

# PROJECT MANUAL

## BRAZORIA COUNTY HISTORICAL MUSEUM

### EXTERIOR RESTORATION AND REPAIR

100 East Cedar  
Angleton, Texas 77515



**ARCHITECT**  
VOLZ & ASSOCIATES, INC.  
1105 West 42nd Street  
Austin, Texas 78756



Exp.  
5/12                      6/15/11

CONSTRUCTION DOCUMENT SET  
June 15, 2011

Architect's Project No. 010-10



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**01 11 00      SUMMARY OF THE WORK**

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PART 1 - GENERAL

1.1 PROJECT DESCRIPTION:

A. The Work includes, but is not limited to:

1. Removal of damaged stucco from exterior masonry and application of new stucco
2. Fabrication and installation of new copper scuppers, leaders, and downspouts
3. Masonry repair, and re-pointing
4. Exterior Masonry cleaning in selected areas to remove mold/mildew
5. Restoration of selected historic wood windows
6. Repair of exterior iron railing
7. Removal of landscaping
8. Limited site work including protection, re-sodding, and tree trimming

B. Hazardous Materials Abatement/Management: The Owner has conducted a hazardous materials survey of the building. Copies of the report are available from the Owner. Findings of the report indicate the some materials do contain asbestos and lead. The Owner shall contract separately to remove identified asbestos-containing materials prior to and during the Work of this Contract. Management of lead paint will be the Contractor's responsibility under this contract. Contractor shall engage services of its own specialist consultants for the management/abatement treatments, monitoring, and legal disposal of lead paint and shall include costs thereof in the bid. The Architect has no responsibility or liability for design, removal of or testing for asbestos/lead management/abatement. Contractor's proposed abatement procedures must ensure the protection of the building's historic materials.

C. The Work as defined in the Drawings and Project Manual will be constructed under a single prime contract with a Construction Manager.

D. Project Location:

Brazoria County Historical Museum  
100 East Cedar  
Angleton, Texas 77515

1.2 PROJECT REPRESENTATIVES

A. Owner: The Owner referred to in these Contract Documents is:

Brazoria County  
E. J. "Joe" King, County Judge  
111 E Locust St # 102A  
Angleton, TX 77515-4642  
(979) 864-1200

B. Architect

1. Restoration Architect: The Architect referred to in these Contract Documents is Volz & Associates, Inc., represented by

Chris Hutson, Architect  
Volz & Associates, Inc.  
1105 W. 42<sup>nd</sup> Street  
Austin, Texas 78756  
(512) 476-0433 (Phone)  
(512) 476-2198 (Fax)  
[chutson@volzassociates.com](mailto:chutson@volzassociates.com).

1.3 WORK UNDER OTHER CONTRACTS

- A. Separate Contract: Should additional asbestos containing material be identified during the Work, the Owner will award a separate contract for performance of asbestos abatement at the site. Those operations will be conducted simultaneously with work under this Contract.
- B. Cooperate fully with separate contractors so that work under those contacts may be carried out smoothly, without interfering with or delaying work under this Contract. Refer to Division 1 Section "Project Coordination – Multiple Prime Contracts" for coordination with separate contractors.
  1. Contractor shall provide, install, and allow abatement contractor access to and use of scaffolding for abatement of any asbestos-containing materials on the exterior.

1.4 CONTRACTOR USE OF PREMISES:

- A. Owner Occupancy: Owner Occupancy: The Owner SHALL occupy the building during the construction period.
- B. Use of the Site: Limit use of the premises to areas impacted by work defined in contract documents:
  1. Contractor shall protect all landscaping, including paving, trees, shrubs, grass and sprinkler system except in areas of work as indicated on the drawings. Any damage will be responsibility of the Contractor to repair to match existing at no expense to the Owner.
  2. Contractor Parking: Use of the parking areas around the site shall be coordinated with Brazoria County.
  3. Driveways and Entrances: Keep entrances serving the premises clear and available at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
  4. Do not unreasonably encumber the site with materials or equipment.

- C. Use of Existing Building: Take all precautions necessary to protect the building during the construction period. Maintain the existing building in a weathertight condition throughout the construction period. Repair all damage caused by construction operations or building exposure.
1. Use of existing building toilets will not be permitted.
  2. Use of existing interior building stair will be permitted after stair has been properly protected.
  3. Use of existing elevator will not be permitted.
- D. Supervision: The Project Superintendent for the General Contractor shall be on site at all times when work is in progress.
- E. Waste Materials: Dispose of all inert waste material from the construction process off site. Do not dispose of organic or hazardous material on site either by burial or by burning. Dispose of any hazardous materials in an accepted and lawful manner at an approved disposal site.
1. Refer to Division 1 Section "Temporary Facilities" for additional cleaning requirements.
  2. Refer to Division 1 Section "Project Closeout" for final cleaning requirements.
- F. Storm Water: Comply with local, DPA, and Texas Department of Health requirements for containment and treatment of storm water. Submit storm water plan, if required by governing authorities.
- G. Humidity and Temperature Control: Maintain electrical and mechanical systems to provide adequate temperature and humidity control within the building.
1. Coordinate with Owner in advance of any disconnection or interruption of HVAC system. Adequate temperature shall be defined as maintaining existing temperature / humidity settings at all spaces.
- H. Dress and Conduct: Owner will expel from job site individuals who fail to comply with the following rules:
1. Minimum street dress shall include shoes, long pants, and shirt at all times.
  2. Amplified music will not be permitted.
  3. Use of foul language will not be permitted.
  4. Smoking on the site will not be permitted.

#### 1.5 WORK IN HISTORIC STRUCTURES:

- A. General: Historical classification of this building requires Contractor to exercise special caution in executing all stages of work to prevent unnecessary damage to historical features, conditions, or materials. Refer to Division 1 Section "Special Procedures for Historic Materials" for additional details.

- B. Contractor to apprise all sub-contractors and workmen of special precautions required when working with historic buildings.
- C. Contractor to monitor the work of all trades to prevent unnecessary or otherwise avoidable damage to historical features, conditions, or materials.
- D. Contractor shall immediately notify Architect and Owner as concealed historical conditions are uncovered during the course of the work and shall allow and facilitate the documentation of those conditions.
- E. Governing Authority: The Brazoria County Historical Museum is subject to the provisions of the Secretary of the Interior's Standards for Rehabilitation. The THC has authority to review and approve or disapprove all renovation and restoration work.
  - 1. Make the site available and accessible to representatives of the Texas Historical Commission upon request and as required within these specifications. Refer to Division 1 Section "Project Coordination – Texas Historical Commission" for additional details.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

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**01 21 00 ALLOWANCES**

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PART 1 - GENERAL

1.1 SUMMARY:

- A. This Section includes administrative and procedural requirements governing allowances.

Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

- B. Types of allowances include the following:

1. Lump-sum allowances.
2. Inspection and testing allowances.

1.2 RELATED DOCUMENTS:

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

- B. The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Payment Procedures" specifies procedures for including each allowance in the Schedule of Values.
2. Division 1 Section "Contract Modification Procedures" specifies procedures for submitting and handling Change Orders.

1.3 SELECTION AND PURCHASE:

- A. At the earliest practical date after award of the Contract, advise the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

- B. At the Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

- C. Purchase products and systems selected by the Architect from the designated supplier.

1.4 SUBMITTALS:

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

- B. Submit invoices or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.5 UNUSED MATERIALS:

- A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.
- B. When requested by the Architect, prepare unused material for storage by Owner where it is not economically practical to return the material for credit. When directed by the Architect, deliver unused material to the Owner's storage space. Otherwise, disposal of unused material is the Contractor's responsibility.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 PROJECT CLOSEOUT:

- A. At Project closeout, credit unused amounts remaining in allowances to the Owner by Change Order.

SCHEDULE OF ALLOWANCES:

Allowance No. 1: Include the sum of \$12,500.00 for Owner's discretionary allowance.

Allowance No. 2: Include the sum of \$2,500.00 for testing of materials. The Owner will select a qualified testing agency to perform tests and to submit test reports. Contractor shall pay for testing under this allowance. Tests included are: all brick and mortar testing as specified in Division 4 Section "Masonry Restoration and Cleaning". All other testing required in the Specifications shall be included in the base bid.

Allowance No. 3: Include the sum of \$5,000.00 for repair and replacement of deteriorated roof decking. Contractor's overhead and profit shall be included in the base bid.

Allowance No. 4: Include the sum of \$15,000.00 for brick masonry repair at parapets after removal of stucco. Repointing and Contractor's overhead and profit shall be included in the base bid.

Allowance No. 5: Include the sum of \$5,000.00 for repair of decorative iron railing at south elevation. Removal, Painting, Re-installation, and Contractor's overhead and profit shall be included in the base bid.

END OF SECTION 01020

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**01 22 00      UNIT PRICES**

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PART 1 - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and procedural requirements for unit prices solicited by the Owner as a part of the Contractor's bid and subsequently incorporated into the Agreement. Specified unit prices not listed in the Agreement are subject to determination at the time of change in the work.
- B. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- B. The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS:

- A. A unit price is an amount proposed by bidders and stated on the Bid Form as a price per unit of measurement for materials and/or services that will be added to or deducted from the contract Sum by appropriate modification in the event the estimated quantities of Work required by Contract Documents are increased or decreased.

1.4 PROCEDURES:

- A. Unit prices include all direct and indirect costs including necessary material, delivery, installation, insurance, labor, overhead, profit and applicable taxes.
- B. Measurement and Payment: Refer to referenced Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Schedule: A "Unit Price Schedule" is included at the end of this Section. Sections referenced in the Schedule contain requirements for products and execution requirements described under each unit price.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

3.1 UNIT PRICE SCHEDULE:

A. Unit Price #1 - Additional Brick Repair/Repointing:

1. Description: Square foot of brick masonry that requires repair and repointing over that indicated on drawings and according to Division 4 Section "Masonry Restoration and Cleaning".
2. Unit of Measurement: Square foot of masonry wall area.

B. Unit Price #2- Additional Roof Deck Repair

1. Description: Additional removal and replacement of deteriorated roof deck over that indicated on drawings and according to Division 6 Section "Rough Carpentry"
2. Unit of Measurement: Square foot of roof deck area.

END OF SECTION

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**01 23 00      ALTERNATES**

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PART I - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and procedural requirements for Alternates.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division - 1 Specification sections, apply to the work of this section.

1.3 DEFINITIONS:

- A. An Alternate is an amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents.

1.4 PROCEDURES:

- A. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.
1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.
- B. Notification: Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates.
- C. Execute accepted alternates under the same conditions as other Work of this Contract.
- D. Schedule: A "Schedule of Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each Alternate.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

SCHEDULE OF ALTERNATES:

Bid Alternate No. 1:

Delete installation of concrete splashblocks at downspouts. Substitute connection of downspouts to new 6" nom. PVC below grade lines as shown on the Drawings. Verify slope, locations and routing of lines prior to excavation. Work to include utility trench excavation and backfill, and modification or cutting of existing concrete drainage culvert and concrete curbs as necessary. Provide and install clean-outs where shown on the Drawings.

Bid Alternate No. 2:

Remove existing built-up roof system at one story mechanical room. Clean surfaces to remove all existing mastic and sealant. Temporarily relocate existing emergency generator. Provide and install new fully-adhered PVC roof system with tapered insulation. Provide new through wall scupper at drain. Assume salvage and re-use of existing leader and downspout. Install masonry infill at existing window openings near roof level. Remove, modify, repair and re-install existing windows (one wood sash, one steel) as detailed. Re-install and re-connect emergency generator.

END OF SECTION

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**01 25 00      SUBSTITUTION PROCEDURES**

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PART I - GENERAL

1.1 SUMMARY:

- A. Substitutions: The contractor's requests for changes in the products, materials, and equipment required by the Contract Documents are considered requests for "substitutions", and are subject to the requirements specified herein. The following are not considered as substitutions:
1. Revisions to the contract documents, where requested by the Owner or Architect are considered as "changes" not substitutions.
  2. Clarifications requested during the bidding period, which have been accepted by Addendum prior to the Contract date, are included in the Contract Documents and are not subject to the requirements for substitutions as herein specified.
  3. Specified Contractor options on products and construction methods included in the Contract documents are choices available to the Contractor and are not subject to the requirements for substitutions as herein specified.
  4. Except as otherwise provided in the Contract Documents, the Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including Uniform General, Special, and Supplementary Conditions and Division - 1 Specification sections, apply to the work of this section.
- B. Standards: Refer to Division-1 Section "References" for the applicability of industry standard to the products specified for the project, and for the acronyms used in the text of the specification sections.

1.3 SUBMITTALS:

- A. Substitution Request Submittal: Submit 5 copies of each request for substitution. In each request identify the product or fabrication or installation method to be replaced by the substitution; include related specification section and drawing numbers, and complete documentation of the product originally specified to permit comparison with the substitution. Include the following information, as appropriate, with each request.

1. Provide complete product data, drawings and description of products, and fabrication and installation procedures.
  2. Provide samples where applicable or requested.
  3. Provide a detailed comparison of the significant qualities of the proposed substitution with those of the work originally specified. Significant qualities include elements such as size, weight, durability, performance and visual effect where applicable.
  4. Provide complete coordination information. Include all changes required in other elements of the work to accommodate the substitution, including work performed by the Owner and Separate Contractors.
  5. Provide a statement indicating the effect the substitution will have on the work schedule in comparison to the schedule without approval of the proposed substitution. Include information regarding the effect of the proposed substitution on the Contract Time.
  6. Provide complete cost information, including a proposal of the net change, if any in the Contract Sum.
  7. Provide certification by the Contractor to the effect that, in the Contractor's opinion, after thorough evaluation, the proposed substitution will result in work that in every significant respect is equal-to or better than the work required by the Contract Documents, and that it will perform adequately in the application indicated.
  8. Include in this certification, the Contractor's waiver of rights to additional payment or time, which may subsequently be necessary because of the failure of the substitution to perform adequately.
- B. Architect's Action: Do not use substitution products in the work until written acceptance by Architect has been made.

## PART 2 - PRODUCTS:

### 2.1 PRODUCER'S STATEMENT OF APPLICABILITY:

- A. Where individual specification sections indicate products that require a "Statement of Applicability" from the manufacturer or other producer, submit a written-certified statement from the producer stating the producer has reviewed the proposed application of the product on the project. This statement shall state that the producer agrees with or does not object to the Architect's specification and the contractor's selection of the product for use in the Work. The statement shall also state that the proposed application of the product on the project is suitable and proper.

## 2.2 SUBSTITUTIONS:

- A. Conditions: The Contractor's request for a substitution will be received and considered when extensive revisions to the Contract Documents are not required, when the proposed changes are in keeping with the general intent of the Contract Documents, when the requests are timely, fully documented and properly submitted, and when one or more of the following conditions is satisfied, all as judged by the Architect; otherwise the requests will be returned without action except to record non-compliance with these requirements.
1. The Architect will consider a request for substitution where the specified product or method cannot be provided within the Contract Time. However, the request will not be considered if the product or method cannot be provided as a result of the Contractor's failure to pursue the work promptly or to coordinate the various activities properly.
  2. The Architect will consider a request for substitution where the specified product or method cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
  3. The Architect will consider a request for substitution when the specified product or method cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.
  4. The Architect will consider a request for substitution when the specified product or method cannot receive a warranty as required by the Contract Documents and where the Contractor certifies that the proposed substitution can receive the required warranty.
  5. The Architect will consider a request for substitution when the requested substitution meets the requirements of 8.3.5 of the Uniform General Conditions.
- B. Work-Related Submittals: The Contractor's submittal of and the Architect's acceptance of shop drawings, product data or samples which relate to work not complying with requirements of the Contract Documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.

## PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

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**01 26 00      CONTRACT MODIFICATION PROCEDURES**

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PART 1 - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including Uniform General, Special, and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Submittal Procedures" for requirements for the Contractor's Construction Schedule.
  2. Division 1 Section "Payment Procedures" for administrative procedures governing Applications for Payment.
  3. Division 1 Section " Substitution Procedures" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 MINOR CHANGES IN THE WORK:

- A. The Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on AIA Form G710, Architect's Supplemental Instructions.

1.4 REQUESTS FOR INFORMATION:

- A. The Contractor may request clarifications and instructions regarding the Contract Documents. A Request for Information (RFI) is a means for which the Contractor shall use to request such guidance and instruction from the Architect. These are to be sequentially numbered and an RFI register shall be maintained by the Contractor. This register shall be updated and reviewed monthly at the monthly progress meeting. Use form supplied with this Specification Section. RFIs requiring a response from the Architect will be addressed within 14 days of receipt. If consultation with consultants is necessary, RFIs will be addressed within 21 days of receipt.

1.5 CHANGE ORDER PROPOSAL REQUESTS:

- A. Owner-Initiated Proposal Requests: The Architect will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Change Proposal Requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
  2. Unless otherwise indicated in the Change Proposal Request, within 20 days of receipt of a Change Proposal Request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the change.
    - a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts. Include costs for applicable changes to bonding and insurance requirements.
    - c. Differentiate between material and labor costs related to the proposed change.
    - d. Indicate portions of the proposed change that will be performed by the General Contractor's own forces, and portions that will be performed by Sub-contractor's forces.
    - e. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- B. Contractor-Initiated Change Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect within 21 days of the occurrence of any event or the discovery of any such condition.
1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
  2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
  3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts. Include costs for applicable changes to bonding and insurance requirements.
  4. Comply with requirements in Division 1 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for a product or system specified.

5. When Contractor repeatedly initiates Change Proposals for proposed work that is already indicated in Contract Documents, or initiates Requests for Information where such information is available in the Contract Documents, and Architect determines that such requests or proposals are excessive, then Contractor shall be responsible for all costs associated with the Architect's additional services to generate responses. Such costs will be paid by the Owner and deducted from amounts owed the Contractor in the subsequent Application for Payment.

C. Change Proposal Request Form: Use AIA Document G709 for all Change Proposal Requests.

#### 1.6 ALLOWANCES:

A. Allowance Adjustment: For allowance-cost adjustment, base each Change Order Proposal on the difference between the actual purchase amount or applicable unit price and the allowance, multiplied by the final measurement of work-in-place. Where applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in the purchase amount only where indicated as part of the allowance.
2. When requested, prepare explanations and documentation to substantiate the margins claimed.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or the Contractor's handling, labor, installation, overhead, and profit. Submit claims within 10 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. The Owner will reject claims submitted later than 10 days.

1. No change to the Contractor's indirect expense is permitted for selection of higher or lower-priced materials or systems of the same scope and nature as originally indicated.

#### 1.7 CONSTRUCTION CHANGE DIRECTIVE:

A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on AIA Form-G714. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract (or to support claim as may be applicable).

1.8 CHANGE ORDER PROCEDURES:

- A. Upon the Owner's approval of a Proposal Request, the Architect will issue a Change Order for signatures of the Owner and the Contractor on AIA Form G701.
- B. Change Orders will be written once a month.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

# REQUEST FOR INFORMATION (RFI)

RFI No. \_\_\_\_\_

Date: \_\_\_\_\_ Pages, including this one

Project: \_\_\_\_\_

From: \_\_\_\_\_ To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Subject: \_\_\_\_\_

Reference: Drawing No. \_\_\_\_\_ Spec. Section /Page \_\_\_\_\_

**INFORMATION REQUESTED:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

This clarification will result in:

\_\_\_\_\_ Possible Cost Change \_\_\_\_\_ Possible Time Extension \_\_\_\_\_ No Cost Change \_\_\_\_\_ No Time Extension

Please respond by: \_\_\_\_\_ Normal (7-14 days) \_\_\_\_\_ Important (3-7 days) \_\_\_\_\_ Urgent (immediately)

Submitted by: \_\_\_\_\_

**RESPONSE:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Response By: \_\_\_\_\_ Date: \_\_\_\_\_

Attachment: \_\_\_\_\_ Number of Pages: \_\_\_\_\_

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**01 29 00      PAYMENT PROCEDURES**

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PART 1 - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
- B. Coordinate the Schedule of Values, Schedule Of Estimated Monthly Pay Requests, and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontractors.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including Uniform General, Special, and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Submittal Procedures" for specification of the Contractor's Construction Schedule.
  - 2. Division 1 Section "Closeout Procedures" for requirements prior to final payment.

1.3 SCHEDULE OF VALUES:

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
  - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
    - a. Contractor's Construction Schedule.
    - b. Application for Payment forms, including Continuation Sheets.
    - c. List of subcontractors.
    - d. Schedule of allowances.
    - e. Schedule of alternates.
    - f. List of products.
    - g. List of principal suppliers and fabricators.
- B. Submit the Schedule of Values to the Architect at the earliest possible date but no later than the Pre-Construction Conference.
- C. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for labor and one line item for materials for each Specification Section. The Architect may require further breakdown of

line items in each section. Use same activity names and terms as used in the Work Progress Schedule.

- D. Identification: Include the following Project identification on the Schedule of Values:
1. Project name and location.
  2. Name of the Architect.
  3. Architect's project number.
  4. Contractor's name and address.
  5. Date of submittal.
- E. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
1. Generic Name.
  2. Related Specification Section or Division.
  3. Description of Work.
  4. Name of subcontractor.
  5. Name of associated manufacturer, fabricator, or supplier.
  6. Breakdown of labor and material costs for each item.
  7. Change Orders that affect value.
  8. Dollar value.
  9. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
- F. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
- G. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
- H. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.
1. Differentiate between items stored on-site and items stored off-site. Include requirements for insurance and bonded warehousing, if required.
- I. Provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- J. Margins of Cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.
- K. Temporary facilities and other major cost items that are not direct cost of actual work-in-place shall be shown as separate line items in the Schedule of Values.

- L. Change Orders: With each Application for Payment submit Change Orders or Construction Change Directives that result in a change in the Contract Sum. Submit each Change Order as a new line item with a separate Schedule of Values for each.

#### 1.4 SCHEDULE OF ESTIMATED MONTHLY PAY REQUESTS:

- A. Contractor shall provide Schedule of Estimated Monthly Pay Requests along with the Schedule of Values. The Schedule of Estimated Monthly Pay Requests shall show Contractor's estimate of the anticipated amounts of each of the monthly pay requests for the duration of the Project.

#### 1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment-Application Times: The date for each progress payment application is the 15th day of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 15 days prior to the date for each progress payment.
1. Submit draft copies of the Application (Preliminary Pay Worksheet) on about the first day of the month.
  2. Within 7 days, the Architect, Owner, and Contractor shall meet at the site during a regularly scheduled Progress Meeting to review the draft Application. Contractor shall address comments/concerns of Architect and Owner and then submit the Application for Payment on or before the 15<sup>th</sup> day of the month.
  3. Within 5 days of receipt of the Application for Payment, Architect will review and either certify the Application or reject it. If rejected, the Contractor shall correct it and resubmit.
- C. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.
- D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Architect will return incomplete applications without action.
1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule (Work Progress Schedule). Use updated schedules if revisions were made.
  2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. All copies shall be complete, including waivers of lien and similar attachments, when required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect and Owner.
- F. Waivers of Mechanics Lien: Submit executed Waivers of Lien as indicated.
1. Waiver Forms:
    - a. Lien must include language indicating that entity acknowledges complete satisfaction of, and forever waives and releases, any and all claims of any kind against the Owner, the Architect, the Project, the property, and Contractor, including but not limited to all statutory and constitutional mechanic's liens and all contract liens that they may be entitled to in connection with the furnishing of labor and materials in connection with the Work, including contractual retainage.
    - b. Waiver of Lien form must be verified by Contractor to be in compliance with all applicable State and County Laws.
    - c. Submit signed and notarized Contractor's Progress Payment Affidavit supplied by Owner.
  2. Partial Waivers of Lien: Submit waivers of mechanics liens from subcontractors, sub-subcontractors and suppliers for the construction period covered by the previous application.
    - a. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
    - b. When an application shows completion of an item, submit final or full waivers.
  3. Final Waiver and Release of Lien:
    - a. Submit a completed G706 - Contractor's Affidavit of Payment of Debts and Claims and Contractor's Final Payment Affidavit supplied by Owner.
    - b. Submit Waivers of Mechanics Lien from all subcontractors, sub-subcontractors and suppliers for all work prior to or at time of Application for Final Payment.
- G. Initial Application for Payment: Administrative actions and submittals, that must precede with submittal of the first Application for Payment, include the following:
1. List of subcontractors.
  2. List of principal suppliers and fabricators.
  3. Schedule of Values (due at Pre-Construction Conference).
  4. Contractor's Construction Schedule.

5. Schedule of unit prices, if any.
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
8. Initial progress report.
9. Report of preconstruction meeting.
10. Certificates of insurance and insurance policies.

H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.

1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
2. Administrative actions and submittals that shall precede this application include:
  - a. Occupancy permits and similar approvals.
  - b. Preliminary copies of warranties (guarantees) and maintenance agreements.
  - d. Preliminary copies of maintenance instructions, maintenance and operating manuals, parts catalog, wiring diagrams, spare parts, keys, etc.
  - e. Owner Training as specified in individual sections (if applicable).
  - f. Meter readings (if applicable).
  - g. Changeover information related to Owner's occupancy, use, operation, and maintenance.
  - h. Application for reduction of retainage and Consent of Surety.
  - i. Advice on shifting insurance coverage from Contractor to Owner (if any).
  - j. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.
  - k. Preliminary copies of Record Drawings and Submittals

I. Final Payment Application: Administrative actions and submittals that must precede submittal of the final Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Written verification of completion of items specified for completion after Substantial Completion.
4. Contractors Final Payment Affidavit (form supplied by Owner). Attach:
  - a. Executed Waivers of Lien from all sub contractors, sub-sub contractors, and suppliers.
5. Transmittal of required Record Documents to the Architect.
6. Removal of temporary facilities and services, materials, rubbish, and similar elements.
7. Documentation of required Owner training per specifications (if applicable).

8. Transmittal of spare parts, materials, and equipment to Owner per specifications.
9. Consent of Surety Company to Final Payment (form supplied by Owner).
10. Final copies of maintenance instructions, maintenance and operating manuals, parts catalog, wiring diagrams, spare parts, etc.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

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**01 31 14      PROJECT COORDINATION - TEXAS HISTORICAL COMMISSION**

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PART I - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and supervisory requirements necessary for coordination with the Texas Historical Commission.
- B. Overview: This project site has the following historic designations
  - 1. Recorded Texas Historic Landmark (RTHL)
  - 2. National Register of Historic Places (NR)
  - 3. State Archaeological Landmark (SAL)
- C. Participation: Where applicable, each Subcontractor shall participate in these coordination requirements even though the General Contractor may be assigned general responsibility for overall coordination purposes.

1.2 THC REVIEW AUTHORITY

- 1. STATE ARCHAEOLOGICAL LANDMARKS: The 1977 Texas Natural Resource Code, Title 9, Chapter 191, (Texas Antiquities Code) requires all development projects on State Archeological Landmark (SAL) sites to be reviewed by the Texas Historical Commission (THC). Since the building site is a designated SAL, any modifications will require a minimum 30-day advance notice to THC for review and approval.
- 2. RECORDED TEXAS HISTORIC LANDMARKS: Section 12, Article 6145 V.T.C.S. Provides guidelines for the protection of Recorded Texas Historic Landmarks which requires that no modification can be made to the building with out 60 days prior notice to be given to the Texas Historical Commission. If the work is approved by the Texas Historical Commission, the 60-day waiting period can be waived at the discretion of the Commission.
- 3. TEXAS HISTORIC COURTHOUSE ACT: Chapter 442 in the Texas Government code states that all modifications and substantial repairs to “any building that serves or has served as a county courthouse” are subject to review and approval by the Texas Historic Commission. In addition, no county may demolish, sell, lease, or damage the historical or architectural integrity of any courthouse of the county, present or past, without first giving six months notice to the Texas Historical Commission.

1.3 RELATED SECTIONS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.
- B. The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Project Meetings" for coordination of project meetings.
2. Division 1 Section "Record Documents" for coordination with record documents.
3. Division 31 Section "Earthwork" for coordination of excavation.

#### 1.4 CORRESPONDENCE

- A. All correspondence with the Texas Historical Commission, including scheduling of site visits, will be made through Volz & Associates, Inc.

#### 1.5 SITE VISITATION

- A. Any duly authorized and empowered representative of the THC may, at any time, visit the site and examine the Antiquities Permit, construction documents, field records, materials, or recovered artifacts.

#### 1.6 POTENTIAL FOR ARCHEOLOGICAL DISCOVERY

- A. Because the site is designated as a State Archaeological Landmark (SAL), an Antiquities Permit is required from the Texas Historical Commission prior to any work being performed per the Texas Natural Resource Code, Title 9, Chapter 191.
  1. Contractor shall be aware that failure to conduct the project according to the THC approved contract documents and the terms of this permit may result in cancellation of the permit.
  2. Contractor shall keep a copy of the permit on-site.
  3. Volz & Associates, Inc. will be responsible for obtaining the permit and supplying a copy to both the Owner and Contactor.
- B. Courthouse squares from this period are likely to contain wells, cisterns, foundation remnants, historic waste/privy pits, and scattered historical artifacts. Scattered artifacts that are uncovered should be saved, tagged, and logged-in as to location found.
- C. Clusters of artifacts, historic building remnants, human remains, or suspected Native American artifacts should be left in place and the project architect called immediately.
- D. All parties will respond as quickly as possible to avoid delaying the work. Found items remain the property of the County and are protected under the SAL designation.

#### 1.7 COORDINATION

- A. Changes in the Work: Architect-approved substitutions, minor changes, construction change directives, or change orders that have the potential to affect the quality or historic character of this project shall also be reviewed by THC prior to implementation. Contractor should be

aware that additional time for THC review may be required in these circumstances. Contractor shall make adjustments to the schedule and cost for the proposed change as may be required.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 31 14

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**01 31 19      PROJECT MEETINGS**

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PART I - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and procedural requirements for project meetings including but not limited to:
1. Pre-Construction Conference.
  2. Pre-Installation Conferences
  3. Progress Meetings.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including Uniform General Conditions and Division - 1 Specification sections, apply to the work of this section.
- B. Division 1 Section "Submittal Procedures" for requirements on Bar-Chart Construction Schedules.

1.3 PRE-CONSTRUCTION CONFERENCE:

- A. Prior to or concurrent with the issuance of the Notice to Proceed Letter, submission of satisfactory Performance and Payment Bonds and Insurance Forms, execution of all subcontractor subcontracts/agreements, and prior to commencement of construction activities, Contractor shall schedule the Pre-Construction Conference and organize the meeting at the project site. Contractor's Project Manager and Superintendent shall conduct the meeting to review schedule, responsibilities and personnel assignments.
- B. Attendees: The Owner, Architect, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
1. The Contractor shall notify all Attendees listed above of the scheduled meeting date, time, and location at least one week prior to the meeting. This notification shall be in writing, and may be transmitted via fax or e-mail (where available).
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
1. Project goals and objectives
  2. Tentative construction schedule.
  3. Critical Work sequencing and coordination of Work.
  4. Designation of responsible personnel.
  5. Schedule of Values.

6. Permit, license, and special inspection requirements and who is responsible for each; scheduling, timelines, approvals and reporting requirements.
7. Procedures for processing field decisions and Change Orders.
8. Procedures for processing Applications for Payment, including procedures for invoices, releases, joint checks, authorization, etc.
9. Project insurance requirements.
10. Distribution of Contract Documents.
11. Submittal of Shop Drawings, Product Data and Samples. Review procedures, issue a list of required shop drawings and submittals required for the project, listing when they are needed and who will approve and how long to get them approved.
12. Preparation of record documents.
13. Housekeeping, use of premises, and security.
14. Office, Work and storage areas.
15. Equipment deliveries and priorities.
16. Job and Safety procedures, including jobsite hours, safety, first aid, noise restrictions, cleanup requirements, equipment, adjacent property concerns, etc.
17. Open discussion of concerns, issues and comments from attendees.
18. Material Submittals to be submitted within 10 days after issuance of the Notice to Proceed Letter.

D. Contractor shall record significant discussions and agreements and disagreements of conference. Distribute the record of the meeting to everyone concerned, promptly, including the Owner and Architect.

#### 1.4 PRE-INSTALLATION CONFERENCES:

A. Conduct a pre-installation conference at the site before each construction activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect and Owner of scheduled meeting dates. Pre-installation conferences shall coincide with Architect's monthly site visit (Progress Meeting).

1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:
  - a. Unit Price Administration, where applicable.
  - b. Coordination Drawings, where applicable.
  - c. Contract Documents.
  - d. Options.
  - e. Related Change Orders.
  - f. Purchases.
  - g. Deliveries.
  - h. Shop Drawings, Product Data and quality control Samples.
  - i. Compatibility problems.
  - j. Time schedules.
  - k. Weather limitations.

- l. Manufacturer's recommendations.
  - m. Compatibility of materials.
  - n. Acceptability of substrates.
  - o. Temporary facilities.
  - p. Space and access limitations.
  - q. Governing regulations.
  - r. Safety.
  - s. Inspection and testing requirements.
  - t. Required performance results.
  - u. Recording requirements.
  - v. Protection.
- B. Contractor shall record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Distribute the record of the meeting to everyone concerned, promptly, including the Owner and Architect.
- C. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

#### 1.5 PROGRESS MEETINGS:

- A. Conduct monthly progress meetings at the Project site. Meetings shall include a review of Contractor's payment request. Coordinate dates of meetings with preparation of the payment request.
- B. Attendees: In addition to representatives of the Owner, Architect, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meeting by persons familiar with the Project and authorized to conclude matters relating to progress.
- C. Agenda: The Contractor shall provide a well-planned agenda. The agenda shall include review and correction or approval of minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
- D. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
- 1. Review the present and future needs of each entity present, including such items as:
    - a. Interface requirements.
    - b. Time.
    - c. Sequences.
    - d. Deliveries.
    - e. Off-site fabrication problems.

- f. Access.
  - g. Site utilization.
  - h. Temporary facilities and services.
  - i. Hours of Work.
  - j. Hazards and risks.
  - k. Housekeeping.
  - l. Quality and Work standards.
  - m. Review of RFI Log.
  - n. Review of Submittal Log.
  - o. Change Proposals & Change Orders.
  - p. Documentation of information for payment requests.
  - q. Review Record Documents
- E. Reporting: No later than 5 days after each progress meeting date, Contractor shall distribute copies of minutes of the meeting to each party present and to other parties who should have been present. A brief summary, in narrative form, of progress since the previous meeting will be included.
- 1. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

END OF SECTION

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**01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION**

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PART 1 - GENERAL

1.1 SUMMARY:

- A. General: This Section specifies administrative and procedural requirements for construction photographs.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including Uniform General, Special, and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Submittal Procedures" contains general submittal requirement.
  2. Division 1 Section "Closeout Submittals" contains requirements for Project Record Documents.

1.3 SUBMITTALS:

- A. Binders: Provide three 2" white 3-ring binders with first submittal of photographs and negatives.
- B. Prints: Submit prints of digital images to meet the following requirements:
1. Time: Submit photographic prints according to the following schedule:
    - a. Pre-Construction Photographs shall be submitted and accepted within one month of project start up, and prior to second Application for Payment.
    - b. Progress and Project Completion photographs shall be submitted and accepted prior to Final Project Close Out.
    - c. Photographs as needed for communication throughout the course of construction shall be submitted on an "as needed" basis.
  2. Quantity, Pre-Construction, Progress, and Project Completion Photographs: Label and submit **3 prints** of each view directly to the Architect for distribution. Architect will distribute prints as follows:
    - a. One print to the Owner as the Owner's permanent record.
    - b. One print shall be retained in the Architect's files.
    - c. One print to the Texas Historical Commission for their records.

- C. Extra Prints: When requested by the Architect, the photographer shall submit extra prints of photographs, with distribution directly to designated parties who will pay the costs for the extra prints directly to the photographer.
- D. Compact Disk: With each submittal, include a copy on 700MB re-writable compact disc (CD-RW) format containing each digital image along with index as described below. Label each compact disc "Construction Progress Photos" along with Name of Project, Name of Architect, and Name of Contractor, and date submitted.
- E. Construction Digital Images: Upon completion of Work submit **three copies** on 700MB re-writable archival quality compact disc (CD-RW) format containing each digital image along with index as described below. Label each compact disc "Construction Progress Photos" along with Name of Project, Name of Architect, and Name of Contractor, and date submitted.

#### 1.4 QUALITY ASSURANCE:

- A. Contractor to photograph construction progress with digital camera with minimum 3 megapixel resolution and adequate lighting.

## PART 2 - PRODUCTS

2.1 Digital Camera: Contractor shall provide and maintain on-site a digital camera with minimum 3 megapixel resolution. Contractor's jobsite Superintendent and Project Manager will both be knowledgeable in the use of the camera. Contractor shall send digital images to the Architect via e-mail during construction. Take photographs on a daily basis to fully document on-going and completed work. Images shall adequately show progress of existing work.

#### 2.2 DIGITAL IMAGES

- A. Construction Digital Images: At Start-Up and Completion of Work submit **3 copies** of required images on 700MB re-writable compact disc (CD-RW) format containing each digital image along with index as described below.
- B. Provide digital images at a resolution of minimum 2048 dpi x 1536 dpi (3 megapixel) in .jpeg format.
- C. Identification: Maintain a written index including the following information:
  - 1. Name of the Project.
  - 2. Name of the Architect.
  - 3. Name of the Contractor.
  - 4. Listing of all digital images included on the disc.
  - 5. Date each image was taken.
  - 6. Description of vantage point, in terms of location, direction (by compass point), and elevation or story of construction for each image.

## 2.3 DIGITAL PRINTS

- A. Provide 4" by 6" smooth surface glossy color prints on single weight commercial-grade stock, mounted in archival photo storage pages. Compile each set of photographs in a white 3 ring binder labeled "Pre-Construction Photographs" along with Name of Project, Name of Architect, and Name of Contractor, and date submitted.
- B. Identification: Label each photograph on the back with project name and date the photograph was taken. On the back of each print provide an applied label or rubber stamped impression with the following information:
1. Name of the Project.
  2. Name of the Architect.
  3. Name of the Contractor.
  4. Date the photograph was taken.
  5. Description of vantage point, in terms of location, direction (by compass point), and elevation or story of construction.

## 2.4 BINDERS AND IMAGE SLEEVES

- A. Provide **three** 2" white 3-ring binders with first submittal of photographs
- B. Label the binder edge and covers as follows:
- Construction Photographs  
Brazoria County Historic Museum  
Interior & Exterior Repairs
- C. Include the name, company, address, and phone number of the Owner, Architect, and the Contractor on the cover.
- D. Provide archival quality plastic sleeves for all photographs.
1. Print File Archival Preservers sheet 46-6P or equal ([www.printfile.com](http://www.printfile.com))

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION PHOTOGRAPHS:

- A. Pre-Construction Photographs: Before starting construction, take photographs of the site and surrounding properties from different points of view as selected by the Architect. Clearly key and mark on a site plan or floor plan the views indicated for all photographs. Include the following views:
1. Existing site conditions
  2. Existing damage on the interior of the building including water stains, window conditions, floor covering damage, etc.

3. Existing broken glass or other damage not noted on plans.

- B. Progress photographs: take photographs in sufficient number in areas of work in progress and during any investigative work. Photographs should illustrate all stages of work, from start to finish. Include newly exposed structural conditions during process of construction. Document removal of rotted material where applicable.
- C. Completion photographs: take photographs in sufficient number documenting the completion of all scopes of work, including parallel “before” and “after” views coordinated with Pre-Construction Photographs where applicable.

### 3.2 OTHER PHOTOGRAPHIC REQUIREMENTS:

- A. Additional Photographs: The Architect may issue requests for additional photographs, in addition to photographs specified. Additional photographs will be paid for by Change Order, and are not included in the Contract Sum or an Allowance.
  - 1. The Architect will give the photographer 3 days notice, where feasible.
  - 2. In emergency situations, the photographer shall take additional photographs within 24 hours of the Architect's request.

### 3.3 PROJECT CLOSE OUT

- A. Digital Images: Upon completion of Work submit **3 copies** on 700MB re-writable disc (CD-RW) or DVD-RW format containing each digital image along with index as described below. Label each compact disc "Construction Progress Photos" along with Name of Project, Name of Architect, and Name of Contractor, and date submitted.
- B. Digital Prints: Submit specified quantity of sleeved digital prints for insertion into project binders submitted at the beginning of the project.

END OF SECTION

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**01 33 00 SUBMITTAL PROCEDURES**

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PART I - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and procedural requirements for submittal of Contractor's Bar Chart Construction Schedule, Submittal Register, Unit Price Schedule, Shop Drawings, Product Data, and Samples to verify that products, materials and systems proposed for use comply with provisions of the Contract Documents.
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
1. Schedule of Values.
  2. Schedule of Estimated Monthly Pay Requests.
  3. Applications for Payments.
  4. Insurance certificates.
  5. Performance and payment bonds.
  6. List of Subcontractors.
  7. Subcontractor qualifications.
  8. Record Documents.
  9. Construction photographs.
  10. Release of Liens.
  11. Consent of Surety.
  12. Construction bar chart schedule.
  13. Submittal register.
  14. Warranties
  15. UL Master Label for Lightning Protection System.
- C. Shop Drawings include, but are not limited to, the following:
1. Fabrication Drawings.
  2. Installation Drawings.
  3. Setting diagrams.
  4. Shop work manufacturing instructions.
  5. Templates and patterns.
  6. Schedules.
  7. Design mix formulas.
- D. Standard information prepared without specific reference to the Project is not considered to be Shop Drawings.
- E. Product Data include, but are not limited to, the following:
1. Manufacturer's product specifications.
  2. Manufacturer's installation instructions.
  3. Standard color charts.
  4. Catalog cuts.

5. Roughing-in diagrams and templates.
6. Standard wiring diagrams.
7. Printed performance curves.
8. Operational range diagrams.
9. Mill reports.
10. Standard product operating and maintenance manuals.

F. Samples include, but are not limited to, the following:

1. Partial Sections of manufactured or fabricated components.
2. Small cuts or containers of materials.
3. Complete units of repetitively-used materials.
4. Swatches showing color, texture, and pattern.
5. Color range sets.
6. Components used for independent inspection and testing.

G. Field Samples are full-size physical examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the work will be judged.

H. Mock-ups are full size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

## 1.2 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including Uniform General, Special and Supplemental Conditions and Division - 1 Specification sections, apply to the work of this section.

## 1.3 SUBMITTAL PROCEDURES:

A. Coordination: Coordinate preparation and processing of submittals with performance of the Work. Transmit each submittal to the Architect sufficiently in advance of scheduled performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for the same element of the Work and different elements of related parts of the Work so that processing will not be delayed by the Architect need to revise submittals concurrently for coordination.
3. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
4. Submittals received after installation of the submitted material or product is complete will be rejected and the work shall be removed.

B. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

1. Allow three weeks for the Architect's and Owner's initial review of each submittal. Where processing must be delayed to permit coordination with subsequent or parallel submittals, allow an additional 21 days. The Architect will advise the Contractor promptly when a submittal being processed must be delayed for coordination.
2. The request to reduce the three-week review period to the standard two-week review period has been forwarded to the Texas Historical Commission. Any modification in the review period will be issued in writing to all known bidders by addendum.
3. Where necessary to provide an intermediate submittal between the initial and final submittals, process the intermediate submittal in the same manner as the initial submittal.
4. Allow a minimum of 10 working days (two weeks for resubmittals which require consultant coordination) for processing each re-submittal.
5. No extension of Contract Time will be authorized because of the Contractor's failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
6. Allow a minimum of 30 calendar days after receipt by Architect and Owner for review and approval of the Submittal Register. If re-submittal is required, allow a minimum of an additional 15 calendar days for review.

C. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the firm or entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4" X 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
2. Use Owner's Submittal Form for each copy of each submittal.
3. Include the following information on the label for processing and recording action taken:
  1. Owners Project Number.
  2. Architect's Project Number.
  3. Project Name.
  4. Date.
  5. Name and address of Architect.
  6. Name and address of Contractor.
  7. Name and address of subcontractor.
  8. Name and address of supplier.
  9. Name and address of manufacturer.
  10. Number and title of appropriate Specification Section.
  11. Drawing number and detail references, as appropriate.

12. Unique Identification number for each submittal supplemented by a numerical or Alphabetical suffix to key resubmittals.

D. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. **Submittals received from sources other than the Contractor will be returned without action.**

1. On the transmittal record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
2. Any submittals that do not bear the Contractor's approval stamp shall be returned without review by the Architect.

#### 1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE:

A. Coordination: Coordinate preparation of the Contractor's Construction Schedule with preparation of the Schedule of Values. Refer to Division 1 Section "Payment Procedures" for details regarding the Schedule of Values.

B. Bar Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 21 days of the date of the Notice to Proceed.

1. Provide a separate time bar for each significant construction activity, including work performed by separate contractors. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of Work as indicated in the Schedule of Values. Coordinate work within scheduling constraints provided by owner.
2. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
3. Show how major construction operations of separate contractors sequence with general construction. Secure time commitments for performing critical elements of Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of Work. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
4. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.
5. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.

- C. Work Stages: Indicate important stages of construction for each major portion of the Work.
- D. Area Separation: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.
- D. Cost Correlation: At the head of the schedule, provide a two item cost correlation line, indicating “precalculated” and “actual” costs. On the line show dollar-volume of Work performed as of the dates used for preparation of payment requests.
- F. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the temporary field office.
  - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- G. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

#### 1.5 SUBMITTAL REGISTER:

- A. The Contractor shall maintain a register showing the number and a brief identification of each submittal. The register shall show dates of actions on the submittal such as receipt, forwarding to another office, and approval status. A copy of the Contractor's updated register shall serve as the status report required to accompany pay estimates.
- B. Submit within 21 days of the Notice to proceed for Architect and Owner review.

#### 1.6 SHOP DRAWINGS:

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle or otherwise indicate deviations from the Contract Documents on the Shop Drawings. Do not reproduce contract Documents or copy standard printed information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information on Shop Drawings:
  - 1. Dimensions.
  - 2. Identification of products and material included.
  - 3. Compliance with specified standards.
  - 4. Notation of coordination requirements.

5. Notation of dimensions established by field measurement.
- C. Submit coordination Drawings where required for integration of different construction elements. Show construction sequences and relationships of separate components to avoid conflicts in utilization of the space available.
- D. Do not permit Shop Drawing copies without an appropriate final stamp or other marking indicating the action taken by the Architect to be used in connection with construction.
- E. Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8.5" X 11" but not larger than 36" X 48".
- F. Initial Submittal: Submit one correctable translucent reproducible print and five blue- or black-line prints for the Architect's review; the reproducible print will be returned.
- G. Final Submittal: Submittal quantity shall be one original and five prints plus the number required by the Contractor. 3 copies will be retained by the Owner, 2 by the Architect, and 1 for the Contractor to maintain as a Record Documents. The remainder will be returned for the Contractor's use.

#### 1.7 PRODUCT DATA:

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
- B. Mark each copy to show which choices and options are applicable to the Project. Include the following information in Product Data:
  1. Manufacturer's printed recommendations.
  2. Compliance with recognized trade association standards.
  3. Compliance with recognized testing agency standards.
  4. Application of testing agency labels and seals.
  5. Notation of dimensions verified by field measurement.
  6. Notation of coordination requirements.
- C. Do not submit Product data until compliance with requirement of the Contract Documents has been confirmed.
- D. Do not submit MSDS sheets. Contractor is to observe all requirements stipulated on MSDS Sheets without Owner or Architect review.
- E. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
- F. Submittals: Submittal quantity shall be 6 copies plus the number required by the Contractor of each required Product Data submittal. 3 copies will be retained by the Owner, 2 by the

Architect, and 1 for the Contractor to maintain as a Record Documents. The remainder will be returned for the Contractor's use.. Submittals will be returned marked with the action taken and corrections or modifications required.

1. Unless the Architect observes noncompliance with provisions of the Contract Documents, the submittal may serve as the final submittal.
- G. Distribution: Furnish copies of final Product Data submittal to manufacturers, subcontractors, suppliers, fabricators, installers, governing authorities and others as required for performance of the construction activities. Show distribution on transmittal forms.
1. Do not proceed with installation of materials, products and systems until a copy of Product Data applicable to the installation is in the installer's possession.
  2. Do not permit use of unmarked copies of Product Data in connection with construction.

#### 1.8 SAMPLES:

- A. Submit Samples physically identical with the material or product proposed for use; submit full-size, fully fabricated Samples, cured and finished in the manner specified.
1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample where so indicated. Include the following information:
    - a. Generic description of the Sample.
    - b. Size limitations.
    - c. Sample source.
    - d. Product name or name of manufacturer.
    - e. Compliance with recognized standards.
    - f. Compliance with governing regulations.
    - g. Availability.
    - h. Delivery time.
- B. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
1. Where variations in color, pattern, texture or other characteristics are inherent in the material or product represented by a Sample, submit sets of multiple units of the sample (not less than 3 units), which show approximate limits of the variations.
  2. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
  3. Refer to other Specification Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be in an undamaged condition at the

time of use. On the transmittal form, indicate such special requests regarding disposition of Sample submittal.

- C. Preliminary Submittals: Where Samples are specified for selection of color, pattern, texture or similar characteristics from a manufacturer's range of standard choices, submit a single, full set of available choices for the material or product.
1. Preliminary submittals will be reviewed and returned with the Architect's marking indicating selection and other action taken.
- D. Submittals: Except for Samples intended to illustrate assembly details, workmanship, fabrication techniques, connections, operation and other characteristics, submit 3 sets of samples; one set will be returned marked with the action taken.
1. Maintain sets of Samples, as returned by the Architect, at the Project Site, available for quality control comparisons throughout the course of construction activity.
  2. Unless noncompliance with provisions of the Contract Documents is observed, the submittal may serve as the final submittal.
  3. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- E. Distribution of Samples: Prepare and distribute additional sets of Samples to subcontractors, suppliers, fabricators, manufacturers, installers, governing authorities, and others as required for performance of the Work. Show distribution on transmittal forms.

#### 1.9 MOCK UPS AND FIELD SAMPLES:

- A. Mock Ups and Field Samples specified in the individual Specification Sections are intended to fully and accurately represent the proposed installed quality, detailing, and installation techniques to be used in the Work.
- B. Mock Ups are full-sized examples and should be located in areas where the sample can be retained on site so as to be available for comparison with actual work for the duration of the construction. Approved mock ups may be incorporated into the Work where feasible.
- C. Provide Architect with transmittal forms and Contractor's action stamp to provide a record of activity.
- D. Coordinate Architect's review of required Mock Ups and Field Samples with regularly scheduled Project Meetings. Requested Mock Up review on days other than regularly scheduled Project Meetings will be considered an Additional Service which will be charged to the Contractor. If the Architect visits the site and the scheduled mock up is not fully complete and ready for review in coordination with a regular project meeting, then the Contractor shall be responsible for all costs associated with the Architect's additional services to visit the site at another time, including: time, travel, and related reimbursable expenses. Such costs will be paid by the Owner and deducted from amounts owed the Contractor in the subsequent Application for Payment. Refer to Section "Special Conditions" for more information.

1.10 CONTRACTOR ACTION:

- A. The Contractor is required to review submittals for compliance with the contract documents and to certify that he has done so by stamp or certification. Stamped or certified submittal represents that Contractor has verified field dimensions and checked and coordinated each shop drawing and sample with the requirements of the Work. Contractor is also required to inform the Architect in writing, at the time of or prior to submission, of deviation from the Contract Documents. Special care should be taken to make submittals complete, with sufficient information for evaluation by the Architect, especially in the case of substitutions.
- B. During review of the submittal, the contractor shall assure that options shown on manufacturers' data sheet/submittal/shop drawings are clearly marked to reflect materials/equipment to be furnished for the job.
- C. Should the Architect, on initiating review, find the submittal unstamped or uncertified, non-responsive and/or incomplete, Architect will not review or take action on submittal. Such returned documents shall not be recognized as having been an official submittal and shall not be recorded on the submittal log.
- D. The Contractor is reminded that Architect's' action pertains to general conformance to the design concept and the contract documents. The Contractor remains responsible for compliance with the latter unless he has informed the Architect in writing of deviations and such deviations have been incorporated into the Contract Documents by appropriate form of modification. Contractor is solely responsible for compliance with the Contract documents for items which are not shown on submittals and not subject to review by Architect.

1.11 ARCHITECT'S ACTION:

- A. Except for submittals for the record, for information and similar purposes, where action and return on submittals is required or requested, the Architect will review each submittal, mark to indicate the action taken, and return within the time specified.
  1. Compliance with specified characteristics is the Contractor's responsibility, and not considered part of the Architect's review and indication of action taken.
- B. Action Stamp: The Architect will stamp each submittal with a uniform self-explanatory stamp. The stamp will be appropriately marked, as follows to indicate the action taken:
  1. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken", that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
  2. Final-But-Restricted Release: When submittals are marked "Make Corrections Noted", that part of the Work covered by the submittal may proceed provided it complies with both the Architect's notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. Returned for Re-submittal: When submittal is marked "Revise and Resubmit", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the Architect's notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
  - a. Do not permit submittals marked "Revise and Resubmit", to be used at the Project site, or elsewhere where construction is in progress.
4. Other Action: Where a submittal is primarily for information or record purposes, for special processing or other Contractor activity, the submittal will be returned, marked "Action Not Required".

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

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**01 42 00      REFERENCES**

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PART 1 - GENERAL

1.1 DEFINITIONS:

- A. General: Basic contract definitions are included in the General Conditions.
- B. Indicated refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help locate the reference; no limitation on location is intended except as specifically noted.
- C. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" shall not be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.
- D. Approved: The term "approved," where used in conjunction with action on the Contractor's submittals, applications, and requests, is limited to the duties and responsibilities of the Architect as stated in General and Supplementary Conditions. Such approval shall not release the Contractor from responsibility to fulfill Contract requirements unless otherwise provided in the Contract Documents.
- E. Regulations: The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.
- F. Furnish: The term "furnish" means purchase/acquire and deliver to the Project Site ready for unloading, unpacking, assembly, installation and similar operations.
- G. Install: The term install describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
- H. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
- I. Installer: An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
  - 1. Unless more stringent requirements are stipulated in the individual specifications sections, the term "experienced," when used with the term "Installer" means having a minimum of 5 previous Projects similar in size and scope to this Project, being familiar with the precautions required, demonstrating knowledge and skill of type of work required, and having complied with requirements of the authority having jurisdiction.

- J. Assignment of Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
1. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
- K. Project Site is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other construction activities as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.
- L. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

#### 1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION:

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 48-Division format and MASTERFORMAT numbering system.
- B. Specification Content: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
- C. Abbreviated Language: Language used in the Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the full context of the Contract Documents so indicates.
- D. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
1. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

#### 1.4 INDUSTRY STANDARDS:

- A. **Applicability of Standards:** Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract documents. Such standards are made a part of the Contract Documents by reference. Individual Sections indicate which codes and standards the contractor must keep available at the Project site for reference.
- B. **Publication Dates:** Where the date of issue of a referenced standard is not specified, comply with the standard in effect as of date of Contract Documents.
- C. **Updated Standards:** At the request of the Architect, Contractor, or authority having jurisdiction, submit a Change Order proposal where an applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of Work affected.
- D. **Conflicting Requirements:** Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Architect for a decision before proceeding.
- E. **Minimum Quantity or Quality Levels:** In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Refer instances of uncertainty to the Architect for a decision before proceeding.
- F. **Copies of Standards:** Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
  - 1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.
  - 2. Although copies of standards needed for enforcement of requirements also may be included as part of required submittals, the Architect reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.
- G. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standard generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

1.5 GOVERNING REGULATIONS/AUTHORITIES:

- A. The Architect has contacted authorities having jurisdiction where necessary to obtain information necessary for the preparation of Contract Documents; that information may or may not be of significance to the Contractor. Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

1.6 SUBMITTALS:

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

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

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**01 50 00      TEMPORARY FACILITIES**

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PART I - GENERAL

1.1 SUMMARY

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.
- B. Temporary construction and support facilities required at jobsite include but are not limited to:
  - 1. Temporary Utilities
    - a. Temporary light & power.
    - b. Temporary construction water.
    - c. Temporary phone & FAX.
    - d. Temporary sanitary facilities.
    - e. Email and internet access.
    - f. Mobile phone access for job Superintendent and Project Manager.
  - 2. Temporary Construction Facilities
  - 3. Temporary Building Protection
    - a. Temporary building enclosures.
  - 4. Vehicular Access and Parking
  - 5. Construction Staging & Storage
    - a. Temporary Storage Area.
  - 6. Scaffolding and Shoring and Conveying Systems
  - 7. Security and protection facilities required include but are not limited to:
    - 1. Temporary fire protection.
    - 2. Barricades, warning signs, lights.
    - 3. Enclosure fence for the construction staging area.
    - 4. Environmental Protection.
  - 8. Temporary Project Identification Sign

1.2 RELATED SECTIONS:

- A. Drawings and general provisions of the Contact, including General and Special Conditions and Division - 1 Specification sections, apply to the work of this section.
- B. The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Construction Progress Documentation" for digital camera and photography requirements.

### 1.3 QUALITY ASSURANCE:

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
  1. Building Code requirements.
  2. Health and safety regulations.
  3. Utility company regulations.
  4. Police, Fire Department and Rescue Squad rules.
  5. Environmental protection regulations.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standard for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."
  1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
  2. Refer to "Practical and Profitable Building Conservation" prepared by the National Electrical Contractors Association for Industry Recommendations for work in Existing Buildings.
- C. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electrical service. Install service in compliance with National Electric Code (NFPA 70).
- D. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

### 1.4 PROJECT CONDITIONS:

- A. Other entities which may use temporary services and facilities without charge include, but are not limited to:
  1. The Owner.
  2. The Architect.
  3. Testing Agencies.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance whether self-contained or part of existing non-permanent construction used as temporary facilities. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the site.

## PART 2 - PRODUCTS

### 2.1 MATERIALS:

- A. General: Provide new materials; if acceptable to the Architect, undamaged previously used material in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Enclosure Fencing for Construction Staging Area: Provide 11-gage, galvanized 2-inch, chain link fabric fencing 8-feet high with galvanized steel pipe posts, 1-1/2" I.D. for line posts and top posts and 2-1/2" I.D. for corner posts. Provide 8-foot high gates fabricated from galvanized steel pipe and galvanized 2-inch chain link fabric fencing as required for access; gates to be secured with locks and one key to be provided to Owner.
- C. Lumber and Plywood: Comply with requirements in Division-6 Section, "Rough Carpentry."
  - 1. Temporary Window Protection: 5/8" Thick Oriented Strand Board (OSB) or approved equal. Painted white at exterior.
  - 2. Miscellaneous Exterior Protection: 3/4" Exposure 1 plywood
  - 3. For Floor Protection: 1/4-inch minimum thickness Masonite or approved equal
- E. Tarpaulins: Provide waterproof, fire--resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

### 2.2 EQUIPMENT:

- A. General: Provide new equipment, if acceptable to Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
- D. Electric Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.

- E. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material as needed during construction.
1. Do not use existing toilet fixtures or facilities.
- F. First Aid Supplies: Comply with governing regulations.
- G. Heating Units (if needed): Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.
- H. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION - GENERAL:

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate, maintain, and modify facilities as required.

#### 3.2 TEMPORARY UTILITIES

A. Temporary Light and Power:

1. Contractor is not permitted to use the Facility's electrical power. Contractor shall provide temporary grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear. Where permitted, wiring circuits not exceeding 125 volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

B. Temporary Construction Water:

1. Contractor shall be allowed use of existing building water from available hose bibs during the Work.

C. Temporary Telephone & FAX:

1. Contractor shall provide temporary telephone or mobile phone with voice mail and FAX service to the jobsite office. Fax service to be available 24 hours a day. Post list of important telephone numbers at telephone.
2. Provide mobile phone service for Project Manager and Job Superintendent.

D. Internet Access and E-mail:

1. Provide e-mail ability and Internet access from the field office to allow communication with the Architect and Owner. Provide e-mail address to Architect and Owner at start of Work.

E. Temporary Sanitary Facilities: Contractor shall provide sanitary facilities including temporary toilets, wash facilities and drinking water. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Locate within designated area where facilities will best serve the Project's needs and as acceptable to the Owner.

1. Toilets: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material. Service temporary toilets weekly or more frequently as required to control odor.
  - a. Do not use existing building toilet fixtures or facilities.
2. Wash Facilities: Provide and install wash facilities supplied with potable water at convenient location for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
3. Drinking Water Facilities: Provide and install containerized tap-dispenser bottled-water type drinking water units, including paper supply.

3.3 TEMPORARY CONSTRUCTION FACILITIES:

- A. Field Office: Not required. Contractor may, at Owner's discretion, use available space within the building for a small field office.

3.4 TEMPORARY BUILDING PROTECTION:

- A. Where Existing Construction is Removed: Provide adequate enclosure, tarpaulin, or other temporary waterproof covers over 3/4" plywood to protect against the elements where existing portions of exterior cover over enclosed space, roofing, windows or other existing building shell construction or weather barrier are removed. Remove protection only when actual construction is in progress, until new construction provides weather tight seal.

B. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.

1. Protect all entryways in areas where construction is occurring.
2. Provide barricades and appropriate warning signs at interior and exterior to prevent public access while work is being performed.
3. Only one entrance shall be barricaded at any time while building is occupied for construction activities.
4. Provide weather tight and secure protection of all window openings where work is performed throughout construction.

### 3.6 VEHICULAR ACCESS AND PARKING:

A. Contractor Parking: Contractor shall coordinate parking with building Owner.

1. Keep existing parking area clear of all construction debris and nails at all times.

### 3.7 CONSTRUCTION STAGING AND STORAGE:

A. Construction Staging Area: Contractor shall use area designated on the Drawings for all construction staging. Entire staging area to be enclosed with fencing.

B. Temporary Storage Areas: Use space within construction staging area as approved by Owner.

1. Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service.
2. Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
3. Remove storage buildings and mobile units and stored materials when no longer needed.

### 3.8 SCAFFOLDING, SHORING, AND CONVEYING SYSTEMS

A. General: Provide temporary hoists, chutes, scaffolds, staging, ladders, platforms, railing, and similar items for proper execution of the Work. Such apparatus, equipment, construction, and use shall meet applicable requirements of labor law, federal safety regulations, and other applicable laws, codes, and regulations of authorities having jurisdiction.

1. Protection: Protect permanent construction from damage, staining, or marring due to use of chutes, hoists, scaffolds, etc. Brace and guy securely and provide safety devices required by codes and regulations.

- B. Scaffolding (if required): Scaffolding design, erection and maintenance shall comply with all applicable codes and regulations.
1. Avoid bracing scaffolding against building when possible. When attachment to the building is required because of design limitations, the attachment method shall not damage the existing historic fabric (including windows, doors, structure, etc.)
  2. Do not free-drop materials, rubbish, or debris during construction.
  3. Removal/ Relocation: Remove and relocate scaffolds to avoid interference with other trades. Remove temporary devices when no longer needed and repair damage.
  4. Temporary Lifts and Hoists: Provide appropriate facilities for hoisting materials.
- C. Truck cranes, bucket trucks, "man-lift" and similar devices used for hoisting personnel and materials are considered "tools and equipment" and not temporary facilities.

### 3.9 PROJECT IDENTIFICATION SIGN:

- A. Do not permit installation of unauthorized signs.
- B. Project Identification Signs: Provide and install one project identification sign per attached drawing.
1. Sign shall be 4'-0" x 8'-0" x 3/4" Medium Density Overlay (MDO), painted with multiple colors, and containing the title of the project, the name of the Owner, Architect, and Contractor. Engage an experienced sign painter to apply graphics.
  2. Consult with Architect for sign placement location. Support on posts or framing of preservative treated wood.
  3. Remove sign and salvage to Owner upon Final Completion.

### 3.10 SECURITY AND PROTECTION FACILITIES INSTALLATION:

- A. Temporary Fire Protection: Install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations" and Special Conditions of the Contract.
- B. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- C. Security Enclosure and Lockup: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

1. Contractor shall control and monitor access to the secure area. If historical items noted for salvage and re-use are stored within the space, Contractor shall require documentation for removal of these items from the secure area. Documentation shall include a complete listing of items removed, the date removed, the name of the person or company responsible for the items, and a signature.

D. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.

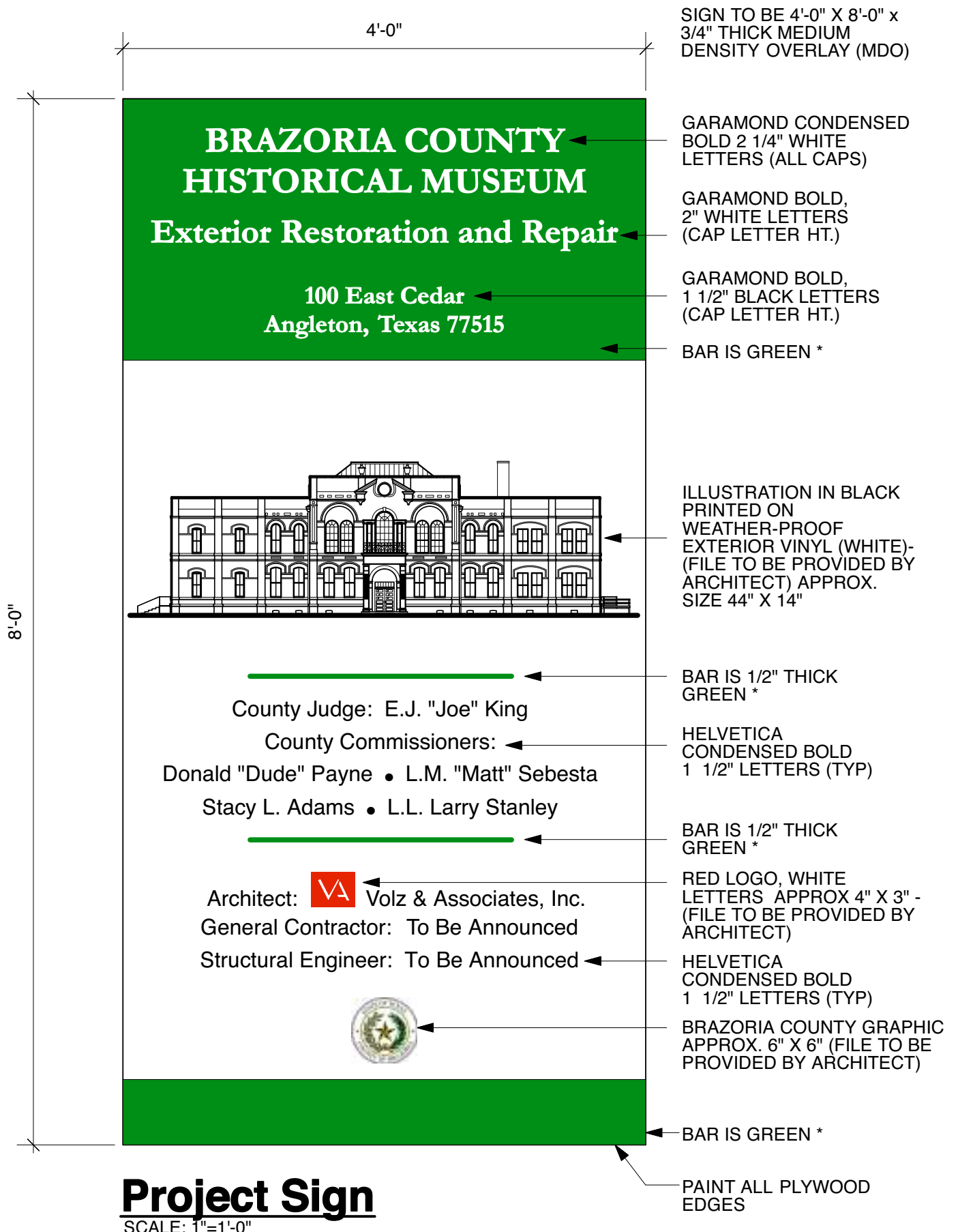
### 3.11 DAY-BY-DAY CLEAN-UP:

- A. Cleaning: Remove staining or reactive materials from new and existing surfaces immediately during course of the Work.
  1. Debris: Remove accumulations of debris promptly, at least once daily.
  2. Dust: Confine dust producing operations during painting and finishing.
  3. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Dispose of material in a lawful manner.

### 3.12 OPERATION, TERMINATION, AND REMOVAL:

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage.
- C. Termination and Removal: Unless the Owner or the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
- D. Contractor shall repair all damage to landscaping, by replacing any damaged shrubbery and trees with new to match existing in type and size. Sod all areas where grass has been killed with new sod to match original or as acceptable to Architect and Owner.
- E. Contractor shall repair all damage to existing driveways or replace with new to match existing.

END OF SECTION



SIGN TO BE 4'-0" X 8'-0" x 3/4" THICK MEDIUM DENSITY OVERLAY (MDO)

**BRAZORIA COUNTY**  
**HISTORICAL MUSEUM**  
**Exterior Restoration and Repair**

GARAMOND CONDENSED BOLD 2 1/4" WHITE LETTERS (ALL CAPS)

GARAMOND BOLD, 2" WHITE LETTERS (CAP LETTER HT.)

**100 East Cedar**  
**Angleton, Texas 77515**

GARAMOND BOLD, 1 1/2" BLACK LETTERS (CAP LETTER HT.)

BAR IS GREEN \*

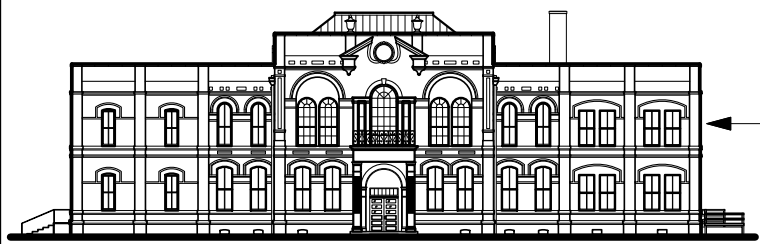


ILLUSTRATION IN BLACK PRINTED ON WEATHER-PROOF EXTERIOR VINYL (WHITE)- (FILE TO BE PROVIDED BY ARCHITECT) APPROX. SIZE 44" X 14"

County Judge: E.J. "Joe" King

BAR IS 1/2" THICK GREEN \*


County Commissioners:

HELVETICA CONDENSED BOLD 1 1/2" LETTERS (TYP)

Donald "Dude" Payne • L.M. "Matt" Sebesta

Stacy L. Adams • L.L. Larry Stanley

BAR IS 1/2" THICK GREEN \*

Architect:  Volz & Associates, Inc.

RED LOGO, WHITE LETTERS APPROX 4" X 3" - (FILE TO BE PROVIDED BY ARCHITECT)

General Contractor: To Be Announced

Structural Engineer: To Be Announced

HELVETICA CONDENSED BOLD 1 1/2" LETTERS (TYP)



BRAZORIA COUNTY GRAPHIC APPROX. 6" X 6" (FILE TO BE PROVIDED BY ARCHITECT)

BAR IS GREEN \*

**Project Sign**

SCALE: 1"=1'-0"

PAINT ALL PLYWOOD EDGES

\* Areas marked "GREEN" will be color to be provided by Architect.



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**01 70 40      WARRANTIES**

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PART I - GENERAL

1.1 SUMMARY:

- A. This Section specifies general administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
  - 1. Refer to the Division 1 General Conditions and Supplementary Conditions for terms of the Contractor's special warranty of workmanship and materials.
  - 2. Specific warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions 2 through 48.
  - 3. Inspection of project at one-year after the date of Final Completion.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contact, including General and Supplementary Conditions and Division - 1 Specification sections, apply to the work of this section.
  - 1. Refer to the Division 7 Sections "PVC Roofing" and "Flashing, and Sheet Metal" for Contractor's warranty on roofing workmanship and materials.
  - 2. Refer to the Division 1 Section "Closeout Procedures" for general project closeout requirements.

1.3 DEFINITIONS:

- A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS:

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work Covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Just before termination of the guarantee period, the Contractor, Architect, and Owner's agent shall inspect the building and note any defects in the Work. The Contractor shall start repair/replacement of any defects found within 10 days of the inspection tour and shall complete the work without interruption until accepted the Owner's agent and Architect, even though the execution may extend beyond the limit of the warranty period.
- E. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
- F. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- G. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to counter sign such commitments are willing to do so.

1.5 SUBMITTALS:

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
  - 1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of the designated portion of the Work.

2. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
  3. Refer to individual Sections of Divisions 2 through 48 for specific content requirements, and particular requirements for submittal of specials warranties.
- B. Form of Submittal: At final completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual. Submit in accordance with Division 1 Section "Closeout Submittals".

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

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**01 73 29 CUTTING AND PATCHING**

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PART I - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and procedural requirements for cutting and patching.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including Uniform General, Special, and Supplementary Conditions and Division - 1 Specification sections, apply to the work of this section.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
- C. Demolition of selected portions of the building for alterations is included in Section 02 00 70, "Selective Demolition."

1.3 SUBMITTALS:

- A. Cutting and Patching Proposal: Approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures 20 days in advance of the time cutting and patching will be performed and request approval from Owner to proceed. Include the following information, as applicable in the proposal:
  - 1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
  - 2. Notify the Owner if suspicious asbestos-containing materials are encountered so the owner can arrange for testing.
  - 3. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
  - 4. List products to be used and firms or entities that will perform Work.
  - 5. Indicate dates when cutting and patching is to be performed.
  - 6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.

7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

#### 1.4 PERFORMANCE:

- A. General: Employ qualified (in compliance with the Contract Documents) workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

#### 1.5 QUALITY ASSURANCE:

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
  1. Obtain approval of the cutting and patching proposal for structural work before cutting and patching the following structural elements:
    - a. Foundation construction.
    - b. Bearing walls and wall framing.
    - c. Wood lintels.
    - e. Roof and floor structure.
  2. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
  3. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic or historic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.
  4. Retain experienced and specialized installer or fabricator to cut and patch each category of exposed Work.

## PART 2 - PRODUCTS

### 2.1 MATERIALS:

- A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.
- B. See individual material sections for specification information on materials subject to cutting and patching.

### PART 3 - EXECUTION

#### 3.1 INSPECTION:

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
- B. Before proceeding, meet at the 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. NOTE: it is the Owner's intent to preserve as much historic fabric as possible, thus all cutting and patching shall be as minimal as is possible.

#### 3.2 PREPARATION:

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

#### 3.3 PERFORMANCE:

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay. Sequence the cutting and patching to avoid delay of the Work.
  - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.
  - 1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required

with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch, after the patched area has received primer and first coat.

#### 3.4 CLEANING:

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit, and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

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**01 77 00      CLOSEOUT PROCEDURES**

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PART I - GENERAL

1.1 SUMMARY:

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
1. Substantial Completion Requirements
  2. Final Completion Requirements
  3. Observation Procedures.
  4. Owner Training.
  5. Final Cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Section in Divisions-2 through -48.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including Uniform General Conditions and Division - 1 Specification sections, apply to the work of this section.
- B. The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Closeout Submittals" contains requirements for Project record document submittal and Operating and maintenance manual submittal.
  2. Division 1 Section "Warranties" contains requirements for submittal of warranties and for one-year warranty inspection.
  3. Division 1 Section "Payment Procedures" contains requirements for final payment application.
  4. Division 1 Section "Construction Progress Documentation" for project documentation requirements.

1.3 SUBSTANTIAL COMPLETION:

- A. Preliminary Procedures: **Before** requesting observation for certification of Substantial Completion, complete the following. List exceptions in the request.
1. Provide draft as-built mark-ups of Record Drawings, Record Specifications, and Operation and Maintenance Manuals for Architect review in accordance with Division Section "Closeout Submittals" and Uniform General Conditions.

2. In the Application for Payment that coincides with or directly follows the date that Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
  3. Advise Owner of pending insurance change-over requirements, if any.
  4. Provide a written statement that all equipment and systems have been started, tested, adjusted. Verify that all deficiencies, if any, have been corrected and all systems are functioning properly.
  5. Provide a written statement that required Owner training, has been provided to the Owner's staff as required in this Section.
  6. Submit preliminary copies of specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
  7. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
  8. Deliver tools, spare parts, extra stock, and similar items to the Owner.
- B. Request for Observation: **After** the items listed above have been completed/submitted and minimum of 5 days prior to the requested date, submit to the Architect, a written request for observation for Substantial Completion. Include the following:
1. Prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to Final Payment. Include the value of incomplete construction, and reasons the Work is not complete.
- C. Observation Procedures: On receipt of a request for observation, the Architect will either proceed with observation or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following observation for approval and acceptance by the Contractor and Owner, attaching thereto a list (Punch List) of items to be completed or corrected.
1. During the Architect's observation for Substantial Completion, the Contractor shall provide access to all portions of the work. This includes providing a motorized lift and a qualified lift operator to allow observation of any work not easily visible from the ground.
  2. A Punch List, which is the opinion of the Architect, is of excessive length, or includes work which would restrict owner occupancy, or demonstrates willful neglect of required corrective action, shall be considered prime evidence that the project is not ready for certification as Substantially Complete.
  3. Refer to the "Uniform General Conditions" and Division 1 Section "Special Conditions" for additional requirements.

- D. If the Architect does not concur with the Contractor's claim of Substantial Completion, he shall so notify the Contractor and the Owner, and the Contractor shall, at an appropriate time, initiate a new request for observation. The Architect will repeat observations at the Contractor's expense; refer to "Excessive Observations below.
- E. Results of the completed observation will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE:

- A. Preliminary Procedures: Within 30 days of the date of Substantial Completion and before requesting Final Observation for certification of Final Acceptance and final payment, complete the following. List any exceptions in the request.
1. Submit the final payment request with releases of lien and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
  2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
  3. Submit a certified copy of the Architect's previous observation dated list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
  4. Submit final meter readings for utilities and similar data as of the date of Substantial Completion or when the Owner took possession of and responsibility for corresponding elements of the Work.
  5. Submit signed and notarized Releases of Lien from General Contractor and all subcontractors and major suppliers [Final Payment Affidavit (form supplied by Owner)].
  6. Submit final copies of maintenance instructions, maintenance and operating manuals, parts catalog, wiring diagrams, spare parts, etc.
  7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  8. Submit final Record Documents in accordance with Section 01 70 20 "Record Documents."
  9. Submit Consent of Surety Company to Final Payment (form supplied by Owner).
  10. Submit proof of removal of temporary facilities and services, materials, rubbish, and similar elements.
  11. Submit documentation of required Owner training per specifications (if applicable).

- B. Request for Observation: **After** the items listed above have been completed, submit to the Architect, a written request for observation for Final Completion.
- C. Final Observation Procedure: The Architect will re-observe the Work upon receipt of notice that the Work, including observation list items (Punch List) from earlier observation(s), has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.
1. Upon completion of re-observation, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for Final Acceptance (Final Punch List).
  2. Contractor shall complete all items on Final Punch List within 7 days of receiving the List and shall notify the Owner and Architect in writing the disposition of each item on the List.
  3. Upon receipt of the Contractor's notification that all items are complete, the Owner and Architect shall re-observe the completed items.

#### 1.5 EXCESSIVE OBSERVATIONS:

- A. If, because of acts or omissions of the Contractor, the Architect is required to conduct more than one observation for Substantial Completion and two observations for Final Acceptance, he shall charge the Owner for all related additional Construction Administration as Additional Services at current hourly rates plus reimbursable expenses, and such costs shall be deducted from money still due to the Contractor.

#### 1.6 APPLICATION FOR FINAL PAYMENT:

- A. After completion of the observation procedures outlined above, the Contractor may submit Final Application for Payment in accordance with Contract requirements.

#### PART 2 - PRODUCTS (NOT APPLICABLE)

#### PART 3 - EXECUTION

##### 3.1 OWNER TRAINING

- A. None required

##### 3.2 FINAL CLEANING:

- A. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
1. Complete the following cleaning operations before requesting observation for Certification of Final Completion.
    - a. Remove labels that are not permanent labels.
    - b. Clean transparent materials, including glass in doors and windows. Remove excess glazing compound, paint and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
    - c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition.
    - d. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including electrical name plates.
    - e. Clean the site of rubbish, litter and other foreign substances.
    - f. Remove tools, construction equipment, machinery, and surplus material from the site.
    - g. Leave the Project clean and suitable for occupancy.
- B. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period.
- C. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

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**01 78 00      CLOSEOUT SUBMITTALS**

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PART I - GENERAL

1.1 SUMMARY:

A. This Section specifies administrative and procedural requirements for Project Record Documents.

1. Project Record Documents required include:

- a. Marked-up copies of Contract Drawings.
- b. Transfer of marked up drawing information to CAD.
- c. Marked-up copies of shop drawings.
- d. Newly prepared drawings including coordination drawings.
- e. Marked-up copies of Specifications, Addenda and Change Orders.
- f. Marked-up product data submittals.
- g. Record Samples.
- h. Field records for variable and concealed conditions.
- i. Record information on Work that is recorded only schematically.
- j. Operation and Maintenance Manuals
- k. Warranties

1.2 RELATED DOCUMENTS:

A. The following sections contain requirements that relate to this section:

1. Division 1 Section "Closeout Procedures" includes general procedures for project closeout.
2. Division 1 Section "Submittal Procedures" includes general requirements for submittals.

B. Specific record copy requirements that expand requirements of this Section are included in the individual Sections of Divisions-2 through -31.

1.3 RECORD DRAWINGS:

A. General: Maintain a clean, undamaged set of Contract Drawings and Shop Drawings, Coordination Drawings, Addenda, Submittals, and Project Correspondence for use in preparation of Record Documents at the completion of the project.

B. Mark-up Procedure: During the construction period, maintain complete sets of Contract Drawings, Shop Drawings, Coordination Drawings, Addenda, Submittals, and Project Correspondence at the jobsite for documenting work during construction.

1. Mark these Drawings to indicate the actual installation where the installation varies appreciably for the installation shown originally. Give particular attention to information on concealed elements which would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:
    - a. Dimensional changes to the Drawings.
    - b. Revisions to details shown on the Drawings.
    - c. Revisions to routing of piping and conduits.
    - d. Actual equipment locations.
    - e. Changes made by Change Order.
    - f. Details not on original Contract Drawings.
  2. Mark completely and accurately record sets of Contract Drawings or Shop Drawings, whichever is most capable of showing of actual physical conditions. When Shop Drawings are marked, show cross-reference on Contract Drawings location.
  3. Mark record sets with red erasable colored pencil; use other colors to distinguish between changes for different Categories of the Work at the same location.
  4. Mark important additional information which was either shown schematically or omitted from original Drawings.
  5. Note construction change directive numbers, alternate numbers, Change Order numbers and similar identification.
- B. Responsibility for Markup: Where feasible, the individual or entity who obtained record data, whether the individual or entity is the installer, subcontractor, or similar entity, is required to prepare the mark-up on Record Drawings.
1. Accurately record information in an understandable drawing technique.
  2. Record data as soon as possible after it has been obtained, but no less frequently than monthly prior to submission of Application for Payment. In the case of concealed installation, record and check the mark-up prior to concealment.
  3. Record Documents shall be available for Owner and Architect's review at each regular Progress Meeting.
  4. At time of and just prior to Substantial Completion, submit Record Drawings to Architect for review. Organize into sets, bind and label sets for Owner's continued use.
- C. Submittal of Draft Record Drawings: Immediately prior to observation for Certification of Substantial Completion, submit **three sets** of completed marked-up Record Drawings to the Architect for review. Architect and Owner will review Record Drawings, return one copy with comments, and retain the other copies.
- D. Submittal of Final Record Drawings: Based on Architect's review comments, prepare a complete final set of Record Drawings in CAD, and a copy of all reviewed Shop Drawings.
1. Drawing to be done by a professional draftsman.

2. Incorporate changes and additional information previously marked. Cloud changes and revisions. CAD base sheets shall be provided by the Architect. Identify and date each Drawing; include the printed designation "PROJECT RECORD DRAWINGS" in a prominent location on each Drawing.
3. Refer instances of uncertainty to the Architect for resolution.
4. Plot final set of Record Drawings on acid-free bond paper and provide **three sets** of drawings to Architect.

#### 1.4 RECORD SPECIFICATIONS:

- A. General: During the construction period, maintain an adequate number of copies of the Project Specifications, including addenda and modifications issued, for Project Record Document purposes.
- B. Mark Up Procedure: Mark the Specifications to indicate the actual installation where the installation varies substantially from that indicated in Specifications and modifications issued. Note related Project Record Drawing information, where applicable. Give particular attention to substitutions, selection of product options, and information on concealed installations that would be difficult to identify or measure and record later.
  1. In each Specification Section where products, materials or units of equipment are specified or scheduled, mark the copy with the proprietary name and model number of the product furnished.
  2. Record the name of the manufacturer, supplier and installer, and other information necessary to provide a record of selections made and to document coordination with record Product Data submittals and maintenance manuals.
  3. Note related record Product Data, where applicable. For each principal product specified, indicate whether record Product Data has been submitted in maintenance manual instead of submitted as record Product Data.
  4. Tape in all written changes to the Specifications as issued through Addendum, ASI, or other written directive from the Architect.
    - a. Affix change to area of specification that it is intended to clarify.
    - b. Affix in a manner which does not conceal any text in the original specification, and allows all text to be read.
    - c. Include the form and date of issuance of each change handwritten if necessary adjacent to the text.
  5. Record documents shall be available for Owner and Architect's review at each regular Progress Meeting.
- C. Submittal of Draft Record Specifications:, Immediately prior to inspection for Certification of Substantial Completion, submit **six copies** of completed marked-up Record Specifications to

the Architect. Architect and Owner will review Record Specifications, return one copy with comments, and retain the other copies.

D. Preparation of Final Record Specifications: Based on Architect's review comments, prepare a complete final set of Record Specifications.

1. Incorporate changes and additional information previously marked. Cloud changes and revisions.
2. Refer instances of uncertainty to the Architect for resolution.
3. Provide **three copies** of completed Record Specifications to Architect.

#### 1.5 RECORD PRODUCT DATA:

A. During the construction period, maintain one copy of each Product Data submittal for Project Record Document purposes.

1. Mark Product Data to indicate the actual product installation where the installation varies substantially from that indicated in Product Data submitted. Include significant changes in the product delivered to the site, and changes in manufacturer's instructions and recommendations for installation.
2. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
3. Note related Change Orders and mark-up of Record Drawings where applicable.
4. Upon completion of mark-up, submit **three copies** of Record Product Data to the Architect for the Owner's records.
5. Where record Product Data is required as part of maintenance manuals, submit marked-up product Data as an insert in the manual, instead of submittal as record Product Data.
6. Each prime contractor is responsible for mark-up and submittal of record Product Data for its own Work.

#### 1.6 RECORD SAMPLE SUBMITTAL:

A. Immediately prior to date of Substantial Completion, the Contractor shall meet with the Architect and, if desired, the Owner's personnel at the site to determine which of the Samples maintained during the construction period shall be transmitted to Owner for record purposes. Comply with the Architect's instructions for packaging, identification marking, and delivery to Owner's Sample storage space. Dispose of other Samples in manner specified for disposal of surplus and waste materials.

### 1.7 MISCELLANEOUS RECORD SUBMITTALS:

- A. Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Immediately prior to Substantial Completion, complete miscellaneous records and place in good order properly identified and bound or filed, ready for use and reference.
  - 1. Categories of requirements resulting in miscellaneous records include, but are not limited to the following:
    - a. Authorized measurements utilizing unit prices or allowances.
    - b. Certifications received in lieu of labels on bulk products.
    - c. Inspections and certifications by governing authorities.
    - d. Final inspection and correction procedures.
  - 2. Upon completion of Miscellaneous Records, submit **three copies** to the Architect.

## PART 2 - PRODUCTS

### 2.1 REPRODUCIBLE DRAWING MEDIA

- A. CAD plots shall be on acid free bond paper as acceptable to Architect.
- B. Record Specifications: Standard 8 1/2 x 11" acid-free bond paper, GVC or comb binding or other approved form.
- C. Record Submittals: In form originally submitted, complete with Contractor's Stamp and Architect's signature.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Post changes and modifications to the Documents as they occur. Do not wait until the end of the Project. The Architect and Owner will review record documents on a monthly basis to evaluate compliance with this requirement.
- B. Final Payment will not be released to the Contractor until Record Documents are submitted and approved by Architect.

END OF SECTION

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## **04 01 20 MASONRY RESTORATION & CLEANING**

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### PART 1 - GENERAL

#### 1.1 SUMMARY:

- A. Masonry restoration work includes the following:
1. Repair of damaged masonry at parapet after removal of stucco. (Under Allowance)
  2. Repointing of mortar joints.
  3. Removal of biological growth on exterior stucco.
  4. Masonry wall reconstruction in attic.

#### 1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- B. The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Allowances" for descriptions of allowances related to this work.
  2. Division 9 Section "Portland Cement Stucco" for new stucco over restored masonry construction.

#### 1.3 REFERENCES:

- A. Preservation Brief 2: Repointing Mortar Joints in Historic Brick Buildings, Robert C. Mack, FAIA, National Park Service, revised October, 1998.
- B. ASTM C91-01: Standard ASTM C144-03: Standard Specification for Aggregate for Masonry
- C. ASTM C150-02ae1: Standard Specification for Portland Cement.
- D. ASTM C207-97: Standard Specification for Hydrated Lime for Masonry Purposes.

#### 1.4 DEFINITIONS:

- A. Repointing: The process of raking out (removing) mortar and replacing it with new mortar.
- B. Pointing: The process of placing new mortar in existing joint spaces that have previously been raked out. This term does not include the raking out process.
- C. Defective/Deteriorated Joint: Joints in which mortar is missing, loose, spalled, eroded, cracked, powdered, broken, hollow, unsound, soft, weathered more than 1/8 inch from original plane, or separated from masonry at one or more faces.

#### 1.5 QUALITY ASSURANCE:

- A. Restoration Specialist: Work must be performed by a firm having not less than 5 years successful experience in comparable masonry restoration projects and employing personnel skilled in the restoration processes and operations indicated.

1. Provide at least one person who shall be present at all times during the execution of the work of this section, who shall be thoroughly familiar with the specified requirements, and the materials and methods needed for their execution, and who shall direct all work performed under this section.
  2. Provide adequate numbers of workers skilled in the necessary crafts and properly informed of the specialized methods and materials to be used in this work.
- B. Source of Materials: Obtain materials for masonry restoration from a single source for each type material required to insure compatibility of component materials and match of quality, color, texture, etc.

#### 1.6 REGULATORY REQUIREMENTS:

- A. Governing Authorities: The Texas Commission on Environmental Quality (TCEQ) has jurisdiction if the cleaning effluent is outside of the acceptable range of 5.0-9.0 pH, or if it has constituents, such as lead, that are classified as hazardous. Comply with all applicable regulations of governing authorities.

#### 1.7 INDEPENDENT TESTING:

- A. Contractor Responsibilities: The Contractor shall provide samples for testing as outlined in Division 1 Section "Allowances" and this section and as required by governing authorities. Costs for these providing samples shall be included in the Contract Sum.
1. The Owner will select an independent agency to perform all inspections and tests specified. Payment for these services will be made by the Contractor under Allowance.
  2. Tests shall include but not be limited to:
    - a. Physical properties of existing brick, including but not limited to porosity, absorption, and compression strength.
    - c. Acid digestion testing of original mortar.

#### 1.8 MOCK-UPS

- A. Field-Constructed Mock-Ups: Prior to start of general masonry restoration, prepare the following sample panels on building where directed by Architect. Obtain Architect's acceptance of visual qualities before proceeding with the work. Retain acceptable panels in undisturbed condition, suitably marked, during construction as a standard for judging completed work.
1. Cleaning: Demonstrate materials and methods to be used for cleaning each type of masonry surface and condition on sample panels approximately 25 sq. ft. in area. Allow a minimum of 7 days drying time before inspection, or longer if possible. Obtain approval of Architect for final cleaning methods to be used.
    - a. Demonstrate disposal and protection techniques, including neutralizing retention ditches, if required.
    - b. Test cleaners and methods on samples of adjacent non-masonry materials for possible reaction with cleaners, except where cleaners and methods are known to have a deleterious effect.
    - c. Confirm required dilutions and dwell times for each surface and condition. Adjust dilutions and dwell times as necessary to achieve acceptable results, using the

minimum concentrations of chemical required to accomplish cleaning to the degree acceptable to Architect.

- d. Allow a waiting period of not less than 7 calendar days, after completion of sample cleaning to permit a study of sample panels for negative reactions.
2. Repointing: Prepare 2 separate sample areas of approximately 3 feet high by 6 feet wide for each type of repointing required, one for demonstrating methods and quality of workmanship expected in removal of mortar from joints and the other for demonstrating quality of materials and workmanship expected in pointing mortar joints.
- B. Scheduling Mock-ups: Contractor shall schedule mock-ups to coincide with Monthly Project Meetings. Contractor shall notify Architect in advance when mock-ups are complete and ready for review. If the Architect visits the site and the scheduled mock-up is not fully complete and ready for review, then the Contractor shall be responsible for all costs associated with the Architect's additional services to visit the site.

#### 1.9 SUBMITTALS:

- A. Qualification Data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include a list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.
- B. Product Data: Submit manufacturer's technical data for each product indicated, including recommendations for their application and use. Include test reports and certifications substantiating that products comply with requirements.
- C. Samples: Submit samples prior to erecting mockups of each of the following:
  1. Submit a one-pound dry sample of the sand aggregate proposed for use in the repointing mortar prior to erecting mock-ups.
  2. Submit each type of mortar for pointing and setting in the form of sample strips of mortar 6 inches long by 1/2 inch wide set in aluminum or plastic channels.
  3. Submit each type of anchor, pin, other attachment device.
- D. Cleaning Program indicating cleaning process, including protection of surrounding materials on building and site, and control of runoff during operations. Describe in detail the materials, methods, and equipment to be used.
  1. If alternative methods and materials to those indicated are proposed for any phase of cleaning work, provide a written description, including evidence of successful use on other comparable projects, and a testing program to demonstrate their effectiveness for this Project.
  2. Submit a work plan describing capture, storage, and disposal as required and/or governed by any and all local, state, and/or federal laws, codes, and regulations.

#### 1.10 DELIVERY, STORAGE AND HANDLING:

- A. Deliver materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.
- B. Protect new masonry and masonry restoration materials during storage and construction from wetting by rain, ground water, or other source, and from staining or intermixture with earth or other types of materials.

- C. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.

#### 1.11 PROJECT/SITE CONDITIONS

- A. Contractor shall be responsible for protecting all existing adjacent materials such as doors, windows, flashings, roofing, and other existing materials that are not intended to be treated.
- B. Contractor shall be responsible for the repair of all damaged adjacent materials due to the execution of the work at no additional expense to the owner. Repairs shall be made by qualified mechanics skilled in the type of repairs required, to the satisfaction of the owner's representative
- C. Protect adjacent areas and surfaces not being treated with barriers suitable for the product being used. Appropriate care should be taken at air intakes, air conditioning vents and similar openings that may come in contact with the product.
- D. Take appropriate precautions to avoid harm to building occupants, pedestrians and nearby property.
- E. Safety: For any number of reasons it is essential to maintain a high degree of worker and occupant safety while working with biological solution.

#### PART 2 - PRODUCTS:

##### 2.1 MORTAR MATERIALS:

- A. Portland Cement: ASTM C 150, Type I. Provide non-staining white cement complying with staining requirement of ASTM C 91 for not more than 0.03% water soluble alkali.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Aggregate for Mortar: ASTM C 144, natural or manufactured sand selected to match original mortar aggregate as determined by testing. Match size, texture, color and gradation of existing, original mortar.
- D. Water: Potable, clean, and free of oils, acids, alkalis, salts and organic matter.

##### 2.2 MORTAR MIXES:

- A. General: New pointing mortar is to match original mortar in color, composition, texture, and tooling. The following specification is intended as a starting point for appropriate mixing of historic mortar. Adjustments to the mix will be required to match the historic mortar following analysis.
- B. Measurement and Mixing: Measure cementitious and aggregate material 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 and aggregate materials together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix which will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 1 to 2 hours. Add remaining water in small portions until mortar of desired consistency is reached. Use mortar within 30 minutes of final mixing; do not retemper or use partially hardened material.

2. Mortar Color: Produce mortar of color required by use of selected ingredients. Do not adjust proportions without Architect's approval. Submit samples for approval.
  3. Do not use admixtures of any kind in mortar, unless otherwise indicated.
- C. Mortar Proportions: Mix proportions are examples and shall be revised to suit project requirements based on mortar analysis. Mix mortar materials in the following proportions:
1. Setting / Pointing Mortar: Comply with ASTM C270, Proportion Specification, Type O, unless otherwise indicated, with cementitious material content limited to portland cement-lime. One part white portland cement, 2 parts lime, 9 parts mortar aggregate. Provide samples and revise as required to exactly match existing as determined by Architect.

### 2.3 REPLACEMENT BRICK:

- A. Brick: Salvage, clean and re-use existing brick to the maximum extent possible. If new units are required, a small portion may be collected from the attic space with Architect's written approval.

### 2.4 CLEANING MATERIALS AND EQUIPMENT:

A. Water for Cleaning:

1. Clean, potable, free of oils, acids, alkalis, salts, and organic matter.
2. Warm Water: Heat water to a temperature of 140 to 180 deg F (60 to 82 deg C).

B. Brushes: Natural fiber bristle only.

C. Spray Equipment:

1. Provide equipment for controlled spray application of water and chemical cleaners, if any, at rates indicated for pressure, measured at spray tip, and for volume. Adjust pressure and volume, as required, to ensure that damage to masonry does not result from cleaning methods.
  - a. Pressure not to exceed **400 psi**.
  - b. For water spray application, provide a fan-shaped spray tip that disperses water at an angle of not less than 25 degrees.
  - c. For heated water spray application, provide equipment capable of maintaining a temperature at flow rates indicated between 140 and 180 deg F (60 and 82 deg C).
  - d. For chemical cleaner spray application, provide low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with a cone-shaped spray tip.

D. Miscellaneous Equipment

1. Natural bristle brushes
2. Soft clean rags
3. Rubber gloves
4. Eye and skin protection
5. Low-pressure applicator, such as pump sprayer or battery powered sprayer.

## 2.5 CHEMICAL CLEANING SOLUTIONS:

- A. General: Unless otherwise indicated, dilute chemical cleaning materials with water to produce solutions of concentration not greater than that recommended by chemical cleaner manufacturer and as demonstrated effective by testing without damage to surfaces.
- B. Cleaner: Chemical cleaners will only be used if more gentle means are determined inadequate by the Architect. Subject to testing and compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
  - 1. D/2 Biological Solution: Non-toxic, biodegradable, biological solution with a neutral pH shall be used. Acids, caustics, and chlorine bleach based products must not be used. Acceptable products available through Cathedral Stone Products; contact Technical Reps - Tel: 410-782-9150; fax: 410-782-9155.

## 2.6 PINS & ANCHORS

- A. Misc Anchors: Type 302/304 stainless steel. Provide new anchors and supports where existing anchors are damaged or otherwise unacceptable
  - a. Provide and install jamb anchors at new door and frame location.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Use hand methods only. Do not use jacks, saws, drills, or other power-driven devices, except as specifically permitted or indicated in the Contract Documents.
- B. Repair, alter, or replace existing work as indicated to comply with applicable portions of these specifications as for new work. Workmanship for existing materials to be repaired or altered, but not otherwise specified, shall conform to similar workmanship existing or adjacent to area in which alterations are to be made.
- C. Work sections that can easily be completed in one shift.

### 3.2 PROJECT CONDITIONS:

- A. Strictly comply with manufacturer's recommendations for environmental conditions prior to, during, and after installation of each material.
- B. Do not repoint mortar joints unless air temperatures are between 40 deg. F. (4 deg. C) and 80 deg. F. (27 deg. C.) and will remain so for at least 48 hours after completion of work.
- C. Prevent mortar used in repair work from staining face of surrounding masonry and other surfaces. Remove immediately mortar in contact with exposed masonry and other surfaces.
- D. Protect adjacent roofs from damage by mortar materials, scaffolding and foot traffic. Do not store materials on roofs.
- E. Protect sills, ledges and projections from mortar droppings.

### 3.3 STUCCO CHEMICAL CLEANING:

A. General:

1. Follow manufacturers' instructions.
2. Work sections that can easily be applied in one shift.
3. Clearly mark or identify time of application and dwell time.
4. Wash down in the same sequence of sections in which product was applied.
5. Thoroughly rinse application areas and surrounding adjacent surfaces.

B. Preparation for Cleaning: Comply with recommendations of cleaner manufacturer's chemical cleaners for protecting building surfaces against damage from exposure to their products.

1. Protect persons, motor vehicles, surrounding surfaces of building whose masonry surfaces are being restored, building site, plants, and surrounding buildings from injury resulting from masonry cleaning and restoration work.
2. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
1. General: Apply chemical cleaners to surfaces to comply with chemical manufacturer's recommendations using brush or spray application methods, at Contractor's option, unless otherwise indicated. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.
  - a. Use only those cleaning methods indicated for each masonry material and location.
  - b. 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.
  - c. Rinse off chemical residue and soil by working upwards from bottom to top of each treated area at each stage or scaffold setting.

C. Disposal: 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.

3.4 BRICK WALL RECONSTRUCTION AND REPAIR:

A. Removal: Carefully remove by hand, at locations indicated, masonry that is damaged, deteriorated, spalled, shifted, or is loose. Cut out full units from joint to joint and in a manner to permit replacement with full-size units.

1. Salvage as many whole, undamaged units as possible.
2. Remove mortar, loose particles, soil, and other debris from salvaged masonry, surrounding wall, and back-up wall. Clean removed units to prepare for resetting.
3. Store salvaged masonry in protected area until ready for reuse.

B. Support and protect masonry indicated to remain that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

C. Inspect exposed portion of back-up wall:

1. Replace damaged material and repoint defective mortar joints.

D. Re-installation: Re-use removed masonry or replace with salvaged units, where possible, or with new units matching existing, including size.

1. Dampen salvaged/new unit and adjacent units immediately before reinstallation.
2. Butter vertical joints for full width before setting and set units in full bed of mortar, unless otherwise indicated.

### 3.5 REPOINTING EXISTING MASONRY:

#### A. Joint Raking:

1. Rake out mortar from joints to depths equal to 2-1/2 times their widths but not less than 1/2 inch nor 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 as determined by Architect.
4. Cut out old mortar by hand with chisel and mallet, unless otherwise indicated. Use of Power operated rotary hand saws and grinders will not be permitted.

#### B. Joint Pointing:

1. Rinse masonry joint surfaces with water to remove any dust and mortar particles. Time application of rinsing so that, at time of pointing, excess water has evaporated or run off, and joint surfaces are damp but free of standing water.
2. Apply first layer of pointing mortar to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Compact each layer thoroughly and allow to become thumbprint hard before applying next layer.
3. When mortar is thumbprint hard, tool joints to match existing at exposed locations. Remove excess mortar from edge of joint by brushing.
4. Cure mortar by maintaining in a damp condition for not less than 72 hours. Cover area with plastic sheeting or other material to prevent mortar from excessive moisture loss.
5. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water.
  - a. Use of metal scrapers or wire brushes will not be permitted. Use of acid or alkali cleaning agents will not be permitted.

### 3.16 FINAL CLEANING:

- A. After completion of all masonry repairs, clean exposed masonry surfaces using low pressure water. All finished work shall show no signs of stains, scratches, streaks or runs of discoloration, mortar damage, or other like defects from use of cleaners.
- B. Clean window glass and other splattered surfaces.
- C. Protect masonry surfaces as necessary from damage caused by other trades until Final Completion.

END OF SECTION

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**05 55 00 METAL FABRICATION & RESTORATION**

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PART 1 - GENERAL

1.1 SUMMARY:

- A. This Section includes, but is not limited to, the following metal fabrications and restoration:
1. Removal, repair and reinstallation of historic railing at exterior

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The following Sections contain requirements that relate to this Section:
1. Division 9 Section "Painting" for priming and painting.

1.3 REFERENCES

1. ASTM A536 - 84(2009) Standard Specification for Ductile Iron Castings

1.4 SUBMITTALS:

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data including manufacturer's technical product information, installation instructions, and recommendations for each type of roofing product required. Include data substantiating that materials comply with requirements.
- C. Shop drawings detailing restoration of existing components and fabrication new components to replace severely deteriorated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
1. Shop drawing of handrail, showing repaired and replaced metal components, and anchorage.

1.5 DEFINITIONS:

- A. Ferrous metal restoration applies to existing items made from iron and steel shapes, plates, bars, strips, tubes, pipes and heavy gage sheet metal which are not a part of other metal repair, modification, and cleaning work specified elsewhere.

1.6 QUALITY ASSURANCE:

- A. Fabricator Qualifications: Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce required units without delaying the Work.
- B. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code-Steel," AWS D1.2 "Structural Welding Code-Aluminum," and AWS D1.3 "Structural Welding Code-Sheet Steel."

1.7 PERFORMANCE REQUIREMENTS:

- A. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.8 PROJECT CONDITIONS:

- A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  - 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating products without field measurements. Coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.
  - 2. Field verify all dimensions in construction documents prior to commencement of work.

PART 2 - PRODUCTS

2.1 FABRICATION, GENERAL:

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp
- C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.

- D. Shear and punch metals cleanly and accurately. Remove burrs.
- E. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- F. Remove sharp or rough areas on exposed traffic surfaces.
- G. Provide for anchorage to stucco substrate. Fabricate and space anchoring devices to secure metal fabrications rigidly in place.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

## 2.2 CAST IRON WELDING:

- A. Comply with AWS (American Welding Society) for recommended practices for welding of cast iron.
  - 1. Welding rods to be nickel-alloy rods fabricated for welding of cast iron.

## 2.3 FINISHING:

- A. General
  - 1. Refer to Division 9 Section "Painting" for painting steel and iron.

## PART 3 - EXECUTION

### 3.1 CAST IRON REPAIR:

- A. Finish Removal: Remove all sealant from perimeter of cast iron. Strip cast iron to bare metal.
- B. Jointly inspect conditions with Architect to verify existing conditions and determine full extent of repairs. Determine if column capitals can be removed or will need to be repaired in place.
  - 1. If removal of iron components for off-site repairs is undertaken, clearly mark each piece for re-assembly and coordinated installation.
- C. Replace all damaged or deteriorated fasteners. Provide necessary brackets and flanges for assembly of units. Use concealed fasteners wherever possible.
- D. New castings: If additional pieces are necessary, provide components in sizes and profiles necessary to match existing, but not less than required to comply with requirements indicated for structural performance.

1. Provide castings that match original profile and are free of warps, cold runs and porosity. New castings, when installed, should be identical to original un-damaged components.
- E. Welding: Clean and weld all cracks in iron. Comply with AWS for recommended practices in welding. Provide welds behind finished surfaces without distortion of the exposed side if possible. Clean exposed welds of all welding flux, and dress on all exposed and contact surfaces.
- F. Allowance for Movement: Allow for thermal movement resulting from the following maximum change in ambient temperature, in design, fabrication, and installation of the installed metal assemblies to prevent buckling, opening up of joints and over stressing of welds and fasteners.
  1. Fit joints with an allowance for contraction and expansion. Cope and miter corner joints. Form joints exposed to weather to exclude water penetration.
- G. Sandblast or chemically prepare iron for priming and painting as recommended by coating manufacturer.
- H. Finishing: Apply primer immediately after cleaning. (Do not allow bare metal to remain overnight before priming). Refer to Division 1 Section "Painting" for details.
  1. Finish colors to be selected by Architect.

### 3.2 INSTALLATION, GENERAL:

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, thru-bolts, lag bolts, wood screws, and other connectors as required.

### 3.3 ADJUSTING AND CLEANING:

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.

### 3.4 PROTECTION:

- A. Protect finishes from damage during construction period with temporary protective coverings as needed. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so that no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

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**06 10 00      ROUGH CARPENTRY**

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PART 1- GENERAL

1.1 SECTION INCLUDES

- A. All materials and labor for replacement of deteriorated wood framing elements, and work requiring new lumber for:
1. Replacement of rotted wood roof decking.
  2. New wood ledgers and plywood decking in attic.
  3. Misc. wood blocking and nailers.
  4. Connecting hardware, fasteners, and accessories

1.2 RELATED SECTIONS

- A. General: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section
- B. The following Sections contain requirements that relate to this Section:
1. Division 1 "Allowances" for allowance for replacement of deteriorated roof decking.
  2. Division 7 "Polyvinyl-Chloride (PVC) Roofing" for temporary removal of existing roofs, flashings, and trim, and as indicated on the drawings.

1.3 QUALITY ASSURANCE

- A. All dimension lumber and engineered wood products shall bear a legible grade stamp of a certified lumber grading agency.
- B. Each piece or bundle of treated wood products shall bear a legible third-party quality mark or tag indicating the name of the treater, date of treatment or lot number, and the American Wood Preservers' Association (AWPA) Specification symbol to which the treatment conforms.
- C. Provide Underwriters' Laboratories (UL) approved identification for fire resistant treated materials.
- D. Unless noted otherwise, all rough carpentry work shall conform to the conventional framing rules of the applicable building code.

1.4 SUBMITTALS

- A. Submit shop drawings and product data, describe materials, fasteners, fastening methods, accessories, and locations.

## PART 2 - PRODUCTS

### 2.1 LUMBER, GENERAL:

- A. Lumber Standards: Furnish lumber manufactured to comply with National Institute of Standards and Technology (NIST) standards:
1. PS 20 "American Softwood Lumber Standard" with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
  2. PS 1 "U.S. Product Standard for Construction and Industrial Plywood"
- B. Inspection Agencies: Inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:
1. NLGA - National Lumber Grades Authority (Canadian).
  2. SPIB - Southern Pine Inspection Bureau.
  3. WCLIB - West Coast Lumber Inspection Bureau.
  4. WWPA - Western Wood Products Association.
  5. APA - The Engineered Wood Association
- C. Grade Stamps: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
- D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
- E. Provide dressed lumber, S4S, unless otherwise indicated.
- F. Provide seasoned lumber with 15 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.

### 2.2 MATERIALS

- A. Dimension Lumber (2-inches by 4-inches thick): No. 2 Grade Southern Pine, visually graded according to the published grading rules of the Southern Pine Inspection Bureau.
- B. Timbers (5-inches by 2-inches thick and larger): No. 1 Grade Southern Pine, visually graded according to the published grading rules of the Southern Pine Inspection Bureau, dimensions as shown on plans or to match existing. End grain of all timbers shall be coated with paraffin wax or approved sealer at the mill or immediately after treatments, prior to shipping.
- C. Exterior Trim lumber: Unless otherwise noted, Appearance Grade D pressure treated pine.
- D. Concealed Boards: Where boards will be concealed by other work, provide lumber of 19 percent maximum moisture content (S-DRY or KD-19) and of Southern Pine "No. 2 Boards" per SPIB rules.

1. Board Sizes: Provide and install sizes indicated or, if not indicated (for sheathing, gutter liners, and similar uses), provide 1-inch boards to match existing to be replaced.
2. Provide preservative treated wood where indicated on the Drawings.
- 3.

### 2.3 PRESERVATIVE TREATMENT

- A. General: Where lumber or plywood is indicated as treated wood or is specified herein to be treated, comply with applicable requirements of AWP Standards C2-99 (lumber and timber) and C9 (plywood). Mark each treated item with the AWPB or SPIB Quality Mark Requirements.
- B. Above-Ground Use: Pressure treat wood members for above ground use with Alkaline Copper Quat (ACQ) preservatives to a minimum retention of 0.25 pcf. For interior uses, after treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of 19 percent and 15 percent.

### 2.4 ROOF DECKING :

- A. Replacement roof decking: 3/4" x 4" wide tongue & groove (verify match w/ existing).

### 2.5 PLYWOOD PANELS:

- A. Construction Panel Standards: Comply with NIST PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108.
- B. Attic decking: APA RATED STURD-I-FLOOR, sanded face
  1. Span Rating: 32/16
  2. Exposure Classification: EXPOSURE 1.
  3. Thickness: 3/4"
  4. Edge Detail: Square.

### 2.6 WOOD PRESERVATIVE (FIELD APPLIED)

- A. Wood Preservative: 2% water-borne solution of copper naphthenate.
  1. Jasco: Termin-8 Wood Preservative Green (25% solution). [http://www.jasco-help.com/products/prod\\_wp.htm](http://www.jasco-help.com/products/prod_wp.htm)
  2. Behr No. 3-91 Dock & Fence Post Preservative <http://www.behr.com>

### 2.7 FASTENERS, ADHESIVES, & ACCESSORY MATERIALS

- A. Material – General: All fasteners in exterior or treated wood shall be hot dip galvanized, stainless steel, or shall have an approved corrosion resistant coating.
  1. Galvanized fasteners shall be G185 hot-dip zinc coating per ASTM A153.
  2. Stainless steel fasteners shall be AISI Type 304 unless noted otherwise.
- B. Nails: common wire nails of the size shown on the plans.
  - a. Use sizes as required by building code unless larger sizes are noted otherwise.

- b. Use hot-dipped galvanized or stainless steel nails at all treated lumber locations. Do not use electro-galvanized nails.

C. Screws:

2. Structural connections, screws shall be SIMPSON SDS-type screws or approved substitute. The length shall be sufficient to develop the full shear capacity of the screw in the main member.
1. Deck installation: unless otherwise noted, screws shall be self-drilling, truss-head screws by Olympic Fasteners or approved substitute. The length shall be sufficient to develop the full shear capacity of the screw in the main member.

D. Bolts, Nuts, and Washers:

1. ASTM A 307, Grade A, unless otherwise noted.
2. Nuts and washers shall be of same material as bolt unless noted otherwise.

E. Expansion Anchors: galvanized anchor with expansion shank, or threaded concrete screw anchor, length as shown on the plans or as recommended by manufacturer for minimum 1,000 pound pull-out resistance. Approved manufacturers:

1. Tapcon
2. Hilti
3. Powers-Rawl

F. Framing Connector Hardware: Galvanized unless noted otherwise. Approved manufacturers:

1. Simpson Strong-Tie (<http://www.strongtie.com/>)
2. USP Structural Connectors (<http://www.uspconnectors.com/>)

## 2.8 STORAGE AND HANDLING

- A. All wood products shall be placed on blocking so that the material does not sag and is completely out of ground-contact.
- B. All wood products shall be protected from rain and direct sunlight.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify all dimensions and existing conditions in the field.
- B. Verify that surfaces are ready to receive work.
- C. Beginning of installation means acceptance of existing conditions.

### 3.2 INSTALLATION

- A. Remove existing materials to be replaced.

- B. Accurately measure or scribe members before cutting. Make all cuts clean and true to mating surfaces. All lumber and timber shall be accurately cut and framed to a close fit so that the joints will have even bearing over the entire contact surface. Mortises shall be true to size for their full depth and tenons shall make a snug, but not a driven, fit there-in.
- C. Treat all field-cuts of existing and new treated material with an approved water repellent preservative.
- D. Discard units of material with defects, which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.
- E. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
- F. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.
- G. Connecting hardware shall be installed in accordance with the manufacturer's recommendations.

END OF SECTION

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**07 54 19      POLYVINYL-CHLORIDE (PVC) ROOFING**

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PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

A. This Section includes the following:

1. Partial removal and re-attachment of existing mechanically adhered PVC membrane roofing system.
2. Inspection and repair of existing sealant related to single-ply membrane roofing.
3. Installation of new PVC Roof over Mechanical Room. (Bid Alternate)

1.2 RELATED DOCUMENTS:

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

B. The following Sections contain requirements that relate to this Section:

1. Division 7 "Flashing, and Sheet Metal" for coordination of new scuppers, leaders and downspouts.
2. Division 6 "Rough Carpentry" for repair of deteriorated wood deck.

C. The following References relate to this section:

1. ASTM D4434 Standard Specification for Poly(Vinyl Chloride) Sheet Roofing

1.3 SUBMITTALS:

A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data: installation instructions, and general recommendations from manufacturer of single-ply membrane system for types of roofing required. Include data substantiating that materials comply with requirements.

1. A sample of the manufacturer's Membrane System Warranty.
2. Submit a letter of certification from the manufacturer which certifies the roofing contractor is authorized to install the manufacturer's roofing system and lists foremen who have received training from the manufacturer along with the dates training was received.

#### 1.4 QUALITY ASSURANCE:

- A. Single-Source Responsibility: Obtain primary single-ply membrane roofing from a single manufacturer. Provide secondary materials as recommended by manufacturer of primary materials.
- B. Installer: Engage an experienced Installer that has specialized in installing roofing systems similar to those required for this Project. Installer must be acceptable to or licensed by manufacturer of primary roofing material.
- C. Pre-Roofing Conference: Before installing roofing and associated Work, meet at project site with Installer, roofing manufacturer, installers of related work, and other entities concerned with roofing performance, including manufacturer's representative, Architect, and Owner. Record discussions and agreements and furnish copy to each participant. Schedule conference to coincide with Monthly Progress Meeting. Review the following:
  - a. Drawings, specifications and submittals related to the roof work;
  - b. Roof system components installation;
  - c. Procedure for the roof manufacturer's technical representative's onsite inspection and acceptance of the roofing substrate, the name of the manufacturer's technical representatives, the frequency of the onsite visits, distribution of copies of the inspection reports from the manufacturer's technical representative;
  - d. Contractor's plan for coordination of the work of the various trades involved in providing the roofing system and other components secured to the roofing;
  - e. Quality control plan for the roof system installation;
- D. Fire Resistance: Provide labeled materials that have been tested as a complete assembly and listed by UL or by other nationally recognized testing laboratory for:
  - a. Class A rated in accordance with ASTM E 108, FM 4470, or UL 790.

#### 1.5 WARRANTY

- A. Warranty Period (Re-attachment): Provide letter from existing membrane manufacturer stating that all removal and reattachment work has been completed in accordance with their written instructions and existing warranty remains in effect.
- B. Warranty Period (BID ALTERNATE): Provide manufacturer's 15 year Total System Warranty covering both labor and material with no dollar limitation. The maximum wind speed coverage shall be peak gusts of 100 mph measured at 10 meters above ground level. Certification is required with bid submittal indicating the manufacturer has reviewed and agreed to such wind coverage.
  - 1. Warranty period shall begin at date of Substantial Completion
- C. Inspection: Upon completion of the installation, an inspection will be conducted by the manufacturer's representative to ascertain that the roofing system has been installed according with manufacturer's specifications and details.

- D. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. Duro-Last Roofing, Inc.

### 2.2 FULLY ADHERED PVC MEMBRANE SYSTEM:

- A. Membrane: Polyvinyl-Chloride membrane complying with ASTM specification D4434.
1. Duro-Last – DL60 - PVC reinforced 60 mil (1.52 mm) fully-adhered membrane (polyvinylchloride polymer blend, reinforced with a high-strength weft-inserted polyester scrim. System weight approximately 0.39 lb/ ft2 (color: white)
- B. Membrane Adhesive: As recommended by membrane manufacturer for particular substrate and project conditions, formulated to withstand minimum required uplift force for Tier 1 Counties (120 mph 3-second gust design wind speed)
- C. Underlayment Board: Georgia Pacific – Dens Deck Prime 1/4" fiberglass/gypsum roof board complying with ASTM C 1177.
- D. Scuppers: Duro-Last - Single Skirt Scupper with metal flange. - Custom fabricated stainless steel with copper exterior flange, with vinyl coated interior (gray). Verify exact opening sizes and lengths prior to fabrication.
- E. Termination Bar: Duro-Last standard termination bar.
- F. Penetration Flashing: Duro-Last Stack Flashings sized as required. Color: white
- G. Fasteners (where required at concrete deck) Duro-Last XHD Screws – Verify length required to penetrate deck as required by manuf.
- H. Walkway Pad: Duro-Last Roof Trak® III Walkway Pad. Verify location and size of walkway pad with Architect.
- I. Peel Stops: Not required (Verify with manufacturer)
- J. Vents: two-way breather vents sized and spacing as required by manufacturer.

### 2.3 TAPERED INSULATION:

- A. Polyisocyanurate Board Roof Insulation: Rigid, cellular, thermal insulation with polyisocyanurate closed-cell foam core and manufacturer's standard facing laminated to both sides; complying with FS HH-I-1972/2, Class 1.
- B. Mechanical Fasteners for Insulation: Type recommended by insulation manufacturer and complying with wind load requirements.

## PART 3 - EXECUTION

### 3.1 SEQUENCING OF WORK

- A. Coordinate removal and re-attachment of roof membrane with work at parapet wall. Provide and maintain temporary covering over exposed deck areas during stucco work at walls.
- B. Schedule re-attachment of membrane and flashing at earliest opportunity after stucco has completely set.

### 3.2 PREPARING SUBSTRATE

- A. General: Comply with manufacturers' instructions to prepare substrate to receive single-ply membrane system.
  - 1. Verify that penetrations, expansion joints, and blocking are in place and secured.
- B. Clean substrate of dust, debris, and other substances detrimental to single-ply system installation. Remove sharp projections.
- C. Install cant strips, flashings, and accessory items as shown and as recommended by manufacturer.
- D. Prime substrate where recommended by manufacturer of materials being installed.
- E. Prevent compounds from entering and clogging drains and conductors and from spilling or migrating onto surfaces of other work.

### 3.3 INSTALLING INSULATION

- A. General: Extend insulation full thickness in two layers, or in multiple layers over entire surface to be insulated, cutting and fitting tightly around obstructions. Form cant strips, crickets, saddles, and tapered areas with additional material as shown and as required for proper drainage of membrane.
  - 1. Stagger joints in one direction for each course. For multiple layers, stagger joints in both directions between courses with no gaps, to form a complete thermal envelope.

2. Provide tapered units to suit drainage pattern indicated on shop drawings.
- B. Do not install more insulation in a day than can be covered with membrane before end of day or before start of inclement weather.
- C. Secure roof insulation to substrate with mechanical anchors of type and spacing indicated by manufacturer but in no case provide less than one anchor per 4 sq. ft. of surface area or less anchorage than required by FM Loss Prevention Data Sheet 1-28.
- D. Provide protection sheet between insulation and membrane when recommended by membrane manufacturer.

### 3.4 INSTALLING MEMBRANE

- A. General: Comply with manufacturer's written installation instructions.
- B. Apply entire PVC membrane roofing utilizing fully adhered application method. Submit instructions including pattern and frequency of mechanical attachments required in the field for roof, corners, and perimeters to provide for the specified wind resistance
  - a. Membrane shall be overlapped a minimum of 75 mm 3 inches at sides for adhered applications and 140-180 mm 5.5-7 inches for mechanically fastened applications and minimum 100 mm 4 inches at ends. Where possible, direction of laps shall allow water to flow over and not into the lap.
  - b. Membrane joints shall be free of wrinkles and fishmouths.
  - c. The entire length of hot-air-welded seams shall be probe-tested and corrected during the day of installation. Defective areas shall be re-welded. Wrinkles, fishmouths, or damaged areas shall be cut out and the area covered with membrane using a continuous hot-air-welded seam on all sides.
  - d. Repairs shall be probe-tested for continuity.
  - e. Do not dilute coatings or sealants unless specifically recommended by the material manufacturer's printed application instructions. Do not thin liquid materials or cleaners used for cleaning PVC sheet.
  - f. Keep liquids in airtight containers, and keep containers closed except when removing materials.
  - g. Use liquid components, including adhesives, within their shelf life period. Store adhesives at 15 to 27 degrees C 60 to 80 degrees F prior to use. Avoid excessive adhesive application and adhesive spills, as they can be destructive to some thermoplastic sheets and insulations; follow adhesive manufacturer's printed application instructions. Mix and use liquid components in accordance with label directions and manufacturer's printed instructions.
  - h. Provide clean, dry cloths or pads for applying membrane cleaners and cleaning of membrane.
  - i. Do not use heat guns or open flame to expedite drying of adhesives or primers.

- j. Require workmen and others who walk on the membrane to wear clean, soft-soled shoes to avoid damage to roofing materials.
- k. Do not use equipment with sharp edges which could puncture the PVC membrane roofing sheet.
- l. Shut down air intakes and any related mechanical systems and seal open vents and air intakes when applying solvent-based materials in the area of the opening or intake. Coordinate shutdowns with the Owner.

### 3.5 MEMBRANE SPLICING/HOT AIR WELDING PROCEDURES

- A. Provide hand-carried, portable UL-rated, class "A" fire extinguishers at roof at all times when membrane welding activities are performed.
- B. Hot air weld the Sure-Weld membrane using an Automatic Hot Air Welding Machine or Hot Air Hand Welder in accordance with the manufacturer's specifications. At all splice intersections, roll the seam with a silicone roller to ensure a continuous hot air welded seam.
- C. Probe all seams once the hot air welds have thoroughly cooled (approximately 30 minutes).
- D. Repair all seam deficiencies the same day they are discovered.
- E. Apply Cut Edge Sealant on all cut edges of reinforced membrane (where the scrim reinforcement is exposed) after seam probing is complete. Cut Edge Sealant is not required on vertical splices.

### 3.6 FLASHING

- A. Flashing of parapet walls, curbs, expansion joints and other parts of the roof must be performed using Sure-Weld reinforced membrane. Sure-Weld non-reinforced membrane can be used for flashing pipe penetrations, Sealant Pockets, and scuppers, as well as inside and outside corners, when the use of pre-molded accessories is not feasible.
- B. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edging/coping and roof drain applications.

### 3.7 ROOF PENETRATIONS AND CURBS

- A. Install Sure-Weld pre-fabricated TPO Split Pipe Seals at all roof jack, vents, and similar penetrations. Fully-adhere bottom flange of seal to roof membrane.
- B. Install Sure-Weld pre-fabricated TPO Curb Wrap Corners at all roof curbs. Fully-adhere bottom flange of seal to roof membrane.

### 3.8 WALKWAY INSTALLATION

- A. Install walkways at all traffic concentration points (such as roof hatches, access doors, rooftop ladders, etc.) and any additional locations as identified on Drawings.

### 3.9 CLEAN UP

- A. Perform daily clean up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.
- B. Prior to the manufacturer's inspection for warranty, the applicator must perform a pre-inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.

### 3.10 PROTECTING ROOFING

- A. After completing roofing (including associated work), institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. At the end of the construction period, or at a time when remaining construction will in no way affect or endanger roofing, make a final inspection of roofing and prepare a written report to Owner, describing nature and extent of deterioration or damage found.
- B. Repair or replace (as required) deteriorated or defective work found at the time of final inspection to a condition free of damage and deterioration at the time of Substantial Completion and according to the requirements of the specified warranty.

END OF SECTION

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**07 60 00 FLASHING AND SHEET METAL**

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PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

- A. Extent of each type of metal roofing, flashing and sheet metal work is indicated on the drawings and by provisions of this section.
- B. Types of work specified in this section include the following:
1. Copper leaders and downspouts.
  2. Copper scuppers.
  3. Misc. flashing.
  4. Galv. chimney cap

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General, Supplementary, and Special Conditions, and Division-1 Specification sections, apply to work of this section.
- B. The following sections contain requirements relating to this section:
1. Division 2 Section "Selective Demolition" for removal of existing roofs, flashings, and trim, and as indicated on the drawings.
  2. Division 7 Section "Polyvinyl Chloride (PVC) Roofing" for pre-fabricated scuppers and roof accessories.
- C. The following are references for this section:
1. Standard Practice in Sheet Metal Work - a Reprint of the 1929 Edition. Sheet Metal and Air Conditioning Contractor's National Association, P.O. Box 70, Merrifield, VA 22116, Ph: (703) 790 - 9890.
  2. Standards: "Architectural Sheet Metal Manual", SMACNA, 5th Edition, 1993.
  3. "Sheet Copper Applications", Copper Development Association, 1990
  4. "Roofing & Waterproofing Manual", National Roofing Contractors Association. 3<sup>rd</sup> edition, 1989.
  5. "Copper in Architecture Handbook", Copper Development Association. July 2000.

1.3 PERFORMANCE REQUIRED AT EXISTING CONDITIONS:

- A. Repair, alter, or replace existing work as indicated to comply with intent stated on drawings and applicable portions of these specifications as for new work. Alterations in the existing roof system have been designed and indicated in the Drawings with the intention of correcting deficiencies in the existing installation and reconstructing the original roof form and appearance.
- B. Review existing conditions, compare to the Contract Documents and report any perceived conditions which would hinder the installation of a permanently watertight, securely attached roof system.

#### 1.4 QUALITY ASSURANCE:

- A. Installer Qualifications: A single Installer shall perform the work of this section and shall be a firm employing persons with not less than five (5) years of successful experience in installation of flat seam and metal shingle roofing and flashing of type and scope equivalent to work of this section.
- B. Industry Standard: Except as otherwise shown or specified, comply with applicable recommendations and details of "Architectural Sheet Metal Manual" by SMACNA, 5th Edition. Conform to dimensions and profiles shown in the Contract Documents, except as modified by reference to SMACNA details.
- C. Mock-up: Before proceeding with final purchase of materials and fabrication of metal roofing components, prepare a mock-up of work. Incorporate materials and methods of fabrication, including soldering, and installation which are identical with project requirements and conditions. Complete mock-up work at time and location directed by Architect. Retain accepted mock-up as quality standard for acceptance of completed metal roofing. Accepted mock-up may be incorporated into the final work.

- 1. Mock-up new leader and downspout at both upper and lower roofs.

#### 1.5 SUBMITTALS:

- A. General: Submit the following in accordance with conditions of Contract and Division 1 Specification Sections.
- B. Product Data: Submit manufacturer's product data, installation instructions and general recommendations for each specified material and fabricated product. Include certification or other substantiating information that materials comply with requirements.
- C. Shop Drawings: Submit shop drawings showing layout, joining, profiles, typical seam and expansion joint systems, and anchorages of fabricated work, including counter-flashings, screen material, and cleats; layouts at 1/4" scale, details at 3" scale.
- D. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

- E. Metal Roofing Installer's Guarantee: Submit three draft copies of Roofing Installer's Guarantee for approval by Owner.

1.6 SAMPLES:

- A. None Required:

1.7 JOB CONDITIONS:

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.
- B. Work by Separate Contractor: Asbestos-containing roof flashings will be removed by an abatement specialist provided by Owner under Separate Contract.

1.8 TESTING:

- A. Water test all downspouts at completion of work. Block outlet tubes and flood downspout for minimum of one hour. Contractor and Architect shall jointly document leaks and Contractor shall make repairs to stop leaks. Upon completion of repairs, contractor shall conduct a second test flooding. If leaks are detected, Contractor shall make repairs and conduct a third test flooding. Architect's time and expenses for observation of the third or more test floodings shall be billed to the Owner as an Additional Service and the amount billed for the additional services shall be deducted from amounts owed to the Contractor. Schedule tests a minimum of two weeks in advance at a mutually agreed-upon monthly project meeting that will allow Owner and Architect to observe.

1.9 GUARANTEES:

- A. Installer's Guarantee: Submit executed copy of Roofing Installer's Guarantee stating that the work of this section shall be free from leaks and other defects for **five (5) years after date of Substantial Completion** and that the Roofing Installer will correct any leaks or defects occurring within the five year warranty period at no additional cost to the Owner. The Installer's Guarantee shall be signed by an authorized representative of Installer, on form which is acceptable to Owner's Representative.

PART 2 - PRODUCTS

2.1 MATERIALS AND ACCESSORIES:

- A. Copper: ASTM B 370; temper H00 (cold-rolled) except where temper 060 is required for forming. 16 oz. minimum and as follows:

- |                |        |
|----------------|--------|
| Scupper:       | 20 oz. |
| Downspouts:    | 16 oz. |
| Strap Anchors: | 20 oz. |
- B. Galvanized Steel Sheet: ASTM A 653, (ASTM A 653M), commercial quality, or ASTM A 653, (ASTM A 653M), lock-forming quality, hot-dipped galvanized steel sheet with no more than 0.20 copper, mill phosphatized where indicated for painting; not less than 0.0396 inch (1.0 mm) thick, unless otherwise indicated. Coating to comply with ASTM A 90, not less than 0.90 oz./sq. ft. coating weight (G90 designation). Provide minimum 24 gauge for repair or match gauge of each existing element to be repaired/replaced.
- C. Solder: ASTM B32 or Fed. Spec. QQ-S-571, 50% pig lead, 50% black tin.
- D. Flux: Fed. Spec. 0-F-506, type best suited for specific metal. Flux shall be thoroughly neutralized and washed off metal after soldering is complete.
- E. Fasteners: Use type and form of metal fastener compatible with base material and support structure, generally of same material as element being secured or attached, 7/8" minimum length.
1. Galvanized steel: Use galvanized Stronghold type, or equal, with large flat head, No. 12 Stubs gauge, 1.5" minimum length.
  2. Screws and bolts for copper: Copper, bronze, or brass.
- F. Pop Rivets: Rivets shall be of size required for performance and shall match material in which they are used.
- G. Downspout Strainers: Copper mesh or wire units, with selvaged edges and non-corrosive fasteners.

## 2.2 FABRICATED UNITS:

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer's instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back 1/2" to form hems. Form bends to 1/16" inside radius.
- B. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. Pre-tin edges to be seamed, form seams, and solder. Make all lock and lap seams, where soldered, at least 3/4" wide. Where lap seams are not soldered, lap according to pitch but in no case less than 4 inches and hem exposed view edge 1/2". Make all flat and lap seams in direction of flow.

Join parts with rivets or sheet metal screws where necessary for strength or stiffness and cover heads with 2" diameter metal discs fully soldered.

- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.
- E. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphaltic coating or other permanent separation as recommended by manufacturer/fabricator.

## PART 3 - EXECUTION

### 3.1 INSTALLATION REQUIREMENTS:

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams which will be permanently watertight and weatherproof.
- B. Examine the substrate and the conditions under which work is to be performed, and do not proceed until unsatisfactory conditions have been corrected. Surfaces to receive sheet metal are to be clean, even, smooth, dry, and free from active rot or fungi attack. Verify slope prior to installation. Verify that substrate waterproofing integrity has been confirmed by testing.
- C. Sheet Metal:
  - 1. Unless otherwise specifically permitted by Architect, turn all exposed edges back 1/2". Form bends to 1/16" inside radius.
  - 2. Shield all sheet metal against galvanic action with self adhering membrane or adhesive sealer tape as acceptable to Architect.
  - 3. Join parts with soldered rivets where necessary for strength or stiffness.
  - 4. Whenever possible, secure metal by means of clips or cleats without nailing through metal. In general, space all required nails, rivets and screws not more than 8" apart and, where exposed to weather, use lead washers. For nailing into wood, use barbed roofing nails 1-1/4" long by 11 gage.
- D. Soldering: Thoroughly clean and tin all joint materials before soldering. Perform all soldering slowly with well heated soldering copper to heat seams thoroughly and completely fill with solder.

1. Perform all soldering with heavy soldering copper (3 lb. minimum each) of blunt design, properly tinned for use. Make all exposed soldering on finished surfaces neat, full flowing, and smooth.
2. Form soldered joints by applying flux to surface and lifting overlapping sheet to apply between sheets to minimum 1/2" depth. Thoroughly sweat joint drawing solder between sheets to minimum 1/2" depth and apply uniform surface bead without excess build up.
3. Solder only fixed components such as corners, intersections, terminations, skirts, collars, and covers. Do not solder joints between adjacent straight runs of valleys and flashings, unless otherwise indicated.
4. Do not nail metal components directly to substrate or solder over nail heads. Where metal components are indicated to be joined prior to soldering, flat lock the pieces of metal together and secure to substrate with cleats.
5. Cut, notch, miter, and provide tabs as necessary to properly join and interlock individual components for soldering. Spot braze units to be soldered except where riveting is permitted or indicated. When riveting in the field, take care not to penetrate substrate waterproofing.
6. Immediately neutralize flux using cloth saturated with 10% solution of washing soda and water, rinse with clean water, and wipe again using separate cloth.

### 3.2 LEADERS AND DOWNSPOUTS:

- A. Leaders: Fabricate and install new leaders as shown on drawings and specified herein. Install as shown on drawings. Provide minimum 1/2" clearance between bottom of scupper and top of leader.
- B. Outlet Tubes: Provide outlet tubes of the size and shape to fit the downspouts. Locate at low points. Solder to the gutter liner and extend at least 3" into the downspout.
- C. Downspouts: Provide and install new copper downspouts at locations shown. Lock and solder seams to provide watertight installation. Provide and install elbow at end of gutter with 9" leg to direct water onto concrete splash block. Provide hinged access door and wire strainers in downspouts where indicated.
- D. Downspout Anchoring: Provide and install 2" wide copper straps at 8' - 0" o.c. maximum.
- E. Strainers: Provide and install hemmed copper or brass wire strainer at the top of each downspout. Match SMACNA Figure 1-24D.

### 3.3 MISCELLANEOUS:

- A. Splashblocks: Modern Pre-Cast – 9" wide x 30" long precast concrete splashblocks (regular gray color) [http://www.modernprecast.com/splash\\_blocks.html](http://www.modernprecast.com/splash_blocks.html)

### 3.4 FINISHING

- A. All non-factory finishes are specified in Division 9 Section "Painting".
- B. All galvanized metal shall be back primed with rust inhibitive primer prior to installation unless noted otherwise

### 3.5 CLEANING AND PROTECTION:

- A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes. Carefully remove grease and oil with solvent and wipe clean.
- B. Protection: Installer shall advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

END OF SECTION

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**07 92 00      JOINT SEALANTS**

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PART 1 – GENERAL

1.1 SUMMARY:

A. This Section includes joint sealants for the following locations:

1. Exterior joints in vertical and horizontal non-traffic surfaces indicated below (Type 1):
  - a. Perimeter joints between masonry and frames of doors and windows.
  - b. Other joints as indicated.
2. Interior joints in vertical surfaces and horizontal non-traffic surfaces as indicated below (Type 3):
  - a. Perimeter joints of exterior openings.
  - b. Other joints as indicated.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The following Sections contain requirements that relate to this Section:
  1. Division 7 Section "Polyvinyl Chloride (PVC) Roofing" for roof sealant applications.
  2. Division 8 Section "Wood Window Restoration" for glazing at all windows.

1.3 SYSTEM PERFORMANCE REQUIREMENTS:

- A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

1.4 SUBMITTALS:

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data from manufacturers for each joint sealant product required.

1.5 QUALITY ASSURANCE:

- A. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

1.6 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS:

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 deg F (4.4 deg C).
  2. When joint substrates are wet.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL:

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: Provide color of exposed joint sealants to comply with the following:
1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

2.2 JOINT SEALANTS:

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing elastomeric sealants that comply with ASTM C920 and other requirements including those requirements referencing ASTM C920 classifications for Type, Grade, Class, and Uses.
- B. Type 1: Multi-Component High Performance Polyurethane Sealant: Type M, Grade NS, Class 25, Uses NT, G, A, M, and O as applicable to joint substrates indicated:
1. Additional Movement Capability: +/-50 movement in expansion and contraction.
  2. Joint Substrates: Concrete, limestone, granite, brick, wood, expansion wall joints, precast units, perimeter window caulking.
  3. Available Products: Subject to compliance with requirements, elastomeric sealants that may be incorporated in the Work include, but are not limited to, the following:
    - a. "Sonolastic NP2," Sonneborn Building Products Div., ChemRex, Inc.
- C. Type 2: Multi-Component Self Leveling and Slope Grade Sealant: Type M, Grade P, Class 25, Uses T and M as applicable to joint substrates indicated:
1. Additional Movement Capability: +/-25 movement in expansion and contraction.
  2. Joint Substrates: Cast-in-place concrete, sidewalks, decks, and balconies.
  3. Available Products: Subject to compliance with requirements, elastomeric sealants that may be incorporated in the Work include, but are not limited to, the following:
    - a. "Sonolastic SL2," Sonneborn Building Products Div., ChemRex, Inc.
    - b. THC/900/901, Tremco, Inc.
- D. Type 3: Acrylic-Emulsion Sealant: Provide manufacturer's standard one-part, nonsag, mildew-resistant, paintable sealant that is recommended for exposed applications on interior and protected exterior locations and that accommodates indicated percentage change in joint width existing at time of installation without failing either adhesively or cohesively. Provide product complying with ASTM C834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.
1. Available Products: Subject to compliance with requirements, latex joint sealants that may be incorporated in the Work include, but are not limited to, the following:
    - a. "AC-20+Silicone" - Pecora Corporation ([www.pecora.com](http://www.pecora.com))
    - b. "Sonolac" - Sonneborn Building Products Div., ChemRex, Inc. ([www.chemrex.com](http://www.chemrex.com))
    - c. "DAP 3.0 Advanced All-Purpose Sealant" DAP ([www.dap.com](http://www.dap.com))
    - d. "Moorlastic 45yr. Acrylic Latex Sealant 466" - Benjamin Moore & Co. ([www.benjaminmoore.com](http://www.benjaminmoore.com))

### 2.3 JOINT SEALANT BACKING:

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Joint Fillers: (Interior use) Preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
  - 1. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, non-outgassing in unruptured state.
    - a. Sonneborn Expansion Joint Filler or approved equal.
- C. Joint Fillers: (Exterior use) Preformed, pre-compressed, expanding foam sealant of material indicated below and of size, shape, and density to control sealant depth and provide watertight secondary sealant in vertical and horizontal applications:
  - 1. Open-cell polyurethane foam impregnated with a non-drying, water-based, stabilized, polymer-modified, acrylic adhesive:
    - a. Emseal - Backerseal (Greyflex) or approved equal. ([www.emseal.com](http://www.emseal.com))

### 2.4 MISCELLANEOUS MATERIALS:

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

## PART 3 - EXECUTION

### 3.1 EXAMINATION:

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION:

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
  3. Remove laitance and form release agents from concrete.
  4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS:

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
1. Install joint fillers to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
    - a. Do not leave gaps between ends of joint fillers.

- b. Do not stretch, twist, puncture, or tear joint fillers.
  - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.
- D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
1. Provide concave joint configuration per Figure 5A in ASTM C1193, unless otherwise indicated.

#### 3.4 CLEANING:

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

#### 3.5 PROTECTION:

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION

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**08 11 00      STEEL DOORS AND FRAMES**

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PART 1 - GENERAL

1.1 SUMMARY:

A. This Section includes steel doors and frames manufactured in accordance with SDI Recommended Standards:

1. Doors:

b. Custom-fabricated, commercial-quality steel doors for exterior use.

2. Frames: Welded steel frames for doors of the following type:

a. Welded unit type.

1.2 RELATED DOCUMENTS:

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

B. The following sections contain requirements that relate to this Section:

1. Division 4 Section "Masonry Restoration & Cleaning" for building anchors and grouting frames in masonry construction.

2. Division 9 Section "Painting" for field painting of steel doors and frames.

1.3 SUBMITTALS:

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product Data: Manufacturer's specifications for fabrication and installation of each type of door and frame, including details of constructions, materials, dimensions, hardware preparation, core, label compliance, profiles, and finishes.

C. Shop Drawings: For fabrication and installation of steel doors and frames work. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections.

D. Label Construction Certification: For door assemblies required to be fire-rated and exceeding limitations of labeled assemblies, submit manufacturer's certification that each door and frame

assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

1.4 QUALITY ASSURANCE:

- A. Provide steel doors and frames complying with Steel Door Institute “Recommended Specifications Standard Steel Doors and Frames” ANSI/SDI-100 and as herein specified.
- B. Fire-Rated Door Assemblies: Units that comply with NFPA 80, are identical to door and frame assemblies whose fire resistance characteristics have been determined per ASTM E 152, and that are labeled and listed by UL, Warnock Hersey, or other testing and inspecting organization acceptable to authorities having jurisdiction.

1.5 PROJECT CONDITIONS:

- A. Field Measurements: Verify existing masonry opening sizes by accurate field measurements before fabrication of new steel doors and frames. Document each opening size and any special conditions at each opening. Show recorded measurements on final shop drawings.

1.6 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver doors and frames palleted, wrapped, or crated to provide protection during transit and job storage.
- B. Inspect doors and frames upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to the Architect; otherwise remove and replace damaged items as directed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
  - 1. Steel Doors and Frames:
    - a. Ceco Corp. or approved equal

2.2 DOORS:

- A. General: Provide flush design doors, 1-3/4 inches thick, seamless hollow construction, unless otherwise indicated.
  - 1. Exterior Grade Steel Doors:

- a. Ceco Corp. – Medallion Series, Level 3 (Extra Heavy Duty) 16 ga. Flush door with steel stiffened core, galvanized steel with B Label Fire rating (1-1/2 hr) – custom size to fit existing opening.

### 2.3 FRAMES:

- A. Fabricate frames of full-welded unit construction, with corners mitered, reinforced, continuously welded full depth and width of frame.

1. Form frames of minimum 14-gage galvanized steel sheets for exterior use.
  - a. Ceco Corp. SU (double rabbet) 5" frame depth with standard throat and backbend or approved equal.

### 2.4 HARDWARE:

- A. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Warnock Hersey, FM, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.

1. Hinges
  - a. Hager – 4" x 4" BB1199 Five Knuckle, Ball Bearing full mortise hinges or approved equal.
2. Cylinder Lock
  - a. Schlage AL 70PD - Commercial grade lockset – SAT lever - 626 Finish – Match existing keying system at building
3. Sound Stripping/Weatherstripping:
  - a. Pemko – PK 33 Series - Adhesive Perimeter Gasket

### 2.5 MISCELLANEOUS:

- A. Finish Hardware Preparation: Prepare doors and frames to receive finish hardware, including cutouts, reinforcing, mortising, drilling, and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A 115 series specifications for door and frame preparation for hardware.

1. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

2. Locate finish hardware as shown on final shop drawings and in accordance with "Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames," published by Door and Hardware Institute.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION:

- A. Frames: Provide steel frames for doors, of size and profile as indicated.
  1. Install frames and accessories in accordance with shop drawings, manufacturer's data, and as herein specified.
- B. Setting Masonry Anchorage Devices: Provide masonry anchorage devices where required for securing frames to in-place concrete or masonry construction.
  1. Set anchorage devices opposite each anchor location, in accordance with details on final shop drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.
- C. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
  1. In masonry construction, install at least 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T-haped anchors.
  2. At in-place concrete or masonry construction, install at least 3 completed opening anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Set frames and secure in place with machine screws and masonry anchorage devices.
  3. Place frames at fire-rated openings in accordance with NFPA Standard No. 80.
- D. Doors: Fit non-fire-rated doors accurately in their respective frames, with the following clearances:
  1. Jambs and Head: 3/32 inch.
  2. Bottom: 1/8 inch, at threshold or carpet.
- E. Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

#### 3.2 ADJUSTING, CLEANING, AND PROTECTION:

- A. Final Adjustments: Check and readjust operating hardware items just prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames that are warped, bowed, or otherwise unacceptable.
  
- B. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

END OF SECTION

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**08 60 10 WOOD WINDOW RESTORATION**

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PART 1 - GENERAL

1.1 SUMMARY:

- A. Extent of window restoration work is as indicated on the drawings and schedules and as specified herein, and includes the following:
1. Documentation, removal and storage of wood windows and glass.
  2. Paint removal and complete repair to wood window assemblies, including selective removal of wood window elements as required to effect restoration and alterations.
  3. Renovation of all sash sections as well as all exterior elements of the window frames and trim.
  4. Replacement of cracked and damaged glass.
  5. Weatherstripping.
- B. With the completion of the work specified in this section, it is intended that the condition of indicated windows be as follows:
1. All sash units shall be "as new" ready for glazing, painting, all lower sash fully operational, with existing hardware re-installed. Upper sash shall be fixed as indicated and sealed to preclude air and water penetration.
  2. All frames and trim shall be "as new" with all damaged areas replaced or restored, missing elements replaced, surface damage repaired and ready for finishing, installation of weatherstripping, and installation of sealant.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The following Sections contain requirements that relate to this Section:
1. Division 1 Section "Temporary Facilities" for Protection of building interior during window restoration.
  2. Division 7 Section "Joint Sealants" for joint sealing between wood windows and adjacent materials.
  3. Division 9 Section "Painting" for field painting of wood windows.

1.3 SUBMITTALS:

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections:

- B. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.
- C. Product data: Submit manufacturer's data sheets for every item of specified weatherstripping and window accessories.

#### 1.4 QUALITY ASSURANCE:

- A. Comply with repair guidelines contained in Preservation Briefs number 9, "The Repair of Historic Wooden Windows," published by the U.S. Department of the Interior and available from the Preservation Assistance Division, (202) 343-9573.
- B. Comply with the general requirements for epoxy consolidation and repair of wood contained in Epoxies for Wood Repairs in Historic Buildings, published by the U.S. Department of the Interior and available from the Preservation Assistance Division, (202) 343-9573.
- C. Manufacturer Qualifications: To function as Contractor's Specialist to perform modifications and repairs on historic window sash, employ a specialized firm with not less than five years of previous experience replicating or remanufacturing comparable wood windows.
  - 1. Single Source Responsibility: Provide new windows produced by a single fabricator who is capable of indicating prior successful production of units similar to those required.
- D. Installer Qualifications: Restoration work done "in situ" shall be performed by a firm employing persons with successful experience in similar work on not less than two completed previous projects comparable to this project in scope, nature, and complexity. Workmen shall be skilled finish carpenters who are experienced in the type of repair work required.
- E. Wood Window Standard: Comply with NWWDA-I.S.-2 for standards of performance and fabrication workmanship for wood windows and AWI Section 1000, Custom Grade.

#### 1.5 MOCK-UP:

- A. Prior to commencing work on this section, prepare sample installation showing indicated repair and restoration procedures on an existing unit. Schedule mock-up reviews to coincide with Monthly Project Meetings. Specific location of unit mock-up shall be as approved by the Architect and shall include representative installations showing the following:
  - 1. Sash joint repair.
  - 2. Repair or replacement of damaged muntins.
  - 3. Consolidation and epoxy repair of wood.
  - 4. Re-glazing

#### 1.6 PROJECT/SITE CONDITIONS:

- A. Prior to beginning work, Contractor shall resurvey windows and determine any additional damage/deterioration. Contractor shall indicate any condition changes on existing window schedule and submit to Architect for evaluation.
- B. Coordination with Owner: Building will remain occupied during construction. Contractor shall coordinate all construction activities in occupied spaces with Owner in advance.

Contractor shall facilitate Owner in relocating furniture as necessary to perform the work. Contractor shall install temporary protection to prevent dust from entering working areas. Refer to Division 1 Section "Temporary Facilities" for additional details.

- C. Remove existing sills, stools, stops, and trim, or portions thereof, where:
1. Indicated or necessary for repair.
  2. Identified as damaged beyond repair during examination by Contractor's repair specialist and approved by Architect.
  3. Damaged beyond repair during the Work under this Contract.
- D. Sash removal shall be required where indicated and to perform the following repair procedures:
1. Reinforce or replace warped sash rails.
  2. Repair, realign sash joints separated in excess of 1/32" cumulative across the width of window.
  3. Replace, install, adjust, or repair weatherstripping on operable windows.
  4. Repair or replace sash weights and chord on operable windows.
- E. Field Measurements: Check actual window openings by accurate field measurement before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

#### 1.7 PROJECT CONDITIONS:

- A. Weather Conditions: Proceed with Work only when existing and forecasted weather conditions will permit Work to be installed in compliance with manufacturer's recommendations and when substrate is completely dry.

## PART 2 - PRODUCTS

### 2.1 MATERIALS:

- A. General: Comply with requirements of NWWDA-I.S.-2.
- B. Wood for Window Sash Repair (including Dutchman patches): Clear fine-grain Sinker Cypress, highest quality, kiln dried to 8-12% moisture content.
- C. Wood for Window Exterior Jamb, Sill, and Trim repair or replacement: Clear Idaho White or Lodgepole Pine, PS 20, Custom grade in accordance with AWI, pressure preservative treated using water borne preservative with 0.25 percent retainage in accordance with AWPA treatment C2.
- D. Provide custom built replacement sash, sill, other frame and trim sections, of the specified wood, sizes and types specified and detailed. Provide special knives as necessary to reproduce the historical profiles shown and to match existing originals. Assemble the sash members with

tight mortise and tenon, glued, joinery. Assemble new frame members with dado or rabbet joints, shop assembled. Use specified glue.

- F. All new elements shall match existing historical windows in configuration, sash pattern, and construction.

## 2.2 EPOXY AND ADHESIVES

- A. Epoxy Repair Materials: Approved equal to products of Abatron, Inc., 5501 95th Avenue, Kenosha, WI 53144; Telephone: (262) 653-2000; Fax: (262) 653-2019. (800) 445-1754 (orders only).

1. Consolidant: LiquidWood.
2. Patch: WoodEpoxy.

- B. Adhesive: Titebond III (ANSI/HPVA Type I Specification) or approved equivalent as determined by Architect.

## 2.3 FUNGICIDE:

- A. Mildewcide//Fungicide: 2% water-borne solution of copper naphthenate (Copper-Tox or approved equal)

## 2.4 WEATHERSTRIPPING AND SEALS:

- A. General: Provide continuous weatherstripping on windows where indicated or scheduled. Provide noncorrosive fasteners for all applications.
- B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.
- C. Weatherstripping at Jambs and Heads: Provide spring metal strips, surface applied unless shown as mortised or semi-mortised, and of following metal and finish:
1. Extruded spring bronze, 34 gauge minimum thickness of main walls and flanges.

## 2.5 ANCHORS & FASTENERS:

- A. Anchors, Clips, and Accessories: Fabricate anchors, clips and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with the requirements of ASTM B633 for SC 3 (severe) service condition; provide strength sufficient to withstand design pressure indicated.
- B. Fasteners: Comply with NWWDA I.S.2 for fabrication and with manufacturer's recommendations and standard industry practices for type and size of installation fasteners.
1. Use countersunk zinc-coated or nonferrous nails and screws, dowels, and resorcinol adhesives for window fabrication and installation.
  2. Use flat-head brass screws for hardware and accessory installation unless noted otherwise.

## 2.6 SASH CORDS AND WEIGHTS:

- A. Sash Cords: Provide new woven cotton cord, pre-stretched, premium waxed cotton sash cord with inner synthetic stranded cord for increased strength and flexibility, sized appropriately for size and weight of each window for use at reproduction curved sash and (#8 for 100lb limit, #10 for 200 lb limit).
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. Phelps Company, Brattleboro, VT, 802-257-4314
- B. Sash Weights: Salvaged or new metal weights designed for windows and of total weight equal to weight of sash to which weights are attached.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. Architectural Iron Co., Milford PA, 800-442-4766,  
<http://www.architecturaliron.com>.

## 2.7 WINDOW HARDWARE

- A. Salvage and reinstall, existing hardware. Clean to remove all paint prior to reinstallation

## 2.8 GLAZING

- A. Re-use salvaged historic glass to the maximum extent possible. Provide new glass only when existing historic glass is cracked, chipped or otherwise damaged.
- B. Annealed Float Glass: ASTM C1036, Type I (transparent glass, flat), Class 1 (clear), Quality Q3 (glazing select); Double Strength, Thickness = 1/8" nominal.

## 2.9 GLAZING COMPOUND

- A. General: Provide glazing putty complying with the following requirements:
1. Consistency: Knife grade.
  2. Vehicle: Blend of soya, linseed and mineral oil
  3. Solids: 99% by weight (+/- .5%)
  4. Color: white.
- B. Available Products: Subject to compliance with requirements, manufacturers offering glazing putty that may be incorporated in the Work include, but are not limited to, the following products:
1. DAP 33 or approved equal. <http://www.dap.com/>

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## PART 3 - EXECUTION

### WOOD WINDOW RESTORATION

08 60 10- 5

### 3.1 DOCUMENTATION, REMOVAL & STORAGE OF WINDOWS AND GLASS:

#### A. General:

1. In occupied spaces, install temporary protection to prevent damage to existing furniture and equipment. Coordinate installation of barriers with Owner. Maintain existing access to electrical and phone/data outlets.
2. Mark each removed window sash and trim piece in an inconspicuous location during removal with window number, and location (upper/lower sash) to allow re-installation into the same opening after restoration.
3. Label the exterior surface of all glass panes with window number and location using grease pencil.

#### B. Windows:

1. Remove for reinstallation existing wood blinds and other window treatments as necessary to access windows. Store blinds in protected, air-conditioned space until re-installation.
2. Carefully remove wood stops and any other trim to allow removal of sashes.
3. Remove existing window sashes, number as noted above, and store in a protected area.
4. Remove and discard sash cords. Remove sash-weights, mark with window number and store in a protected area. Remove pulleys for repair and reinstallation.

#### C. Historic Glass:

1. Historic glass shall be protected and shall not be damaged. Glass shall be removed carefully, salvaged, cleaned, tagged and inventoried, and carefully wrapped and crated in a manner to prevent breakage or damage, and then shall be stored on site for future reinstallation in original sash location.
2. Salvaged glass shall be carefully wrapped to prevent damage and stored on site ready for restoration.

### 3.1 GENERAL PREPARATION REQUIRED FOR ALL WINDOW ELEMENTS:

#### A. Remove existing paint and/or clear finish from all accessible exterior window elements.

1. Remove paint that is peeling, crazing, alligating, or showing other similar defects by cleaning, scraping, and hand sanding. In extreme cases, a hot air gun may be required. It is not desirable to remove all paint, except where unit is to receive transparent finish. Remove to the degree necessary to perform repair operations and as herein specified and to permit application of uniform opaque or transparent finish as noted on Drawings.
2. Window elements will be considered free of heavy paint build-up if all loose paint is removed, paint is removed to bare wood at areas to receive patching, re-gluing, or chemical consolidation, and areas not required to be patched have less than 3 mil thickness of firmly adhered smooth paint film remaining.

#### B. Remove wood elements indicated to be replaced or removed. Sand to feather junctions between paint to remain and bare wood.

- C. Removal of damaged or unsound wood: Except where epoxy consolidation “in situ” is indicated, rotted or unsound wood areas shall be removed with a plane or specialized tool which minimized damage to adjacent sound wood prior to treatment and patching.
- D. Remove applied sealant materials and unsound previous repair materials.
- E. Bare sound wood areas on exterior elements shall be treated with a paintable mildewcide preservative solution.
- F. Remove penetrating elements and foreign materials from window.

### 3.2 REPAIR PROCEDURES:

- A. Epoxy Repair at Open or Checked Wood:
  - 1. Brush apply consolidant to entire surface area to be patched immediately prior to patching.
  - 2. Minor epoxy repairs: Fill minor holes, gouges, checks, or voids with epoxy patching compound applied in conformance with recommendations referenced. Sand surfaces flush with adjacent, original surface so patch will be inconspicuous when painted.
- B. Repair of Rotted Wood Sections with Epoxy Patching Compound: Preparation and application shall be in accordance with the requirements as set forth in the referenced standards and as follows:
  - 1. Rotted or unsound wood areas shall be removed with a plane or specialized tool which minimizes damage to adjacent sound wood prior to treatment and patching.
  - 2. Treat remaining wood to kill fungal growth using wood preservative/fungicide. Follow manufacturer's recommendations and allow sufficient time to dry before proceeding with consolidation.
    - a. Treat wood a minimum of two feet beyond rotted area in direction of grain.
  - 3. Treat intact wood adjacent proposed repair with epoxy consolidant: Where significant epoxy repair is warranted, drill 1/8” diameter holes along the length of piece perpendicular to the grain. Fill holes with epoxy consolidant, repeating as wood absorbs the fluid. Cure according to referenced standards and epoxy manufacturer’s recommendations. Consolidate surfaces with multiple brush applications of consolidant. Where approved by the Architect, consolidate existing wood in place, in lieu of complete replacement of piece. This option will only be considered by the Architect for repair of localized rot at frame and sill components.
  - 4. Brush apply consolidant to entire surface area to be patched. Allow to cure prior to patching.
  - 5. Fill prepared voids with epoxy patching compound, and sand smooth and flush with adjacent, original surface after curing. Where epoxy compounds are used to build up missing or damaged parts of members, duplicate existing profiles. Sand patch smooth to uniform surface plane matching original surface.
- C. Dutchman Repairs: Remove and discard damaged portion and cut and fit in a matching portion using specified adhesive. Where wood is damaged beyond practical repair by the indicated method, Contractor may elect, with approval of Architect, to remove the entire part (such as an entire frame and provide a new matching part. Where entire members have been removed and new members provided, provide joint reinforcements where new and existing, or two new,

members join. Retain and match existing woodwork joinery configurations, adapting only as required to incorporate joint reinforcements and adhesive. Match character, color, grain density, and cut of existing wood.

1. Criteria for Repair of Separated Joints: Repair cracks and gaps greater than the sizes listed in the schedule below by partial or complete rebuilding or replacement of parts as indicated:
    - a. Gap between vertical edges of faces: 3/64" x 8% of joint length
    - b. Intersecting joint gap: 1/32" x 30% of joint length
    - c. Longitudinal gap between molding and face: 3/64" x 8% of joint length
  2. Repair splits within elements larger than 3/64" x 3" in either dimension by fitting tapered wood sliver matching species, color, and grain direction into split, gluing, and planing smooth.
  3. Holes in excess of 1/8" in any surface dimension: Install wood "Dutchmen" or wood plugs with approved adhesive. Rectangular patches shall be made by splicing in new material with matching species, color, grain direction, moisture content and density.
- D. Replace Existing Element With New at sill, frame, sash or trim members indicated to be replaced with members of same configuration as original of material specified.
1. Remove portions of existing finish carpentry where existing material is damaged beyond satisfactory repair.
    - a. Rotted or unsound wood areas shall be removed with a keyhole saw, plane or specialized tool which minimizes damage to adjacent sound wood prior to treatment and patching.
    - b. Cut and remove existing carpentry without damaging work to remain. When removing and reinstalling existing carpentry, protect against damage. Store safely until reinstalled. Do not reinstall damaged units.
  2. Discard removed existing carpentry which is not scheduled for re-use, only after obtaining confirmation from Architect.
  3. Joinery: Match existing mortise and tenon joints when replacing sash members. Remove damaged or loose dowels and install new dowels of same species.
  4. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber in relation to relative humidity conditions existing during time of fabrication and in installation areas.
  5. Field verify all dimensions and irregular conditions in order to properly fabricate woodwork to fit seamlessly into existing construction assemblies.
  6. Backprime and Prime Lumber. Backprime all finish carpentry prior to installation. Comply with requirements of section on painting within Division-9 for primers and their application. Do not prime surfaces to be glued.
  7. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level horizontal lines; and with 1/32" maximum offset in flush adjoining surfaces and 1/16" maximum offsets in revealed adjoining surfaces.
  8. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

9. Anchor carpentry work to anchorage devices or directly attach to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Use fine finishing nails for exposed nailing, countersink and filled flush with finished surface.
- E. Re-secure loose frame sections so that members fit tightly and the entire frame fits securely in the wall.
- F. Seal bare areas immediately after repair work is complete with specified primer sealer.

### 3.3 RE-GLAZING:

- A. Double bed glass panels in specified putty by applying a continuous layer of putty 1/16" thick onto the wood/glass rabbet and a second layer on the second surface of the glass. Exterior sealant to glass joints shall be airtight, neatly tooled to shed water, with smooth surface, and uniform in thickness. Failure to meet this requirement will be cause for rejection of work.
- B. Bring compound to room temperature (68-72°F, 21-23°C) prior to use for best workability. If necessary, place glazing in a gloved hand to warm and soften.
- C. Apply putty to backstop of sash to provide back thickness of back bedding where glass is to be set. Minimum thickness of backbedding is 1/16".
- D. Press glass firmly into place. For clear glass maintain 1/4" minimum contact area between glass and compound.
- E. Install glazier's points or clips at quarter points of windowpane to hold glass. Space points no more than 18" apart.
- F. Press glazing onto sash filling height and width of L-shaped recess completely.
- G. Tool glazing to an angle that sheds water and glaze corners to a rounded finish.
- H. Remove excess glazing with mineral spirits before it sets.
- I. Cut or scrape away excess glazing prior to it fully curing.

### 3.4 PAINTING

- A. Allow glazing compound to fully cure prior to painting.
- B. Prime and paint window sash as specified in Division 9 Section "Painting".

### 3.5 INSTALLATION:

- A. Restored Window Sash: Install replacement sash units, frame elements and trim elements creating sound and snug joints.
- B. Pulleys, Weights and Sash Cords:
  1. Re-install salvaged/new pulleys.
  2. Install new sash cords and existing/new sash weights where scheduled. Verify proper weighting of each sash and adjust weights as necessary.
  3. Reset sash weight access panels in jamb members so joints are flush and smooth.
- C. Sash Locks, Sash Pins, and Sash Lifts: Reinstall cleaned and restored hardware, or install new where scheduled, per Division 8 Section "Finish Hardware".

- D. Secure window sashes noted to be fixed in place using stainless steel screws. Seal outside joints per Division 7 Section "Joint Sealants".
- E. Weatherstripping: Provide and install new weatherstripping for each operable window. Weatherstrip each side of each operator, including meeting rails.

### 3.6 ADJUSTING:

- A. Adjust operating sash and hardware to provide a tight fit at contact points and weatherstripping, and to provide smooth operation prior to sealing.
- B. Re-install blinds in previous locations. Verify proper closing & latching and adjust as necessary.

### 3.7 CLEANING & PROTECTION:

- A. Clean interior and exterior surfaces promptly after installation. Take care to avoid damage to protective coatings and finishes.

END OF SECTION

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**09 24 23 PORTLAND CEMENT STUCCO**

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PART 1 - GENERAL

1.1 SUMMARY:

A. This Section includes the following:

1. New exterior stucco over masonry at parapet walls.
2. Repair of existing exterior stucco over masonry at selected areas.

1.2 RELATED DOCUMENTS:

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

B. The following Sections contain requirements that relate to this Section:

1. Division 3 Section "Poured-in -Place Concrete" for new concrete substrate.
2. Division 4 Section "Masonry Restoration & Cleaning" for re-construction of masonry walls.

1.3 REFERENCES:

A. Comply with applicable provisions of the following codes, specifications, and standards,:

1. ASTM references as noted in specification.

1.4 SUBMITTALS:

A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Product certificates signed by manufacturers of stucco components certifying that their products comply with specified requirements.

D. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

1.5 QUALITY ASSURANCE:

- A. Single-Source Responsibility: Obtain each type of stucco assembly products from a single manufacturer for each veneer stucco assembly indicated.
- B. Installer Qualifications: Repair and restoration work shall be performed by a firm with successful experience in similar work on not fewer than **four** completed previous projects comparable to this project in scope, nature, and complexity, and which is capable of certifying these qualifications. Installer shall possess and be capable of properly utilizing historic stucco finishing tools and equipment where applicable. Workers shall be skilled stuccoers and experienced in the type of restoration work required.

1.6 MOCK-UPS

- A. General: Prior to installation of stucco work, apply one sample of each type of stucco assembly, and texture on actual wall surfaces in a location as designated by Architect.
  - 1. Schedule mock-up reviews to coincide with Monthly Project Meetings.
  - 2. Cover an entire area between breaks using materials and methods proposed for production work.
  - 3. Modify field sample or apply additional samples as required to obtain Architect's acceptance. Simulate finished lighting conditions for reviewing field samples.
  - 4. Retain and maintain field samples during construction in an undisturbed condition as a standard for judging the completed unit of Work.
  - 5. Accepted field samples in an undisturbed condition at time of Substantial Completion may become a part of the completed unit of Work.
- B. Repair, alter or replace existing work as indicated to comply with applicable portions of these specifications as for new work. Workmanship for existing materials to be repaired or altered, shall conform to similar workmanship to area in which alterations are to be made.
  - 1. Where patching is required, match stucco mix composition and assembly to match adjacent existing stucco.
  - 2. Where replacement/restoration of existing stucco walls/ceilings is required, material content of restoration finish stucco mixes shall be limited in composition to materials present in the original stucco.
- C. Provide the following mock-up samples:
  - 1. **Stucco at new wall, scored where indicated to match historic.**

1.7 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside, under cover, and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, or other causes.

1.8 PROJECT CONDITIONS:

- A. Field Assessment: Contractor to verify that areas of stucco restoration and replacement indicated on drawings and actual existing conditions correlate. Submit in writing to the Architect any discrepancies and do not proceed with work without further instruction. Include proposal for types of stucco systems at each location. New stucco to match existing surrounding stucco at each location in type, texture and finish.
  - 1. If conditions are encountered which differ from the assumptions indicated in the Contract Documents regarding typical conditions, immediately notify Architect and do not proceed without further instruction.
- B. Environmental Conditions, General: Establish and maintain environmental conditions for application of stucco to comply with ASTM C843 and with veneer stucco manufacturer's recommendations.
  - 1. Cold Weather Requirements: Provide heat and protection as required to protect each coat of stucco. Distribute heat uniformly to prevent concentration of heat on stucco near heat sources; provide deflection or protective screens.
  - 2. Warm Weather Requirements: Protect stucco against uneven and excessive evaporation and from strong flows of dry air, both natural and artificial. Provide suitable coverings, moist curing, barriers to deflect sunlight and wind, or combinations of these, as required.
- C. Protect contiguous work from soiling and moisture deterioration caused by stuccoing. Provide temporary covering and other provisions necessary to minimize harmful spattering of stucco on other work.

PART 2 - PRODUCTS

2.1 STUCCO MATERIALS:

- A. Portland/Lime Stucco:
  - 1. Cement: Portland Cement, ASTM C 150, Type I, white.
  - 2. Lime: Special hydrated lime for masonry purposes, ASTM 207, Type S.

3. Sand Aggregate for Base Coats: ASTM C 897. (Verify quantity, size and color match w/ historic)
4. Aggregate for Finish Coats: ASTM C 897.
5. Water for Mixing and Finishing Stucco: Drinkable, free of substances capable of affecting stucco set or of damaging stucco.

## 2.2 STUCCO MIXES:

- A. Determine the type of existing stucco system and design final mix to match existing stucco mix in composition, texture, and hardness.
  1. Mechanically mix stucco materials to comply with referenced stucco application standard and with recommendations of stucco manufacturer.
  2. Water for Mixing and Finishing Stucco: Drinkable, free of substances capable of affecting stucco set or of damaging stucco, lath, or accessories.
- B. Mix Ratio:
  - 1 Mix ratio shall be determined by testing of existing stucco application.
- C. Mixing: Mechanically mix cementitious and aggregate materials to match historic stucco sample and comply with recommendations of stucco manufacturer.

## 2.3 BONDING AGENT:

- A. Bonding Agent: Tinted material, in conformance with ASTM C932;
  1. EucoWeld, Euclid Chemical Company (440-582-2224) or approved equal.

## 2.4 LATH:

- A. Self-Furring galvanized lath or approved equal:
  1. AMICO – Self Furred Diamond Mesh Lath – galvanized or approved equal. Refer to ASTM C1063 for weight and fastening method.

## 2.5 MISCELLANEOUS MATERIALS:

- A. General: Provide auxiliary materials for stucco repair that comply with referenced standards and recommendations of gypsum board manufacturer.
  1. AMICO – Type "M" Expansion/Control Joint – zinc alloy.
  2. AMICO – Type X-66 Casing Bead – zinc alloy.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION:

- A. Substrates: With Installer present, examine substrates to which stucco assemblies attach or abut for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION:

- A. Surface Preparation: Before applying stucco, clean and prepare substrates according to the manufacturer's instructions for each particular substrate condition and as specified. Etch masonry substrates where oils are present. Roughen or remove paint films, dirt and debris that could impair the bond of stucco and create sound, properly keyed substrate for stucco.
1. Cleaning and Preparing Surfaces for Stucco: Sweep concrete surfaces clean immediately before applying stucco. Apply bonding agent to substrate per manufacturer's written instructions. Install stucco on bonding agent within timeframe provided in manufacturer recommendations.
- B. Sequence stucco application with the installation and protection of other work, so that neither will be damaged by the installation of the other.

#### 3.3 STUCCO APPLICATION:

- A. Measure and proportion all materials to insure uniform batches. Use only clean tools and equipment, free from hardened or partially hardened materials. Make only that quantity of mix which can be used within 2-1/2 hours. Machine-mix stucco for at least 3 minutes. Periodically beat again during use. Do not retemper or use material that has partially set, has caked, or become lumpy.
- B. Apply first coat of base in order to level and prepared masonry, filling all voids. Apply second coat of base as soon as first coat is sufficiently firm to receive it.
- C. Apply finish coat immediately after base coat has initially set. When this is not possible, dampen base coat uniformly before applying finish coat.
- D. Thickness: Match thickness of existing stucco. (Assume 1" thickness for bidding purposes)
- E. Tolerances: Unless otherwise approved, do not deviate more than 1/8" in 10'-0" from a true plane in finished stucco surfaces, as measured by a 10'-0" straightedge placed at any location on surface.

- F. Scoring Match historic scoring with specialized tool to create crisp, even lines. Refer to photo on the Drawings. Space scoring as indicated on the Drawings.
- G. Keep stucco damp (at 90% humidity) for 48 to 72 hours in order to prevent drying too quickly. Use wet blankets as required or as directed to maintain damp condition.

### 3.6 CLEANING AND PROTECTION:

- A. Remove temporary coverings used to protect other work.
- B. Remove any stucco spillage promptly from adjoining work.
- C. After completing stuccoing provide protection and maintain conditions in a manner suitable to Installer that ensures stucco is without damage or deterioration at the time of Substantial Completion.

END OF SECTION

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**09 91 00 PAINTING**

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PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

- A. Extent of coatings is indicated on the drawings and as herein specified.
- B. Work includes surface preparation, painting, and finishing of exposed interior and exterior items and surfaces throughout the project as indicated in drawings and schedules and includes the following applications:
  - 1. Prep and paint all exterior wood at repaired windows including: window sashes, trim, exterior jamb, and pilasters. Re-paint interior trim if damaged during work.
  - 2. Paint stucco at parapet walls, and miscellaneous stucco patches.
  - 3. Paint restored metal railing
  - 4. Paint new door and frame from roof to attic.
  - 5. Re-paint existing roof hatches.
  - 6. Paint re-installed windows and stucco at Mechanical Room roof (Bid Alternate).
- C. “Paint” as used herein means all coating systems materials including primers, emulsions, enamels, stains, sealers, and fillers, and other applied materials whether used as prime, intermediate or finish coats.
- D. Surfaces to be painted: Except where natural finish of material is specifically noted not to be painted, paint exposed surfaces whether or not colors are designated in “schedules”. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from custom colors in standard finishes available.
- E. Painting is not required on concealed surfaces, operating parts, and labels unless otherwise indicated.

1.2 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The following Sections contain requirements that relate to this Section:
  - 1. Division 8 Section “Wood Window Restoration” for repair and reconstruction of existing windows

1.3 SUBMITTALS:

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: Submit manufacturer's technical product data, label analysis and instructions for handling, storage, and application of each material proposed for use for each paint system specified.
1. List each material and cross-reference the specific coating, finish system, and application. Identify each material by the manufacturer's catalog number and general classification.
  2. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- C. Field Samples: On exterior wall surfaces and other components which have been cleaned and finish removal/preparation accomplished and approved, duplicate finishes of prepared samples. Provide full-coat finish samples on at least 25 sq. ft. of surface until required sheen, color, and texture are obtained; simulate finished lighting conditions for review of in-place work. Coordinate with sample preparation specified in "Finish Removal" and regularly scheduled project meetings.
1. Final acceptance of colors will be from job-applied samples.
  2. The Architect will select one surface to represent surfaces and conditions for each type of coating and substrate to be painted. Apply coatings on this surface according to the schedule or as specified.
  3. After finishes are accepted, this surface will be used to evaluate coating systems of a similar nature.
- D. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

#### 1.4 QUALITY ASSURANCE:

- A. Installer Qualifications: A single installer shall perform the work of this section and shall be a firm with not less than five (5) years of successful experience in installation of paint systems similar to those required for this project.
- B. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.
- C. Coordination of Work: Review other sections in which primers are provided to ensure compatibility of the total systems for various substrates. On request, furnish information on characteristics of finish material to ensure use of compatible primers.

1. Notify the Architect of problems anticipated using the materials specified.
- D. Materials Quality: Material containers not displaying manufacturer's product identification will not be acceptable.
- E. Substitutions: Proposals for substitution manufacturers shall be considered only from bidding contractors and not less than 10 days before bid due date.

#### 1.5 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
  1. Product name or title of material.
  2. Fed/ Spec. number if applicable.
  3. Product description (generic classification or binder type).
  4. Manufacturer's stock number and date of manufacture.
  5. Contents by volume, for pigment and vehicle constituents.
  6. Thinning instructions.
  7. Application instructions.
  8. Color name and number.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
  1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

#### 1.6 JOB CONDITIONS:

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 deg C), unless otherwise permitted by paint manufacturer's printed instructions.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
- D. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature and humidity limits specified by the manufacturer during application and drying periods.

## PART 2 - PRODUCTS

### 2.1 MATERIAL QUALITY:

- A. Provide best quality grade of various types of coatings as regularly manufactured by acceptable materials manufacturers. Materials not displaying manufacturer's identification as a standard, best grade product will not be acceptable.
- B. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.

### 2.2 COMPATIBILITY:

- A. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coating system for various substrates. Upon request from other trades, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

### 2.3 MANUFACTURERS:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
  - 1. Benjamin Moore and Co. (Moore).
  - 2. The Sherwin-Williams Company (S-W).

### 2.4 PRODUCTS - INTERIOR:

- A. General:
  - 1. Primers: Provide the manufacturer's recommended factory-formulated primers that are compatible with the substrate and finish coats indicated. Tint primers as necessary to maximize hiding properties of paint system.
  - 2. Finish Coats: Provide the manufacturer's recommended factory-formulated finish-coat materials that are compatible with the substrate and undercoats indicated.
  - 3. Total Dry Film Thickness: Provide total dry film thickness (DFT) not less than manufacturer's recommended thickness for each product specified.

B. Painted Woodwork: interior window sash and trim (as needed),

1. Primer (1 coat, all surfaces) Interior, alkyd primer.

- b. Moore: Fresh Start Alkyd Enamel Underbody, 217
- c. S-W: PrepRite Wall & Wood Oil Primer/Undercoater, B49

2. Finish (2 coats, all surfaces) Interior, Semi-gloss Alkyd Enamel:

- b. Moore: Alkyd Dulamel, C207
- c. S-W: Pro Mar 200 Alkyd Semi-Gloss, B34

2.5 PRODUCTS - EXTERIOR:

A. General:

1. Primers: Provide the manufacturer's recommended factory-formulated primers that are compatible with the substrate and finish coats indicated. Tint primers as necessary to maximize hiding properties of paint system.
2. Finish Coats: Provide the manufacturer's recommended factory-formulated finish-coat materials that are compatible with the substrate and undercoats indicated.
3. Total Dry Film Thickness: Provide total dry film thickness (DFT) not less than manufacturer's recommended thickness for each product specified.

B. Painted Woodwork:

1. Primer (1 coat) Exterior Alkyd Wood Primer

- b. Moore: Fresh Start Moorwhite Penetrating Alkyd Primer, 100
- c. S-W: A-100 Exterior Alkyd Wood Primer Y24W20

2. Finish (2 coats) Exterior Acrylic Latex Paint (satin)

- b. Moore: MoorGlo Soft Gloss Fortified Acrylic House Paint, 096
- c. S-W: Duration Exterior Satin Latex Coating, K33

C. Exterior Stucco:

1. Primer (1 coat) Exterior Alkyd Masonry Sealer

- b. Moore: Moore's Alkyd Masonry Sealer, C077
- c. S-W: Loxon Concrete and Masonry Primer

2. Finish (2 coats) Exterior Acrylic Elastomeric (satin or low luster)

- b. Moore: Moorlastic 100% Acrylic Elastomeric Waterproof Coating - 055
- c. S-W: SherLastic Elastomeric Coating – A5-100 Series

D. Exterior Iron Railing, Chimney Cap, Roof Hatch & New Door/Frame:

1. Primer (1 coat) Exterior Epoxy Primer
  - b. Moore: HP Polymide Epoxy Metal Primer
  - c. S-W: Recoatable Epoxy Primer B67 Series
  
2. Finish (2 coats) Exterior Polyurethane (Gloss finish)
  - b. Moore: HP Aliphatic Acrylic Urethane
  - c. S-W: Acrolon 218 HS Polyurethane B65 Series

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.
  1. Do not paint over dirt, rust, scale, oil, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.
  2. Do not begin to apply paint until unsatisfactory conditions have been corrected.
  3. Start of coating will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
  
- B. Measure moisture content of surfaces using an electronic moisture meter. Do not begin application of coatings unless moisture content of surfaces is below the following maximum values:
  1. Plaster: 12 percent
  2. Wood: 15 percent
  
- C. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
  1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION:

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-

applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish-coat material with substrates primed by others.
  2. Provide a thin coat of white shellac or other recommended sealer over water stains or any other discoloration that could bleed through the finish coating.
- D. Cementitious Materials: Prepare stucco, plaster, concrete, and similar surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen, as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
1. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause blistering and burning of the finished paint, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's printed directions.
- E. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
1. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
  2. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including siding and trim.
  3. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately upon delivery.
- F. Ferrous Metals: Clean ungalvanized ferrous metal surfaces that have not been shop-coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council (SSPC).

1. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
2. Touch up bare areas and shop-applied prime coats that have been damaged after touch up by installer. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.

G. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
3. Use only thinners approved by the paint manufacturer and only within recommended limits.

### 3.3 APPLICATION:

A. General: Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

1. Provide finish coats that are compatible with primers used.
2. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth even surface according to the manufacturer's directions.
3. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint, until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
4. Finish exterior doors on tops, bottoms, and side edges same as exterior faces.
5. Omit primer on metal surfaces that have been shop-primed and touch-up painted.

C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- D. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer, and as indicated in paint schedule.
- F. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with specified requirements.

### 3.4 FIELD QUALITY CONTROL:

- A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:
  1. Under Allowance, the Owner may engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
  2. The testing agency will perform appropriate tests for the following characteristics as required by the Owner:
    - a. Adhesion to substrate.
    - b. Adhesion between primer / finish
    - c. Dry mil thickness of each coat.
  3. If test results show material being used does not comply with specified requirements, the Contractor may be directed to stop painting, remove non-complying paint, pay for testing, repaint surfaces coated with rejected paint, and remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are incompatible.

### 3.5 CLEANING:

- A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
- B. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

### 3.6 PROTECTION:

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION

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**31 00 00 EARTHWORK**

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PART 1 - GENERAL

1.1 SUMMARY:

- A. This Section includes the following:
  - 1. Site grading.
  - 2. New sod where existing landscaping removed.
  - 3. Excavating and backfilling for underground drain lines. (Bid Alternate)

1.2 RELATED DOCUMENTS:

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

1.3 DEFINITIONS:

- A. Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- D. Select Fill: The layer of compacted fill materials placed between the subgrade and surface slab in a soil-supported foundation.
- E. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Architect. Unauthorized excavation, as well as remedial work directed by the Architect, shall be at the Contractor's expense.
- F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other manmade stationary features constructed above or below ground surface.
- G. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

1.4 SUBMITTALS:

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product data for the following:

1. All imported fill and sod.

1.5 QUALITY ASSURANCE:

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction, including the Texas Historical Commission. Comply with Trench Safety requirements established by OSHA.
- B. Sod: Harvest, deliver, store, and handle sod according to the requirements of the American Sod Producers Association's (ASPA) "Specifications for Turfgrass Sod Materials and Transplanting/Installing."

1.6 PROJECT CONDITIONS:

A. EXISTING SERVICES:

1. General: Determine exact locations of grading before commencing Work. Determine location of above grade and underground utilities and perform work in a manner that will avoid damage. Hand apply additional soil, as required around existing equipment and directly against building.
2. Maintain all existing underground utilities not indicated to be removed. Coordinate with utility companies to temporarily shutoff services during excavation if lines are active.
3. Traffic: Conduct earthwork operations to ensure minimum interference with driveways, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from Owner.

B. EXISTING IMPROVEMENTS:

1. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.
  - a. Protect improvements on Owner's property.
  - b. Restore damaged improvements to their original condition, as acceptable to property owners.
2. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

- a. Backhoe trenching will not be permitted. When encountered, saw cut tree roots at perimeter of excavation to provide a clean cut.
  - b. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during course of construction operations.
  - c. Provide protection for roots over 1-1/2 inch in diameter that are cut during construction operations. Coat cut faces with an emulsified asphalt or other acceptable coating formulated to use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.
  - d. Repair trees that are damaged by construction operations in a manner acceptable to Arborist. If damage to trees occurs, Contractor shall be responsible for repairs. All repairs to trees are to be performed by a certified Arborist, as approved by the Architect.
  - e. Restore repaired portions of lawn by watering, weeding, replanting and other operations in coordination with Owner. Roll, regrade, replant, and remulch bare or eroded areas as a result of Work to produce a uniformly smooth lawn.
3. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated or directed.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS:

- A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.
- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, GC, SC, CL, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups ML, MH, CH, OL, OH, and PT.
- D. Backfill and Fill Materials: Satisfactory soil materials.
- E. Select Fill Materials: Low swell potential select fill with maximum Liquid Limit of 35 percent and a Plasticity Index between seven (7) and fifteen (15). The low swell potential select fill shall be free of organics, trash, rubble, or other deleterious materials and shall have no particle size greater than two (2) inches in diameter.

## 2.2 GRASS MATERIALS:

A. Sod: Certified turfgrass sod complying with ASPA specifications for machine-cut thickness, size, strength, moisture content, and mowed height, and free of weeds and undesirable native grasses. Provide viable sod of uniform density, color, and texture of the following turfgrass species, strongly rooted, and capable of vigorous growth and development when planted.

1. Species: St. Augustine grass -(*Stenotaphrum secundatum*) – “Texas Common”

## 2.3 ACCESSORIES:

A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick minimum, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 2'-6" deep.

1. Tape Colors: Provide tape colors to utilities as follows:

- a. Red: Electric.
- b. Yellow: Gas, oil, steam, and dangerous materials.
- c. Orange: Telephone and other communications.
- d. Blue: Water systems.
- e. Green: Sewer systems.

## PART 3 - EXECUTION

### 3.1 PREPARATION:

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Cut roots of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction. Cuts shall be made with a rock saw or manually cut to create a clean edge. No backhoes are allowed for trenching due to the high potential for damage to root structure of existing trees.

1. Leave existing topsoil in place within drip lines of all existing trees to prevent damage to root system.

D. Dispose of unsuitable or excess topsoil as specified for disposal of waste material.

### 3.2 EXCAVATION:

A. General:

1. Explosives: Do not use explosives.
2. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.
  - a. Unclassified excavation includes excavation of walks, pavements and other obstructions visible on surface; underground structures, utilities, and other items indicated to be demolished and removed; together with soil and other materials encountered that are not classified as rock or unauthorized excavation.
  - b. Excavations more than 10 feet in width and pits more than 30 feet in either length or width are defined as open excavations.

B. Stability of Excavations:

1. Comply with OSHA requirements, local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations. Stability of all excavations shall be the responsibility of the Contractor.
2. Shoring and Bracing: Provide and install shoring and bracing, as legally required. Shoring design (if required) shall be provided by the Contractor and prepared by a Professional Engineer registered in the State of Texas.

C. Excavation for Utility Trenches:

1. Excavate trenches to indicated slopes, lines, depths, and invert elevations.
2. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
3. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove stones and sharp objects below invert elevation and install bedding course.
  - a. For pipes or conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
  - b. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.

### 3.4 STORAGE OF SOIL MATERIALS:

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.5 BACKFILL:

- A. Backfill excavations promptly, but not before completing the following:

1. Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for record documents.
3. Testing, inspecting, and approval of underground utilities.
4. Concrete formwork removal (if any).
5. Removal of trash and debris from excavation.
6. Removal of temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

- B. Utility Trench Backfill:

1. Place and compact bedding course on rock and other unyielding bearing surfaces and to fill unauthorized excavations. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
2. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18 inches of footings. Place concrete to level of bottom of footings.
3. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
  - a. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
4. Coordinate backfilling with utilities testing.
5. Fill voids with approved backfill materials as shoring and bracing, and sheeting is removed.
6. Place and compact final backfill of satisfactory soil material to final subgrade.

7. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

### 3.6 GRADING:

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  1. Provide a smooth transition between existing adjacent grades and new grades.
  2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  1. Lawn or Unpaved Areas: Plus or minus 0.10 foot.
  2. Walks: Plus or minus 0.10 foot.
  3. Pavements: Plus or minus 1/2 inch.

### 3.7 SODDING LAWNS:

- A. Lay sod within 24 hours of stripping. Do not lay sod if dormant or if ground is frozen.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
- C. Lay sod across angle of slopes exceeding 1:3.
- D. Saturate sod with fine water spray within 2 hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below the sod.

### 3.11 PROTECTION:

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
  1. Scarify or remove and replace material to depth directed by the Architect; reshape and recompact at optimum moisture content to the required density.

C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

### 3.12 DISPOSAL OF SURPLUS AND WASTE MATERIALS:

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION

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**33 41 00      STORM DRAINAGE PIPING**

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PART 1 - GENERAL

1.1 SUMMARY:

A. This Section includes the following:

1. Below grade Storm Drainage from roof downspouts (Bid Alternate)

1.2 RELATED DOCUMENTS:

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

1. Division 31 Section "Earthwork" for excavation of trenches.

1.3 REFERENCES:

A. American Society of Testing Materials

1. ASTM D2665 - 10 Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
2. ASTM D1785 - 06 Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
3. ASTM D2321 - 11 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
4. ASTM F1668 - 08 Standard Guide for Construction Procedures for Buried Plastic Pipe

1.4 SUBMITTALS:

A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

- a. Product data for the all pipe and fittings
- b. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

1.5 QUALITY ASSURANCE:

- A. Installer Qualifications: A single Installer shall perform the work of this section and shall be a firm employing persons with not less than five (5) years of successful experience in installation of storm drainage systems of type and scope equivalent to work of this section.

## 1.6 PROJECT CONDITIONS:

### A. EXISTING SERVICES:

1. General: Determine exact locations of grading before commencing Work. Determine location of above grade and underground utilities and perform work in a manner that will avoid damage. Hand apply additional soil, as required around existing equipment and directly against building.
2. Maintain all existing underground utilities not indicated to be removed. Coordinate with utility companies to temporarily shutoff services during excavation if lines are active.

### B. EXISTING IMPROVEMENTS:

1. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.
  - a. Protect improvements on Owner's property.
  - b. Restore damaged improvements to their original condition, as acceptable to property owners.

## PART 2 - PRODUCTS

### 2.1 PIPING:

- A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.
1. PVC plastic pipe, Schedule 40, Class 12454-B (PVC 1120), ASTM D1785; PVC plastic drain, waste and vent pipe and fittings, ASTM D2665; fitting patterns, ASTM D3311; primer, ASTM F656; solvent cement, ASTM 2564.

### 2.2 ACCESSORIES:

- A. Downspout connector to be PVC 4x6x6" dia Offset Downspout Adapter or approved equal (<http://www.guttersupply.com>)
- B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick minimum, continuously inscribed with a description of the utility, with metallic core

encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 2'-6" deep.

1. Tape Colors: Provide tape colors to utilities as follows:
  - a. Red: Electric.
  - b. Yellow: Gas, oil, steam, and dangerous materials.
  - c. Orange: Telephone and other communications.
  - d. Blue: Water systems.
  - e. Green: Sewer systems.

## PART 3 - EXECUTION

### 3.1 EARTHWORK:

- A. Site excavation and trenching are specified in Division 31 Section "Earthwork."

### 3.2 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install gravity-flow, nonpressure drainage piping according to the following:
  1. Install piping pitched down in direction of flow.
  2. Install piping with 36-inch minimum cover or as allowed by code.
  3. Install subgrade piping according to ASTM D 2321 and ASTM F 1668.
  4. Before joining any pipe, all foreign matter, lumps, blisters, excess coal tar coating, oil or grease shall be removed from the ends of each pipe and the pipe ends shall then be wire brushed and wiped clean and dry. Pipe ends shall be kept clean until joints are made.
  5. Every precaution shall be taken to prevent foreign material from entering the pipe during installation. No debris, tools, clothing or other materials shall be placed in the pipe.
  6. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work

D. Work shall include all joints or connections to new or existing mains, pipes, culverts, etc., as may be required to complete the Work.

1. Coordinate coring of existing drainage culvert with Owner.

3.3 WARNING TAPE INSTALLATION:

A. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.4 BACKFILL:

A. Backfilling of trenches is specified in Division 31 Section "Earthwork."

END OF SECTION