative, will approve the Contractor's final Certificate for Payment after inspection and receipt of required items and training or will advise Contractor of items that must be completed or corrected before certificate will be issued.

1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
  - a. Project name.
  - b. Date.
  - c. Name of Architect.
  - d. Name of Contractor.
  - e. Page number.
4. Submit list of incomplete items in the following format:
  - a. PDF electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
  - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
  - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - e. Remove snow and ice to provide safe access to building.
  - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - h. Sweep concrete floors broom clean in unoccupied spaces.
  - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
  - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - k. Remove labels that are not permanent.
  - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
  - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

SECTION 01 7700  
CLOSEOUT PROCEDURES

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to original condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION 01 7700**

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Miscellaneous record submittals.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for final property survey.
  - 2. Section 01 7700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one (1) set of marked-up record prints.
- B. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one (1) paper copy of each submittal.
- C. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

2. Identification: As follows:

- a. Project name.
- b. Date.
- c. Designation "PROJECT RECORD DRAWINGS."
- d. Name of Architect.
- e. Name of Contractor.

2.2 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as paper copy.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for reference during normal working hours.

**END OF SECTION 01 7839**



SECTION 01 7839  
PROJECT RECORD DOCUMENTS

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SECTION 02 4119  
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
- 2. Demolition and removal of selected site elements.
- 3. Cutting and alterations.
- 4. Protecting of adjacent surfaces.

B. Related Requirements:

- 1. Section 01 1000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
- 2. Section 01 7300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items

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SELECTIVE DEMOLITION

of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

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

1.5 PREINSTALLATION MEETINGS

A. Pre-demolition Conference: Conduct conference at Project site

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.
6. Review temporary enclosures to prevent dust and debris from entering other occupied spaces of the building.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician.

B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

E. Pre-demolition Photographs or Video: Written documentation, with associated photographs, of existing conditions of areas / item that are not scheduled to be repaired, adjoining construction, landscaping in the area of work, etc., including finish surfaces, which might be misconstrued as damage caused by the demolition

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operations. Do not proceed to the work until the report is submitted and approved by the Owner.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  - 1. Before selective demolition, Owner will remove the following items:
    - a. None.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

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SELECTIVE DEMOLITION

- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Consultant.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
  - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
  - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Comply with requirements for existing services/systems interruptions specified in Section 01 1000 "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. Arrange to shut off indicated utilities with utility companies.

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SELECTIVE DEMOLITION

3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
  - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

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SELECTIVE DEMOLITION

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 PROTECTION OF SURFACES

- A. When weather threatens, cease work under this Section and return building to a water-tight condition. Contractor must have sufficient materials on site to provide a temporary waterproof system in the event of unexpected rain/snow.
- B. Contractor shall not remove any more materials than is intended to have replaced water-tight that same day. Contractor shall maintain on site temporary tarps and/or rolls of membrane that can be used in emergencies to provide a method of temporary waterproofing in case of unexpected threatening weather.
- C. Contractor shall restore to original condition any damages caused during work performed in this Section.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 7419 "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
  1. Clean salvaged items.

SECTION 02 4119  
SELECTIVE DEMOLITION

2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Consultant, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- B. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.



SECTION 02 4119  
SELECTIVE DEMOLITION

3.8 CLEANING

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

3.9 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Construction to Be Removed: Designated portions of concrete topping slab, insulation and waterproofing, plaster from designated interior walls, and resilient floor trim and acoustical fabric from designated interior walls.
- B. Existing Items to Be Removed and Salvaged: None.
- C. Existing Items to Be Removed and Reinstalled: Suspended ceiling grid and ceiling tiles, projector screens and related equipment, electrical conduit and junction boxes, and networking equipment and conduit.

**END OF SECTION 02 4119**

SECTION 02 8000  
LANDSCAPE REPAIR

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Removal of damaged turf and plantings and replacement of materials damaged by the Contractor during the performance of Work is included in this Section.
- B. Repair of damaged concrete, damaged by the contractor during the performance of the Work.
- C. Repair of damaged hot mix asphalt paving, damaged by the contractor during the performance of the Work. **[NOTE: Contractor is expected to protect the concrete and asphalt paving from damage from construction traffic and materials.]**

1.2 QUALITY ASSURANCE

- A. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods for their installation, and who shall direct all work performed under this Section.
- B. Standards:
  - 1. All plants and planting material shall meet or exceed the specifications of federal, state, and county laws requiring inspection for plant disease and insect control.
  - 2. Quality and size shall conform to the current edition of *Horticultural Standards* for number one grade nursery stock as adopted by the American Association of Nurserymen.
  - 3. State of Michigan, Department of Transportation (MDOT) Standards, latest edition for Asphalt Repair Work.
  - 4. American concrete Institute (ACI) Standards for Concrete Work

1.3 SUBMITTALS

- A. General: Comply with the provisions of Section 01 3300.

1.4 PRODUCT HANDLING

- A. Delivery and Storage:
  - 1. Deliver all items to the job site in their original containers with all labels intact and legible.
  - 2. Use all means necessary to protect plant materials before, during, and after installation and to protect the work and materials of all other trades.

SECTION 02 8000  
LANDSCAPE REPAIR

- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's representative and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Protect structures, utilities, roads, trees and vegetation from damages caused by landscaping operations.
- B. Topsoil required to complete the work of planting shall be natural, friable topsoil, characteristic of representative soils in the vicinity that produce heavy growths of crops, grass or other vegetation. It shall not be extremely acidic nor alkaline nor contain toxic substances, harmful to plant growth. All topsoil used for this project shall be without admixtures of subsoil; free from clay lumps, stones, roots, debris and other objects over one inch in diameter.

2.2 FERTILIZER

- A. Fertilizer shall meet the applicable sections of the State Highway Specifications.
- B. Fertilizer shall be uniform in composition, free flowing and suitable for application with approved equipment.

2.3 SOD

- A. Product Delivery and Handling:
  - 1. Sod shall be placed within 48 hours of cutting and shall be protected and maintained during transit or storage on site as necessary to ensure vigorous growth after placement.
  - 2. Sod remaining on the site unplaced after 48 hours will be rejected. All yellowing or otherwise discolored sod will be rejected.
  - 3. The Contractor shall inform the Owner's representative 24 hours in advance of any delivery of sod.
- B. Description
  - 1. Sod shall be well established and shall contain all the dense root system of the grasses and shall exhibit vigorous healthy root growth free of noxious weeds, objectionable grasses, grubs, diseases or injurious insects.
  - 2. Sod shall meet the applicable sections of the State Highway Specifications unless specifically called for otherwise by the Owner's Representative.

SECTION 02 8000  
LANDSCAPE REPAIR

2.4 CONCRETE

- A. Concrete shall be commercially produced material and shall be air entrained, with a minimum compressive strength of 3500 psi at 28 days.
- B. Accessories such as expansion joint materials and tie bars shall be installed in the repaired concrete to match the materials damaged during the work.
- C. All products shall meet current ACI and MDOT standards for new construction.
- D. Concrete curing compound shall be white pigmented, free of paraffin or petroleum, Type 2 curing compound conforming to AASHTO M148 "Standard Specification for Liquid Membrane – Forming Compounds".

2.5 HOT MIX ASPHALT

- A. Hot mix asphalt shall be commercially produced material and shall be an 1100 or 1300 mix design for both the bottom (leveling course) and the top (wearing course) materials.
- B. Tack coat shall be SS-1h material.

2.6 COLD MIX ASPHALT

- A. Cold mix asphalt materials for contained holes shall be POUR-PATCH as manufactured by Revere Products (800) 343-7318.
- B. Cold mix asphalt materials for depressions and chipped out areas shall be EPOXI-TAR PATCH as manufactured by Revere Products (800) 343-7318.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Ground preparation shall not be started until all stones, debris, and similar material larger than "1" in diameter have been removed, depressions and ruts filled and the entire area to be seeded and/or sodded has been accepted by the Owner's Representative.

3.2 PROTECTION OF PERSON AND PROPERTY

- A. Protection of Existing Plant Materials
  - 1. Existing trees, shrubs, and plant materials to remain shall be protected by acceptable means.
  - 2. Damage to above plant material shall be repaired by qualified nurserymen or replaced with approved equal material.

SECTION 02 8000  
LANDSCAPE REPAIR

3.3 SODDING

- A. General lawn repair shall be performed by personnel familiar with the accepted procedures of planting and under the supervision of a qualified planting foreman.
- B. Preparation of Sod:
  - 1. Immediately prior, but not in excess of 24 hours before sod is to be placed, the soil surface shall be worked until it is relatively free from debris, washes, gullies, clods and stones and is in satisfactory condition.
  - 2. The surface shall be worked to depth of not less than 3" with a disc, tiller, or other equipment approved by the Owner's representative.
  - 3. Prepared surfaces that become crusted shall be reworked to an acceptable condition for sodding.
- C. Application of Fertilizer
  - 1. Commercial fertilizer shall be applied in accordance with the State Highway Specifications.
- D. Application of Sod
  - 1. Laying: Fit sod pieces tightly together so that no joint is visible, alternate courses staggered, and tap firmly to eliminate all air pockets, provide a true and even surface and ensure knitting without displacement of sod or deformation of the surface of sodded areas. Edges shall be buried flush with adjacent soil. Following compaction, screened topsoil shall be used to fill all cracks between sod pieces. Excess soil shall be worked into grass.
  - 2. Watering: Within five hours after the sod has been placed, it shall be saturated to a depth of 2" by watering with a fine spray.
  - 3. Maintenance: Sod shall be watered each day such that it shall be saturated to a depth of ½" by watering with a fine spray until project is accepted by the Owner, but not for a period of more than 21 days. If after 21 days the sod is determined to not be acceptable to the Owner it shall be removed and replaced.

3.4 CONCRETE REPAIR

- A. Damaged concrete shall be saw cut a distance of at least 1 foot beyond the damaged areas. The saw cut shall be at least 1/3<sup>rd</sup> the depth of the material being removed.
- B. The exposed subgrade materials shall be leveled and compacted prior to the application of the new concrete. Subgrade materials shall also be moistened to prevent quick loss of moisture soon after application.

SECTION 02 8000  
LANDSCAPE REPAIR

- C. Forms shall be provided to maintain a clean and vertical face for the installation of new materials, as needed.
  - D. New joints shall be laid out in areas of replaced materials. Spacing of joints shall not exceed 15 times the depth of the concrete.
  - E. Expansion joint material shall be installed at all locations where the repaired concrete meets a structure, curb, sidewalk, forms an intersection or at 50-ft. intervals in a continuous slab. Expansion joint materials shall cover the entire gap of the joint. The top of the expansion joint materials must be slightly below concrete grade. Anchor expansion joint material to prevent displacing during concrete placing and finishing.
  - F. Materials shall be delivered and installed in accordance with the American Concrete Institute (ACI) Standards.
  - G. Concrete curing compound shall be applied within 1 hour or final finishing or before the concrete has dried.
  - H. Apply pigmented, membrane forming, curing compound in two coats at right angles to each other. Apply compound by spray only. Rate of application shall be 200 square feet per gallon for each coat.
  - I. Any areas covered with compound that is disturbed during curing shall be re-sprayed immediately.
  - J. Contractors shall provide protection from rapid curing and from physical damage for a period of not less than 3 days following the application of the new concrete.
  - K. Replacement of any existing pavement marking within the repaired area will be included as part of any repair.
- 3.4 HOT ASPHALT REPAIRS - To be performed in all areas where asphalt damage occurs. (Cold patch repairs shall be installed as a temporary measure only until hot asphalt repairs can be scheduled and performed.)
- A. Damaged bituminous concrete shall be saw cut a distance of at least 1 foot beyond the limits of damage. The saw cut shall be a minimum of 2" in depth, but not less than  $\frac{3}{4}$  of the depth of the existing materials.
  - B. The old pavement shall be carefully removed for its full depth, but not less than 4 inches.
  - C. The exposed substrate material shall be leveled and compacted prior to the application of the new hot mix asphalt. Subgrade materials that are too soft (due to moisture) shall be allowed to dry or removed and replaced with dryer materials.
  - D. The exposed edges of the surrounding asphalt shall be brush coated with tack coat prior to the application of the new hot mix asphalt.

SECTION 02 8000  
LANDSCAPE REPAIR

- E. The hot mix asphalt shall be delivered and installed in accordance with MDOT standards. The placement of asphalt shall be as follows:
    - 1. The top course of thickness shall be not less than 1.5" compacted thickness, nor more than 2.5" compacted thickness.
    - 2. The bottom course thickness shall not be less than 2.0" thickness, and shall not be installed in any thickness greater than 3.0" compacted thickness for any one layer.
    - 3. The total thickness of the pavement shall meet or exceed the surrounding materials, but shall not be less than 4.0" total compacted thickness.
    - 4. If dirt is allowed to lie on any one layer, the layer must be swept and a tack coat applied prior to the application of a subsequent layer.
  - F. Contractor shall provide protection for the new hot mix asphalt for a minimum of 4 hours following application.
  - G. Contractor is responsible for the proper drainage of the patched asphalt. Any water in excess of 1/8" in depth following 30 minutes after a rain will be considered as unacceptable.
  - H. Replacement of any stripping or other pavement marking shall be included as part of the repair work.
- 3.5 Clean Up
- A. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.

**END OF SECTION 02 8000**

PART ONE – GENERAL

1.01 DESCRIPTION

A. Section includes maintenance of unit masonry and cleaning as follows:

1. Repairing unit masonry, including replacing units.
2. Cutting and repointing joints.
3. Stone patching
4. Saw-cut existing masonry expansion joints to widen for new sealants.
5. Saw-cut new expansion joints in masonry wall system.
6. Restoration cleaning of wall surfaces.
7. Painting of designated steel components

1.02 RELATED SECTIONS

- A. Section 02220 – Selective Demolition
- B. Section 07920 – Joint Sealants

1.03 DEFINITIONS

- A. Very Low-Pressure Spray: Under 100 psi (690 kPa).
- B. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- C. Medium-Pressure Spray: 400 to 800 psi (2750 to 5510 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- D. High-Pressure Spray: 800 to 1200 psi (5510 to 8250 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- E. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.
- F. Significant cracking: extent of cracking observed in sandstone which would not allow proper installation of water proofing/sealant materials.

1.04 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced, masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.
- B. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that restoration and cleaning work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm.
- C. Restoration Worker Qualifications: Persons who are experienced in restoration work of types they will be performing. When masonry units are being patched, assign at least



one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products.

- D. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with factory-trained representatives who are available for consultation and Project-site inspection and assistance at no additional cost.
- E. Source Limitations: Obtain each type of material for masonry restoration (cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- F. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage due to worker fatigue.
- G. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials and Project site.
  - 1. Include methods for keeping pointing mortar damp during curing period.
  - 2. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- H. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used, protection of surrounding materials, and control of runoff during operations.
  - 1. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- I. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from 20 feet (6 m) away by Owner or Owners Representative.
- J. Field Samples: Prepare test areas of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
  - 1. Masonry Repair: Complete test sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each test area not smaller than 2 adjacent whole units or approximately 32 inches (1200 mm) in least dimension. Perform test sample areas in existing walls at areas as directed by Owners Representative unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

- a. Stone Patching:
  - 1) Provide at two (2) areas, minimum 1 ft x 1ft, to determine the required patching material color and texture.
2. Repointing: Rake out joints in designated area, approximately 36 inches (900 mm) high by 48 inches (1200 mm) wide and repoint; cleaned and finished.
  - a. Install mortar sample that contains a close color range, aggregate type, and finish that will produce a mortar matching the cleaned masonry when cured and dry.
  - b. Install up to three (3) samples with varying shades of color, aggregate, and finish.
  - c. Repeat process, up to 3 times, until acceptable.
3. Cleaning: Clean two (2) areas approximately 25 sq. ft. (2.3 sq. m) for each type of masonry and surface condition.
  - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not use cleaners and methods known to have deleterious effect without providing all appropriate protections.
  - b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.
  - c. Repeat, using same of different leaning methods up to 3 times, until acceptable.
4. Approval of test areas does not constitute approval of deviations from the Contract Documents contained in test areas unless Owners Representative specifically approves such deviations in writing.
5. Approved test areas may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.05 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Samples for Verification: For the following:
  1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.
- C. Hardware List: Submit a complete list of incidental materials to be provided under this Section.
- D. Repair Procedures: Submit written procedures for the remedial work including materials, methods, and equipment that will be used.
- E. As provided in Section 01300.

#### 1.06 DELIVERY, STORAGE, AND PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be

stored in a protected area between 40 - 80 degrees F.

- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- B. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- E. Store sand where grading and other required characteristics can be maintained and contamination avoided.

#### 1.06 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.
- B. Repair masonry units and repoint mortar joints only when air temperature is between 40 and 90 deg F (4 and 32 deg C) and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for masonry repair and mortar-joint pointing unless otherwise indicated:
  - 1. When air temperature is below 40 deg F (4 deg C), heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F (4 and 49 deg C).
  - 2. When mean daily air temperature is below 40 deg F (4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 7 days after repair and pointing.
- D. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F (32 deg C) and above unless otherwise indicated.
- E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.
- F. Clean masonry surfaces only when air temperature is 40 deg F (4 deg C) and above and is predicted to remain so for at least 7 days after completion of cleaning.

#### 1.07 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the

materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.

## PART TWO – PRODUCTS

### 2.01 MORTAR

- A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.
  - a. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Mortar Sand: ASTM C 144 unless otherwise indicated.
  - 1. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color with no more than 50 parts per million chloride ions and free of organic contaminants.
  - 2. For pointing mortar, provide sand with rounded edges.
  - 3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
  - 4. For joints narrower than 1/4 inch, use aggregate graded with 100 percent passing the No. 8 sieve and 95 percent passing the No. 16 sieve.
- D. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars. Pigments shall conform to ASTM C 270 and C 979. Integral coloring material shall consist of inert, non-fading, finely ground, alkali-fast mineral oxides, made specifically for cement/lime mortars. Limit coloring additive so as to no exceed 10% of the weight of Portland cement. Do not use carbon black as a coloring additive.
- E. Water: Potable.
- F. Admixtures
  - 1. Admixtures such as air-entraining agents, accelerators, retardants, water repellent agents, antifreeze compounds, and other admixtures shall not be added to mortar unless specified.
  - 2. Do not use admixtures containing more than 0.2% chloride ions.

### 2.02 STONE PATCHING AND REPAIR MATERIALS

#### A. Limestone Units

- 1. Fast-drying, non-shrink, pre-mixed patching material designed for repairing vertical and horizontal masonry surfaces. Proprietary mortar compound must be colored to match

and blend with original stonework, and compressive strength shall be balanced to match original stones.

- a. Jahn M70 Stone Patching Mortar, Cathedral Stone Products, Inc., Jessup, MD.
- b. MIMIC by Charger Corporation, Hamden, CT
- c. or Owner's Representative approved equivalent.

## 2.03 MORTAR MIXES

- A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C 5 and manufacturer's written instructions.
- B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
  1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Owners Representatives approval.
  1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.
- D. Do not use admixtures in mortar unless otherwise indicated.
- E. Mortar Proportions: Mix mortar materials in the following proportions:
  1. Pointing Mortar for Brick: Proportions shall be consistent with those identified in preconstruction testing.
    - a. Add mortar pigments to produce mortar colors required.
  2. Rebuilding (Setting) Mortar: Same as pointing mortar.
    - a. Add mortar pigments to produce mortar colors required.

## 2.04 MASONRY UNITS

- A. Face Brick (Solid Masonry Units Made from Clay or Shale):
  1. ASTM C 216, Grade SW, Type FBS, unless otherwise indicated.
  2. Size, Texture and Color: To match adjacent, existing masonry units as approved by owner.
  3. Properties:
    - a. Initial Rate of Absorption: 6 to 15 grams of water per minute per 30 square

- inches.
- b. Efflorescence: Perform as described in ASTM C 67. Units shall have a rating of "Not Effloresced".
- 4. Use: Provide as needed for replacement of existing damaged units.
- 5. Provide special units for corners and other similar exposed applications.

## 2.05 CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).
- C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.
- D. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.
- E. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Light Duty Cleaner
    - b. Dominion Restoration Products, Inc; Bio-Cleanse
    - c. Dumond Chemicals, Inc.; Safe n' Easy Architectural Cleaner/Restorer.
    - d. Prosoco; Enviro Klean 2010 All Surface Cleaner.
- F. Mild Acidic Cleaner: Manufacturer's standard mildly acidic cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Bio Cleaner
    - b. Dominion Restoration Products, Inc; DR-60 Stone and Masonry Cleaner
    - c. Diedrich Technologies Inc.; Envirorestore 100.
    - d. Prosoco; Enviro Klean Biowash
- G. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Cathedral Stone Products; Heavy Duty Cleaner
- b. Diedrich Technologies Inc.; Diedrich 101 Masonry Restorer
- c. Dumond Chemicals, Inc.; Safe n' Easy Ultimate Stone and Masonry Cleaner.
- d. Prosoco; Enviro Klean Restoration Cleaner

## 2.04 PAINT MATERIALS

- A. Steel Primer Coat: Urethane-based, zinc rich primer
  - 1. Tneme-Zinc Series 90-97 by Tnemec Company
  - 2. Corothane I Galvapac 1K by Sherwin Williams
  - 3. or Owner's Representative approved substitute
- B. Steel Top Coat: Acrylic polyurethane top coat. Color to be selected by the Owner
  - 1. Endura-Shield Series 73 by Tnemec Company
  - 2. Fast Clad DTM Urethane by Sherwin Williams
  - 3. or Owner's Representative approved substitute

## 2.05 ACCESSORY MATERIALS

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
- B. Reinforcement and Anchorage: All screws, bolts, nuts, washers, rivets, ties, and pins shall be hot-dipped galvanized steel (ASTM A 153, Class B), or Type 304 stainless steel

## PART THREE – EXECUTION

### 3.01 GENERAL

- A. Examine each area of work and verify that existing conditions are acceptable for the specified installation procedures. Report, in writing, adverse conditions that could affect the performance of the Work within five calendar days. Absence of written notification will indicate the Contractor's acceptance of existing project conditions.
- B. Masonry workmanship shall comply with all applicable recommendations of the Brick Industry Association (BIA, formerly the Brick Institute of America), the Indiana Limestone Institute of America, and Masonry Structures ACI 530.1, except as modified below. Report any damage to new or existing flashings within the work area to the Owner's Representative, and provide for repairs by appropriately skilled tradesmen, at no cost to the Owner.
- C. Manufacturer's Recommendations: Comply with the manufacturer's written approved installation instructions and with any governing regulations and industry standards applicable to the work.

- D. Proceed when project conditions are acceptable and implement any cold / hot weather provisions specified herein.
- E. Conduct all masonry work in a neat and workmanlike manner, to prevent staining any surface with mortar or other spills. Avoid dropping mortar on completed masonry work or other elements of the building. If mortar drops or spills, spot-clean immediately using a sponge and clean water.
- F. Tolerances:
  - 1. External corners and other conspicuous lines and levels: Maximum deviation from plumb or level  $\pm 1/4$  inch in any 10 ft section with a maximum cumulative amount of  $3/8$  inch in any one direction beyond 10 ft.
  - 2. Variation from Level: Maximum  $1/2$  inch in 20 feet, or  $3/4$  inch in 40 feet or more.
  - 3. Mortar bed joint thickness:  $3/8$  inch or match existing adjacent construction. Maximum deviation  $\pm 1/16$  inch
  - 4. Mortar head joint thickness:  $3/8$  inch or match existing adjacent construction. Maximum deviation  $\pm 1/16$  inch
  - 5. Vertical alignment of the center line of corresponding head joints in alternate courses when using other than stacked bond. Maximum deviation  $\pm 1/4$  inch
  - 6. Vertical alignment of the center line of all head joints in total assemblage height when using other than stacked bond. Maximum deviation  $\pm 1$  inch

### 3.02 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
  - 1. Erect temporary protective covers over walkways and at points of pedestrian entrance and exit that must remain in service during course of restoration and cleaning work, as required.
- B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- C. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.



2. Keep wall wet below area being cleaned to prevent streaking from runoff.
  3. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
  4. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
  5. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
- D. Prevent mortar from staining face of surrounding masonry and other surfaces.
1. Cover sills, ledges, and projections to protect from mortar droppings.
  2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
  3. Immediately remove mortar in contact with exposed masonry and other surfaces.
  4. Clean mortar splatters from scaffolding at end of each day.
- D. Prevent mortar from staining face of surrounding masonry and other surfaces.

### 3.03 REPOINTING MASONRY

- A. General: Tuckpoint mortar joints containing static cracks, deterioration, holes or voids. New bedding and pointing mortar mix should not have a compressive strength that exceeds existing mortar or masonry materials.
- B. Rake out and repoint joints to the following extent:
1. Joints where mortar is missing or where they contain holes.
  2. Cracked joints where cracks can be penetrated at least 1/4 inch (6 mm) by a knife blade 0.027 inch (0.7 mm) thick.
  3. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
  4. Joints where they have been filled with substances other than mortar.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved test area:
1. Remove mortar from joints to depth of 2-1/2 times joint width, but not less than 1/2 inch (13 mm) or not less than that required to expose sound, unweathered mortar.
  2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
  3. Do not spall edges of masonry units or widen joints. Replace any masonry units which become damaged.
- D. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.
- E. Notify Owner's Representative of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other

deteriorated items.

F. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch (9 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.

G. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.

H. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.

I. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

J. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.04 MASONRY UNIT REPLACEMENT

A. Match existing construction tolerances, corners, and recess. Install masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line.

B. Provide shoring and support, as required, prior to removing existing masonry units.

C. Use full units without cutting whenever possible. Cut new masonry units as required to fit adjoining work neatly. Avoid the use of less than half size units at corners, jambs, and at other locations. Perform job site cutting of masonry units with proper masonry saw to provide straight, clean, unchipped edges. Prevent broken masonry unit corner or edges. Do not break masonry units with a hammer.

D. Mortar Bedding and Jointing

1. Provide new ties to replace damaged ties, in like-kind. All masonry reinforcement

- and anchors should be completely bedded in mortar. Direct masonry unit-to-anchor contact is not permitted.
2. Lay new units with completely filled bed and head joints. Butter ends with sufficient mortar to fill head joints and lay into place. Do not slush head joints. Tooth new units into existing masonry work, to match existing bonding patterns.
  3. Spaces between masonry units and backup materials are to remain free and clear of mortar.
  4. Repoint head joints and top joints where new work adjoins existing masonry work.
- E. Establish lines, levels, and coursing indicated. Protect from displacement.
- F. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- G. Placing and Bonding
1. Do not lay mortar bed more than 2 ft ahead of work.
  2. Do not furrow bed joints.
  3. Completely butter the ends and head of each unit with mortar and shove the unit into place so that mortar squeezes out the top of the head joint and bed joint. Do not slush head joints.
  4. At cavity wall sections, cut off and scoop out the mortar that extrudes from bed and head joints on outer and inner faces of the wythe.
  5. Do not disturb, tap, shove or push units once they are laid in their final position. Where adjustment must be made, remove mortar and replace.
  6. Tooth masonry at intersections and external corners.
  7. Strike exterior of mortar joints flush during laying. When mortar is thumb print hard on exposed surfaces, tool joints concave with a cylindrical pointing tool slightly larger than the masonry joint to compact the mortar thoroughly.
  8. Slightly bevel bed joint mortar away from the cavity space before placing the unit to minimize mortar protrusions into any cavity space intended to be free of mortar. Back purge or strike mortar extrusions in the cavity space.

### 3.05 STONE PATCHING

- A. Hairline cracks: For areas that are not spalled, but are cracked, ensure that the area around each crack is sound. If not, chip out unsound material and repair. If the crack is visible from the ground level, chip or cut out existing stone slightly wider than crack taking care to ensure all edges are square and at a 90-degree angle. Seal hairline cracks with epoxy injection prior to patching with repair mortar. If the crack is not directly visible from the ground level rout the hairline crack using hand tools and fill with sealant.
- B. Remove all loose and spalled materials, as well as contaminants or bond breaking substances including, but not limited to laitance, mildew, loose debris, existing coatings and oils.
- C. Report any rusted anchors and ties encountered during preparation work to the Owner's Representative prior to proceeding.
- D. Cut out unsound/deficient material by hand with chisel and mallet. Care must be taken to

ensure edges of all patches are square cut, maintaining 90-degree angles.

- E. All patches must be a minimum of 1/4" deep. The surface must be sound and free of ice and frost.
- F. For stone patches/repairs greater than two inches deep, or at embedded masonry anchors, dutchman repairs are acceptable.
- G. Repair mortar for stone
  - 1. Use the recommended mix design and product from the manufacturer for the particular type of stone work being repaired.
  - 2. Prior to application, lightly mist the surface with water. Next, apply a slurry coat with a brush or trowel, working material into the pores of the surface. With a trowel, apply repair mortar with firm pressure. Overbuild the patch by at least 1/4 inch and approximately to the desired shape. Finished with a hard rubber float or shaved to the final shape with the edge of a trowel, miter rod, or margin trowel.
  - 3. Match texture to existing using conventional plastering techniques. After completing patch, wipe down adjacent areas with a wet cloth or sponge to remove excess patching material.
  - 4. Curing Procedure: Lightly mist the patch with water to wet the entire surface of the finished patch approximately 30 minutes to 1 hour after completion on hot sunny days and approximately 2 hours on cool or cloudy days. Time will vary with temperature and humidity. Mist at least once a day, but as often as possible on the two days following the patch installation.
- H. Limestone Dutchman Repairs
  - 1. Saw cut a predetermine area of existing stone slightly larger than required to produce the smallest possible glue line for epoxy adhesion.
  - 2. Ensure that prepared surfaces are clean, dry and free of dust. Mix and apply epoxy adhesive in accordance with the manufacturer's instructions. Epoxy should be applied to cover all mating surfaces and provide a continuous weathertight seal.
  - 3. Where the dutchman is unsupported, as in overhangs and soffit stones, insert a stainless steel threaded rod or dowel between mating surfaces, prior to applying epoxy adhesive.
  - 4. Finish sand any uneven edges or excess epoxy bulk.

### 3.06 CLEANING, GENERAL

- A. Proceed with cleaning in an orderly manner; work from bottom to top or top to bottom in a manner as specified by product manufacturers requirements, of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.
- B. Perform cleaning to the extent necessary to remove existing mildew, efflorescence, dirt, plant fungi, etc. so that the wall appearance is uniform, and acceptable to the water repellent sealer manufacturer. Begin with the least caustic cleaning method. Adjust cleaning methods as required. In general:
  - 1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist

- chemical cleaner being used.
2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
    - a. Equip units with pressure gages.
  3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
  4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
  5. For high-pressure water-spray application, use fan-shaped spray tip that disperses water at an angle of at least 40 degrees.
  6. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F (60 and 71 deg C) at flow rates indicated.
  7. For steam application, use steam generator capable of delivering live steam at nozzle.
- C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- D. Water Application Methods:
1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
  2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- E. Steam Cleaning: Apply steam to masonry surfaces at the very low pressures indicated for each type of masonry material. Hold nozzle at least 6 inches (150 mm) from surface of masonry and apply steam in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- F. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush application. Do not spray apply at pressures exceeding 50 psi (345 kPa). Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.
- G. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- H. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

### 3.07 PRELIMINARY CLEANING

- A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing too dry as long as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.
- B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, tar and various other roof coatings.
  - 1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
  - 2. Remove paint and caulking with alkaline paint remover.
    - a. Comply with requirements in "Paint Removal" Article.
    - b. Repeat application up to two times if needed.

### 3.08 FINAL CLEANING

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

### 3.08 PAINTING

- A. Clean existing steel surfaces removing scaling and rust.
- B. Prepare existing deteriorated steel surface to receive coating in accordance with paint manufacturer's recommendations and with the The Society of Protective Coatings (SSPC) guidelines as follows:
  - 1. SP-2, "Hand Tool Cleaning"
  - 2. SP-3, "Power Tool Cleaning"
- C. Inspect the condition of the exposed steel sections and connections (anchors and welds). Where section loss is greater than 10 percent of the nominal thickness, report to the Owner's Representative for review and corrective procedure. Do not proceed with coating work without written authorization form the Owner's Representative.
  - 1. Primer: 3 mils (dry) / 5 mils (wet)

- 2. Top Coat: 2.5 mils (dry) / 4.5 mils (wet)
- D. Mix coating components following the manufacturer's written instructions.
- E. Maintain coating thickness during application within the manufacturer's published maximum and minimum thickness ranges.
- F. If additional coats are required to obtain the required coating thickness, apply additional coats after the initial coat is completely dry/cured.

3.09 FIELD QUALITY CONTROL

- A. Owners Representatives: Owner will assign Project representatives to help carry out responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Owner's Representative use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Notify Owner's Representative in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Owner's Representative have had reasonable opportunity to make observations of work areas at lift device or scaffold location.
- C. Contractor shall maintain or exceed levels of workmanship and material acceptability in regard to surface preparation, cleaning, and coating application as established by mock up/test samples.

- End of Section -

SECTION 07 9200  
JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Remove and replace joint sealant and back-up material where shown on the drawings and elsewhere as required to provide a positive barrier against passage of air and passage of moisture.
- B. Related Work Described Elsewhere
  - 1. Adhere strictly to the caulking and sealant specifications and to the detail drawings.

1.2 RELATED SECTIONS

- A. Section 02 4119 – Selective Demolition

1.3 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Products used in this work shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner's Representative.
- B. In acceptance or rejection of the work of this Section, the Owner's Representative will make no allowance for lack of skill on the part of the workmen.
- C. Mock-ups: Prepare sample for each type of sealant joint at each substrate to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Locate mock-ups on existing surfaces where directed by the Owner and Consultant.
    - a. Provide mockup of at least 2 lineal feet to include surface preparation, cleaning, sealant joint, and back-up materials.
    - b. Pre-Construction Field-Adhesion Testing: Before installing sealants, field test their adhesion to project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
    - c. Manufacturer's representative will review technical aspects, surface preparation, application, and workmanship.
  - 2. Approval of mock-ups does not constitute approval of deviations from the Contract Documents unless specifically approved by the Owner's Representative.
  - 3. Maintain field sample during construction for workmanship comparison.
  - 4. Subject to compliance with requirements, approved mock-ups may become part of the completed Work.



SECTION 07 9200  
JOINT SEALANTS

1.4 SUBMITTALS

- A. As provided in Section 01 3000.
- B. Product data and a color chart for each sealant will be delivered to the Owner's Representative. The Owner will select colors for each sealant from the manufacturer's standard colors.
- C. Submit manufacturer's technical data sheet for each product indicated including chemical analysis and recommendations for their application and use. Include test reports and certifications indicating that products comply with requirements.
- D. Pre-Construction: Field adhesion test reports.
- E. Field adhesion test reports.

1.5 PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be stored in a protected area between 40 - 80 degrees F.
- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- C. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.

1.6 JOB CONDITIONS

- A. Do not apply sealants when the surface temperature is below 40 degrees F. or above 125 degrees F. Do not apply materials when surface is damp or during cold, rainy, or frosty weather.

1.7 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.
- B. Provide sealant manufacturer's standard limited watertight warranty for period of ten (10) years from the date of completion of the Work.

SECTION 07 9200  
JOINT SEALANTS

PART 2 - PRODUCTS

2.1 SEALANTS

- A. General: Except as specifically otherwise directed by the Owner's Representative. Use only the type of sealants described in this Section.
- B. Wet Glazing, Building Joints, and Window Perimeter Sealant: Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
  - 1. Spectrum 1 as manufactured by Tremco.
  - 2. DOWSIL 790/791 as manufactured by The Dow Chemical Company.
  - 3. Sikasil WS-290 as manufactured by Sika
  - 4. Or Owner's Representative approved equivalent.

2.2 BACK-UP MATERIALS

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
  - 1. Provide sealant backing by same manufacturer as sealant or by a manufacturer that is approved by the sealant manufacturer.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints

PART THREE - EXECUTION

3.1 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

## SECTION 07 9200 JOINT SEALANTS

### 3.2 PREPARATION

- A. Remove all existing sealant and backing materials from the horizontal and vertical joints in the limestone cladding, metal fascia panels, brick masonry expansion or control joints, and window, door and equipment perimeters.
- B. Remove all existing window wet glazing and frame joint sealants and backing material. Trim existing glazing gaskets flush with frame as detailed.
- C. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Clean joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- D. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- E. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

### 3.3 INSTALLATION OF BACK-UP MATERIAL

- A. Use only the back-up material recommended by the manufacturer of the sealant and approved by the Owner's Representative for the particular installation, compressing the back-up material 25% to 50% to secure a positive and secure fit. When using back-up of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

### 3.4 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply. Verify the joint type according to the details in the drawings and verify that the required proportion of width of joint to depth of joint has been secured.

SECTION 07 9200  
JOINT SEALANTS

- B. Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.
- C. Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surfaces would be objectionable.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.5 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
  - 1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 5 tests for each kind of sealant, joint profile, and joint substrate.
  - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.6 Cleaning Up

- A. Remove masking tape immediately after joints have been tooled.
- B. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.

SECTION 07 9200  
JOINT SEALANTS

- C. Keep adjacent surfaces clean and free from sealant as the installation progresses.  
Use solvent or cleaning agent as recommended by the sealant manufacturer.

**END OF SECTION 07 9200**



## **PART 1 - GENERAL**

### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Provide new sheet metal work in connection with the exterior restoration.
  - 2. New masonry through wall flashing

### **1.2 RELATED SECTIONS**

- A. Section 04012 – Maintenance of Masonry
- B. Section 07920 – Joint Sealants

### **1.3 REFERENCES**

- A. Copper, Brass, and Bronze Handbook Sheet Copper Applications, published by the Copper development Associations, Inc., (CED), New York, NY.
- B. Factory Mutual Loss Prevention Data Sheet 1-49.
- C. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)

### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For sheet metal flashing and trim.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Distinguish between shop- and field-assembled work.
  - 3. Include identification of finish for each item.
  - 4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.
- C. Samples:
  - 1. For each exposed product and for each color and texture specified.

### **1.5 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.



## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

### 2.2 SHEET METAL MATERIALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Through Wall Flashing:
  - 1. Stainless-Steel Sheet: Minimum 22 gage, ASTM A 240/A 240M, Type 304, dead soft, fully annealed; 2D (dull, cold rolled), or 2B (bright, cold rolled are approved finishes).
- C. Metal Coping
  - 1. Metallic-Coated Steel Sheet: Minimum 24 gage, zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation; prepainted by coil-coating process to comply with ASTM A 755/A 755M.
  - 2. Surface: Manufacturer's standard clear acrylic coating on both sides.
  - 3. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 4. Color: As selected by Owners Representative from manufacturer's full range.
  - 5. Cleats: Minimum 22 gage continuous.
- D. Termination Bar: Aluminum, 1/8 inch by 1 inch (minimum), slotted holes 4 inches on center, top edge flat or with caulk dip depending on application.



## 2.3 UNDERLAYMENT MATERIALS

- A. Flexible Sheet Flashing for Through Wall Flashing: Self, adhering, reinforced, rubberized asphalt sheet membrane; minimum 40 mil thick;
  - 1. Perma-A-Barrier Wall Flashing by WR Grace or approved substitute.
  - 2. Primer: "Perma-A-Barrier Surface Conditioner" or as recommended by the sheet Manufacturer.
  - 3. Seam and lap Joints Membrane: Rubberized, asphalt based liquid membrane
    - a. Bituthene Liquid Membrane by WR Grace or approved substitute.

## 2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
  - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
    - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  - 2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
  - 3. Fasteners for Zinc-Coated (Galvanized): Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.
- C. Solder:
  - 1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
  - 2. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.





- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

## 2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  - 1. Obtain field measurements for accurate fit before shop fabrication.
  - 2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  - 3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
  - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
  - 2. Use lapped expansion joints only where indicated on Drawings.
- C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.



SECTION 07620  
SHEET METAL FLASHING AND TRIM

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  3. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
  4. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
  2. Use lapped expansion joints where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not solder metallic-coated steel or aluminum sheet.
  2. Do not use torches for soldering.
  3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
  4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
  5. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.
- H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.



### 3.2 THROUGH WALL FLASHING INSTALLATION

- A. Remove existing mortar and clean surfaces that are to receive flashings.
- B. Install prefabricated pan flashings with maximum 24 inch legs with soldered seams at transitions and corners. Incorporate soldered end dams at all flashing terminations. Otherwise, fabricate and install flashings with maximum available lengths.
- C. In field of walls, overlap pan flashing ends a minimum four (4) inches. Set overlapped ends in full bed of waterproofing liquid mastic compatible with flexible sheet membrane.
- D. Fully adhere flexible sheet membrane to horizontal leg of metal pans and to clean, sound inboard wall surfaces. Use primer on inboard wall surfaces as required for proper adhesion. Lap ends of sheet flashing a minimum six (6) inches. Seal all flashing ends and terminations with compatible liquid mastic.
- E. Install termination bar to top of flexible sheet membrane with masonry anchors at maximum 12 inches on center and encapsulate top edge with compatible liquid mastic.
- F. At masonry expansion joints, flashing system shall run continuously through without termination.

### 3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

- End of Section -



**ENCLOSURE REPAIRS**

of

**PAULINE KNAPP BUILDING  
WAYNE STATE UNIVERSITY**

**87 E FERRY STREET  
DETROIT, MI 48202**

Prepared for

**WAYNE STATE UNIVERSITY  
DESIGN AND CONSTRUCTION SERVICES  
5454 CASS AVENUE  
DETROIT, MI 48202**

Prepared by  
**INTERTEK**

**45000 HELM STREET, SUITE 200  
PLYMOUTH, MICHIGAN 48170**

**WSU PROJECT #509-404249  
FEBRUARY 2025**

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SECTION 01 1000  
SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Project: Wayne State University
- B. Student Center
  - a. 87 E Ferry Street
  - b. Detroit, MI 48202
- C. Owner (PHA): Wayne State University
- D. Design and Construction Services
- E. 5454 Cass Avenue
- F. Detroit, MI 48202
- G. Roof Designer: Intertek
- H. 45000 Helm Street, Suite 200
- I. Plymouth, MI 48170
- J. Section includes:
  - 1. Project Information
  - 2. Work Covered by Contract Documents
  - 3. Work by Owner
  - 4. Owner-Furnished Products
  - 5. Access to Site
  - 6. Coordination with Occupants
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- K. Related Sections:
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  - 3. Division 07 Section 7600 Sheet Metal Flashing and Trim
  - 4. Division 07 Section 1900 Water Repellents
  - 5. Division 07 Section 7920 Joint Sealants

SECTION 01 1000  
SUMMARY

1.3 PROJECT INFORMATION

- A. Project Identification: The Pauline Knapp Building is located at 87 E Ferry Street, Detroit, Michigan 48202. The enclosure repair project consists of removal and replacement of all joint sealants, perimeter sealants, new wet glazing, brick repairs and new elastomeric coating to provide a barrier system at the exterior brick walls, new through-wall flashing above the front entrance canopy, new shelf angles at porcelain enamel panels, new pre-cast concrete panels above and below windows, and concrete repairs. Roof repairs are also included where designed. All dimensions provided are approximate and MUST be verified by contractor prior to bid submission. No change orders or allowances will be considered for additional quantities or material required to complete the project.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of the Project is defined by the Contract Documents and consists of the following. The Contractor shall:
1. Provide and maintain all enclosures, fencing of construction area, interior protection, exterior protection, and ground protection as necessary and as required by Division 01 Section 5000 Temporary Facilities and Controls.
  2. Remove **ALL** existing joint sealant and back-up material from all window perimeters within the designed exterior walls with plaster wall cladding and provide new back-up material and silicone joint sealant. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of window perimeter sealant is 1,700 LF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  3. Remove **ALL** existing joint sealant and back-up material from building control joints within the exterior plaster wall cladding and provide new back-up material and urethane/paintable joint sealant. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of control perimeter sealant is 270 LF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  4. Apply new elastomeric coating to **ALL** exterior brick veneer (after crack repairs have been completed). Refer to Section 09 96 53 – Elastomeric Coatings.
    - a. The approximate square footage of plaster surface to be coated is 6,560 SF. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  5. Trim **ALL** existing gaskets and provide wet glazing seals to **ALL** glazing frame joints at designated windows. Refer to Section 07 92 00 – Joint Sealants.
    - a. The approximate lineal footage of wet glazing sealant is 4,700 LF
    - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
  6. Remove and replace existing thru-wall flashing with new above the front entrance canopy.
    - a. The approximate lineal footage of thru-wall flashing replacement is 30 LF.
    - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.

SECTION 01 1000  
SUMMARY

7. Cut and tuckpoint damaged and deteriorated mortar joints in the brick wall and stone wall. Locations are noted in the drawing set.
  - a. The approximate square footage of mortar joints is 503 SF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
8. Rout and seal cracks in the existing exterior brick veneer wall prior to application of new elastomeric coating. Refer to Section 04 0120 – Maintenance of Masonry. Location is identified in the drawing set.
  - a. The approximate lineal footage of crack repair is 6 LF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
9. Remove and replace existing spalled brick prior to application of new elastomeric coating. Refer to Section 04 0120 – Maintenance of Masonry. Locations of spalled brick are noted on the drawing set.
  - a. The approximate number of spalled bricks is 14.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
10. Reflash the perimeter of the roof parapet wall at Areas A and B, which involves a stripping repair utilizing either a similar roof cement and reinforcement mesh (with an aluminum coating finish) or a heavier ply sheet. Refer to drawing set for repair methods.
  - a. The approximate square footage of perimeter repair is 3,152 SF.
  - b. This work item is considered lump sum pricing and the Contractor shall field verify all quantities prior to submitting a bid.
11. Repair isolated areas of membrane tears on both roof areas A and B. Repairs include cleaning the area, applying roof cement and patch to the repair location and sealing the perimeter edges of the patch with sealant. Refer to drawing set for repair methods.
  - a. This work is considered Unit Price.
12. Where porcelain panels are bowing, the panels are to be removed, re-secured, and new sealant applied. Panels are to be stored in a secure location. New anchors may need to be engineered and fabricated. Contractor to provide means and methods for this repair.
  - a. The approximate lineal footage of affected porcelain panel is 422 LF.
  - b. Provide a time and expense rate for this work.
13. Repair concrete beams once identified damaged porcelain enamel panels are moved. The extent of damage to the concrete beams is unknown; however, work will likely include removing any loose or cracked concrete, cleaning and coating any exposed rebar with a rust primer, patching the designated areas, applying a liquid AVB coating.
  - a. This work is considered Unit Price.
14. Provide and maintain protection of all materials stored on site.
15. Remove all construction fencing and clean the work area to the satisfaction of the owner.

1.5 ALTERNATE WORK



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SUMMARY

- A. None.

1.6 WORK BY OWNER

- A. Preceding Work: None.
- B. Concurrent Work: None.
- C. Subsequent Work: None.

1.7 OWNER-FURNISHED PRODUCTS

- A. Owner-Furnished Products: None.

1.8 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to the areas identified in the Drawings. Refer to Drawing SP-1 for location of temporary facilities and staging area.
  - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials unless approved in writing by Owner.
    - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather-tight condition throughout construction period. Repair damage caused by construction operations.

1.9 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner and tenants will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
  - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or

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SUMMARY

used facilities without written permission from Owner and approval of authorities having jurisdiction.

2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.10 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated.
  1. Weekend Hours: As allowed by management with 72-hour notice
  2. Early Morning Hours: As allowed by management with 72-hour notice
  3. Hours for Utility Shutdowns: To be determined during Pre-Construction Conference, and as agreed to by Owner in writing
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  1. Notify Owner not less than five (5) business days in advance of proposed utility interruptions.
  2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  1. Notify Owner not less than three (3) business days in advance of proposed disruptive operations.
  2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Non-Smoking Building: Smoking is not permitted on the roof, within the building, or on Owner's property.
- F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

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SUMMARY

2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
  1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 01 1000**

SECTION 01 3233  
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Periodic construction photographs.
- B. Related Requirements:
  - 1. Division 01 Section 3300 "Submittal Procedures" for submitting photographic documentation.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three (3) days of taking photographs.
  - 1. Digital Camera: Minimum sensor resolution of eight (8) megapixels.
  - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
  - 3. Identification: Provide the following information with each image description in file metadata tag:
    - a. Name of Project.
    - b. Name and contact information for photographer.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Date photograph was taken.
    - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
    - g. Unique sequential identifier keyed to accompanying key plan.

1.4 USAGE RIGHTS

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

SECTION 01 3233  
PHOTOGRAPHIC DOCUMENTATION

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

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

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Date and Time: Include date and time in file name for each image.
  - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Construction Manager.
- C. Periodic Construction Photographs: Take 12 photographs daily coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

**END OF SECTION 01 3233**

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Consultant's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require consultant's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Consultant's and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

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3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
  - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal category: Action; informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for consultants' final release or approval.
  - g. Scheduled date of fabrication.
  - h. Scheduled dates for purchasing.
  - i. Scheduled dates for installation.
  - j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. consultant's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Consultant's for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Consultant's reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on consultants' receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  1. Initial Review: Allow 5 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Consultant's will advise Contractor when a submittal being processed must be delayed for coordination.

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2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow 5 days for review of each resubmittal.
  4. Sequential Review: Where sequential review of submittals by consultant's consultants, Owner, or other parties is indicated, allow 10 days for initial review of each submittal.
  5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
1. Submit a minimum of two copies of each submittal, except as otherwise indicated.
    - a. Owner/Consultant's will retain one copy; remainder will be returned. Mark up and retain the returned copies for inclusion in the Operation and Maintenance Manuals.
    - b. At least one set of material samples shall be submitted for color selection.
  2. The Contracting Officer, or their designated representative, will not accept submittals received from sources other than Contractor.
  3. Identify deviations from the Contract Documents on submittals.
  4. Indicate name of firm or entity that prepared each submittal on label or title block.
  5. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Consultant's.
  6. Include the following information for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name of Consultant's.
    - d. Name of Contractor.
    - e. Name of subcontractor.
    - f. Name of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.
      - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
    - i. Number and title of appropriate Specification Section.
    - j. Drawing number and detail references, as appropriate.
    - k. Location(s) where product is to be installed, as appropriate.
    - l. Other necessary identification.



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7. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections, deviations, and field dimensions. Mark with approval stamp before submitting to the Contracting Officer, or their designated representative.
  8. The Contracting Officer, or their designated representative, will review each action submittal, make marks to indicate corrections or modifications required, stamp and mark as appropriate to indicate action taken, and return copies less those retained. Compliance with specified requirements remains Contractor's responsibility.
  9. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Consultant's observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
    - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Consultant's.
  10. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Consultant's will return without review submittals received from sources other than Contractor.
    - a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
      - 1) Project name.
      - 2) Date.
      - 3) Destination To:
      - 4) Source From:
      - 5) Name and address of Consultant's.
      - 6) Name of Contractor.
      - 7) Name of firm or entity that prepared submittal.
      - 8) Names of subcontractor, manufacturer, and supplier.
      - 9) Category and type of submittal.
      - 10) Submittal purpose and description.
      - 11) Specification Section number and title.
      - 12) Specification paragraph number or drawing designation and generic name for each of multiple items.
      - 13) Drawing number and detail references, as appropriate.
      - 14) Indication of full or partial submittal.
      - 15) Transmittal number numbered consecutively.
      - 16) Submittal and transmittal distribution record.
      - 17) Remarks.
      - 18) Signature of transmitter.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

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1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Consultant's.
  4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Consultant's.
    - d. Name of Contractor.
    - e. Name of firm or entity that prepared submittal.
    - f. Names of subcontractor, manufacturer, and supplier.
    - g. Category and type of submittal.
    - h. Submittal purpose and description.
    - i. Specification Section number and title.
    - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - k. Drawing number and detail references, as appropriate.
    - l. Location(s) where product is to be installed, as appropriate.
    - m. Related physical samples submitted directly.
    - n. Indication of full or partial submittal.
    - o. Transmittal number numbered consecutively.
    - p. Submittal and transmittal distribution record.
    - q. Other necessary identification.
    - r. Remarks.
- F. Options: Identify options requiring selection by Consultant's.
- G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Consultant's on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.

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3. Resubmit submittals until they are marked with approval notation from consultants' action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers and authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from consultant's action stamp.
- K. Proposed Substitutions
  1. Substitutions will not be considered.

1.6 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  1. Submit electronic submittals via email as PDF electronic files.
    - a. Consultant's will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  2. Action Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will return one copy.
  3. Informational Submittals: Submit electronic submittals via email as PDF electronic files unless otherwise indicated. Consultant's will not return copies.
  4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show applicable products and options.
  3. Include the following information, as applicable:

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- a. Manufacturer's catalog cuts.
  - b. Manufacturer's product specifications and installation instructions.
  - c. Standard color charts.
  - d. Statement of compliance with specified referenced standards.
  - e. Testing by recognized testing agency.
  - f. Application of testing agency labels and seals.
  - g. Notation of coordination requirements.
  - h. Availability and delivery time information.
  - i. Print performance curves and operational range diagrams.
  - j. Wiring diagrams showing factory installed diagrams.
4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples.
  6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Submit at least two (2) opaque copies. The contracting officer or their designated representative will retain one copy and return the remainder.
  2. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimension and Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
    - h. Wiring diagrams showing field installed wiring.
    - i. Fabrication and installation drawings and rough in and setting diagram.
  3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
  4. Submit Shop Drawings in the following format:
    - a. PDF electronic file if 8-1/2 by 11inch format.

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- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a comparison of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Consultant's will return submittal with options selected.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit three sets of Samples. Consultant's will retain two sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

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- 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
  - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Number and name of room or space.
  4. Location within room or space.
  5. Submit product schedule in the following format:
    - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- H. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- I. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Consultant's and owners, and other information specified.
- J. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- L. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- M. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- N. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

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- O. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- P. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.
- Q. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- R. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- S. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- U. Information Submittals:
  - 1. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of Consultant's and owners, and other information specified.
  - 2. Product Certificates: Prepare written statements on manufacturer's letterhead, including signature of entity responsible for preparing certification, certifying that product complies with requirements in the Contract Documents.
- V. Delegated Design:
  - 1. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract

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SUBMITTAL PROCEDURES

Documents, provide products and systems complying with specific performance and design criteria indicated.

- a. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.
2. Delegated - Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, and where required by the authorities having jurisdiction, submit three copies of a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - a. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 2 - EXECUTION

### 2.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Consultant's.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 2.2 CONSULTANT'S ACTION

- A. Action Submittals: Consultant's will review each submittal, make marks to indicate corrections or revisions required, and return it. Consultant's will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Consultant's will review each submittal and will not return it or will return it if it does not comply with requirements. Consultant's will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Consultant's.



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- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Consultant's without action.

**END OF SECTION 01 3300**

SECTION 01 4000  
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

- A. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Testing and inspecting services are specified in other Sections of these Specifications or are required by authorities having jurisdiction and shall be performed by independent testing agencies.
  - 2. Where quality - control services are indicated or required, the Contractor shall engage a qualified testing agency to perform these services.
  - 3. Contractor is responsible for scheduling times for tests, inspections, and obtaining samples and notifying testing agency.
  - 4. Retesting and Re-inspecting: Contractor shall pay for additional testing and inspecting required as a result of tests and inspections indicating noncompliance with requirements.
- B. Performance and Design Criteria: Where design services or certifications by a professional engineer are required by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
  - 2. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer, or their designated representative.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

SECTION 01 4000  
QUALITY REQUIREMENTS

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.4 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

SECTION 01 4000  
QUALITY REQUIREMENTS

1.5 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

SECTION 01 4000  
QUALITY REQUIREMENTS

1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. Testing agency shall submit a certified written report of each test and inspection to Contractor, Owner, Contracting Officer, or their designated representative, and to authorities having jurisdiction when they so direct. Reports of each inspection, test, or similar service shall include the following:
  1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data, test and inspection results, an interpretation of test results and comments or professional opinion on whether tested or inspected work complies with the Contract Document requirements.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  11. Name and signature of laboratory inspector.
  12. Recommendations on retesting and reinspecting.

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- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of the technical representative that authored report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

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QUALITY REQUIREMENTS

- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated; as documented according to ASTM E 329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

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- f. When testing is complete, remove test specimens and assemblies; do not reuse products on Project.
- 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.



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- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Testing agency shall cooperate with the Contracting Officer, or their designated representative, and Contractor in performing its duties and shall provide qualified personnel to perform inspections and tests.
  - 1. Promptly notify the Contracting Officer or its designated representative of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Does not release, revoke, alter, or increase the requirements of the Contract Document nor approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- G. Auxiliary Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits.
- I. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

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QUALITY REQUIREMENTS

- J. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner and Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - EXECUTION

2.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

2.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

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1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 01 4000**

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for work restrictions and limitations on utility interruptions.
  - 2. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Retain "Sewer, Water, and Electric Power Service" Paragraph below if multiple contracts are required. If needed, insert use-charge requirements for other utilities needed for construction operations.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
  - 1. Locations of dust-control partitions at each phase of work.
  - 2. HVAC system isolation schematic drawing.
  - 3. Location of proposed air-filtration system discharge.
  - 4. Waste handling procedures.
  - 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 EQUIPMENT

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

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with regulations and health codes, and with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
  - 1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At

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TEMPORARY FACILITIES AND CONTROLS

Substantial Completion, restore these facilities to condition existing before initial use.

- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed, and that is self-contained with thermostatic control.
  - 1. Use of gasoline - burning space heaters, open - flame heaters, or salamander - type heating units is prohibited.
  - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
  - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
    - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
  - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
  - 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Field Offices: Provide field offices, storage and fabrication sheds, and other support facilities as necessary for construction operations.
- B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  2. Remove snow and ice as required to minimize accumulations.
- D. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Collect waste daily and, when containers are full, legally dispose of waste off - site. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- F. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
  1. Do not load elevators beyond their rated weight capacity.
  2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- G. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
  1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.



SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide temporary environmental protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Section 01 1000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
  - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Protect existing landscaping and restore any areas damaged during construction to original condition prior to start of project.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction and workers from inclement weather and for containment of heat.
- H. Security Enclosure and Lockup: **Install temporary enclosure (fencing) around the entire staging area.** Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions and/or other approved measures to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
  - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
  - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  - 3. Insulate partitions to control noise transmission to occupied areas.
  - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  - 5. Protect air-handling equipment.
  - 6. Provide walk-off mats at each entrance through temporary partition.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
  - 1. Prohibit smoking in on CMHA property.
  - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
- M. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

3.4 OPERATION TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.

SECTION 01 5000  
TEMPORARY FACILITIES AND CONTROLS

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Termination and Removal: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 7700 "Closeout Procedures."

**END OF SECTION 01 5000**

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 3300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, the Architect, with Owner's approval, will determine which products will be used.

SECTION 01 6000  
PRODUCT REQUIREMENTS

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- B. Submittal Time: Comply with requirements in Section 01 7700 "Closeout Procedures."

SECTION 01 6000  
PRODUCT REQUIREMENTS

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "As selected", the Owner will make the selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
  6. Or Equal: For products specified by name and accompanied by the term "Or Equal," or "Or Approved Equal", or "Approved", comply with requirements in Section 01 3300, Submittal Procedures.
- B. Product Selection Procedures:
1. Where Specifications name a single product or manufacturer, provide the item indicated that complies with requirements.
  2. Where Specifications include a list of names of products or manufacturers, provide one of the items indicated that complies with requirements.
  3. Where Specifications include a list of names of products or manufacturers, accompanied by the term "available products" or "available manufacturers," provide one of the named items that complies with requirements. Comply with provisions for "comparable product requests" for consideration of an unnamed product.
  4. Where Specifications name a product as the "basis - of - design" and include a list of manufacturers, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by the other named manufacturers.
  5. Where Specifications name a single product as the "basis - of - design" and no other manufacturers are named, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by another manufacturer.
  6. Unless otherwise indicated, the Contracting Officer, or its designated representative, will select color, pattern, and texture of each product from manufacturer's full range of standard options.
  7. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for

SECTION 01 6000  
PRODUCT REQUIREMENTS

Contractor's convenience will not be considered unless otherwise indicated.

- b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements.

2. Manufacturers:

- a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
- b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements.

- 3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.

- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision, with Owner's approval, will be final on whether a proposed product matches.

- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. The Owner will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

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

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

SECTION 01 6000  
PRODUCT REQUIREMENTS

B. Product Substitution and Comparable Product Requests:

1. Submit three copies of each request for product substitution or comparable product.
2. Do not submit unapproved substitutions or products on Shop Drawings or other submittals.
3. Identify product to be replaced and show compliance with requirements. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified.
4. Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - a. For Substitution requests, provide a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.
5. The Contracting Officer, or its designated representative, will review the proposed substitution and notify the Contractor of its acceptance or rejection.

**END OF SECTION 01 6000**



SECTION 01 6000  
PRODUCT REQUIREMENTS

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SECTION 01 7300  
EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Installation of the Work.
  - 3. Cutting and patching.
  - 4. Progress cleaning.
  - 5. Starting and adjusting.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.
- B. Related Requirements:
  - 1. Section 01 1000 "Summary" for limits on use of Project site.
  - 2. Section 01 3300 "Submittal Procedures" for submitting surveys.
  - 3. Section 01 7700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 DEFINITIONS

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

1.4 INFORMATIONAL SUBMITTALS

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

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect

SECTION 01 7300  
EXECUTION

before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Fire-detection and -alarm systems.
    - i. Conveying systems.
    - j. Electrical wiring systems.
    - k. Operating systems of special construction.
  3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
    - a. Water, moisture, or vapor barriers.
    - b. Membranes and flashings.
    - c. Exterior curtain-wall construction.
    - d. Sprayed fire-resistive material.
    - e. Equipment supports.
    - f. Piping, ductwork, vessels, and equipment.
    - g. Noise- and vibration-control elements and systems.
  4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.
- D. The Contractor shall review means, methods, techniques, sequences and procedures indicated in the Contract Documents either directly or by reference to standards or

SECTION 01 7300  
EXECUTION

manufacturer's instructions; and advise the Contracting Officer, or their designated representative, (1) if the specified procedure deviates from good construction practice, (2) if following the procedure will affect warranties including the Contractor's general warranty, or (3) of objections the Contractor may have to the procedure and propose alternative procedures the Contractor will warrant.

- E. Examine substrates and conditions for compliance with manufacturer's written requirements including, but not limited to, surfaces that are sound, level, plumb, smooth, clean, and free of deleterious substances; substrates within installation tolerances; and application conditions within environmental limits. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to property survey and existing benchmarks.
- G. Do not scale the Drawings. Follow indicated dimensions. In case of discrepancy in the figures, bring the matter to the attention of the Contracting Officer, or their designated representative, for interpretation before proceeding with the Work. Failure to follow this procedure shall be at the Contractor's own risk, and the Contracting Officer, or their designated representative, interpretation shall be final.
- H. Take field measurements as required to fit the Work properly. Where fabricated products are to be fitted to other construction, verify dimensions by field measurement before fabrication and, when possible, allow for fitting and trimming during installation.
- I. Unless specifically identified, the terms "repair, replace, repair or replace" shall mean repair in a workmanlike manner, and "install or furnish and install", shall be understood to mean "Furnish all material required and Install".
- J. Installation General: Comply with manufacturer's written instructions for installation. Anchor each product securely in place, accurately located and aligned with other portions of the Work. Clean exposed surfaces and protect from damage.
  - 1. All work shall be executed only by artisans and mechanics qualified through experience in their respective trades.
- K. Maintenance: The following site maintenance shall be performed for the entire duration of the construction/renovation process.
  - 1. Clean Project site and work areas daily, including common areas.
  - 2. The cutting of grass and proper disposal of clippings, to be performed on a regular weekly basis and/or as dictated by need.
  - 3. The removal of snow from public access walkways and adjacent site walkways.
- L. Complete the cleaning operations before requesting inspection for certification of Substantial Completion:

SECTION 01 7300  
EXECUTION

PART 2 - PRODUCTS

2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

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

## SECTION 01 7300 EXECUTION

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

SECTION 01 7300  
EXECUTION

4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
  - B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
  - C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
  - D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
  - E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
  - F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
  - G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
  - H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
    1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
    2. Allow for building movement, including thermal expansion and contraction.
    3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
  - I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
  - J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- 3.5 CUTTING AND PATCHING
- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

SECTION 01 7300  
EXECUTION

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Do not cut structural members or operational elements without prior written approval of the Contracting Officer, or their designated representative.
- F. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
  - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
2. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
- H. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
- I. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- J. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.



SECTION 01 7300  
EXECUTION

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Proceed with patching after construction operations requiring cutting are complete.
- K. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- L. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

SECTION 01 7300  
EXECUTION

3.6      PROGRESS CLEANING

- A.    General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1.    Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2.    Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80° F (27° C).
  - 3.    Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a.    Use containers intended for holding waste materials of type to be stored.
  - 4.    Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B.    Site: Maintain Project site free of waste materials and debris.
- C.    Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1.    Remove liquid spills promptly.
  - 2.    Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D.    Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E.    Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F.    Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G.    Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H.    During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I.    Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

SECTION 01 7300  
EXECUTION

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

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION 01 7300**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Disposing of nonhazardous demolition and construction waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within seven (7) days of date established for the Notice to Proceed.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
1. Review and discuss waste management plan including responsibilities of waste management coordinator.
  2. Review requirements for documenting quantities of each type of waste and its disposition.
  3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, locations for waste to be held until picked up for disposal and how often waste is to be picked up.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
1. Comply with operation, termination, and removal requirements in Section 01 5000 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
1. Distribute waste management plan to everyone concerned within three (3) days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

2. Comply with Section 01 5000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

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

**END OF SECTION 017419**

SECTION 01 7419  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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SECTION 01 7700  
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for progress cleaning of Project site.
  - 2. Section 01 7839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.



SECTION 01 7700  
CLOSEOUT PROCEDURES

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, maintenance service agreements, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Submit Record Drawings, operation and maintenance manuals, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items.
  - 7. Make final changeover of permanent locks and deliver keys to Owner.
  - 8. Complete startup testing of systems.
  - 9. Remove temporary facilities and controls.
  - 10. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  - 11. Complete final cleaning requirements, including touchup painting. a. The Project shall be turned over in "move - in" condition.
  - 12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- D. Record Drawings: Maintain a set of prints of the Contract Drawings as Record Drawings. Mark to show actual installation where installation varies from that shown originally.
  1. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- E. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
- F. Operation and Maintenance Data: Submit three copies of manual. Organize data into three - ring binders with Project identification on front and spine of each binder, and envelopes for folded drawings. Include the following in tabbed sections:
  1. Table of Contents.
  2. General Contractor name, phone number and contact person.
  3. Subcontractor names, phone numbers, and contact persons.
  4. Equipment and fabricated material supplier/fabricators names, phone numbers, and contact persons.
  5. Copies of approved Shop Drawings.
  6. Manufacturer's operation and maintenance documentation.
  7. Maintenance and service schedules.
  8. Maintenance service contracts.
  9. Emergency instructions.
  10. Spare parts list.
  11. Key biting lists (if applicable).
  12. Wiring diagrams.
  13. Copies of warranties.
    - a. 1 - Year (from date of final approval) Contractor's Warranty Certification.
    - b. All Manufacturer's Warranty Certifications (for all material and equipment warranted/guaranteed beyond 1 year of the date of final approval).
  14. Other information on installed materials or equipment that will be required to maintain or sustain the Project.
  15. Advise Owner of pending insurance changeover requirements.
  16. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  17. Complete startup and testing of systems and equipment.
  18. Perform preventive maintenance on equipment used prior to Substantial Completion.

SECTION 01 7700  
CLOSEOUT PROCEDURES

19. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 7900 "Demonstration and Training."
  20. Advise Owner of changeover in heat and other utilities.
  21. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  22. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  23. Complete final cleaning requirements, including touchup painting.
  24. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- G. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- C. The Contracting Officer, or their designated representative, will prepare the Certificate of Substantial Completion after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.
- D. When items must be completed or corrected, request inspection for Final Completion/Approval, once the following are complete:

SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Submit a signed copy of Substantial Completion inspection list stating that each item has been completed or otherwise resolved for acceptance.
2. Submit all final waivers, final Certificate for Payment, wage reports, warranties, consent of Surety, and other outstanding items.
3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

a. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Include a detailed review of the following:

- 1) Basis of system design and operational requirements, review of documentation, emergency procedures, operations, adjustments, troubleshooting, maintenance, and repairs.

E. The Contracting Officer, or their designated representative, will approve the Contractor's final Certificate for Payment after inspection and receipt of required items and training or will advise Contractor of items that must be completed or corrected before certificate will be issued.

1. Reinsertion: Request reinsertion when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
  - a. Project name.
  - b. Date.
  - c. Name of Architect.
  - d. Name of Contractor.
  - e. Page number.
4. Submit list of incomplete items in the following format:
  - a. PDF electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

SECTION 01 7700  
CLOSEOUT PROCEDURES

- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
  - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

SECTION 01 7700  
CLOSEOUT PROCEDURES

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
  - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - e. Remove snow and ice to provide safe access to building.
  - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - h. Sweep concrete floors broom clean in unoccupied spaces.
  - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
  - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - k. Remove labels that are not permanent.
  - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
  - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

SECTION 01 7700  
CLOSEOUT PROCEDURES

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to original condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION 01 7700**

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Miscellaneous record submittals.
- B. Related Requirements:
  - 1. Section 01 7300 "Execution" for final property survey.
  - 2. Section 01 7700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one (1) set of marked-up record prints.
- B. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one (1) paper copy of each submittal.
- C. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.



SECTION 01 7839  
PROJECT RECORD DOCUMENTS

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

2. Identification: As follows:

- a. Project name.
- b. Date.
- c. Designation "PROJECT RECORD DRAWINGS."
- d. Name of Architect.
- e. Name of Contractor.

2.2 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as paper copy.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for reference during normal working hours.

**END OF SECTION 01 7839**

SECTION 01 7839  
PROJECT RECORD DOCUMENTS

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SECTION 02 4119  
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
  - 2. Demolition and removal of selected site elements.
  - 3. Cutting and alterations.
  - 4. Protecting of adjacent surfaces.

- B. Related Requirements:

- 1. Section 01 1000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
  - 2. Section 01 7300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items

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of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

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

1.5 PREINSTALLATION MEETINGS

A. Pre-demolition Conference: Conduct conference at Project site

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.
6. Review temporary enclosures to prevent dust and debris from entering other occupied spaces of the building.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician.

B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

E. Pre-demolition Photographs or Video: Written documentation, with associated photographs, of existing conditions of areas / item that are not scheduled to be repaired, adjoining construction, landscaping in the area of work, etc., including finish surfaces, which might be misconstrued as damage caused by the demolition

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operations. Do not proceed to the work until the report is submitted and approved by the Owner.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  - 1. Before selective demolition, Owner will remove the following items:
    - a. None.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

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- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Consultant.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
  - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
  - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Comply with requirements for existing services/systems interruptions specified in Section 01 1000 "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. Arrange to shut off indicated utilities with utility companies.

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3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
  - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.



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1. Strengthen or add new supports when required during progress of selective demolition.

3.4 PROTECTION OF SURFACES

- A. When weather threatens, cease work under this Section and return building to a water-tight condition. Contractor must have sufficient materials on site to provide a temporary waterproof system in the event of unexpected rain/snow.
- B. Contractor shall not remove any more materials than is intended to have replaced water-tight that same day. Contractor shall maintain on site temporary tarps and/or rolls of membrane that can be used in emergencies to provide a method of temporary waterproofing in case of unexpected threatening weather.
- C. Contractor shall restore to original condition any damages caused during work performed in this Section.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 7419 "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
  1. Clean salvaged items.

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2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Consultant, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- B. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

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3.8 CLEANING

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

3.9 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Construction to Be Removed: Designated portions of concrete topping slab, insulation and waterproofing, plaster from designated interior walls, and resilient floor trim and acoustical fabric from designated interior walls.
- B. Existing Items to Be Removed and Salvaged: None.
- C. Existing Items to Be Removed and Reinstalled: Suspended ceiling grid and ceiling tiles, projector screens and related equipment, electrical conduit and junction boxes, and networking equipment and conduit.

**END OF SECTION 02 4119**

SECTION 02 8000  
LANDSCAPE REPAIR

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Removal of damaged turf and plantings and replacement of materials damaged by the Contractor during the performance of Work is included in this Section.
- B. Repair of damaged concrete, damaged by the contractor during the performance of the Work.
- C. Repair of damaged hot mix asphalt paving, damaged by the contractor during the performance of the Work. **[NOTE: Contractor is expected to protect the concrete and asphalt paving from damage from construction traffic and materials.]**

1.2 QUALITY ASSURANCE

- A. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods for their installation, and who shall direct all work performed under this Section.
- B. Standards:
  - 1. All plants and planting material shall meet or exceed the specifications of federal, state, and county laws requiring inspection for plant disease and insect control.
  - 2. Quality and size shall conform to the current edition of *Horticultural Standards* for number one grade nursery stock as adopted by the American Association of Nurserymen.
  - 3. State of Michigan, Department of Transportation (MDOT) Standards, latest edition for Asphalt Repair Work.
  - 4. American concrete Institute (ACI) Standards for Concrete Work

1.3 SUBMITTALS

- A. General: Comply with the provisions of Section 01 3300.

1.4 PRODUCT HANDLING

- A. Delivery and Storage:
  - 1. Deliver all items to the job site in their original containers with all labels intact and legible.
  - 2. Use all means necessary to protect plant materials before, during, and after installation and to protect the work and materials of all other trades.

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LANDSCAPE REPAIR

- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's representative and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Protect structures, utilities, roads, trees and vegetation from damages caused by landscaping operations.
- B. Topsoil required to complete the work of planting shall be natural, friable topsoil, characteristic of representative soils in the vicinity that produce heavy growths of crops, grass or other vegetation. It shall not be extremely acidic nor alkaline nor contain toxic substances, harmful to plant growth. All topsoil used for this project shall be without admixtures of subsoil; free from clay lumps, stones, roots, debris and other objects over one inch in diameter.

2.2 FERTILIZER

- A. Fertilizer shall meet the applicable sections of the State Highway Specifications.
- B. Fertilizer shall be uniform in composition, free flowing and suitable for application with approved equipment.

2.3 SOD

- A. Product Delivery and Handling:
  - 1. Sod shall be placed within 48 hours of cutting and shall be protected and maintained during transit or storage on site as necessary to ensure vigorous growth after placement.
  - 2. Sod remaining on the site unplaced after 48 hours will be rejected. All yellowing or otherwise discolored sod will be rejected.
  - 3. The Contractor shall inform the Owner's representative 24 hours in advance of any delivery of sod.
- B. Description
  - 1. Sod shall be well established and shall contain all the dense root system of the grasses and shall exhibit vigorous healthy root growth free of noxious weeds, objectionable grasses, grubs, diseases or injurious insects.
  - 2. Sod shall meet the applicable sections of the State Highway Specifications unless specifically called for otherwise by the Owner's Representative.

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2.4 CONCRETE

- A. Concrete shall be commercially produced material and shall be air entrained, with a minimum compressive strength of 3500 psi at 28 days.
- B. Accessories such as expansion joint materials and tie bars shall be installed in the repaired concrete to match the materials damaged during the work.
- C. All products shall meet current ACI and MDOT standards for new construction.
- D. Concrete curing compound shall be white pigmented, free of paraffin or petroleum, Type 2 curing compound conforming to AASHTO M148 "Standard Specification for Liquid Membrane – Forming Compounds".

2.5 HOT MIX ASPHALT

- A. Hot mix asphalt shall be commercially produced material and shall be an 1100 or 1300 mix design for both the bottom (leveling course) and the top (wearing course) materials.
- B. Tack coat shall be SS-1h material.

2.6 COLD MIX ASPHALT

- A. Cold mix asphalt materials for contained holes shall be POUR-PATCH as manufactured by Revere Products (800) 343-7318.
- B. Cold mix asphalt materials for depressions and chipped out areas shall be EPOXI-TAR PATCH as manufactured by Revere Products (800) 343-7318.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Ground preparation shall not be started until all stones, debris, and similar material larger than "1" in diameter have been removed, depressions and ruts filled and the entire area to be seeded and/or sodded has been accepted by the Owner's Representative.

3.2 PROTECTION OF PERSON AND PROPERTY

- A. Protection of Existing Plant Materials
  - 1. Existing trees, shrubs, and plant materials to remain shall be protected by acceptable means.
  - 2. Damage to above plant material shall be repaired by qualified nurserymen or replaced with approved equal material.

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3.3 SODDING

- A. General lawn repair shall be performed by personnel familiar with the accepted procedures of planting and under the supervision of a qualified planting foreman.
- B. Preparation of Sod:
  - 1. Immediately prior, but not in excess of 24 hours before sod is to be placed, the soil surface shall be worked until it is relatively free from debris, washes, gullies, clods and stones and is in satisfactory condition.
  - 2. The surface shall be worked to depth of not less than 3" with a disc, tiller, or other equipment approved by the Owner's representative.
  - 3. Prepared surfaces that become crusted shall be reworked to an acceptable condition for sodding.
- C. Application of Fertilizer
  - 1. Commercial fertilizer shall be applied in accordance with the State Highway Specifications.
- D. Application of Sod
  - 1. Laying: Fit sod pieces tightly together so that no joint is visible, alternate courses staggered, and tap firmly to eliminate all air pockets, provide a true and even surface and ensure knitting without displacement of sod or deformation of the surface of sodded areas. Edges shall be buried flush with adjacent soil. Following compaction, screened topsoil shall be used to fill all cracks between sod pieces. Excess soil shall be worked into grass.
  - 2. Watering: Within five hours after the sod has been placed, it shall be saturated to a depth of 2" by watering with a fine spray.
  - 3. Maintenance: Sod shall be watered each day such that it shall be saturated to a depth of ½" by watering with a fine spray until project is accepted by the Owner, but not for a period of more than 21 days. If after 21 days the sod is determined to not be acceptable to the Owner it shall be removed and replaced.

3.4 CONCRETE REPAIR

- A. Damaged concrete shall be saw cut a distance of at least 1 foot beyond the damaged areas. The saw cut shall be at least 1/3<sup>rd</sup> the depth of the material being removed.
- B. The exposed subgrade materials shall be leveled and compacted prior to the application of the new concrete. Subgrade materials shall also be moistened to prevent quick loss of moisture soon after application.

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- C. Forms shall be provided to maintain a clean and vertical face for the installation of new materials, as needed.
  - D. New joints shall be laid out in areas of replaced materials. Spacing of joints shall not exceed 15 times the depth of the concrete.
  - E. Expansion joint material shall be installed at all locations where the repaired concrete meets a structure, curb, sidewalk, forms an intersection or at 50-ft. intervals in a continuous slab. Expansion joint materials shall cover the entire gap of the joint. The top of the expansion joint materials must be slightly below concrete grade. Anchor expansion joint material to prevent displacing during concrete placing and finishing.
  - F. Materials shall be delivered and installed in accordance with the American Concrete Institute (ACI) Standards.
  - G. Concrete curing compound shall be applied within 1 hour or final finishing or before the concrete has dried.
  - H. Apply pigmented, membrane forming, curing compound in two coats at right angles to each other. Apply compound by spray only. Rate of application shall be 200 square feet per gallon for each coat.
  - I. Any areas covered with compound that is disturbed during curing shall be re-sprayed immediately.
  - J. Contractors shall provide protection from rapid curing and from physical damage for a period of not less than 3 days following the application of the new concrete.
  - K. Replacement of any existing pavement marking within the repaired area will be included as part of any repair.
- 3.4 HOT ASPHALT REPAIRS - To be performed in all areas where asphalt damage occurs. (Cold patch repairs shall be installed as a temporary measure only until hot asphalt repairs can be scheduled and performed.)
- A. Damaged bituminous concrete shall be saw cut a distance of at least 1 foot beyond the limits of damage. The saw cut shall be a minimum of 2" in depth, but not less than  $\frac{3}{4}$  of the depth of the existing materials.
  - B. The old pavement shall be carefully removed for its full depth, but not less than 4 inches.
  - C. The exposed substrate material shall be leveled and compacted prior to the application of the new hot mix asphalt. Subgrade materials that are too soft (due to moisture) shall be allowed to dry or removed and replaced with dryer materials.
  - D. The exposed edges of the surrounding asphalt shall be brush coated with tack coat prior to the application of the new hot mix asphalt.



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- E. The hot mix asphalt shall be delivered and installed in accordance with MDOT standards. The placement of asphalt shall be as follows:
    - 1. The top course of thickness shall be not less than 1.5" compacted thickness, nor more than 2.5" compacted thickness.
    - 2. The bottom course thickness shall not be less than 2.0" thickness, and shall not be installed in any thickness greater than 3.0" compacted thickness for any one layer.
    - 3. The total thickness of the pavement shall meet or exceed the surrounding materials, but shall not be less than 4.0" total compacted thickness.
    - 4. If dirt is allowed to lie on any one layer, the layer must be swept and a tack coat applied prior to the application of a subsequent layer.
  - F. Contractor shall provide protection for the new hot mix asphalt for a minimum of 4 hours following application.
  - G. Contractor is responsible for the proper drainage of the patched asphalt. Any water in excess of 1/8" in depth following 30 minutes after a rain will be considered as unacceptable.
  - H. Replacement of any stripping or other pavement marking shall be included as part of the repair work.
- 3.5 Clean Up
- A. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.

**END OF SECTION 02 8000**

PART ONE – GENERAL

1.01 DESCRIPTION

A. Section includes maintenance of unit masonry and cleaning as follows:

1. Repairing unit masonry, including replacing units.
2. Cutting and repointing joints.
3. Stone patching
4. Saw-cut existing masonry expansion joints to widen for new sealants.
5. Saw-cut new expansion joints in masonry wall system.
6. Restoration cleaning of wall surfaces.
7. Painting of designated steel components

1.02 RELATED SECTIONS

- A. Section 02220 – Selective Demolition
- B. Section 07190 – Water Repellents
- C. Section 07920 – Joint Sealants

1.03 DEFINITIONS

- A. Very Low-Pressure Spray: Under 100 psi (690 kPa).
- B. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- C. Medium-Pressure Spray: 400 to 800 psi (2750 to 5510 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- D. High-Pressure Spray: 800 to 1200 psi (5510 to 8250 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).
- E. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.
- F. Significant cracking: extent of cracking observed in sandstone which would not allow proper installation of water proofing/sealant materials.

1.04 QUALITY ASSURANCE

- A. Restoration Specialist Qualifications: Engage an experienced, masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.
- B. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that restoration and cleaning work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm.
- C. Restoration Worker Qualifications: Persons who are experienced in restoration work of

types they will be performing. When masonry units are being patched, assign at least one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products.

- D. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with factory-trained representatives who are available for consultation and Project-site inspection and assistance at no additional cost.
- E. Source Limitations: Obtain each type of material for masonry restoration (cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- F. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage due to worker fatigue.
- G. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials and Project site.
  - 1. Include methods for keeping pointing mortar damp during curing period.
  - 2. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- H. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used, protection of surrounding materials, and control of runoff during operations.
  - 1. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
- I. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from 20 feet (6 m) away by Owner or Owners Representative.
- J. Field Samples: Prepare test areas of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
  - 1. Masonry Repair: Complete test sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each test area not smaller than 2 adjacent whole units or approximately 32 inches (1200 mm) in least dimension. Perform test sample areas in existing walls at areas as directed by Owners Representative unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

- a. Stone Patching:
  - 1) Provide at two (2) areas, minimum 1 ft x 1ft, to determine the required patching material color and texture.
2. Repointing: Rake out joints in designated area, approximately 36 inches (900 mm) high by 48 inches (1200 mm) wide and repoint; cleaned and finished.
  - a. Install mortar sample that contains a close color range, aggregate type, and finish that will produce a mortar matching the cleaned masonry when cured and dry.
  - b. Install up to three (3) samples with varying shades of color, aggregate, and finish.
  - c. Repeat process, up to 3 times, until acceptable.
3. Cleaning: Clean two (2) areas approximately 25 sq. ft. (2.3 sq. m) for each type of masonry and surface condition.
  - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not use cleaners and methods known to have deleterious effect without providing all appropriate protections.
  - b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.
  - c. Repeat, using same of different leaning methods up to 3 times, until acceptable.
4. Approval of test areas does not constitute approval of deviations from the Contract Documents contained in test areas unless Owners Representative specifically approves such deviations in writing.
5. Approved test areas may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.05 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Samples for Verification: For the following:
  1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.
- C. Hardware List: Submit a complete list of incidental materials to be provided under this Section.
- D. Repair Procedures: Submit written procedures for the remedial work including materials, methods, and equipment that will be used.
- E. As provided in Section 01300.

#### 1.06 DELIVERY, STORAGE, AND PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be stored in a protected area between 40 - 80 degrees F.

- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- B. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- E. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.06 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.
- B. Repair masonry units and repoint mortar joints only when air temperature is between 40 and 90 deg F (4 and 32 deg C) and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for masonry repair and mortar-joint pointing unless otherwise indicated:
  - 1. When air temperature is below 40 deg F (4 deg C), heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F (4 and 49 deg C).
  - 2. When mean daily air temperature is below 40 deg F (4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 7 days after repair and pointing.
- D. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F (32 deg C) and above unless otherwise indicated.
- E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.
- F. Clean masonry surfaces only when air temperature is 40 deg F (4 deg C) and above and is predicted to remain so for at least 7 days after completion of cleaning.

1.07 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.

PART TWO – PRODUCTS

2.01 MORTAR

- A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.
  - a. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Mortar Sand: ASTM C 144 unless otherwise indicated.
  - 1. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color with no more than 50 parts per million chloride ions and free of organic contaminants.
  - 2. For pointing mortar, provide sand with rounded edges.
  - 3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
  - 4. For joints narrower than 1/4 inch, use aggregate graded with 100 percent passing the No. 8 sieve and 95 percent passing the No. 16 sieve.
- D. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars. Pigments shall conform to ASTM C 270 and C 979. Integral coloring material shall consist of inert, non-fading, finely ground, alkali-fast mineral oxides, made specifically for cement/lime mortars. Limit coloring additive so as to not exceed 10% of the weight of Portland cement. Do not use carbon black as a coloring additive.
- E. Water: Potable.
- F. Admixtures
  - 1. Admixtures such as air-entraining agents, accelerators, retardants, water repellent agents, antifreeze compounds, and other admixtures shall not be added to mortar unless specified.
  - 2. Do not use admixtures containing more than 0.2% chloride ions.

2.02 STONE PATCHING AND REPAIR MATERIALS

- A. Limestone Units
  - 1. Fast-drying, non-shrink, pre-mixed patching material designed for repairing vertical and horizontal masonry surfaces. Proprietary mortar compound must be colored to match and blend with original stonework, and compressive strength shall be balanced to match original stones.
    - a. Jahn M70 Stone Patching Mortar, Cathedral Stone Products, Inc., Jessup, MD.
    - b. MIMIC by Charger Corporation, Hamden, CT

- c. or Owner's Representative approved equivalent.

## 2.03 MORTAR MIXES

- A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C 5 and manufacturer's written instructions.
- B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
  - 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Owners Representatives approval.
  - 1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.
- D. Do not use admixtures in mortar unless otherwise indicated.
- E. Mortar Proportions: Mix mortar materials in the following proportions:
  - 1. Pointing Mortar for Brick: Proportions shall be consistent with those identified in preconstruction testing.
    - a. Add mortar pigments to produce mortar colors required.
  - 2. Rebuilding (Setting) Mortar: Same as pointing mortar.
    - a. Add mortar pigments to produce mortar colors required.

## 2.04 MASONRY UNITS

- A. Face Brick (Solid Masonry Units Made from Clay or Shale):
  - 1. ASTM C 216, Grade SW, Type FBS, unless otherwise indicated.
  - 2. Size, Texture and Color: To match adjacent, existing masonry units as approved by owner.
  - 3. Properties:
    - a. Initial Rate of Absorption: 6 to 15 grams of water per minute per 30 square inches.
    - b. Efflorescence: Perform as described in ASTM C 67. Units shall have a rating of "Not Effloresced".
  - 4. Use: Provide as needed for replacement of existing damaged units.

5. Provide special units for corners and other similar exposed applications.

## 2.05 CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).
- C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.
- D. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.
- E. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Light Duty Cleaner
    - b. Dominion Restoration Products, Inc; Bio-Cleanse
    - c. Dumond Chemicals, Inc.; Safe n' Easy Architectural Cleaner/Restorer.
    - d. Prosoco; Enviro Klean 2010 All Surface Cleaner.
- F. Mild Acidic Cleaner: Manufacturer's standard mildly acidic cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Bio Cleaner
    - b. Dominion Restoration Products, Inc; DR-60 Stone and Masonry Cleaner
    - c. Diedrich Technologies Inc.; Envirorestore 100.
    - d. Prosoco; Enviro Klean Biowash
- G. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cathedral Stone Products; Heavy Duty Cleaner
    - b. Diedrich Technologies Inc.; Diedrich 101 Masonry Restorer
    - c. Dumond Chemicals, Inc.; Safe n' Easy Ultimate Stone and Masonry Cleaner.
    - d. Prosoco; Enviro Klean Restoration Cleaner



2.04 PAINT MATERIALS

- A. Steel Primer Coat: Urethane-based, zinc rich primer
  - 1. Tnemec-Zinc Series 90-97 by Tnemec Company
  - 2. Corothane I Galvapac 1K by Sherwin Williams
  - 3. or Owner's Representative approved substitute
- B. Steel Top Coat: Acrylic polyurethane top coat. Color to be selected by the Owner
  - 1. Endura-Shield Series 73 by Tnemec Company
  - 2. Fast Clad DTM Urethane by Sherwin Williams
  - 3. or Owner's Representative approved substitute

2.05 ACCESSORY MATERIALS

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
- B. Reinforcement and Anchorage: All screws, bolts, nuts, washers, rivets, ties, and pins shall be hot-dipped galvanized steel (ASTM A 153, Class B), or Type 304 stainless steel

PART THREE – EXECUTION

3.01 GENERAL

- A. Examine each area of work and verify that existing conditions are acceptable for the specified installation procedures. Report, in writing, adverse conditions that could affect the performance of the Work within five calendar days. Absence of written notification will indicate the Contractor's acceptance of existing project conditions.
- B. Masonry workmanship shall comply with all applicable recommendations of the Brick Industry Association (BIA, formerly the Brick Institute of America), the Indiana Limestone Institute of America, and Masonry Structures ACI 530.1, except as modified below. Report any damage to new or existing flashings within the work area to the Owner's Representative, and provide for repairs by appropriately skilled tradesmen, at no cost to the Owner.
- C. Manufacturer's Recommendations: Comply with the manufacturer's written approved installation instructions and with any governing regulations and industry standards applicable to the work.
- D. Proceed when project conditions are acceptable and implement any cold / hot weather provisions specified herein.
- E. Conduct all masonry work in a neat and workmanlike manner, to prevent staining any surface with mortar or other spills. Avoid dropping mortar on completed masonry work or other elements of the building. If mortar drops or spills, spot-clean immediately using a

sponge and clean water.

F. Tolerances:

1. External corners and other conspicuous lines and levels: Maximum deviation from plumb or level  $\pm 1/4$  inch in any 10 ft section with a maximum cumulative amount of  $3/8$  inch in any one direction beyond 10 ft.
2. Variation from Level: Maximum  $1/2$  inch in 20 feet, or  $3/4$  inch in 40 feet or more.
3. Mortar bed joint thickness:  $3/8$  inch or match existing adjacent construction. Maximum deviation  $\pm 1/16$  inch
4. Mortar head joint thickness:  $3/8$  inch or match existing adjacent construction. Maximum deviation  $\pm 1/16$  inch
5. Vertical alignment of the center line of corresponding head joints in alternate courses when using other than stacked bond. Maximum deviation  $\pm 1/4$  inch
6. Vertical alignment of the center line of all head joints in total assemblage height when using other than stacked bond. Maximum deviation  $\pm 1$  inch

3.02 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
1. Erect temporary protective covers over walkways and at points of pedestrian entrance and exit that must remain in service during course of restoration and cleaning work, as required.
- B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
- C. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
  2. Keep wall wet below area being cleaned to prevent streaking from runoff.
  3. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
  4. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
  5. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

- D. Prevent mortar from staining face of surrounding masonry and other surfaces.
  - 1. Cover sills, ledges, and projections to protect from mortar droppings.
  - 2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
  - 3. Immediately remove mortar in contact with exposed masonry and other surfaces.
  - 4. Clean mortar splatters from scaffolding at end of each day.
- D. Prevent mortar from staining face of surrounding masonry and other surfaces.

### 3.03 REPOINTING MASONRY

- A. General: Tuckpoint mortar joints containing static cracks, deterioration, holes or voids. New bedding and pointing mortar mix should not have a compressive strength that exceeds existing mortar or masonry materials.
- B. Rake out and repoint joints to the following extent:
  - 1. Joints where mortar is missing or where they contain holes.
  - 2. Cracked joints where cracks can be penetrated at least 1/4 inch (6 mm) by a knife blade 0.027 inch (0.7 mm) thick.
  - 3. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
  - 4. Joints where they have been filled with substances other than mortar.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved test area:
  - 1. Remove mortar from joints to depth of 2-1/2 times joint width, but not less than 1/2 inch (13 mm) or not less than that required to expose sound, unweathered mortar.
  - 2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
  - 3. Do not spall edges of masonry units or widen joints. Replace any masonry units which become damaged.
- D. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.
- E. Notify Owner's Representative of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- F. Pointing with Mortar:
  - 1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
  - 2. Apply pointing mortar first to areas where existing mortar was removed to depths

- greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch (9 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to feather edge the mortar.
  4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
  5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.
- G. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
- H. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
- I. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.
- J. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

#### 3.04 MASONRY UNIT REPLACEMENT

- A. Match existing construction tolerances, corners, and recess. Install masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line.
- B. Provide shoring and support, as required, prior to removing existing masonry units.
- C. Use full units without cutting whenever possible. Cut new masonry units as required to fit adjoining work neatly. Avoid the use of less than half size units at corners, jambs, and at other locations. Perform job site cutting of masonry units with proper masonry saw to provide straight, clean, unchipped edges. Prevent broken masonry unit corner or edges. Do not break masonry units with a hammer.
- D. Mortar Bedding and Jointing
1. Provide new ties to replace damaged ties, in like-kind. All masonry reinforcement and anchors should be completely bedded in mortar. Direct masonry unit-to-anchor contact is not permitted.
  2. Lay new units with completely filled bed and head joints. Butter ends with sufficient mortar to fill head joints and lay into place. Do not slush head joints. Tooth new units into existing masonry work, to match existing bonding patterns.
  3. Spaces between masonry units and backup materials are to remain free and clear of mortar.
  4. Repoint head joints and top joints where new work adjoins existing masonry work.

- E. Establish lines, levels, and coursing indicated. Protect from displacement.
- F. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- G. Placing and Bonding
  - 1. Do not lay mortar bed more than 2 ft ahead of work.
  - 2. Do not furrow bed joints.
  - 3. Completely butter the ends and head of each unit with mortar and shove the unit into place so that mortar squeezes out the top of the head joint and bed joint. Do not slush head joints.
  - 4. At cavity wall sections, cut off and scoop out the mortar that extrudes from bed and head joints on outer and inner faces of the wythe.
  - 5. Do not disturb, tap, shove or push units once they are laid in their final position. Where adjustment must be made, remove mortar and replace.
  - 6. Toothing masonry at intersections and external corners.
  - 7. Strike exterior of mortar joints flush during laying. When mortar is thumb print hard on exposed surfaces, tool joints concave with a cylindrical pointing tool slightly larger than the masonry joint to compact the mortar thoroughly.
  - 8. Slightly bevel bed joint mortar away from the cavity space before placing the unit to minimize mortar protrusions into any cavity space intended to be free of mortar. Back parge or strike mortar extrusions in the cavity space.

### 3.05 STONE PATCHING

- A. Hairline cracks: For areas that are not spalled, but are cracked, ensure that the area around each crack is sound. If not, chip out unsound material and repair. If the crack is visible from the ground level, chip or cut out existing stone slightly wider than crack taking care to ensure all edges are square and at a 90-degree angle. Seal hairline cracks with epoxy injection prior to patching with repair mortar. If the crack is not directly visible from the ground level rout the hairline crack using hand tools and fill with sealant.
- B. Remove all loose and spalled materials, as well as contaminants or bond breaking substances including, but not limited to laitance, mildew, loose debris, existing coatings and oils.
- C. Report any rusted anchors and ties encountered during preparation work to the Owner's Representative prior to proceeding.
- D. Cut out unsound/deficient material by hand with chisel and mallet. Care must be taken to ensure edges of all patches are square cut, maintaining 90-degree angles.
- E. All patches must be a minimum of 1/4" deep. The surface must be sound and free of ice and frost.
- F. For stone patches/repairs greater than two inches deep, or at embedded masonry anchors, dutchman repairs are acceptable.
- G. Repair mortar for stone

1. Use the recommended mix design and product from the manufacturer for the particular type of stone work being repaired.
2. Prior to application, lightly mist the surface with water. Next, apply a slurry coat with a brush or trowel, working material into the pores of the surface. With a trowel, apply repair mortar with firm pressure. Overbuild the patch by at least 1/4 inch and approximately to the desired shape. Finished with a hard rubber float or shaved to the final shape with the edge of a trowel, miter rod, or margin trowel.
3. Match texture to existing using conventional plastering techniques. After completing patch, wipe down adjacent areas with a wet cloth or sponge to remove excess patching material.
4. Curing Procedure: Lightly mist the patch with water to wet the entire surface of the finished patch approximately 30 minutes to 1 hour after completion on hot sunny days and approximately 2 hours on cool or cloudy days. Time will vary with temperature and humidity. Mist at least once a day, but as often as possible on the two days following the patch installation.

H. Limestone Dutchman Repairs

1. Saw cut a predetermine area of existing stone slightly larger than required to produce the smallest possible glueline for epoxy adhesion.
2. Ensure that prepared surfaces are clean, dry and free of dust. Mix and apply epoxy adhesive in accordance with the manufacturer's instructions. Epoxy should be applied to cover all mating surfaces and provide a continuous weathertight seal.
3. Where the dutchman is unsupported, as in overhangs and soffit stones, insert a stainless steel threaded rod or dowel between mating surfaces, prior to applying epoxy adhesive.
4. Finish sand any uneven edges or excess epoxy bulk.

3.06 CLEANING, GENERAL

- A. Proceed with cleaning in an orderly manner; work from bottom to top or top to bottom in a manner as specified by product manufacturers requirements, of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.
- B. Perform cleaning to the extent necessary to remove existing mildew, efflorescence, dirt, plant fungi, etc. so that the wall appearance is uniform, and acceptable to the water repellent sealer manufacturer. Begin with the least caustic cleaning method. Adjust cleaning methods as required. In general:
  1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
  2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
    - a. Equip units with pressure gages.
  3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
  4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
  5. For high-pressure water-spray application, use fan-shaped spray tip that

- disperses water at an angle of at least 40 degrees.
6. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F (60 and 71 deg C) at flow rates indicated.
  7. For steam application, use steam generator capable of delivering live steam at nozzle.
- C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- D. Water Application Methods:
1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
  2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- E. Steam Cleaning: Apply steam to masonry surfaces at the very low pressures indicated for each type of masonry material. Hold nozzle at least 6 inches (150 mm) from surface of masonry and apply steam in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- F. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush application. Do not spray apply at pressures exceeding 50 psi (345 kPa). Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.
- G. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- H. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

### 3.07 PRELIMINARY CLEANING

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

1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
2. Remove paint and caulking with alkaline paint remover.
  - a. Comply with requirements in "Paint Removal" Article.
  - b. Repeat application up to two times if needed.

### 3.08 FINAL CLEANING

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

### 3.08 PAINTING

- A. Clean existing steel surfaces removing scaling and rust.
- B. Prepare existing deteriorated steel surface to receive coating in accordance with paint manufacturer's recommendations and with the The Society of Protective Coatings (SSPC) guidelines as follows:
  1. SP-2, "Hand Tool Cleaning"
  2. SP-3, "Power Tool Cleaning"
- C. Inspect the condition of the exposed steel sections and connections (anchors and welds). Where section loss is greater than 10 percent of the nominal thickness, report to the Owner's Representative for review and corrective procedure. Do not proceed with coating work without written authorization from the Owner's Representative.
  1. Primer: 3 mils (dry) / 5 mils (wet)
  2. Top Coat: 2.5 mils (dry) / 4.5 mils (wet)
- D. Mix coating components following the manufacturer's written instructions.
- E. Maintain coating thickness during application within the manufacturer's published maximum and minimum thickness ranges.
- F. If additional coats are required to obtain the required coating thickness, apply additional coats after the initial coat is completely dry/cured.

### 3.09 FIELD QUALITY CONTROL



- A. Owners Representatives: Owner will assign Project representatives to help carry out responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Owner's Representative use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Notify Owner's Representative in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Owner's Representative have had reasonable opportunity to make observations of work areas at lift device or scaffold location.
- C. Contractor shall maintain or exceed levels of workmanship and material acceptability in regard to surface preparation, cleaning, and coating application as established by mock up/test samples.

**END OF SECTION 04 012**



## **PART 1 - GENERAL**

### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Provide new sheet metal work in connection with the exterior restoration.
  - 2. New masonry through wall flashing

### **1.2 RELATED SECTIONS**

- A. Section 04012 – Maintenance of Masonry
- B. Section 07920 – Joint Sealants

### **1.3 REFERENCES**

- A. Copper, Brass, and Bronze Handbook Sheet Copper Applications, published by the Copper development Associations, Inc., (CED), New York, NY.
- B. Factory Mutual Loss Prevention Data Sheet 1-49.
- C. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)

### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For sheet metal flashing and trim.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Distinguish between shop- and field-assembled work.
  - 3. Include identification of finish for each item.
  - 4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.
- C. Samples:
  - 1. For each exposed product and for each color and texture specified.

### **1.5 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.



## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

### 2.2 SHEET METAL MATERIALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Through Wall Flashing:
  - 1. Stainless-Steel Sheet: Minimum 22 gage, ASTM A 240/A 240M, Type 304, dead soft, fully annealed; 2D (dull, cold rolled), or 2B (bright, cold rolled are approved finishes).
- C. Metal Coping
  - 1. Metallic-Coated Steel Sheet: Minimum 24 gage, zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation; prepainted by coil-coating process to comply with ASTM A 755/A 755M.
  - 2. Surface: Manufacturer's standard clear acrylic coating on both sides.
  - 3. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 4. Color: As selected by Owners Representative from manufacturer's full range.
  - 5. Cleats: Minimum 22 gage continuous.



- D. Termination Bar: Aluminum, 1/8 inch by 1 inch (minimum), slotted holes 4 inches on center, top edge flat or with caulk dip depending on application.

## 2.3 UNDERLAYMENT MATERIALS

- A. Flexible Sheet Flashing for Through Wall Flashing: Self, adhering, reinforced, rubberized asphalt sheet membrane; minimum 40 mil thick;
  - 1. Perma-A-Barrier Wall Flashing by WR Grace or approved substitute.
  - 2. Primer: "Perma-A-Barrier Surface Conditioner" or as recommended by the sheet Manufacturer.
  - 3. Seam and lap Joints Membrane: Rubberized, asphalt based liquid membrane
    - a. Bituthene Liquid Membrane by WR Grace or approved substitute.

## 2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
  - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
    - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  - 2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
  - 3. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.
- C. Solder:
  - 1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
  - 2. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.



- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

## 2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  - 1. Obtain field measurements for accurate fit before shop fabrication.
  - 2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  - 3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
  - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
  - 2. Use lapped expansion joints only where indicated on Drawings.
- C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.



**PART 3 - EXECUTION**

**3.1 INSTALLATION, GENERAL**

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  - 3. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
  - 4. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
  - 1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  - 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
  - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
  - 2. Use lapped expansion joints where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.



1. Do not solder metallic-coated steel or aluminum sheet.
2. Do not use torches for soldering.
3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
5. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.

H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

### 3.2 THROUGH WALL FLASHING INSTALLATION

- A. Remove existing mortar and clean surfaces that are to receive flashings.
- B. Install prefabricated pan flashings with maximum 24 inch legs with soldered seams at transitions and corners. Incorporate soldered end dams at all flashing terminations. Otherwise, fabricate and install flashings with maximum available lengths.
- C. In field of walls, overlap pan flashing ends a minimum four (4) inches. Set overlapped ends in full bed of waterproofing liquid mastic compatible with flexible sheet membrane.
- D. Fully adhere flexible sheet membrane to horizontal leg of metal pans and to clean, sound inboard wall surfaces. Use primer on inboard wall surfaces as required for proper adhesion. Lap ends of sheet flashing a minimum six (6) inches. Seal all flashing ends and terminations with compatible liquid mastic.
- E. Install termination bar to top of flexible sheet membrane with masonry anchors at maximum 12 inches on center and encapsulate top edge with compatible liquid mastic.
- F. At masonry expansion joints, flashing system shall run continuously through without termination.

### 3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

- End of Section -

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Chemical treatment application to reduce water infiltration in natural stone.

1.02 RELATED SECTIONS

- A. Section 02220 – Selective Demolition
- B. Section 04012 – Maintenance of Masonry
- C. Section 07920 – Joint Sealants

1.03 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Products used in this work shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner's Representative.
- B. In acceptance or rejection of the work of this Section, the Owner's Representative will make no allowance for lack of skill on the part of the workmen.
- C. Mock-ups: Prepare sample for each type of substrate to be treated to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Locate mock-ups on existing surfaces where directed by the Owner's Representative.
    - a. Provide mockup of at least 25 square feet to include surface preparation, cleaning, sealant joint, and juncture details and allow for evaluation of repellent performance and finish.
    - b. Conduct Rilem test on cured field sample. Adjust application until required repellent performance is achieved.
    - c. Manufacturer's representative will review technical aspects, surface preparation, application, and workmanship.
  - 2. Approval of mock-ups does not constitute approval of deviations from the Contract Documents unless specifically approved by the Owner's Representative.
  - 3. Maintain field sample during construction for workmanship comparison.
  - 3. Subject to compliance with requirements, approved mock-ups may become part of the completed Work.

1.04 SUBMITTALS

- A. As provided in Section 01300.
- B. Submit manufacturer's technical data sheet for each product indicated including chemical analysis and recommendations for their application and use. Include test reports and certifications indicating that products comply with requirements.

1.04 PROJECT/SITE CONDITIONS

- A. Ensure all cleaning and masonry repair work has been completed.
- B. Cover air intakes, air conditioning vents and similar openings that may come in contact with



the water repellent and residue fumes. Leave covers in place until application of water repellent is complete.

- C. Protect trees, plants, foliage, storm sewers, and surrounding surfaces from water repellent.
- D. Take appropriate precautions to avoid harm to building occupants, pedestrians and nearby property. Terminate work when wind drift may cause contact with passerby or vehicles and adjacent property.
- E. Deliver materials to the job site in original, unopened containers. Materials are to be stored in a protected area between 45 - 90 degrees F.
- F. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- G. Apply sealer when surface, air, and material temperatures are within a temperature range acceptable to the manufacturer.
- H. Do not apply sealer in rain or when rain is expected within 24 hours. Do not apply below 40 degrees F or when temperatures are expected to fall below 40 degrees F within 24 hours.

1.06 Warranty

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.
- B. Furnish a manufacturer's standard 5-year warranty.

PART TWO - PRODUCTS

2.01 WATER REPELLENT SEALER

- A. General: Except as specifically otherwise directed by the Owner's Representative. Use only the type of sealants described in this Section.
- B. Siloxane, Penetrating Water Repellent: Clear, containing 5 percent or more solids of oligomeric alkylalkoxysiloxanes; with alcohol, ethanol, mineral spirits, water, or other proprietary solvent carrier; and with 400 g/L or less of VOCs.
  - 1. Natural Stone Treatment WB Plus as manufactured by Prosoco.
  - 2. MasterProtect H 107 as manufactured by BASF.
  - 3. Weather-Guard as manufactured by Euclid Chemical.
  - 4. Or Owner's Representative approved equivalent.

2.05 OTHER MATERIALS

- A. All other materials not specifically described but required for complete installation of water repellents shall be first quality of their respective kinds, new, and as selected by the contractor subject to the approval of the Owner's Representative.

PART THREE - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.
- B. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements. Check moisture content in representative locations by method recommended by manufacturer.
- C. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
- D. Verify that required repairs are complete, cured, and dry before applying water repellent.
- E. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.

### 3.02 SURFACE PREPARATION

- A. Protection: Protect plant life and surfaces to remain uncoated during application. Use drop cloths or masking as required.
- B. Prepare surfaces in accordance with manufacturer's instructions.
- C. Verify substrate has properly cured. Surfaces shall be clean and structurally sound. Remove dust, dirt, oil, grease, chemical films, coatings and other contaminants before application.
- D. Cracks and spalls must be repaired and cured prior to application.
- E. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, according to repellent manufacturer's written instructions.
- F. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions.
- G. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
  - 1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

### 3.03 APPLICATION

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.
- B. Stir material thoroughly before and periodically during use. Do not dilute.
- C. Apply coating of water repellent on surfaces to be treated using low-pressure spray to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.

- D. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.
- E. Apply even distribution of sealer.
- F. Clearly mark or identify areas that have been treated at the end of each shift.

3.04 FIELD QUALITY CONTROL

- A. RILEM Test:
  - 1. Perform RILEM tube test in accordance with industry standard practices. Perform 1 test for every 200 sq. ft. of completed installation.
  - 2. No moisture/water absorption over the course of 1 hour will constitute acceptable project requirements. Locations that fail to meet this requirement will have water repellent re-applied until the requirements are met. Follow water repellent manufacturer's written application instructions for re-application procedures.
  - 3. Report results to Owner and Owner's Representative for project record.

3.05 PROTECTION

- A. Protect sealer from damage during construction.

3.06 CLEAN UP

- A. Cleanup shall be performed on a daily basis, or more often as may be necessary.
- B. Upon completion of work, remove all protective coverings and coatings, and clean window glass and other spattered surfaces. Remove spattered coating by proper methods as recommended by the manufacturer, using care not to damage adjacent surfaces.

**END OF SECTION 07 190**

SECTION 07 9200  
JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Remove and replace joint sealant and back-up material where shown on the drawings and elsewhere as required to provide a positive barrier against passage of air and passage of moisture.
- B. Related Work Described Elsewhere
  - 1. Adhere strictly to the caulking and sealant specifications and to the detail drawings.

1.2 RELATED SECTIONS

- A. Section 02 4119 – Selective Demolition
- B. Section 04 0120 – Maintenance of Masonry

1.3 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Products used in this work shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner's Representative.
- B. In acceptance or rejection of the work of this Section, the Owner's Representative will make no allowance for lack of skill on the part of the workmen.
- C. Mock-ups: Prepare sample for each type of sealant joint at each substrate to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Locate mock-ups on existing surfaces where directed by the Owner and Consultant.
    - a. Provide mockup of at least 2 lineal feet to include surface preparation, cleaning, sealant joint, and back-up materials.
    - b. Pre-Construction Field-Adhesion Testing: Before installing sealants, field test their adhesion to project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
    - c. Manufacturer's representative will review technical aspects, surface preparation, application, and workmanship.
  - 2. Approval of mock-ups does not constitute approval of deviations from the Contract Documents unless specifically approved by the Owner's Representative.
  - 3. Maintain field sample during construction for workmanship comparison.
  - 4. Subject to compliance with requirements, approved mock-ups may become part of the completed Work.

SECTION 07 9200  
JOINT SEALANTS

1.4 SUBMITTALS

- A. As provided in Section 01 3000.
- B. Product data and a color chart for each sealant will be delivered to the Owner's Representative. The Owner will select colors for each sealant from the manufacturer's standard colors.
- C. Submit manufacturer's technical data sheet for each product indicated including chemical analysis and recommendations for their application and use. Include test reports and certifications indicating that products comply with requirements.
- D. Pre-Construction: Field adhesion test reports.
- E. Field adhesion test reports.

1.5 PRODUCT HANDLING

- A. Deliver materials to the job site in original, unopened containers. Materials are to be stored in a protected area between 40 - 80 degrees F.
- B. Do not retain on the job site any material that has exceeded the shelf life recommended by its manufacturer.
- C. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional cost to the Owner.

1.6 JOB CONDITIONS

- A. Do not apply sealants when the surface temperature is below 40 degrees F. or above 125 degrees F. Do not apply materials when surface is damp or during cold, rainy, or frosty weather.

1.7 WARRANTY

- A. Furnish a written guarantee signed by the application contractor or firm, warranting the materials and workmanship to be watertight for a period of two (2) years from date of completion of the Work.
- B. Provide sealant manufacturer's standard limited watertight warranty for period of ten (10) years from the date of completion of the Work.

SECTION 07 9200  
JOINT SEALANTS

PART 2 - PRODUCTS

2.1 SEALANTS

- A. General: Except as specifically otherwise directed by the Owner's Representative. Use only the type of sealants described in this Section.
- B. Window Perimeter Sealant: Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
  - 1. Spectrum 1 as manufactured by Tremco.
  - 2. DOWSIL 790/791 as manufactured by The Dow Chemical Company.
  - 3. Sikasil WS-290 as manufactured by Sika
  - 4. Or Owner's Representative approved equivalent.
- C. Wet Glazing and Building Control Joint: Polyurethane, S, NS, Class 50, NT; single-component, nonsag;
  - 1. Dymonic 100 as manufactured by Tremco.
  - 2. SikaFlex NP 2 as manufactured by Sika
  - 3. StoSeal STPE Sealant as manufactured by Sto
  - 4. Or Owner's Representative approved equivalent.

2.2 BACK-UP MATERIALS

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
  - 1. Provide sealant backing by same manufacturer as sealant or by a manufacturer that is approved by the sealant manufacturer.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints

SECTION 07 9200  
JOINT SEALANTS

PART THREE - EXECUTION

3.1 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove all existing sealant and backing materials from the horizontal and vertical joints in the stone cladding, brick masonry expansion or control joints, and window, door and equipment perimeters.
- B. Remove all existing window wet glazing and frame joint sealants and backing material. Trim existing glazing gaskets flush with frame as detailed.
- C. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Clean joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- D. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- E. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.3 INSTALLATION OF BACK-UP MATERIAL

- A. Use only the back-up material recommended by the manufacturer of the sealant and approved by the Owner's Representative for the particular installation, compressing the back-up material 25% to 50% to secure a positive and secure fit. When using back-up of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

SECTION 07 9200  
JOINT SEALANTS

3.4 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply. Verify the joint type according to the details in the drawings and verify that the required proportion of width of joint to depth of joint has been secured.
- B. Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.
- C. Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surfaces would be objectionable.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.5 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
  - 1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 5 tests for each kind of sealant, joint profile, and joint substrate.
  - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.



SECTION 07 9200  
JOINT SEALANTS

3.6 Cleaning Up

- A. Remove masking tape immediately after joints have been tooled.
- B. Cleanup shall be performed on a daily basis, or more often as may be necessary. Contractor shall use a magnet bar to sweep all ground areas along and around the building where work was performed prior to leaving that area of work.
- C. Keep adjacent surfaces clean and free from sealant as the installation progresses. Use solvent or cleaning agent as recommended by the sealant manufacturer.

**END OF SECTION 07 9200**