

## **Project Manual**

# **Restoration of the Escambia County Courthouse - Restroom Renovations**

**Escambia County, Florida**

Quina Grundhoefer Architects  
January 23, 2017

# Project Manual

Project:       **Restoration of the Escambia County Courthouse – Restroom Renovations**  
                  Pensacola, Florida  
Date:         January 23, 2017

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## SECTION 01010 – SUMMARY OF WORK

### PART 1 - GENERAL

#### 1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project: **Restoration of the Escambia County Courthouse – Restroom Renovations**

1. Location: 223 South Palafox Street
2. Owner: Escambia County Board of County Commissioners

B. Contract Documents, dated 01-25-17, were prepared for the Project by  
Quina Grundhoefer Architects                      Project Architect  
H. M. Yonge & Associates                      HVAC, and Electrical Engineer

C. Project Summary:

The work includes the partial removal of two existing restrooms to be replaced with two new handicap accessible restrooms located on the second floor of the existing Old County Courthouse Building, a local historic landmark building. General Contractors that are experienced with work on historic properties will be considered. Asbestos survey and removal has been completed in a previous contract in all areas except for the possibility of finding asbestos containing materials in the walls or on the piping to be demolished and replaced

D. The Work will be constructed under a single prime contract.

E. The Project Schedule will be according to Purchasing Office.

1.2 TAX SAVINGS: Escambia County, as a tax exempt entity of the State of Florida, has designated this project as a “Direct Materials Purchase” project in order to take advantage of tax savings by purchasing certain materials to be used in this project for itself as Owner so that said materials purchase will be exempt from sales and use taxes of the State of Florida. The contractor will be required to submit major purchase requisitions (over \$5,000) to the owner to be paid directly through this Direct Purchase program.

#### 1.3 CONTRACTOR USE OF PREMISES

A. General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site. The Contractor's use of the premises is limited only by the Owner's right to perform work or to retain other contractors on portions of the Project.

- B. Use of the Site: Limit use of the premises to work in areas indicated. The present west side plaza will be the primary location for contractor access. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.
  - 1. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles 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.
- C. Use of the Existing Building: Portions of the existing building will be occupied throughout the construction process and all entry and access will be monitored by the County security system. Contractor is to register with the County for vendor access and coordinate all events with County personnel.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

## **SECTION 01027 - APPLICATIONS FOR PAYMENT**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
  - 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.
- B. The Contractor's Construction Schedule and Submittal Schedule are included in Section "Submittals".

#### **1.3 SCHEDULE OF VALUES**

- A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
- B. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
  - 1. Contractor's construction schedule.
  - 2. Application for Payment form.
  - 3. List of subcontractors.
  - 4. Schedule of alternates.
  - 5. List of products.
  - 6. List of principal suppliers and fabricators.
  - 7. Schedule of submittals.
- C. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.
- D. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
- E. Identification: Include the following Project identification on the Schedule of Values:
  - 1. Project name and location.
  - 2. Name of the Architect.
  - 3. Project number.
  - 4. Contractor's name and address.
  - 5. Date of submittal.

- F. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
  - 1. Generic name.
  - 2. Related Specification Section.
  - 3. Name of subcontractor.
  - 4. Name of manufacturer or fabricator.
  - 5. Name of supplier.
  - 6. Change Orders (numbers) that have affected value.
  - 7. Dollar value.
  - 8. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.
- G. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
- H. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
- I. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### 1.4 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.

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: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.
- D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.
  - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been 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. Waivers of Mechanics Lien: With each Application for Payment submit waivers of mechanics liens from subcontracts or sub-subcontractors and suppliers for the construction period covered by the previous application.
  - 1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.

2. When an application shows completion of an item, submit final or full waivers.
  3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
- F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide 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.
  4. Contractor's Construction Schedule (preliminary if not final).
  5. Submittal Schedule
  6. Certificates of insurance and insurance policies.
- G. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- H. Administrative actions and submittals that shall proceed or coincide with this application include:
1. Occupancy permits and similar approvals.
  2. Warranties (guarantees) and maintenance agreements.
  3. Test/adjust/balance records.
  4. Maintenance instructions.
  5. Meter readings.
  6. Start-up performance reports.
  7. Change-over information related to owner's occupancy, use operation and maintenance.
  8. Final cleaning.
  9. Application for reduction of retainage, and consent of surety.
  10. Advice on shifting insurance coverages.
  11. Final progress photographs.
  12. List of incomplete work, recognized as exceptions to Architect's Certificate of Substantial Completion.
- I. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
- Completion of Project closeout requirements.  
Completion of items specified for completion.  
Assurance that Work not complete and accepted will be completed without undue delay.  
Transmittal of required Project construction records to Owner.  
Removal of temporary facilities and services.  
Removal of surplus materials, rubbish and similar elements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01027.



## **SECTION 01040 - PROJECT COORDINATION**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
  - Coordination.
  - Administrative and supervisory personnel.
  - Protection of Work and Property
  - General installation provisions.
  - Cleaning and protection.
- B. Progress meetings: Hold regular weekly coordination meetings at a time convenient to all parties involved. Resolve coordination problems, distribute minutes to those in attendance and those affected by decisions resulting from the meetings.

#### **1.3 COORDINATION**

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
  - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
  - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
  - 4. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  - Preparation of schedules.
  - Installation and removal of temporary facilities.
  - Delivery and processing of submittals.
  - Progress meetings.
  - Project Close-out activities.

#### **1.4 PROTECTION OF WORK AND PROPERTY**

- A. The services of a watchman is not a Contract requirement, however, it is the responsibility of the Restoration of the Escambia County Courthouse – Restroom Renovations

Contractor to protect all new and existing construction work and materials from damage or theft for the duration of the Contract. The Contractor shall provide watchman services as he deems necessary for such protection.

- B. Openings in exterior walls and roof shall be enclosed to prevent unauthorized entry. Enclosed access openings shall be provided with operating hardware and shall be locked during non-working hours.
- C. The Contractor shall protect all existing construction from damage, including the existing building, adjoining building, streets, sidewalks, curbs, fire hydrants, utility poles, existing site improvements, and other property and equipment on or adjacent to the project site. The Contractor shall repair any damage to such items to the satisfaction of the Architect, without cost to the Owner.
- D. The Contractor shall provide all temporary protection required to protect all persons from injury within the area of the operations of the Contract for the duration of the Contract.
- E. The Contractor shall provide all temporary construction and safeguards including planking, runways, bridges, fences, guard rails, barricades, lights and warning signs, necessary for the protection of the site improvements, existing building, adjacent property, the workmen, occupants of the existing building, and the public, and as required by local authorities.
- F. The Contractor shall provide protection against rain, wind, snow, frost, and heat, to protect the interior of the existing building, and all new work and materials, from damage for the duration of the Contract, and to allow the work to proceed without interruption. The Contractor shall repair any damage to such items to the satisfaction of the Architect, without cost to the Owner.
- G. The Contractor shall construct and maintain all necessary temporary drainage facilities and perform all pumping necessary to keep excavations, floors, pits and trenches free of water from any source for the duration of the Contract. Water removal shall be accomplished by such methods which will not damage adjacent property, any item of permanent site improvements, or the existing building.
- H. Maintain the sidewalk fronting the premises free of construction debris, ice, and snow, at all times.
- I. Conduct all building operations in accordance with "Good Practice Requirements for Building Construction Operations" of the National Fire Protection Association.

#### 1.5 SUBMITTALS

- A. Coordination Drawings: Prepare and submit coordination Drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.
- B. Show the interrelationship of components shown on separate Shop Drawings.
- C. Indicate required installation sequences.
- D. Comply with requirements contained in Section "Submittals."
- E. Refer to Division-15 Section "Mechanical Requirements," and Division-16 Section "Electrical Requirements" for specific coordination Drawing requirements for mechanical and electrical installations.
- F. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.

- G. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

## PART 2 - PRODUCTS (Not Applicable).

## PART 3 - EXECUTION

### 3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

### 3.2 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION 01040

## **SECTION 01045 - CUTTING AND PATCHING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section specifies administrative and procedural requirements for cutting and patching.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
  - 1. Requirements of this Section apply to mechanical and electrical installations. Refer to Division-15 and Division-16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

#### **1.3 SUBMITTALS**

- A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval 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. 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.
  - 3. List products to be used and firms or entities that will perform Work.
  - 4. Indicate dates when cutting and patching is to be performed.
  - 5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
  - 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 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 before cutting and patching the following structural elements:
    - Foundation construction.
    - Bearing and retaining walls.
    - Structural concrete.
    - Structural steel.
    - Lintels.
    - Timber and primary wood framing.
    - Structural decking.
    - Stair systems.
    - Miscellaneous structural metals.
    - Exterior curtain wall construction.
    - Equipment supports.
    - Piping, ductwork, vessels and equipment.
- B. 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.
1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
    - Shoring, bracing, and sheeting.
    - Primary operational systems and equipment.
    - Air or smoke barriers.
    - Water, moisture, or vapor barriers.
    - Membranes and flashings.
    - Fire protection systems.
    - Noise and vibration control elements and systems.
    - Control systems.
    - Communication systems.
    - Conveying systems.
    - Electrical wiring systems.
- C. 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 qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.
1. If possible retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:
    - Processed concrete finishes.
    - Ornamental metal.
    - Matched-veneer woodwork.

Window wall system.  
Stucco and ornamental plaster.  
Finished wood flooring.  
HVAC enclosures, cabinets or covers

## 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.

## 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.

### 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.

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.

4. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

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 removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.
4. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken containing the patch, after the patched area has received primer and second coat.
5. Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

### 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 01045

## **SECTION 01300 - SUBMITTALS**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;

1. Contractor's construction schedule.
2. Submittal schedule.
3. Daily construction reports.
4. Shop Drawings.
5. Product Data.
6. Samples.

- 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:

Permits.  
Applications for payment.  
Performance and payment bonds.  
Insurance certificates.  
List of Subcontractors.

- C. The Schedule of Values submittal is included in Section "Applications for Payment."

- D. Inspection and test reports are included in Section "Quality Control Services."

#### **1.3 SUBMITTAL PROCEDURES**

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

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
3. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- 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 initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.



2. If an intermediate submittal is necessary, process the same as the initial submittal.
  3. Allow two weeks for reprocessing each submittal.
  4. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- C. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Include the following information on the label for processing and recording action taken.
    - Project name.
    - Date.
    - Name and address of Architect.
    - Name and address of Contractor.
    - Name and address of subcontractor.
    - Name and address of supplier.
    - Name of manufacturer.
    - Number and title of appropriate Specification Section.
    - Drawing number and detail references, as appropriate.
- 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.

#### 1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar- chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".
1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".
  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. 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.
  4. Secure time commitments for performing critical elements of the 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 the Work.
  5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
  6. 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.

- B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.
- C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.
- D. Area Separations: 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.
- E. 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 Project meeting room and temporary field office.
- F. 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 SCHEDULE

- A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.
  - 1. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
    - Scheduled date for the first submittal.
    - Related Section number.
    - Submittal category.
    - Name of subcontractor.
    - Description of the part of the Work covered.
    - Scheduled date for resubmittal
    - Scheduled date the Architect's final release or approval.
- B. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
  - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- C. 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.

#### 1.6 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Architect at weekly intervals:
  - List of subcontractors at the site.
  - Approximate count of personnel at the site.
  - High and low temperatures, general weather conditions.
  - Accidents and unusual events.
  - Meetings and significant decisions.
  - Stoppages, delays, shortages, losses.
  - Meter readings and similar recordings.

Emergency procedures.  
Orders and requests of governing authorities.  
Change Orders received, implemented.  
Services connected, disconnected.  
Equipment or system tests and start-ups.  
Partial Completions, occupancies.  
Substantial Completions authorized.

## 1.7 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
  - 1. Dimensions.
  - 2. Identification of products and materials included.
  - 3. Compliance with specified standards.
  - 4. Notation of coordination requirements.
  - 5. Notation of dimensions established by field measurement.
  - 6. Sheet Size: Except for templates, patterns and similar full- size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 36" x 48".
  - 7. Submittal: Submit one correctable translucent reproducible print and two blue- or black-line prints for the Architect's review; the reproducible print will be returned.
- C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
  - 1. Preparation of coordination Drawings is specified in section "Project Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.
  - 2. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

## 1.8 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."
  - 1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
    - Manufacturer's printed recommendations.
    - Compliance with recognized trade association standards.
    - Compliance with recognized testing agency standards.
    - Application of testing agency labels and seals.
    - Notation of dimensions verified by field measurement.
    - Notation of coordination requirements.

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
3. Submittals: Submit 3 copies of each required submittal; submit 4 copies where required for maintenance manuals. The Architect will retain one, and will return the other marked with action taken and corrections or modifications required.
4. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
  - a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
  - b. Do not permit use of unmarked copies of Product Data in connection with construction.

## 1.9 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
  1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:
    - Generic description of the Sample.
    - Sample source.
    - Product name or name of manufacturer.
    - Compliance with recognized standards.
    - Availability and delivery time.
  2. 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.
 

Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.

Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.
  3. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
 

Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

Sample sets may be used to obtain final acceptance of the construction associated with each set.

## 1.10 ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.

Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Approved: Where submittals are marked "Approved", 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. Approved as Corrected: When submittal are marked "Approved as Corrected", that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
3. Revise and Resubmit: 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 notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
4. Rejected: When submittal is marked "Rejected", do not proceed with that part of the Work covered by the submittal, including fabrication, delivery, or other activity. Prepare a new submittal in accordance with the Contract Documents and submit without delay.
5. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".

2.0 PART 2 - PRODUCTS (Not Applicable).

3.0 PART 3 - EXECUTION (Not Applicable).

END OF SECTION 01300

## **SECTION 01400 - QUALITY CONTROL SERVICES**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section specifies administrative and procedural requirements for quality control services.
- B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
  - 1. Specific quality control requirements for individual construction activities are specified in the Section that specify those activities. Those requirements, including inspections and tests cover production of standard products as well as customized fabrication and installation procedures.
  - 2. Inspections, tests and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Documents requirements.
  - 3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

#### **1.3 RESPONSIBILITIES:**

- A. Contractor's Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.
  - 1. The Contractor shall employ and pay an independent agency to perform specified quality control services.
- B. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the owner.

C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, Restoration of the Escambia County Courthouse – Restroom Renovations    Quality Control Services 01400-1

tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:

1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
  2. Providing the agency with a preliminary design mix proposed for use for materials mixes that required control by the testing agency.
- D. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual specifications Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
1. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed on the Work during performance of its services.
  2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
  3. The agency shall not perform any duties of the Contractor.
- E. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services for the project shall coordinate the sequence of their activities so as to accommodate required services with a minimum of delay in the progress of the work. In addition, the Contractor and each independent testing agency shall coordinate their work so as to avoid the necessity of removing and replacing work to accommodate inspections and tests.
- F. The Contractor is responsible for scheduling times for inspections, tests, taking of samples and similar activities.
- G. Schedule of Inspections and Tests: Submit a schedule of inspections, tests and similar services required by the Contract Documents within 45 days of the date of the Notice to Proceed.

#### 1.4 SUBMITTALS

- A. General: The independent testing agency shall submit a certified written report of each inspection, test or similar service, directly to the Architect and owner, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, Submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

1. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to the following:

Date of Issue

Project title and number

Name, address and telephone number of testing agency

Dates and locations of samples and tests or inspections

Names of individuals making the inspection or test

Designation of the Work and test method

Identification of product and Specification Section

Complete inspection or test data  
Test results and an interpretation of test results  
Ambient conditions at the time of sample-taking and testing  
Comments or professional opinion as to whether inspected or tested Work complies with Contract Documents requirements.  
Name and signature of laboratory inspector  
Recommendations on retesting

## 1.5 QUALITY ASSURANCE

- A. Qualifications for Service Agencies: Engage inspection and testing services agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

## 2.0 PART 2 - PRODUCTS (Not Applicable).

## 3.0 PART 3 - EXECUTION

### 3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching".
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01400



## **SECTION 01500 - TEMPORARY FACILITIES**

### 1.0 PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

- B. Temporary utilities required include but are not limited to:

Water service and distribution.  
Temporary electric power and light.  
Telephone service.  
Storm and sanitary sewer.

- C. Temporary construction and support facilities required include but are not limited to:

Temporary heat.  
Field offices and storage sheds.  
Sanitary facilities, including drinking water.  
Dewatering facilities and drains.  
Temporary enclosures.  
Hoists.  
Temporary Project identification signs and bulletin boards.  
Waste disposal services.  
Rodent and pest control.  
Construction aids and miscellaneous services and facilities.

- D. Security and protection facilities required include but are not limited to:

Temporary fire protection.  
Barricades, warning signs, lights.  
Environmental protection.

Contractor to maintain a security program for the building and materials for the duration of the project.

#### 1.3 SUBMITTALS

- A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.
- B. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.

#### 1.4 QUALITY ASSURANCE

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- A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
- Building Code requirements.
  - Health and safety regulations.
  - Utility company regulations.
  - Police, Fire Department and Rescue Squad rules.
  - Environmental protection regulations.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards 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. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

## 1.5 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. 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.

## 2.0 PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Water: Provide potable water approved by local health authorities.

### 2.2 EQUIPMENT

- A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

- C. 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.
- D. First Aid Supplies: Comply with governing regulations.
- E. 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.

### 3.0 PART 3 - EXECUTION

#### 3.1 INSTALLATION

- 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 and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

#### 3.2 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate sanitary facilities and other temporary construction and support facilities for easy access.
  - 1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.

- B. Temporary Field Office: Provide a temporary field office in the existing building as directed by the Owner equipped with telephone communication. Field office to have a desk with a set of construction documents present at all times for the contractor's, subcontractors', architects' and owner's use. Documents include drawings, specifications, change orders, architect's supplementary instructions and approved shop drawings.
  - 1. Post all applicable permits, licenses, notices and safety procedures required in a conspicuous location.
- C. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
  - 1. Where temporary wood or plywood enclosure exceeds 100 square feet in area, use UL-labeled fire-retardant treated material for framing and main sheathing.

- D. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated. Remove at the completion of the project.
- E. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.
- F. 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. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

### 3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.
- B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, 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," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
  - 1. Locate fire extinguishers where convenient and effective for their intended purpose.
  - 2. Store combustible materials in containers in fire-safe locations.
  - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
  - 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- C. 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.
- D. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, 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.
  - 1. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:
    - Replace air filters and clean inside of ductwork and housings.
    - Replace significantly worn parts and parts that have been subject to unusual operating conditions.
    - Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION 01500

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## **SECTION 01631 - PRODUCT SUBSTITUTIONS**

### 1.0 PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions."

The following are not considered substitutions:

1. Substitutions requested by Bidders during the bidding period, and accepted in writing by the Architect, prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
2. Revisions to Contract Documents requested by the Owner or Architect.
3. Specified options of products and construction methods included in Contract Documents.
4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities and approved by the architect and owner.

#### 1.4 SUBMITTALS

- A. Substitution Request Submittal:

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
  2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
- B. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
  - C. Samples, where applicable or requested.
  - D. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
  - E. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.

- F. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
- G. Cost information, including a proposal of the net change, if any in the Contract Sum.
- H. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the publication indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.

## 2.0 PART 2 - PRODUCTS

### 2.1 SUBSTITUTIONS

- A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.
  - 1. Proposed changes are in keeping with the general intent of Contract Documents.
  - 2. The request is timely, fully documented and properly submitted.
- B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction Activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

## PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01631

## **SECTION 01700 - PROJECT CLOSEOUT**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
  - 1. Inspection procedures.
  - 2. Project record document submittal.
  - 3. Operating and maintenance manual submittal.
  - 4. Submittal of warranties.
  - 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions-2 through -16.

#### **1.3 SUBSTANTIAL COMPLETION**

- A. Prerequisites to Substantial Completion: Before requesting inspection for certification of Substantial Completion, complete and/or submit the following:
  - 1. In the Application for Payment that coincides with, or first follows, the date 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.
    - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
  - 2. Advise Owner of pending insurance change-over requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
  - 4. 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.
  - 5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
  - 6. Deliver tools, spare parts, extra stock, and similar items.
  - 7. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.

8. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
  9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
- B. Inspection Procedures: At the contractor's request, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued. Architect will repeat inspection when advised Work is Substantially Complete. Results of completed inspection make-up initial "punch-list" for Final Acceptance.

#### 1.4 FINAL ACCEPTANCE

- A. Prerequisites to Final Acceptance: Before requesting final inspection for certification of final acceptance and final payment, complete the following, listing exceptions in the request.
1. Submit the final payment request with releases 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 final inspection 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 consent of surety to final payment.
  5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. On receiving Contractor's notice that Work is complete, including punchlist items and excluding items delayed because of acceptable circumstances, the Architect will reinspect the Work, and prepare a Certificate of Final Acceptance, or will advise Contractor of unfulfilled obligations. If necessary, procedure will be repeated.

#### 1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.



2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
  3. Note related Change Order numbers where applicable.
  4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
  5. Provide record drawings in PDF format.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
1. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.
1. Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.
- E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.
- F. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
- Emergency instructions.
  - Spare parts list.
  - Copies of warranties.
  - Wiring diagrams.
  - Recommended "turn around" cycles.
  - Inspection procedures.
  - Shop Drawings and Product Data.
  - Fixture lamping schedule.

## 2.0 PART 2 - PRODUCTS (Not Applicable)

## 3.0 PART 3 - EXECUTION

Restoration of the Escambia County Courthouse – Restroom Renovations  
Project Closeout

3.1     CLOSEOUT PROCEDURES: Provide a minimum or (3) three sets of closeout documents.

- A.   Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

Maintenance manuals.  
Record documents.  
Spare parts and materials.  
Tools.  
Lubricants.  
Fuels.  
Identification systems.  
Control sequences.  
Hazards.  
Cleaning.  
Warranties and bonds.  
Maintenance agreements and similar continuing commitments.

- B.   As part of instruction for operating equipment, demonstrate the following procedures:  
Start-up.  
Shutdown.  
Emergency operations.  
Noise and vibration adjustments.  
Safety procedures.  
Economy and efficiency adjustments.  
Effective energy utilization.

3.2     FINAL CLEANING

- A.   General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".
- B.   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 inspection for Certification of Substantial Completion.
    - a. Remove labels that are not permanent labels.
    - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound 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, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

- d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
- C. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.
- D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- E. 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.

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 01700

## **SECTION 01740 - WARRANTIES AND BONDS**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
  - 1. Contractor is to provide **one year warranty** for all the Work, established from the date of substantial completion.
    - a. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
    - b. Refer to each individual Section of the Specifications for specific warranties which require a longer warrantee period.
    - c. Contractor to meet the warranty and bond requirements of Escambia County Purchasing Department.
- 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.

#### **1.3 DEFINITIONS**

- A. **Standard Product Warranties** are preprinted 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 benefitted from use of the Work through a portion of its anticipated useful service life.
- D. 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.
  - 1. 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.

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 countersign 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.
- 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.

PART 2 - PRODUCTS (not applicable).

PART 3 - EXECUTION (not applicable).

END OF SECTION 01740

## **SECTION 02070 - SELECTIVE DEMOLITION**

### **PART 1 - GENERAL:**

#### **1.1 RELATED DOCUMENTS:**

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

#### **1.2 DESCRIPTION OF WORK:**

- A. Extent of selective demolition work is indicated on drawings.
- B. Types of Selective Demolition Work: Demolition requires the selective removal and subsequent offsite disposal of the following:
  - 1. Portions of building indicated on drawings and as required to accommodate new construction.
  - 2. Removal of interior walls, portions of exterior walls, floors and ceilings, doors, frames, and windows. Drawings indicate existing construction to remain.
  - 3. Cutting of existing concrete floor slab and beams in areas indicated.
  - 4. Cutting non-structural concrete floors and masonry walls for underground piping and ducts, and for above grade piping, ducts, and conduit is included with the work of the respective mechanical and electrical Divisions 15 and 16 specification sections.
  - 5. Asbestos testing has been completed for the building and is on file with Escambia County Facilities Planning.
  - 6. Permitting with the Florida DEP prior to start of any demolition work is a part of this contract.

#### **1.3 SUBMITTALS:**

- A. Schedule: Submit schedule indicating proposed methods and sequence of operations for selective demolition work prior to commencement of work. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection.

#### **1.4 JOB CONDITIONS:**

- A. Occupancy: Owner will vacate the buildings and areas of selective demolition.
- B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.

Conditions existing at time of commencement of contract will be maintained by Owner insofar as practicable. However, variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.

- C. Partial Demolition and Removal: Items indicated to be removed but of salvable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.

Storage or sale of removed items on site will not be permitted.

D. Protections:

1. Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition work.
2. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to and from occupied portions of building.
3. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
4. Protect floors with suitable coverings when necessary.
5. Construct temporary insulated solid dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks if required.
6. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces, and installation of new construction to insure that no water leakage or damage occurs to structure or interior areas of existing building.
7. Remove protections at completion of work.

E. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

F. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
2. When utilities are required to cross existing paved areas, saw-cutting finished surfaces should be used only as a last resort. The University recommends boring as the standard procedure for crossing streets/roads. Concrete walks shall be cut and replaced from joint to joint, doveled to the remaining slab.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 INSPECTION:

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing conditions to structure surfaces, equipment or to surrounding properties

which could be misconstrued as damage resulting from selective demolition work; file with Owner's Representative prior to starting work.

### 3.2 PREPARATION:

- A. Cease operations and notify the Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
- B. Provide weatherproof closures for exterior openings resulting from demolition work and make provisions for the temporary roof covering over areas that will remain occupied during the construction process and that are beneath the construction area.
- C. Locate, identify, stub off and disconnect utility services that are not indicated to remain.
- D. Provide by-pass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shut-down of service is necessary during change-over.

### 3.3 DEMOLITION:

- A. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.
- B. If unanticipated mechanical, electrical or structural elements which conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Architect in written, accurate detail. Pending receipt of directive from Architect rearrange selective demolition schedule as necessary to continue overall job progress without delay.

### 3.4 DISPOSAL OF DEMOLISHED MATERIALS:

- A. Remove debris, rubbish and other materials resulting from demolition operations from building site. Transport and legally dispose of materials off site.
- B. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution.
- C. Burning of removed materials is not permitted on project site.

### 3.5 CLEAN-UP AND REPAIR:

- A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave interior areas broom clean.

END OF SECTION 02070



## **SECTION 02080 – HEALTH & SAFETY WORK PLAN FOR STABILIZATION OF LEAD CONTAINING PAINT**

### **PART 1 – SUMMARY OF THE WORK**

#### **1.1 PROJECT SCOPE OF WORK**

General: The work outlined in this document supports the lead-containing paint stabilization project at the Restoration of the Escambia County Courthouse Phase IV. In general terms, the project will include removal of loose and flaking lead-based painted coatings on the interior ceiling, which are located in the following areas:

1) Piping in concealed walls to be demolished

Designated areas with loose and flaking paint total approximately 50 square feet. Regarding removal of loose and flaking lead-containing paint coatings, the intent of this work plan is to provide information to help prevent the migration of lead in dust that may be created during the stabilization actions. In addition, the abatement contractor shall coat the prepared areas with a minimum of one layer of primer paint coating following the removal of loose and flaking paint.

#### **1.2 GENERAL REQUIREMENTS FOR WORK IMPACTING LEAD BASED PAINT COATINGS**

In general terms, work impacting lead-based paint coatings should be performed in accordance with Sections 02085, Federal and State Occupational Health and Safety Administration (Fed-OSHA 29 CFR 1910.1025 Lead-based paint waste materials shall be placed in leak tight containers and properly labeled as indicated in Section 02086.

Federal efforts to regulate Lead Based Paint (LBP) began with the enactment of the Lead-Based Paint Poison Prevention Act (LBPPPA) in 1971. In 1973, the Consumer Product Safety Commission (CPSC) defined lead-based paint as paint having lead content equal to or greater than 0.5 percent by weight in a dry film of newly applied paint. In 1978, the CPSC lowered the allowable lead levels in new paint to 0.06%.

Federal and State Occupational Health and Safety Administration (Fed-OSHA 29 CFR 1910.1025 do not define the amount of lead in paint to a regulatory requirement; rather the activities or task define when the regulation is in effect. Both Federal and State standards use the term “trigger task” activities. In the work place, employers must make certain assumptions of the exposure levels and comply with the regulations based on the level of disturbance rather than the lead level.

Employees who perform trigger tasks (such as manual demolition) are required to receive employer provided training, air monitoring, protective clothing, respirators, and hand washing facilities. In addition there are standard work practices required such as the use of wet methods and HEPA vacuums.

There is the possibility that other painted surfaces located in inaccessible areas may contain levels of lead. Caution should be taken during demolition and renovation activities to prevent lead levels in generated airborne dust from painted surfaces from exceeding the Permissible Exposure Limit (PEL). Furthermore work involving lead-containing painted surface areas with detectable levels of lead should be performed by a lead abatement contractor.

### 1.3 GENERAL REQUIREMENTS FOR WORK IMPACTING ASBESTOS-CONTAINING MATERIALS

Sampling of the loose and flaking interior finish materials were also sampled for asbestos content. Asbestos was not detected in the collected samples.

The laboratory results for the lead paint and asbestos sampling are provided as an attachment to this section.

## **PART 2 – TEST LABORATORY SERVICES**

### 2.1 RELATED DOCUMENTS

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

### 2.2 DESCRIPTION OF THE WORK

This section describes work being performed at the Old **Escambia County Courthouse Phase IV**. Determination of acceptability of a work area following renovation actions will be based on a combination of visual inspections and surface sampling. Visual inspections will be performed by USPS's Environmental Consultant in areas where removal work is performed. Dust wipe sampling may be performed in work areas where lead-containing paints or coatings are sanded, abraded or otherwise separated from the applied to architectural finish.

### 2.3 POST REMOVAL ACCEPTANCE CRITERIA

Observations will be performed in all work areas to document the removal of all dust and debris.

## **PART 3 – WORK AREA CONTAINMENT**

### 3.1 RELATED DOCUMENTS

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

### PRODUCTS

### 3.2 SHEET PLASTIC DROP CLOTH

Provide fire retardant polyethylene film in the largest size possible to minimize seams, 4.0 or 6.0 mils thick as indicated, clear, frosted or black as indicated.

### 3.3 MISCELLANEOUS MATERIALS

- 3.3.1 Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive, which is formulated to stick aggressively to sheet polyethylene.
- 3.3.2 Spray Cement: Provide spray adhesive in aerosol cans, which is specifically formulated to stick tenaciously to sheet polyethylene.

## EXECUTION

### 3.4 SEQUENCE OF WORK

Carry out work of this section sequentially. Complete each activity before proceeding to the next.

### 3.5 GENERAL

- 3.5.1 A "Work Area" must be isolated from the balance of the building, and appropriately cleaned at the completion of the repair work.
- 3.5.2 Contain the Work Area from other parts of the building so as to prevent dust and debris from passing beyond the isolated area. Should the area beyond the Work Area(s) become contaminated with lead or debris as a consequence of the work, thoroughly clean those areas. Perform all such required cleaning or decontamination at no additional cost.
- 3.5.3 Fixed items such as cabinets shall be completely covered with one (1) layer of polyethylene sheeting, at least 4 mil in thickness, secured in place with duct tape. Such fixed items shall be considered outside the work area unless covering plastic or seal is breached.
- 3.5.4 Seal ventilating systems or any other systems within 10 feet of the work area that are bringing air into or out of the Work Area. Disable fan systems by disconnecting wires, removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.

### 3.6 CONTROL ACCESS

Isolate the Work Area to prevent entry by occupants into Work Area or surrounding controlled areas. The Regulated Area should be portioned from adjacent areas with tape and signage.

### 3.7 CRITICAL BARRIERS

Individually seal all ventilation openings, lighting fixtures, clocks, doorways, windows, convectors and speakers within 10 feet of the Work Area with duct tape alone or with fire retardant polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all work including Project Decontamination is completed. Take care in sealing of lighting fixtures to avoid melting or burning of sheeting.

### 3.8 PLASTIC COVERINGS

Protect building and other surfaces in the Work Area from damage or from contamination from debris by covering with a plastic barrier.

### 3.9 DECONTAMINATION FACILITY

Establish a decontamination area that is adjacent to the regulated area for decontamination of employees and their equipment. At a minimum the decontamination shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface of sufficient size to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination. All equipment and surfaces of containers filled with lead debris must be cleaned prior to removing them from the area. Entry to and exit from the regulated area shall be through the decontamination area. Decontamination shall also allow for washing of workers hands and face.

## **PART 4 - WORKER PROTECTION**

### GENERAL

#### 4.1 RELATED DOCUMENTS

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

#### 4.2 DESCRIPTION OF WORK

This section describes the equipment and procedures required for protecting workers if lead is encountered, except for respiratory protection.

#### 4.3 RELATED WORK SPECIFIED ELSEWHERE

4.3.1 Respiratory Protection: Specified in Section 01562.

## EQUIPMENT

### 4.4 PROTECTIVE CLOTHING

- 4.4.1 Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the Work Area.
- 4.4.2 Gloves: Provide work gloves to all workers and require that they be worn at all times in the Work Area. Do not remove gloves from Work Area and dispose of as contaminated waste at the end of the work.
- 4.4.3 Safety Glasses: Provide safety glasses to all workers and require that they be worn at all times in the Work Area.

## EXECUTION

### 4.5 GENERAL

Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work. Each time Work Area is entered, put on new disposable coverall, and the assigned respirator.

### 4.6 DECONTAMINATION PROCEDURES

Require all workers remove coveralls, disposable head covers, and disposable footwear covers or boots when exiting the work area. Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, drink or smoke, workers shall follow the procedure described above, thoroughly wash hands and then dress in street clothes before entering the non-work areas of the building.

## **PART 5 - RESPIRATORY PROTECTION**

### GENERAL

#### 5.1 RELATED DOCUMENTS

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

#### 5.2 DESCRIPTION OF WORK

Instruct and train each worker involved in the removal of lead in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face until the Work Area is completely decontaminated

## EQUIPMENT

### 5.3 AIR PURIFYING RESPIRATORS

- 5.3.1 Respirator Bodies: Provide full or half face air purifying respirators.
- 5.3.2 Filter Cartridges: Provide, at a minimum, combination HEPA type P100 filters labeled and color-coded in accordance with NIOSH Certification.

## EXECUTION

### 5.4 GENERAL

- 5.4.1 Respiratory Protection Program: Comply with OSHA 29 CFR 1926
- 5.4.2 Require that respiratory protection be used at all times that there is any possibility of disturbance of contaminated materials whether intentional or accidental.
- 5.4.3 Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity until the work area has been cleared for re-occupancy.

### 5.5 FIT TESTING

- 5.5.1 Initial Fitting: Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing have been provided.
- 5.5.2 On an annual basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.
- 5.5.3 Upon Each Wearing: Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions.

### 5.6 AIR PURIFYING RESPIRATORS

- 5.6.1 Negative pressure - Full face mask: Store respirators and filters at the job site in the changing area and protect totally from exposure to lead dust prior to their use.

## **PART 6 - STABILIZATION OF LEAD-BASED PAINTED COATINGS**

### **GENERAL**

#### **6.1 RELATED DOCUMENTS**

General provisions of Contract, including General and Supplementary Conditions, and other Specification Sections, apply to work of this section. In instances where documents conflict, the more stringent requirement will apply.

#### **6.2 APPLICABILITY**

If actions are performed that separate the lead-based paint from the substrate, the contractor shall use drop cloths below the work area.

### **PRODUCTS**

#### **6.3 POLYETHYLENE SHEET**

Impermeable fire retardant polyethylene sheeting drop cloths shall be placed on surfaces beneath all work impacting lead-based paint coatings. Provide polyethylene sheeting in the largest size possible to minimize seams, 6.0 mil thick, clear, frosted or black as indicated.

#### **6.4 DUCT TAPE**

Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

#### **6.5 SPRAY CEMENT**

Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

#### **6.6 DISPOSAL BAGS**

Provide 6 mil thick leak-tight polyethylene bags.

### **EXECUTION**

- 6.7 Description of Work: If measured lead levels exceed the Action Limit of 30ug/m<sup>3</sup> at any time during the course of the work or if visible emissions are observed outside the regulated area, the Contractor will be required to take immediate corrective action. If the corrective actions do not reduce concentrations below the Action Limit, the Owner's representative will require the contractor to stop work and construct containment systems.

6.8 Decontamination Unit

- 6.8.1 Decontamination Area: Whenever feasible, a decontamination area or hygiene facility is required for each Work Area. Require all persons, without exception, to remove lead contamination prior to leaving the work area. Decontamination shall, at a minimum, allow for washing of workers hands and face.

6.9 Work Area Requirements

- 6.9.1 Demarcate the Work Area and restrict access by providing a taped-off and labeled perimeter around the Work Area where lead-based paint is impacted during work on the building interior.
- 6.9.2 Dust generation is to be minimized by misting interior painted surfaces with water during removal. Use caution to minimize damaged to adjacent surfaces and historic substrate materials.
- 6.9.3 Minimum respiratory protection is half-face with appropriate HEPA filter with a protection factor of 10 for work environments up to  $300 \mu\text{g}/\text{m}^3$ .
- 6.9.4 Create a poly containment on the floor of the work area, which should extend at least 10 feet out from the wall. Use 6-mil polyethylene and securely affix to interior walls or adjacent structures with duct tape or fasteners. For elevation work platforms, provide plastic sheeting to capture debris at the work platform level. Do not allow debris to fall more than 10 feet.

OSHA Compliance:

Contractors and their employees who are potentially exposed to lead levels in excess of the OSHA Action Limit ( $30 \mu\text{g}/\text{m}^3$ ) must comply with the OSHA requirements for medical surveillance, exposure monitoring and training and education.

The Contractor must conduct all OSHA required abatement monitoring and medical surveillance at no cost to the Owner.

- 6.9.5 General Removal/Disturbance Procedures
- 6.9.6 Setup and management of the Work Area is to be under the supervision of a General Superintendent as described.
- 6.9.7 Prior to commencing work, comply with requirements for Worker and Respiratory Protection.
- 6.9.8 Do not allow eating, drinking, smoking and chewing tobacco or gum in the Work Area.



- 6.9.9 Provide a drop cloth of 6-mil polyethylene sheeting under the work area. Where work is adjacent to walls, extend polyethylene sheeting up the walls and attach securely. For elevation work platforms, provide plastic sheeting to capture debris at the work platform level.
- 6.9.10 Seal supply and exhaust vents, and convectors within ten (10) feet of the Work Area with 6-mil fire retardant polyethylene sheeting secured and completely sealed with duct tape. The use of spray adhesive on historic surfaces is prohibited.
- 6.9.11 All lead-based paint removal work must be conducted within containment areas. Workers must exercise caution to avoid release of lead-contaminated dust into the ambient air. Remove lead-based paint debris, which collects on the drop cloth using HEPA vacuums and/or wet cleaning methods at the completion of each shift.
- 6.9.12 At the completion of each shift, proceed with equipment and worker decontamination.

6.10 Project Decontamination:

- 6.10.1 Cleaning procedures include using a HEPA vacuum to clean all surfaces followed by a wet wiping with a Leadisolv (or equivalent) solution and finishing with another HEPA vacuuming.
- 6.10.2 Daily cleanup consists of removing large debris and mopping the work area.
- 6.10.3 The final cleanup consists of a preliminary final cleanup (removing plastic and first cleaning), and the final visual inspection.
- 6.10.4 Cleaning Procedures:
  - 6.10.4.1 HEPA Vacuuming Procedures: At the conclusion of the active removal process, all surfaces in the Work Area should be thoroughly and completely HEPA vacuumed.
  - 6.10.4.2 Detergents have been found to be very effective when used as part of the final cleanup process in a lead- based paint project. Contractors may use detergents including Leadsorb or Leadisolv (or equivalent).
  - 6.10.4.3 Read Manufacturer's Instruction: Users of detergents should carefully follow the specific manufacturer's instructions for the proper use of the product, especially the dilution ratio recommended. Concentrated detergents should be used only with waterproof gloves to prevent skin irritation. Wear appropriate eye and face protection for cleaning solutions.
- 6.10.5 Small Debris: Small debris should be collected and disposed of properly. However, before any sweeping occurs, the affected surfaces should be sprayed with a fine mist of water, to keep surface dust from becoming airborne and

potentially contaminating other areas of the property and removal workers. Dry sweeping is prohibited. Debris should be placed in double 6-mil plastic bags or other hard containers, properly sealed and moved to the designated trash storage area. Care should be taken not to overload trash bags, which otherwise may rupture or puncture during handling and transport.

6.10.6 Dispose of all lead- based waste material as specified in this Section.

6.11 Waste Evaluation and Disposal: This paragraph describes disposal of lead-based painted building materials (if applicable). Accomplish disposal either by landfill or other acceptable methods. Waste containing greater than 1000 mg/kg when tested by TTLC or failed the California WET test shall be treated as hazardous waste. Additional Federal testing by TCLP will be required to see if the waste will have to be stabilized.

6.11.1 The Contractor shall evaluate the waste prior to disposal to determine which types are hazardous.

6.11.2 Disposal of Wastes: Waste must be segregated into solid and hazardous wastes. Wastes should neither be left on the property in an unsecured area, nor dumped in an unauthorized dumpster. Lead-containing wash water should not be flushed into storm drains or sanitary sewers without permission of local authorities.

6.11.3 Solid Waste Disposal: Solid waste that has been evaluated and determined not to be hazardous can be disposed of in a state approved landfill as construction debris. Waste should be transported to the approved disposal landfill in covered vehicles.

6.11.4 Hazardous Waste Disposal: Hazardous waste must be disposed of at a hazardous waste disposal facility, usually defined as a treatment, storage, and disposal facility (TSD).

6.11.5 Disposal Site Procedures: At the disposal site, sealed polyethylene bags shall be carefully unloaded from the truck. If bags are broken or damaged, return to work site for re-bagging. Clean entire truck by HEPA vacuum and wet wipe methods.

6.11.6 Retain all copies of employee blood tests, receipts waste shipment records, manifests, chain of custody, etc.

6.12 POST REMOVAL ACCEPTANCE CRITERIA

## **PART 7 - DISPOSAL OF LEAD WASTE MATERIAL**

### **GENERAL**

7.1 RELATED DOCUMENTS

General provisions of Contract, including General and Supplementary Conditions, and other Specification Sections, apply to work of this section. In instances where documents conflict, the more stringent requirement will apply.

## 7.2 DESCRIPTION OF THE WORK

This section describes the disposal of lead waste materials. Disposal includes packaging of waste materials.

## PRODUCTS

### 7.3 DISPOSAL BAGS / CONTAINERS

Provide disposal bags and contains as necessary to properly package lead waste.

## EXECUTION

### 7.4 GENERAL

Waste Evaluation and Disposal: This paragraph describes disposal of lead-based painted building materials (if applicable). Accomplish disposal either by landfill or other acceptable methods. Federal testing by TCLP will be required to see if the waste will have to be stabilized.

- 7.4.1 The Contractor will be responsible for representative sampling and analysis of lead waste generated during this project.
- 7.4.2 The Contractor shall assume that any waste containing lead is hazardous.
- 7.4.3 To the extent feasible, the Contractor shall segregate dust and small debris, which may contain lead-based paint. Such waste shall be double bagged, secured with tape, and labeled.
- 7.4.4 Larger hazardous waste items which cannot be bagged shall be wrapped in plastic, secured with tape, labeled and disposed of.
- 7.4.5 All waste is to be hauled by a waste hauler with all required licenses from all state and local authority with jurisdiction.
- 7.4.6 Seal lead waste in leak-proof impermeable containers labeled in accordance with EPA requirements
- 7.4.7 Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material. Vehicle must be placarded with DOT label.

- 7.4.8 Advise the landfill operator or processor, in advance of transport, of the quantity of material to be delivered.
- 7.4.9 At completion of hauling and disposal of each load, submit copy of waste manifest, chain of custody form, and landfill receipt to Owners Representative.

## **SECTION 06100 - ROUGH CARPENTRY**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS:**

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

#### **1.2 SUMMARY:**

- A. Types of work in this section include rough carpentry for:
  - 1. Wood nailers, blocking and furring.
- B. Finish carpentry is specified in another section within Division 6.

#### **1.3 DEFINITIONS:**

- A. Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated.

#### **1.4 SUBMITTALS:**

- A. Product Data: Submit manufacturer's specifications and installation instructions for:
  - 1. Sheathing.
- B. Wood Treatment Data: Submit chemical treatment manufacturer's instructions for handling, storing, installation and finishing of treated material.
- C. Preservative Treatment: For each type specified, include certification by treating plant stating compliance: Spruce-Pine-Fir graded under NLGA rules.
- D. Any species and grade which meets or exceeds the following values:
  - Fb (minimum extreme fiber stress in bending); 1500 psi.
  - E (minimum modulus of elasticity); 1,500,000 psi.

### **2.0 PART 2 - LUMBER**

#### **2.1 BOARDS:**

- A. Concealed Boards: Where boards will be concealed by other work, provide lumber of 15 percent maximum moisture content (KD) and of following species and grade:
  - Southern Pine No. 2 Boards per SPIB rules, or any species graded Construction Boards per WCLIB or WWPAA rules.

#### **2.2 MISCELLANEOUS LUMBER:**

- A. Provide wood for support or attachment of other work including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members.
- B. Moisture content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- C. Grade: Standard Grade light framing size lumber of any species or board size lumber as required. No. 3 Common or Standard grade boards per WCLIB or WWPA rules or No. 3 boards per SPIB rules.

### 2.3 CONSTRUCTION PANELS:

- A. Trademark: Factory-mark each construction panel with APA trademark evidencing compliance with grade requirements.
- B. Concealed APA Performance-Rated Panels: Where construction panels will be used for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements indicated for grade designations, span rating, exposure durability classification, edge detail (where applicable) and thickness.
  - 1. Roof and wall sheathing: APA RATED SHEATHING.  
Exposure Durability Classification: EXTERIOR.  
Span Rating: As required to suit rafter and stud spacing indicated.
- C. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels with grade designation, APA C-D PLUGGED INT with exterior glue, in thickness indicated, or, if not otherwise indicated, not less than 15/32".

### 2.4 MISCELLANEOUS MATERIALS:

- A. Fasteners and Anchorages: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails.

### 2.5 WOOD TREATMENT BY PRESSURE PROCESS:

- A. Pressure-treat above-ground items with water-borne preservatives to comply with AWPB LP-2. After treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of 19 percent and 15 percent. Treat indicated items and the following:

Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers and waterproofing.

Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete.

Wood framing members less than 18" above grade.

Wood floor plates installed over concrete slabs directly in contact with earth.

### 3.0 PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL:

- A. 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.
- B. Set carpentry work to required levels and lines, with members plumb and true and cut and fitted.
- C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards.
- D. Countersink nail heads on exposed carpentry work and fill holes.
- E. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

#### 3.2 WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS:

- A. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
- B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.
- C. Provide permanent grounds of dressed, preservative treated, key- bevelled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

#### 3.3 WOOD FURRING:

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required tolerance of finished work.
- B. Furring to Receive Plywood Paneling: Unless otherwise indicated, provide 1" x 3" furring at 2' o.c., horizontally and vertically. Select furring for freedom from knots capable of producing bent- over nails and resulting damage to paneling.

#### 3.4 WOOD FRAMING, GENERAL:

- A. Provide framing members of sizes and on spacings shown, and frame openings as shown, or if not shown, comply with recommendations of "Manual for House Framing" of National Forest Products

Association (N.F.P.A). Do not splice structural members between supports.

- B. Provide special framing as shown for eaves, overhangs, and similar conditions, if any.

3.6 BOARD SHEATHING:

- A. Install boards with end joints staggered over supports, and with each piece extending over at least 2 spaces between supports. Nail with 8d common nails, spaced 2 per support for board widths of 6" and less, 3 per support for widths of 8" and more.

3.7 INSTALLATION OF CONSTRUCTION PANELS:

- A. General: Comply with applicable recommendations contained in Form No. E 30F, "APA Design/Construction Guide - Residential & Commercial", for types of construction panels and applications indicated.

Fasten panels as recommended by manufacturer.

END OF SECTION 06100



## **SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK**

### 1.0 PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following:

- 1. Painted and stained wood trim.

#### 1.3 SUBMITTALS

- A. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
- B. Samples for initial selection purposes of the following in form of manufacturer's color charts consisting of actual units or sections of units showing full range of colors, textures, and patterns available for each type of material indicated.
  - 1. Shop applied wood finishes.
  - 2. Exposed cabinet hardware, one unit of each type and finish.

#### 1.4 QUALITY ASSURANCE

- A. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI) except as otherwise indicated.
- B. WIC Quality Standard: Comply with applicable requirements of "Manual of Millwork" published by Woodwork Institute of California (WIC) unless otherwise indicated.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.
- B. Do not deliver woodwork until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Obtain and comply with Woodwork Manufacturer's and Installer's coordinated advice for optimum temperature and humidity conditions for woodwork during its storage and installation, whether stored on site or off site. Do not install woodwork until these conditions have been attained and stabilized so that woodwork is within plus or minus 1.0 percent of optimum moisture content from date of installation through remainder of construction period.

- B. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of Work.

## 2.0 PART 2 - PRODUCTS

### 2.2 MATERIALS

- A. General: Provide materials that comply with requirements of the AWI woodworking standard for each type of woodwork and quality grade indicated and, where the following products are part of woodwork, with requirements of the referenced product standards, that apply to product characteristics indicated:

Hardboard: ANSI/AHA A135.4

High Pressure Laminate: NEMA LD 3.

Particleboard: ANSI A208.1

Softwood Plywood: PS 1.

- B. Wood/for transparent finish: Rift cut or quarter-sawn, **Mahogany**.
- C. Wood for opaque finish: AWI Section 400 and its Division 400A "Wood Cabinets.": WIC Section 14 "Wood Casework": Western hardwoods.

### 2.3 FABRICATION, GENERAL

- A. 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.
- B. Fabricate woodwork to dimensions, profiles, and details indicated.
- C. Complete fabrication, including assembly, finishing, and hardware application, before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

### 2.4 LAMINATE CLAD CABINETS

- A. Quality Standard: Comply with AWI Section 400 and its Division 400B "Laminate Clad Cabinets."
- B. Quality Standard: Comply with WIC Section 15 "Plastic-Covered Casework."
- C. WIC Section 16: "Laminated Plastic Countertops, Splashes and Wall Paneling."
- D. Type of Top: High pressure decorative, premium grade, color to be selected by architect from manufacturer's standard colors.

## 3.0 PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 8'-0" for plumb and level (including tops) and with no variations in flushness of adjoining surfaces.
- B. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- C. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nails for expose nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish indicated.
- D. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
- E. Tops: Anchor securely to base units and other support systems as indicated.

### 3.2 ADJUSTMENT AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate defects functionally and visually; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

### 3.3 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensures that woodwork is being without damage or deterioration at time of Substantial Completion.

END OF SECTION 06402

## **SECTION 08211 - PANELED WOOD DOORS**

### 1.0 PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

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

#### 1.2 SUMMARY:

- A. Extent and location of each type of wood door is indicated on drawings and in schedules.
- B. Types of doors: Solid core flush wood doors with birch or oak veneer faces with vented grille and opaque glass pane.
- C. Finish: At contractor's option provide factory-finishing or job site painting - see section 09900 - Painting for job site painting  
Note: contractor to provide in his base bid the finishing of wood doors..
- D. Factory-prefitting to frames and factory-premachining for hardware for wood doors is included in this section.

#### 1.3 SUBMITTALS:

- A. Product Data: Door manufacturer's technical data, including details of core and edge construction, and factory-finishing specifications.
- B. Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.
- C. Samples: Submit samples, 12" square.

#### 1.4 QUALITY ASSURANCE:

- A. Quality Standards: Comply with the following standards:

NWWDA Quality Standard: I.S.1 "Industry Standard for Wood Flush Doors", of National Wood Window and Door Association (NWWDA).

AWI Quality Standard: "Architectural Woodwork Quality Standards"; including Section 1300 "Architectural Flush Doors", of Architectural Woodwork Institute (AWI) for grade of door, core construction, finish and other requirements exceeding those of NWWDA quality standard.

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

- A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with requirements of referenced standards and recommendations of NWWDA pamphlet "How to Store, Handle, Finish, Install, and Maintain Wood Doors", as well as with manufacturer's instructions.

1.6 PROJECT CONDITIONS:

- A. Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period to comply with the following requirements applicable to project's geographical location:

Referenced AWI quality standard including Section 100-S-3 "Moisture Content".

Referenced WIC quality standard including "Section 1 - General Information - Technical Bulletin".

2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Acceptable Manufacturers:

1. Algoma Hardwoods, Inc.
2. Eggers Industries, Architectural Door Division.
3. Mohawk Flush Doors, Inc.
4. Weyerhaeuser Company.
5. Buell Door Company.

2.2 INTERIOR FLUSH WOOD DOORS:

- A. Solid Core Doors for Transparent Finish: Premium grade, **Natural birch or red oak veneer**, plain sliced.

Solid core construction: 5 ply or 7 ply doors.

Note: All doors for this project to be the same construction with the same wood species veneer.

2.3 FABRICATION:

- A. Fabricate flush wood doors to produce doors complying with AWI for tolerances and alignment.

2.4 FACTORY FINISHING:

- A. General: Comply with referenced AWI quality standard including Section 1500 "Factory Finishing".
- B. Transparent Finish: Comply with requirements indicated for grade, finish system, staining effect and sheen.  
AWI Grade: Premium.

Finish: AWI System #2 catalyzed lacquer or #3 alkyd-urea conversion varnish as standard with manufacturer.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Examine installed door frames prior to hanging door:

Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.

Reject doors with defects.

- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION:

- A. Hardware: For installation see Division-8 "Finish Hardware" section of these specifications.

- B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and of referenced AWI standard and as indicated.

- C. Fitting Clearances for Doors: Provide 1/8" at jambs and heads; and 1/8" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4" clearance from bottom of door to top of threshold.

- D. Bevel doors 1/8" in 2" at lock and hinge edges.

END OF SECTION 08211

## **SECTION 08710 - FINISH HARDWARE**

### 1.0 PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

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

#### 1.2 DESCRIPTION OF WORK:

- A. Definition: "Finish Hardware" includes items known commercially as finish hardware which are required for doors.
- B. Extent of finish hardware required is indicated on drawings and in schedules.
- C. Types of finish hardware required include the following:

- Hinges
- Lock cylinders and keys
- Lock and latch sets
- Exit Devices
- Closers
- Thresholds

#### 1.3 QUALITY ASSURANCE:

- A. Manufacturer: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
- B. Supplier: A recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than 3 years.

#### 1.4 SUBMITTALS:

- A. Product Data: Submit manufacturers technical product data for each item of hardware.
- B. Hardware Schedule: Submit final hardware schedule in manner indicated below. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware.
- C. Final Hardware Schedule Content: Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
  - Type, style, function, size and finish of each hardware item.
  - Name and manufacturer of each item.
  - Fastenings and other pertinent information.
  - Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
  - Explanation of all abbreviations, symbols, codes, etc. contained in schedule.
  - Mounting locations for hardware.
  - Door and frame sizes and materials.
  - Keying information.

- D. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- E. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

## 2.0 PART 2 - PRODUCTS

### 2.1 SCHEDULED HARDWARE:

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in the Finish Hardware Data Sheet and Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of the following:
- B. Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required. An asterisk (\*) after a manufacturer's name indicates whose product designation is used in the Hardware Schedule for purposes of establishing minimum requirements. Provide either the product designated, or, where more than one manufacturer is listed, the comparable product of one of the other manufacturers which comply with requirements including those specified elsewhere in this section.
- C. ANSI/BHMA designations used elsewhere in this section or in schedules to describe hardware items or to define quality or function are derived from the following standards. Provide products complying with these standards and requirements specified elsewhere in this section.

Butts and Hinges: ANSI A156.1 (BHMA 101)

Locks and Lock Trim: ANSI A156.2 (BHMA 601)

Exit Devices: ANSI A156.3 (BHMA 701)

Door Controls - Closers: ANSI A156.4 (BHMA 301)

Auxiliary Locks: ANSI A156.5 (BHMA 501)

Architectural Door Trim: ANSI A156.6 (BHMA 1001)

Template Hinge Dimensions: ANSI A156.7

Door Controls - Overhead Holders: ANSI A156.8 (BHMA 311)

Interconnected Locks & Latches: ANSI A156.12 (BHMA 611)

Mortise Locks & Latches: ANSI A156.13 (BHMA 621)

Auxiliary Hardware: ANSI A156.16 (BHMA 1201)

Materials & Finishes: ANSI A156.18 (BHMA 1301)

### 2.2 MATERIALS AND FABRICATION:

- A. Hand of door: Drawings show direction of swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
- B. Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to Architect.
- C. Manufacturer's identification will be permitted on rim of lockcylinders only.



- D. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.
- E. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- F. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.
- G. Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use sex screw fasteners.
- H. Tools and Maintenance Instructions for Maintenance: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

### 2.3 HINGES, BUTTS AND PIVOTS:

- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- B. Screws: Furnish Phillips flat-head or machine screws for installation of units, except furnish Phillips flat-head or wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
  - Steel Hinges: Steel pins.
  - Non-ferrous Hinges: Stainless steel pins.
  - Interior Doors: Non-rising pins.
  - Tips: Flat button and matching plug, finished to match leaves, except where hospital tip (HT) indicated.
  - Number of hinges: Provide number of hinges indicated but not less than 3 hinges for door leaf for doors 90" or less in height and one additional hinge for each 30" of additional height.

### 2.4 LOCK CYLINDERS AND KEYING:

- A. General: Supplier will meet with Owner to finalize keying requirements and obtain final instructions in writing.
- B. Existing System: Grandmasterkey the locks to the Owner's existing system, with a new masterkey for the project.
- C. Review the keying system with the Owner and provide the type required (master, grandmaster or

great-grandmaster), either new or integrated with Owner's existing system.

- D. Equip locks with manufacturer's special 6-pin tumbler cylinder, with construction master key feature, which permits voiding of construction keys without cylinder removal.
- E. Permanently inscribe each key with number or lock that identifies cylinder manufacturer key symbol, and notation "DO NOT DUPLICATE".
- F. Key Material: Provide keys of nickel silver only.
- G. Key Quantity: Furnish 3 change keys for each lock; 5 master keys for each master system; and 5 grandmaster keys for each grandmaster system.
- H. Furnish one extra blank for each lock.
- I. Deliver keys to key control system manufacturer.

## 2.5 LOCKS, LATCHES AND BOLTS:

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set.
- B. Lock Throw: Provide 5/8" minimum throw of latch and deadbolt used on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.

Provide 1/2" minimum throw on other latch and deadlock bolts.

- C. Flush Bolt Heads: Minimum of 1/2" diameter sods of brass, bronze or stainless steel, with minimum 12" long rod for doors up to 7'-0" in height. Provide longer rods as necessary for doors exceeding 7'-0" in height.
- E. Rabbeted Doors: Where rabbeted door stiles are indicated, provide special rabbeted front on lock and latch units and bolts.

## 2.6 CLOSERS AND DOOR CONTROL DEVICES:

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit, depending upon size of door, exposure to weather and anticipated frequency of use.
- B. Provide parallel arms for all overhead closers.

Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1) provisions for door opening force and delayed action closing. Opening force to meet the requirements of ADA (American Disabilities Act)

2.7 HARDWARE FINISHES:

A. Provide the following finishes for hardware, unless noted otherwise:

Hinges:	Oiled Bronze US10B
Locksets and Auxiliary Locks:	Oiled Bronze US10B
Exit Devices:	Oiled Bronze US10B
Push/Pulls:	Oiled Bronze US10B
Door Stops:	Oiled Bronze US10B
Door Closers:	Bronze Lacquer LAQ
Misc. Items:	Oiled Bronze US10B

3.0 PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations.
- C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

3.2 ADJUST AND CLEAN:

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surfaces soiled by hardware installation.

3.3 ACCEPTABLE MANUFACTURERS: \*asterisk indicates manufacturer scheduled

A. Butts and Hinges

Stanley  
Hager  
Mckinney

B. Locks and Lock Trim

Schlage-L Series "02" Lever Design\*  
Russwin  
Corbin  
Sargent

C. Exit Devices:

Von Duprin  
Russwin  
Corbin  
Sargent

D. Door Closers

Sargent Series 1250\*  
LCN  
Russwin/Corbin Series

E. Door Trim

Baldwin\*  
Ives  
Trimco  
Quality  
Von Duprin

F. Door Controls

Rixson  
Glynn Johnson  
Russwin/Corbin

3.4 HARDWARE SCHEDULE:

Note: Provide silencers for all doors.

SET NO. 1:

3 ea. Butts 5BB1 4.5 x 4.5	640	IV
1 ea. Privacy Set L9040 x 02A      613	SC	
1 ea. Floor Stop FS436	613	IV
1 ea. Closer 1461 RW/PA x TB	695	LC

SET NO. 2:

3 ea. Butts 5BB1 4.5 x 4.5	640	IV
1 ea. Storeroom Lockset L9080      613	SC	
1 ea. Floor Stop FS436	613	IV

END OF SECTION 08710.

## **SECTION 09250 - GYPSUM DRYWALL**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS:**

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

#### **1.2 SUMMARY:**

- A. This Section includes the following types of construction:
  - 1. Steel framing members to receive gypsum board.
  - 2. Gypsum board screw-attached to steel framing and furring members.

#### **1.3 DEFINITIONS:**

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA 505 for definitions of terms for gypsum board construction not otherwise defined in this section or other referenced standards.

#### **1.4 SUBMITTALS:**

- A. Product data from manufacturers for each type of product specified.

#### **1.5 QUALITY ASSURANCE:**

- A. Fire resistance ratings: Provide materials and construction which are identical to those assemblies whose fire resistance rating has been determined per ASTM E119.
- B. Single source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.
- C. Insulation Fire performance characteristics: Provide insulation materials that have been UL tested with the following characteristics:
  - Surface Burning: ASTM E 84.
  - Fire Resistance Ratings: ASTM E 119.
  - Combustion: ASTM E 136.

#### **1.6 DELIVERY, STORAGE, AND HANDLING:**

- A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

#### **1.7 PROJECT CONDITIONS:**

- A. Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.

## 2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS: Subject to compliance with the requirements, provide one of the following:

1. Steel Framing and Furring:

- a. Bostwick Steel Framing Co.
- b. Dale Industries, Inc.
- c. Gold Bond Building Products Div., National Gypsum Co.
- d. Incor, Inc.
- e. Marino Industries Corp.
- f. United States Gypsum Co.

2. Grid Suspension Systems:

- a. Chicago Metallic Corp.
- b. National Rolling Mills Co.

3. Gypsum Boards and Related Products:

- a. Domtar Gypsum Co.
- b. Georgia-Pacific Corp.
- c. Gold Bond Building Products Div., National Gypsum Co.
- d. United States Gypsum Co.

## 2.2 STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS:

- A. General: Provide components which comply with ASTM C 754 for materials and sizes, unless otherwise indicated.
- B. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
- C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- E. Angle-Type Hangers: Angles with legs not less than 7/8 inch wide, formed from 0.0635 inch thick galvanized steel sheet complying with ASTM A 446, Coating Designation G90, with bolted connections and 5/16 inch diameter bolts.
- F. Channels: Cold-rolled steel, 0.0598 inch minimum thickness of base (uncoated) metal and 7/16 inch wide flanges, protected with rust-inhibitive paint, and as follows:

Carrying Channels: 1-1/2 inch deep, 475 lbs per 1000 ft., unless otherwise indicated.

Furring Channels: 3/4 inch deep, 300 lbs per 1000 ft., unless otherwise indicated.

- G. Steel Studs for Furring Channels: ASTM C 645, with flange edges bent back 90 deg and doubled over to form 3/16 inch minimum lip (return), minimum thickness of base (uncoated) metal and minimum depth as follows:
1. Thickness: 0.0179 inch, unless otherwise indicated.
  2. Depth: 1-5/8 inches, unless otherwise indicated.
  3. Gage: 25
- H. Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth of 3/4 inch, and minimum thickness of base (uncoated) metal as follows:
1. Thickness: 0.0179 inch, unless otherwise indicated.
  2. Gage: 25
- I. Grid Suspension System: At the contractor's option, provide metal suspended grid system sized for the required loading; ASTM C 645, manufacturer's standard grid suspension system composed of main beams and cross furring members which interlock to form a modular supporting network.

## 2.3 STEEL FRAMING FOR WALLS AND PARTITIONS:

- A. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 deg and doubled over to form 3/16" minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:
1. Thickness: 0.0179 inch, unless otherwise indicated.
  2. Depth: 3-5/8 inches, unless otherwise indicated.
  3. Gage: Studs: 25 ga. Track: 20 ga.
  4. Spacing for studs (unless otherwise noted on drawings): 16" o.c. for interior and exterior walls.
- B. Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth and minimum thickness of base (uncoated) metal as follows:
1. Depth: 7/8 inch.
  2. Thickness: 0.0179 inch, unless otherwise indicated.
- C. Fasteners: Provide fasteners of type, material, size, corrosion resistance, holding power and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum drywall manufacturers for applications indicated.

## 2.4 GYPSON BOARD:

- A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end joints.
- B. Thickness: 5/8 inch, comply with ASTM C 840 for application system and support spacing indicated.
- C. Gypsum Wallboard: ASTM C 36, Type X, Regular; tapered edges; 5/8".
- D. Water-Resistant Gypsum Backing Board: ASTM C 630; Regular; tapered edges; 5/8"

## 2.5 TRIM ACCESSORIES:

- A. Cornerbead and Edge Trim for Interior Installation: Provide corner beads, edge trim and control joints which comply with ASTM C 1047; Sheet steel zinc-coated by hot-dip process.
- B. One-Piece Control Joint: Formed with vee-shaped slot per Fig. 1 in ASTM C 1047, with slot opening covered with removable strip.

## 2.6 GYPSUM BOARD JOINT TREATMENT MATERIALS:

- A. General: Provide materials complying with ASTM C 475, ASTM C 840, and recommendations of manufacturer of both gypsum board and joint treatment materials for the application indicated.
- B. Joint Tape: Paper reinforcing tape, unless otherwise indicated.
- C. Setting-Type Joint Compounds: Factory-prepackaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

## 2.7 MISCELLANEOUS MATERIALS:

- A. General: Provide auxiliary materials for gypsum drywall construction which comply with referenced standards and the recommendations of the manufacturer of the gypsum board.
- B. Fastening Adhesive for Wood: ASTM C 557.
- C. Gypsum Board Screws: ASTM C 1002.
- D. Concealed Acoustical Sealant: Paintable, gunnable per ASTM C-919.  
Acceptable manufacturers:
  - 1. USG Acoustical Sealant
  - 2. Tremco Acoustical Sealant

## 3.0 PART 3 - EXECUTION

### 3.1 EXAMINATION:

- A. Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION:

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling anchors in a manner that will develop their full strength and at spacing required to support ceiling.
- B. Furnish inserts and other devices indicated, to other trades for installation well in advance of time needed for coordination with other construction.



### 3.3 INSTALLATION OF STEEL FRAMING, GENERAL:

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar construction to comply with details indicated and with recommendations of gypsum board manufacturer, or if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.
- C. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement, at locations indicated below to comply with details shown on Drawings:

Where edges of suspended ceilings abut building structure horizontally at ceiling perimeters or penetration of structural elements.

Where partition and wall framing abuts overhead structure.

Provide slip or cushioned type joints as detailed to attain lateral support and avoid axial loading.

- D. Do not bridge building expansion and control joints with steel framing or furring members; independently frame both sides of joints with framing or furring members or as indicated.

### 3.4 INSTALLATION OF STEEL FRAMING FOR SUSPENDED AND FURRED CEILINGS:

- A. Screw furring members to wood framing.
- B. Secure hangers to structural support by connecting directly to structure where possible or other anchorage devices or fasteners as indicated.
- C. Do not attach hangers to metal deck tabs.
- D. Do not attach hangers to metal roof deck.
- E. Do not connect or suspend steel framing from ducts, pipes or conduit.
- F. Keep hangers and braces 2 inches clear of ducts, pipes and conduits.
- G. Sway-brace suspended steel framing with hangers used for support.
- H. Install suspended steel framing components in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.
- I. Wire Hangers: 0.1620 inch diameter (8 gage), 4 ft. on center.
- J. Carrying Channels (Main Runners): 1-1/2 inch, 4 ft. on center.
- K. Rigid Furring Channels (Furring Members): 16 inches on center.
- L. Installation Tolerances: Install steel framing components for suspended ceilings so that cross furring members or grid suspension members are level to within 1/8 inch in 12 ft. as measured both lengthwise on each member and transversely between parallel members.

- M. Wire-tie or clip furring members to main runners and to other structural supports as indicated.
- N. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross furring members to each other and butt-cut to fit into wall track.

### 3.5 INSTALLATION OF STEEL FRAMING FOR WALLS AND PARTITIONS:

- A. Install runners (tracks) at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other construction.
- B. Where studs are installed directly against exterior walls, install asphalt felt strips between studs and wall.
- C. Installation Tolerances: Install each steel framing and furring member so that fastening surface do not vary more than 1/8 inch from plane of faces of adjacent framing.
- D. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
- E. Install steel studs and furring in sizes and at spacings 24" on center.
- F. Install steel studs so that flanges point in the same direction and gypsum boards can be installed in the direction opposite to that of the flange.
- G. Frame door openings to comply with details indicated, with GA-219 and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
- H. Frame openings other than door openings to comply with details indicated, or if none indicated, in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

### 3.6 APPLICATION AND FINISHING OF GYPSUM BOARD, GENERAL:

- A. Gypsum Board Application and Finishing Standard: Install and finish gypsum board to comply with ASTM C 840.
- B. Install sound attenuation blankets where indicated, prior to gypsum board unless readily installed after board has been installed.
- C. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.
- D. Install ceiling boards across framing in the manner which minimizes the number of end-butt joints, and which avoids end joints in the central area of each ceiling. Stagger end joints at least 24 inches.
- E. Install wall/partition boards in manner which minimizes the number of end-butt joints or avoids

them entirely where possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

- F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.
- G. Locate either edge or end joints over supports, except in horizontal applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- H. Attach gypsum board to steel studs so that leading edge or end of each board is attached to open (unsupported) edge of stud flange first.
- I. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
- J. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors and doors over 32 inches wide. Apply spot grout at each jamb anchor clip just before inserting board into frame.
- K. Form control joints and expansion joints at locations indicated, with space between edges of boards, prepared to receive trim accessories.
- L. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are braced internally.
- M. Fit gypsum board around ducts, pipes, and conduits.
- N. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch to 1/2 inch space and trim edge with "U" bead edge trim. Seal joints with acoustical sealant.
- O. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board over wood framing, with "floating" internal corner construction.
- P. Seal construction at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim, and close off sound-flanking paths around or through construction, including sealing of partitions above acoustical ceilings.
- Q. Space fasteners in gypsum boards in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.

### 3.7 METHODS OF GYPSUM BOARD APPLICATION:

- A. Install gypsum wallboard as follows:
  - On ceilings apply gypsum board prior to wall/partition board application to the greatest extent possible.
  - On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

- B. Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install gypsum backing board.

In "dry" areas install gypsum backing board or wallboard with tapered edges taped and finished to produce a flat surface.

At "wet" areas install water- resistant gypsum backing board to comply with ASTM C 840 and recommendations of gypsum board manufacturer.

- C. On ceilings apply base layer prior to application of base layer on walls/partitions; apply face layers in same sequence. Offset joints between layers at least 10 inches. Apply base layers at right angles to supports unless otherwise indicated.
- D. On partitions/walls apply base layer and face layers vertically (parallel to framing) with joints of base layer over supports and face layer joints offset at least 10 inches with base layer joints.
- E. On furring members apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
- F. Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:
1. Fasten with screws.
  2. Fasten to concrete with adhesive at locations as shown on the drawings.

### 3.8 INSTALLATION OF DRYWALL TRIM ACCESSORIES:

- A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.
- B. Install corner beads at external corners.
- C. Install control joints at locations indicated, or if not indicated, at spacings and locations required by referenced gypsum board application and finish standard, and approved by the Architect for visual effect.

### 3.9 FINISHING OF DRYWALL:

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.
- B. Prefill open joints and rounded or beveled edges, if any, using setting-type joint compound.
- C. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.
- D. Finish interior gypsum wallboard by applying the following joint compounds in 3 coats (not including prefill of openings in base), and sand between coats and after last coat.
- E. Water-Resistant Gypsum Backing Board Base for Ceramic Tile: Comply with ASTM C 840 and manufacturer's recommendations for treatment of joints behind tile.

3.10 INSTALLATION OF INSULATION: Install insulation complying with manufacturer's written recommendations.

3.11 PROTECTION:

- A. Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall construction being without damage or deterioration at time of Substantial Completion.

END OF SECTION 09250

## **SECTION 09300 - CERAMIC TILE**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section includes:

1. Glazed Porcelain 3" x 6" wall tile, including cove base
2. Unglazed Porcelain 1" x 1" hexagon floor tile.
3. Marble thresholds.

#### **1.3 SUBMITTALS**

- A. Submit samples of wall and floor tile showing size, color, and texture specified.

#### **1.4 QUALITY ASSURANCE**

- A. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

#### **1.5 PROJECT CONDITIONS**

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

### **PART 2 - PRODUCTS**

#### **2.1 PRODUCTS, GENERAL**

- A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
- B. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- C. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.

#### **2.2 MATERIALS:**

- A. Wall tile - Porcelain Tile:
  1. Wearing surface: Smooth, glazed.
  2. Nominal size: 3" x 6" x 5/16"
  3. Face: Plain.
  4. Mfr: American Olean  
Dal-Tile.
  5. Price category: American Olean "Greenwich Village"

- A. Floor tile - Porcelain Tile:

1. Wearing surface: Smooth, unglazed.
2. Nominal size: 1" x 1" x 1/4" Hexagon
3. Face: Plain.
4. Mfr: American Olean  
Dal-Tile.
5. Price category: American Olean "Satinglo"

### 2.3 MARBLE THRESHOLDS:

- A. Marble Thresholds: Provide marble thresholds complying with ASTM C 503 requirements for exterior use and for abrasion resistance where exposed to foot traffic, a minimum hardness of 10 per ASTM C 241.
- B. Provide white, honed marble complying with MIA Group "A" requirements for soundness.

### 2.4 SETTING MATERIALS

- A. Thinset Cement Mortar Installation Materials: Provide materials complying with ANSI A108.1.
- B. Dry-Set Factory Mixed Mortars and Grouts: As recommended by tile manufacturer and tile installer for project applications.

### 2.5 GROUTING MATERIALS

- A. Sand-Portland or Commercial Portland Cement Grout: ANSI A 108.10 and ANSI A 118.6, composed of white or gray cement and white or colored aggregate as required to produce color indicated.
  1. Color: As selected by Architect from manufacturer's standards.

### 2.7 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
- B. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
- C. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

### 3.2 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile that apply to type of setting and grouting materials and methods indicated.

- B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.
- C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.
- E. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.
- F. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.

### 3.3 FLOOR INSTALLATION METHODS

- A. Ceramic Mosaic Tile: Install tile to comply with requirements indicated below for thinsetting bed methods, TCA installation methods related to types of subfloor construction, and grout types:

### 3.4 WALL TILE INSTALLATION METHODS

- A. Install types of tile designated for wall application to comply with requirements indicated below for setting-bed methods, TCA installation methods related to subsurface wall conditions.

### 3.5 CLEANING AND PROTECTION

- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
- B. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- C. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.
- D. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.
- E. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work-with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
- F. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.
- G. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09300.



## **SECTION 09511 - ACOUSTICAL TILE CEILINGS**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section includes acoustical tile ceilings installed with exposed suspension systems.

#### **1.3 SUBMITTALS**

- A. Manufacturer's complete and current product data, including certified test reports showing compliance, and manufacturer's recommendations for cleaning, maintenance and refinishing.
- B. 6" x 6" samples for each unit showing range of color and texture.

#### **1.4 QUALITY ASSURANCE**

- A. Installer Qualifications: Installer to have three years experience in similar work and be certified acceptable by manufacturer.
- B. Provide components per the following requirements. Identify the testing agency.

Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.

Flame Spread: 25 or less.

Smoke Developed: 50 or less.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver units in manufacturer's unopened packages with labels intact and legible; store protected from moisture, light and dirt.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

#### **1.6 PROJECT CONDITIONS**

- A. Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

### **2.0 PART 2 - PRODUCTS**

#### **2.1 GENERAL:**

Restoration of the Escambia County Courthouse – Restroom Renovations  
Acoustical Tile Ceilings

- A. Provide units with STC of range shown per AMA 1-II "Ceiling Sound Transmission Test by Two-Room Method" with ceilings continuous at partitions and supported by a metal suspension system of type shown.

## 2.2 Acoustical Panels:

- A. Fissured, mineral composition with washable painted finish, tegular edge: 5/8" x 24" x 24"; NRC range .60-.70 minimum. Acceptable products:
  - 1. **Armstrong "1732 Fine Fissured Humiguard Plus" or approved equal product by:**
  - 2. Celotex Corp.
  - 3. United States Gypsum Co.

## 2.3 Metal Suspension Systems, General:

- A. Provide as shown, per ASTM C-635. Provide finishes and colors selected by Architect from manufacturer's standard ranges.
- B. Attachment Devices: Size for five times design load indicated in ASTM C-635, Table 1, direct hung.
- C. Hanger Wire: Galvanized carbon steel, minimum 12 gauge, per ASTM A-641. Size so stress at three times hanger design load (per ASTM C-635, Table 1, Direct Hung), will be less than yield stress of wire.
- D. Edge moldings and trim: Metal as shown; stepped edge molding to match typical reveal edge.

## 2.4 EXPOSED METAL DIRECT HUNG SUSPENSION SYSTEMS:

- A. Provide a steel, double web, exposed tee, system sized for intermediate duty per ASTM C-635. Finish with factory paint of standard color as selected by Architect. Acceptable products:
  - 1. DX System; Donn Corporation
  - 2. 200 Snap-Grid System; Chicago Metallic
  - 3. Tablock Double Web Exposed; Roper-Eastern

## 2.5 MISCELLANEOUS MATERIAL:

- A. Acoustical Sealant: Provide one of the following, per the requirements of Section 07900:
  - 1. BA-98 Pecora
  - 2. Tremco Acoustical Sealant by Tremco, Inc.

## 3.0 PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Furnish layouts and attachment devices required for ceiling supports to be installed by other trades.
- B. Layout acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half-width units at borders, and comply with reflected ceiling plans

### 3.2 INSTALLATION

- A. General: Install acoustical ceiling systems to comply with installation standard referenced below, per manufacturer's instructions and CISCA "Ceiling Systems Handbook."
- B. Standard for Installation of Ceiling Suspension Systems: Comply with ASTM C 636.
- C. Arrange acoustical units and orient directionally patterned units in a manner shown by reflected ceiling plans.
- D. Suspend ceiling hangers from building structural members.
- E. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Display hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
- F. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- G. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eyescrews, or other devices that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
- H. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eyescrews, or other devices that are secure and appropriate for structure to which hangers are attached as well as for type of hanger involved, and in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
- I. Do not attach hangers to steel deck tabs.
- J. Do not attach hangers to steel roof deck. Attach hangers to structural members.
- K. Space hangers not more than 4'-0" o.c. along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.
- L. Screw-attach moldings to substrate at intervals not over 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12'-0". Miter corners accurately and connect securely.

### 3.3 CLEANING

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

### 3.4 ATTIC STOCK:

- A. Provide 2.0% of same material delivered to Owner in original protective coverings, labeled to identify contents.

END OF SECTION 09511

## **SECTION 09900 - PAINTING**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

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

#### **1.2 SUMMARY**

- A. This Section includes surface preparation, painting, and finishing of exposed interior and exterior items and surfaces.
- B. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified under other sections.
- C. Paint exposed surfaces whether or not colors are designated in "schedules," except where a surface or material is specifically indicated not to be painted or is to remain natural. 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 standard colors or finishes available.
- D. Painting includes field painting exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- E. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.

#### **1.3 DEFINITIONS**

- A. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats.

#### **1.4 SUBMITTALS**

- A. Product Data: Manufacturer's technical information, label analysis, and application instructions for each material proposed for use.
- B. List each material and cross-reference the specific coating and finish system and application. Identify each material by the manufacturer's catalog number and general classification.
- C. Samples for initial color selection in the form of manufacturer's color charts.

After color selection, the Architect will furnish color chips for surfaces to be coated.

- D. Samples for verification purposes: Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate. Define each separate coat, including block fillers and primers. Use representative colors when preparing samples for review. Resubmit until required sheen, color, and texture are achieved.

## 1.5 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.
- B. 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 materials to ensure use of compatible primers.

## 1.6 JOB CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are within the manufacturer's recommendations.

## 2.0 PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
  - Devoe and Reynolds Co. (Devoe).
  - The Glidden Company (Glidden).
  - Benjamin Moore and Co. (Moore).
  - PPG Industries, Pittsburgh Paints (PPG).
  - Pratt and Lambert (P & L).
  - The Sherwin-Williams Company (S-W).
- B. See "Paint Schedule" at the end of this Section.

## 3.0 PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions under which painting will be performed for compliance with requirements for application of paint. Do not begin paint application until unsatisfactory conditions have been corrected.
- B. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

### 3.2 PREPARATION

- A. General Procedures: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items in place that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items if necessary for complete painting of 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. Clean surfaces before applying paint or surface treatments. Remove oil and grease prior to cleaning. Schedule cleaning and painting so that 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 in accordance with the manufacturer's instructions for each particular substrate condition and as specified.
- D. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing of problems anticipated with using the specified finish-coat material with substrates primed by others.
- E. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel 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.
- F. 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.

Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer before application of primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.

When transparent finish is required, backprime with spar varnish.

Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.

- G. Ferrous Metals: Clean nongalvanized 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.
- H. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.
- I. Galvanized Surfaces: Clean galvanized surfaces with non-petroleum-based solvents so that the surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- J. Materials Preparation: Carefully mix and prepare paint materials in accordance with manufacturer's directions.
- K. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.
- L. 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.
- M. Use only thinners approved by the paint manufacturer, and only within recommended limits.
- N. Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

### 3.3 APPLICATION

- A. Apply paint in accordance with 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.
- C. Provide finish coats that are compatible with primers used.
- D. The number of coats and film thickness required is 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 an even smooth surface in accordance with the manufacturer's directions.
- E. Apply additional coats when 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.
- F. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas as required to maintain the system integrity and provide desired protection.
- G. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.
- H. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, nonspecular black paint.
- I. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
- J. Sand lightly between each succeeding enamel or varnish coat.
- K. Omit primer on metal surfaces that have been shop-primed and touch up painted.
- L. 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.

Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure and where application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

- M. Minimum Coating Thickness: Apply materials at not less than the manufacturer's recommended spreading rate. Provide a total dry film thickness of the entire system as recommended by the manufacturer.
- N. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by the manufacturer to material that is required to be painted or finished and has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.

- O. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- P. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.
- Q. Provide satin finish for final coats.
- R. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.

### 3.4 CLEANING

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

### 3.5 PROTECTION

- A. Protect work of other trades, whether to be 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 for protection of their work after completion of painting operations.
- C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.6 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal: Primer is not required on shop-primed items.

Primer: PPG 6-208 Metal Priming Primer

First Coat: PPG 6-252 Line Enamel

Second Coat: Same as first

- B. Zinc-Coated Metal:

Primer: PPG 6-209 Galvanized Primer

First Coat: PPG 6-252 Line Enamel

Second Coat: Same as first

### 3.7 INTERIOR PAINT SCHEDULE

- A. Wood shown to be Painted:

First Coat: PPG 6-6 Enamel Undercoater

Second Coat: PPG 20 Line Alkyd Lo Luster Enamel

Third Coat: Same as second



B. Stained Wood:

First Coat: Rez oil stain, Transparent

Second Coat: Rez 77-7 Satin Finish Varnish

Third Coat: Same as second

C. Gypsum wall boards at walls and ceilings:

First Coat: PPG 6-2 Sealer

Second Coat: PPG 6-70 Latex Flat

Third Coat: Same as second

D. Ferrous Metals:

First Coat: PPG 6-208 Metal Primer

Second Coat: PPG 20- Line LO Luster Enamel

Third Coat: Same as second

END OF SECTION 09900

## **SECTION 10440 - SPECIALTY SIGNS**

### **1.0 PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS:**

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

#### **1.2 DESCRIPTION OF WORK:**

- A. Forms of specialty signs required are:

- 1. Unframed Acrylic plaques

#### **1.3 QUALITY ASSURANCE:**

- A. Uniformity of Manufacturer: For each sign form and graphic image process indicated furnish products of a single manufacturer.

#### **1.4 SUBMITTALS:**

- A. Shop Drawings: Submit shop drawings showing size, material and message.

- 1. Furnish full-size sample.

- B. Product Data: Submit manufacturer's technical data and installation instructions.

### **2.0 PART 2 - PRODUCTS**

#### **2.1 ACCEPTABLE MANUFACTURERS:**

- A. Manufacturers: Subject to compliance with requirements, provide products of one of the following or approved equal:

- a. Andco Industries Corp.
- b. APCO Graphics Inc.
- c. ASI Sign Systems, Inc.
- d. Vomar Products, Inc.

#### **2.2 MATERIALS:**

- A. Cast Acrylic Sheet: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and thicknesses indicated, with a minimum flexural strength of 16,000 psi when tested in accordance with ASTM D 790, a minimum allowable continuous service temperature of 176 deg.F (80 deg.C), and of the following general types:

2.3 FABRICATION:

A. Unframed Acrylic Plaques: Fabricate unframed panel signs with edges mechanically and smoothly finished; 5/8" raised letters, with braille designations.

1. Provide two (2) unframed 8" x 8" plaques, with braille and pictogram for restrooms.

Architect to provide list of names for signs.

3.0 PART 3 - EXECUTION

3.1 INSTALLATION:

A. General: Install signs at locations as directed by the architect. Use mounting methods in compliance with the manufacturer's instructions.

Install sign units level, plumb and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

3.2 CLEANING AND PROTECTION:

At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION 10440

## SECTION 15100 - MECHANICAL GENERAL REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 CONDITIONS AND REQUIREMENTS

- A. The General Conditions, Supplementary Conditions, and Division-1, General Requirements apply to this section.

#### 1.02 GENERAL PROVISIONS

- A. The contract drawings indicate the extent and general arrangement of the work. The Contractor shall be responsible for installing the proposed systems as indicated, without violation of applicable codes, standards, or specification requirements. The Contractor is also responsible for coordinating the installation and operation of these systems with the other sections of this specification to provide a complete and operable system. Equipment, piping, and ductwork arrangements shall fit the space as indicated and shall allow adequate and approved clearance for entry, servicing and maintenance. Detailed drawings of any proposed departures due to actual field conditions shall be submitted to the Architect for approval. All work shall conform to the requirements of the referenced publications and as specified herein.

#### 1.03 CONFORMANCE WITH AGENCY REQUIREMENTS

- A. Where materials or equipment are specified to conform to requirements of the Underwriters' Laboratories, Inc., Factory Mutual Systems, Air Conditioning and Refrigeration Institute, Air Diffusion Council, American Society of Heating, Refrigerating and Air Conditioning Engineers, or the Air Moving and Conditioning Association, Inc., the Contractor shall submit proof of such conformance. The label or listing of the specified agency will be acceptable evidence. In lieu of the label or listing, the Contractor may submit a written certificate from any approved, nationally recognized testing organization adequately equipped and competent to perform such services, stating that the items have been tested and that the units conform to the requirements, including methods of testing, of the specified agency. Where equipment is specified to conform to requirements of the ASME Boiler and Pressure Vessel Code, the design, fabrication, and installation shall conform to the code in every respect.

#### 1.04 CAPACITIES

- A. Capacities of all equipment and material shall be not less than those indicated, nor exceed maximum values shown on the drawings. Physical dimensions of equipment shall be verified against contract documents to insure manufacturer=s maintenance space of available.

#### 1.05 EQUIPMENT INSTALLATION

- A. Necessary supports shall be provided for equipment, appurtenances, pipe, and ductwork as required. Isolation vibration units shall be provided to minimize the intensity of vibration transmission to the building structure where required.

## 1.06 ELECTRICAL WORK

- A. Electric-motor-driven equipment specified herein shall be provided complete with motors and controls. Electric equipment and wiring shall be in accordance with Division 16000, "Electrical Work". Electrical characteristics shall be as indicated. Each motor shall be of sufficient capacity to drive the equipment at the specified capacity without exceeding the nameplate rating of motor when operating at proper electrical system voltage. Manual or automatic control and protective or signal devices required for the operation herein specified and any control wiring required for controls and devices, but not shown on the electrical plans, shall be provided under this section.

## 1.07 APPROVAL OF MATERIALS AND EQUIPMENT

- A. After notice to proceed and before purchasing, the Contractor shall submit to the Architect for approval, in five bound copies, a list of materials he proposes for the work. Items to be submitted include, but are not limited to, the items listed in each individual section. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's names, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable Federal, industry, and technical society publication references, and other information necessary to establish contract compliance of each item the Contractor proposes to furnish.
  - 1. Shop Drawings: Drawings shall be a minimum of 8 1/2" x 11" in size, except as specified otherwise.
  - 2. Manufacturer's Data: Submittals for each manufactured item shall be manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts. All equipment selections shall be clearly marked with name designations shown on drawings (i.e., AHU-1, HPU-2, etc.).
  - 3. Delivery and Storage: Equipment and materials shall be carefully handled, properly stored, and adequately protected to prevent damage before and during installation, in accordance with the manufacturer's recommendations and as approved by the Architect. Damaged or defective items, in the opinion of the Architect, shall be replaced.
  - 4. Cataloged Products: Materials and equipment shall be cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be manufacturer's latest design that complies with the specification requirements. Materials and equipment shall duplicate items that have been in satisfactory commercial or industrial use at least 2 years prior to bid opening. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the items need not be the products of the same manufacturer.

## 1.08 NAMEPLATES

- A. Each major item of equipment shall have the manufacturer's name, address, serial and model numbers on a plate securely attached to the item.

#### 1.09 VERIFICATION OF DIMENSIONS

- A. The Contractor shall visit the premises to thoroughly familiarize himself with all details of the work and working conditions and verify all dimensions in the field, and shall advise the Architect of any discrepancy before performing any work. The Contractor shall be specifically responsible for the coordination and proper relation of his work to the building structure and to the work of all trades.

#### 1.10 DRAWINGS

- A. Because of the scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that are required. The Contractor shall carefully investigate the structural and finish conditions affecting his work and he shall furnish fittings, offsets, transitions, unions, etc., as may be required to meet such conditions at no additional cost to the Owner.

#### 1.11 CUTTING AND REPAIRING

- A. The work shall be carefully laid out in advance and no excessive cutting of construction will be permitted. Damage to building, piping, wiring, or equipment as a result of cutting for installation shall be repaired by mechanics skilled in the trade involved at no additional expense to the Owner.

#### 1.12 SAFETY REQUIREMENTS

- A. Belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts located so that any person can come in close proximity thereto shall be fully enclosed or properly guarded. High-temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation of a type as specified herein. Items such as catwalks, ladders, and guard rails shall be provided where required for safe operation and maintenance of equipment.

#### 1.13 MANUFACTURER'S RECOMMENDATIONS

- A. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Architect prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

#### 1.14 PAINTING

- A. At the completion of all work, all equipment on this project shall be checked for damage, and any factory finished paint that has been damaged shall be repaired to match the adjacent areas. Any metal or especially covered areas that have been deformed shall be replaced with new material and repainted to match adjacent areas. Painting of new work shall be as specified herein.

#### 1.15 FINAL CLEANUP

- A. At the completion of all work, all equipment on the project shall be checked and thoroughly cleaned, including coils, plenums, under equipment, and any and all other areas around or in equipment. Any filters used during construction shall be replaced with new filters during final cleanup.

#### 1.16 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Bound Instructions: Three (3) complete sets of instructions containing the manufacturer's operating and maintenance instructions for each piece of equipment shall be furnished to the Architect before the contract is completed. Each set shall be permanently bound and shall have a hard cover. The following identification shall be inscribed on the covers: The words "Operating and Maintenance Instructions", the name and location of the building, the name of the Contractor and the contract number. Flysheet shall be placed before instructions covering each subject. The instruction sheet shall be approximately 8 1/2" x 11", with large sheets of drawings folded in. The instructions shall include, but shall not be limited to, the following:
  - 1. Approved wiring and control diagrams, with data to explain the detailed operation and control of each component.
  - 2. A control sequence describing start-up, operation and shutdown.
  - 3. Operating and maintenance instructions for each piece of equipment, including lubrication instructions.
  - 4. Manufacturer's bulletins, cuts and descriptive data.
  - 5. Parts lists and recommended spare parts.

END OF SECTION 15100

## **SECTION 15200 - TESTING AND BALANCING AIR DISTRIBUTION SYSTEMS**

### **PART 1 - GENERAL**

#### **1.01 GENERAL REQUIREMENTS**

- A. The General Conditions, Supplementary Conditions and Division 1, General Requirements, apply.

#### **1.02 QUALITY ASSURANCE**

- A. Testing Agency:
1. Submit name, address, and qualifications of testing agency to Architect for approval prior to start of testing.
  2. All system adjustments, test and balances are to be performed by a company regularly and exclusively engaged in this work. Agency shall be a member in good standing of the Associates Air Balance Council (AABC).
  3. Procedures shall be as outlined in the AABC Publication "National Standards for Total System Balance," 6<sup>th</sup> edition (2002).

#### **1.03 SUBMITTALS**

- A. Test Reports: After completion, submit three (3) certified copies of test and balance report to the Architect for review and as a project record document.

#### **1.04 JOB CONDITIONS**

- A. Commencement of Test: Do not begin balancing until the systems have been completed and are in full working order, or at the direction of the Architect, place any part thereof in operation for the purpose of balancing.
- B. Plans and Data: Furnish the balance agency one (1) complete set of all approved up-to-date mechanical plans and shop drawings of all cooling, heating and air distribution equipment.

#### **1.05 FIELD QUALITY CONTROL**

- A. Performance Data: Record the following data and submit to the Architect.
1. Leak test all duct systems and submit results to Architect. Testing procedure shall conform to AABC and leakage rate shall not exceed their recommendations.
  2. Air Volumes and Velocities: Determine and tabulate at each grille, diffuser, louver, outside air intake, etc., and adjust dampers, control devices and fan drives to obtain the indicated air quantities. Adjust or modify each supply grille and diffuser distribution pattern as required to maintain air motion, noise level and temperature variations within acceptable limits throughout each space. Clearly and permanently mark all dampers at final setting for reported air balance.
  3. System Component Capacity: Record and calculate all data necessary to demonstrate capacity under actual operating conditions, and adjust dampers, valves, control valves and machine drives to obtain a suitable operating balance for each system. Record data for each item of equipment simultaneously with data from all associated equipment together with coincident outside air dry bulb temperatures to permit evaluation of total system performance. Data to include the following:



- a. Supply, return and outside air quantities of the existing air conditioning and ventilation system.
  - b. Air volumes and velocities for each fan, cooling coil and air cleaning assembly.
  - c. Entering and leaving air dry bulb and wet bulb temperature for each cooling and heating coil. Leaving dew point for each cooling coil.
  - d. Static pressures for all air handling units and major fans.
  - e. Actual voltage and current input for each motor.
  - f. Test and adjust each diffuser grille, and register within 10 percent of design requirements. Test and record temperature rise, voltage, and current across duct heaters.
4. In readings and test diffusers, grilles and registers include required fpm velocity and test fpm velocity, and required cfm and test cfm after adjustments.

#### 1.06 TEMPERATURE CONTROLS

- A. Set adjustments of all controllers to operate as indicated. Provide testing agency personnel with instruments to verify reports to Architect.

#### 1.07 FINAL TEST

- A. At conclusion of testing agency's work, demonstrate to the Architect that the equipment is mechanically sound, that the systems deliver the rated output without objectionable noise, distress or vibration, and that the temperature controls are functioning properly.

END OF SECTION 15200

## **SECTION 15400 - PLUMBING**

### **PART 1 - GENERAL**

#### **1.01 SCOPE OF WORK**

- A. The work to be performed under this section of the Specification shall include all labor, materials, equipment, transportation, construction, facilities, and incidentals necessary for the proper execution and completion of all Plumbing work as shown and indicated on the Contract Drawings, and/or specified herein with the intent that the installation shall be complete in every respect and ready for use.

#### **1.02 GUARANTEE**

- A. All materials and equipment provided and/or installed under this section of the specifications shall be guaranteed for a period of one year from the date of acceptance of the work by the Owner. Should any trouble develop during this period due to defective materials or faulty workmanship, the Contractor shall furnish all necessary labor and materials to correct the trouble without any cost to the Owner.

#### **1.03 CODES AND REGULATIONS**

- A. All work performed under this section shall conform with all local governing regulations, and in case of conflicting requirements, the most stringent shall apply. Minimum requirements shall be the International Plumbing Code. All electrically operated equipment specified in this section shall comply with the National Electrical Code.
- B. Should it be found that any part of the work shown or specified is not in accordance with local regulations, the Architect shall be so advised at the time of bidding and all work installed as required to meet the local codes.
- C. The Contractor shall comply with the latest revisions of all county, district, municipal, or local building codes, interpretations, buildings permits to include but not be limited to:

Florida Building Code – 2014 with all supplements  
Florida Mechanical Code - 2014 with all supplements  
Florida Plumbing Code - 2014 with all supplements  
Local Municipal Codes

#### **1.04 FEES AND PERMITS**

- A. The Plumbing Subcontractor shall obtain and pay for all permits, fees for inspection, and other charges that may be necessary for fully completing the work. The Plumbing Subcontractor shall make all necessary tests required by City, County, or State authorities, legal regulations, and/or the Architect, and return to the Architect any certificates of approval issued in this district for plumbing work, etc. signed by the inspector in charge of each particular part of the work.

#### **1.05 RESPONSIBILITY OF BIDDER**

- A. Each bidder shall visit the site of the proposed work and fully acquaint himself with conditions relating to the construction requirements so that he may fully understand the facilities, difficulties and restrictions contingent upon the execution of the work under this contract. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other document

shall in no way relieve any bidder from his obligations with respect to his bid or the contract. The submission of a bid shall be taken as prima facie evidence of compliance with this paragraph and that he has included in his proposal every item of cost necessary for a complete installation of air conditioning, heating and ventilation operations strictly as planned, specified, and intended.

#### 1.06 PIPING

- A. Provide pipe sleeves through masonry construction, and install escutcheon plates around exposed piping in all rooms.
- B. Soil, waste, and vent lines shall be Schedule 40 PVC-DWV in accordance with Commercial Standards CS272-65 or ASTM Standards D2665-68. Soil, waste, and vent lines penetrating a fire rated wall shall be service weight cast iron at the point of penetration only.
- C. All plastic pipe shall bear the NSF Seal of Approval, and such other markings as required by the aforementioned standards.
- D. Above slab cold water and hot water piping shall be Type "L" hard copper with sweated joints, using wrought fittings and non-corrosive flux.

#### 1.07 PIPE SUPPORT

- A. Hangers: Support all suspended piping with clevis type hangers equal to Grinnell #260, 5'-0" o.c. Architect shall approve all methods of attachment of hangers to construction. Hangers in contact with copper piping shall be copper, or copper plated.
- B. Vertical Support: Steel bar base clamped to pipe or grip strut channel with offset clamps. Support members to be of same material as supported material where possible.

#### 1.08 PIPING PLACEMENT

- A. Place in most direct manner permitted by construction, free of unnecessary offsets. Changes in direction by means of standard fittings.
- B. Grade 2" waste lines 1/4" per foot and 3" and 4" waste lines 1/8" per foot for positive flow. Secure all piping to structure.
- C. Soil Pipe:
  - 1. Changes in direction of drainage pipe shall be made by means of suitable bends and branches of Y's and long sweeps. Short radius quarter bends are prohibited.
  - 2. Connections to vertical soil pipe to all connections in horizontal soil pipe to be made by "Y" fittings.
  - 3. Do not begin work until elevation of final connection point is verified and grading of entire system can be determined.
- D. Vent Pipes:
  - 1. Connect branch vents into main stacks with connections not less than 4 feet above the highest fixture.
  - 2. All vent stacks shall be connected at the bottom to main drainage system and all horizontal runs shall be graded so as to discharge all water or condensation.

- E. Water Piping: Place supply pipes as shown or as directed in neat arrangement and parallel or at right angles to walls, joists, etc.
  - 1. Place shock absorbers at each fixture group as recommended by manufacturer. Shock absorbers shall be PDI certified.
  - 2. Place valves on all water pipe risers and branch lines at point where risers and branch lines connect to main water lines.

## PART 2 - PRODUCTS

### 2.01 WATER PIPING

- A. All water piping, unless otherwise shown or specified shall be copper pipe Type L or K as specified having a wall thickness of not less than .035 inches. It shall be clean, round, straight, and true to size, free from flaws and other defects.
- B. All fittings on copper pipe shall be copper. The pipe and fittings shall be thoroughly cleaned before inserting into the joint and then soldered with lead free solder.

### 2.02 VALVES AND COCKS

- A. Valves and cocks shall be installed where shown on the drawings, and/or where found to be necessary for proper operation of the system. All branches from risers, all branches from mains, and all fixtures or equipment not having stops shall be provided with valves whether shown or not.
- B. Angle or straightway chromium plated stops on the supplies to all fixtures accessible from the same room in which the fixtures are located.
- C. All valves shall be the product of one manufacturer as cataloged by Milwaukee, Stockham, Crane, or Nibco.
- D. For water piping, valves shall be equal to 125 psi SWP/200 psi WOG Nibco as follows:
  - 1. Gate valves 1/2" to 3" = S-111.
  - 2. Ball valves 1/2" to 2" = S-585.
  - 3. Check valves 1/2" to 3" = S-413W.

### 2.03 THERMAL INSULATION WORK

- A. All insulation work shall be performed by experienced insulation application mechanics thoroughly familiar with and experienced in the application of insulation materials. All insulation materials shall be applied in accordance with manufacturer's published recommended methods. Installation and finish of insulation materials shall meet with complete data for approval of materials and application methods as proposed for use. All piping shall be pressure tested and all surfaces shall be thoroughly cleaned before covering is applied. Insulation materials, including sealer, adhesive, finished, etc., shall meet NFPA Standards with regard to flame spread and support of combustion.
- B. All hot and cold water piping shall be covered with 1" thick heavy density fiberglass sectional pipe insulation equal to Owens Corning Fiberglass 25 ASJ/SSL, excluding piping below grade or chromium plated fixture connections.
- C. Fittings for the above shall be insulated with premolded fitting insulation of the same material and thickness as the adjacent insulation and shall be covered with a premolded plastic (PVC) vapor

barrier and sealed with vapor barrier lagging adhesive. Covering adjacent to unions and other points of termination shall be finished with the plastic material neatly beveled.

- D. It shall be the responsibility of the insulation subcontractor to coordinate hanger locations and prevent crushing or breaking finishes.

#### 2.04 FLOOR, WALL, AND CEILING PLATES

- A. Nickel plated floor, wall, and ceiling plates shall be provided on all pipes passing through floor, ceiling, or partition. Nickel or chromium plated escutcheons shall be provided on all fixture supplies.

#### 2.05 PLUMBING FIXTURES AND EQUIPMENT

- A. Provide roughing-in for and connect to supply lines, waste and vent lines, all equipment, fixtures, drains, etc., specified herein or in other sections of the specifications which require such connections.
- B. Provide stops in hot and cold water connections to each fixture, equipment items, etc. Where not otherwise specified, stops shall be same as specified hereinbefore for ball valves. Provide deep escutcheon on all sinks and lavatories where waste pipe goes into wall. Anchor all supplies from wall securely within wall construction.
- C. Provide stops for all fixtures. Traps for all fixtures shall be 17- gauge chromium plated brass.
- D. Plumbing fixtures shall be equal to American Standard, Crane, Kohler, or Eljer. No others will be accepted.
- E. Plumbing fixtures shall be as follows:
  - P-1 WATER CLOSET (Handicapped): Kohler K-4368 17" high elongated bowl with Sloan Royal 111 flush valve. Provide with flexible riser with stop and Beneke 523 white open front seat less cover
  - P-2 LAVATORY (Handicapped): Kohler K-2005, 20" x 18" wall hung with Delta 520-DST faucet with grid waste. Provide 1-1/4", 17-gauge P-Trap, flexible supplies equal to Eastman and feet supported concealed arm carrier equal to Zurn Z-1231. Provide trap wrap 500R protective kit by Brocar or equal.
  - P-3 WATER COOLER (Handicapped): Oasis P8ACSL barrier free, split level, wall hung type with 8 GPH capacity. Provide 1-1/4", 17-gauge P-Trap, flexible supply equal to Eastman and carrier equal to Zurn Z-1225. Install per ADA requirements.

#### 2.06 CLEANOUTS

- A. In Concrete Floors: 58190, adjustable head, cast iron head and ferrule with cadmium plug, round loose set scoriated tractor cover.
- B. In Finished Walls: 58790 cast iron cleanout tee with cadmium plug and stainless steel wall plate cover. Where distance from plug to finish wall will exceed 4", provide 58710 extend cover from sanitary tee to bring plug within 4".

#### 2.07 ACCESS DOORS

- A. Provide Phillip Carrey, J.R. Smith, Zurn or equal Smith Model #4761, 12" x 16" chromium plated steel access panels where valves, trap primers, or shock absorbers occur in inaccessible walls or ceilings. All doors and covers shall be completely removable from frames. All hinges must be concealed type. Steel frames shall be 16-gauge with 14-gauge steel doors. Access doors installed in fire rated assemblies shall be UL fire rated type with automatic closures.

### PART 3 - EXECUTION

#### 3.01 COMPLETION OF WORK

- A. This Contractor shall arrange for the installation of all equipment in order that it progresses along with the general construction of the building, and in no case shall be hold up other phases of the work due to the fact his equipment is not properly installed.

#### 3.02 TESTING

- A. General: Perform all tests to conform to local code requirements. File copies of all test reports in duplicate to owner.
- B. Soil, Waste, and Vent Systems: Plug all openings, fill entire system with water to point of overflow and hold for at least one hour before inspection. System must remain full during the test without leakage. Each vertical stack with its branches may be tested separately, but any portion tested must have a 10' head. Provide test tees and plugs for all tests as required.
- C. Water Supply System: Test and secure acceptance of entire system before the piping concealed. Test as follows: Disconnect and cap all outlets to plumbing fixtures and all other equipment not designed for the test. All piping throughout shall be tight under test. Water piping shall remain under normal water pressure during construction for 8 hours without leaking.

#### 3.03 DISINFECTION

- A. Disinfect all domestic water piping in accordance with local health department guidelines.

END OF SECTION.

## **SECTION 15800 - HEATING, VENTILATION, AND AIR CONDITIONING**

### **PART 1 - GENERAL**

#### **1.01 SCOPE OF WORK**

- A. The work consists of furnishing all labor, materials and incidentals necessary for a completely functional system. In general, the work shall include, but not necessarily be limited to the following major subdivisions.

Ductwork, grilles, and diffusers  
Insulation  
Fans (exhaust)

#### **1.02 CODES, FEES, PERMITS**

- A. The Contractor shall comply with all county, district, municipal, or local building code, interpretations, building permits and assessments of fees for building permits, and ordinances.
- B. The Contractor shall obtain and pay for all required permits, inspections, and certificates of inspection. Certificates of inspection shall be delivered to the Architect upon completion of the job.
- C. The Contractor shall comply with the latest revisions of all county, district, municipal, or local building codes, interpretations, buildings permits to include but not be limited to:

ASHRAE, 2008 "HVAC Systems and Equipment" - Chapter 18, Duct Construction  
SMACNA Standards for Duct Construction  
Florida Building Code - 2014 with all supplements  
Florida Mechanical Code - 2014 with all supplements  
Florida Plumbing Code - 2014 with all supplements  
NFPA-90A (2012) - Installation of Air Conditioning and Ventilation Systems  
Local Municipal Codes

#### **1.03 RESPONSIBILITY OF BIDDER**

- A. Each bidder shall visit the site of the proposed work and fully acquaint himself with conditions relating to the construction requirements so that he may fully understand the facilities, difficulties and restrictions contingent upon the execution of the work under this contract. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other document shall in no way relieve any bidder from his obligations with respect to his bid or the contract. The submission of a bid shall be taken as prima facie evidence of compliance with this paragraph and that he has included in his proposal every item of cost necessary for a complete installation of air conditioning, heating and ventilation operations strictly as planned, specified, and intended.

#### **1.04 SUB-DIVISIONS OF WORK**

- A. Each sub-division of work includes furnishing and installing all materials to make that part of work complete, and shall comprise all auxiliaries, setting of equipment, sleeves through building construction where required and etc., all in complete coordination with General Contractor and in cooperation with other trades. It is contemplated that all sub-divisions of work when completed will form heating, air conditioning, and ventilation system for this project.

#### 1.05 DRAWINGS

- A. The drawings for the Heating, Ventilating and Air Conditioning for this job are diagrammatic. The Contractor shall make his own measurements at the site and in the buildings during construction and install the systems as the work progresses in such a manner that the equipment, piping, conduit, panels, and ductwork will fit into the finished space provided maintaining headroom; and be neatly installed. All equipment and its interconnecting piping, ductwork, conduit, etc., shall be provided.
- B. Due to differences between various manufacturers, it is not practicable to show exact dimensions of units, nor to show or specify all minor details of equipment. Contractor shall provide all valves, fittings and accessories as necessary for a complete installation, whether or not specifically mentioned or shown.
- C. Equipment shall not be acceptable if operated in excess of the recommended and published ratings of the manufacturer.

#### 1.06 FOUNDATIONS

- A. The Contractor shall furnish all special foundations and supports for equipment, ductwork and piping which he installs and which are separate and distinct from building construction as shown by Architectural drawings.

#### 1.07 SAFETY PROVISIONS

- A. Contractor shall be required at all times to perform his work in strict accordance with the Williams-Steiger Occupational Health and Safety Act of 1970.
- B. Equipment with any projecting or rotating parts shall be totally enclosed or properly guarded.

#### 1.08 NOISE AND VIBRATION

- A. This Contractor shall be held responsible for elimination of all noises or vibrations transmitted to occupied areas from equipment which he may install. This applies particularly to airborne noises in ductwork, vibration and noises in piping, and vibration from mechanical equipment transmitted through bases to building structure.
- B. This Contractor shall furnish and install all flexible connectors for ductwork connected to motor driven equipment.
- C. Contractor shall closely coordinate work for location of mechanical equipment and roof openings. Neoprene vibration isolation pads shall be installed beneath roof mounted equipment. Pads shall be a minimum of 1 inch thick.

#### 1.09 MOTORS AND STARTERS

- A. This Contractor shall be responsible for the furnishing in place of all electric motors required for the operation of all heating, ventilating and air conditioning equipment. Electrical Contractor to provide all power wiring and conduit required for the operation of electrical motors as specified. Electric motors shall be selected in sizes as required to properly operate the equipment furnished but in no case smaller than those indicated on Equipment Schedules. Verify all electrical characteristics from electrical drawings before releasing motors for shipment. Electric motors shall have a service factor of 1.15 and power factor in accordance with ASHRAE 90-75.



- B. This Contractor shall furnish all magnetic motor starters required to operate heating, ventilating, and air conditioning equipment and turn over to the Electrical Contractor for installation. All motor starters shall be provided with:

1 thermal overload per phase leg.

A 110 volt coil and a hand-off-automatic switch, if motors are subject to electrical interlock unless otherwise specified.

- C. Phase Failure/Phase Reversal Protection shall be provided on all three phase motors. Motor protection shall be by Symcom Inc., or Time Mark Corp.
- D. If equipment is provided with R.L.A. in excess of design conditions the Mechanical Contractor shall stand the expense of associated electrical changes.
- E. It is the responsibility of the Mechanical Contractor to provide thermal overloads of the proper size as required by the actual motor nameplate amps. Motor starters shall comply with the requirements of the latest edition of the National Electrical Code and the local utility service company.

#### 1.10 PAINTING

- A. All equipment furnished without factory paint or galvanized finish shall be thoroughly cleaned and given a prime coat, then a finish coat of paint in a color as selected by Architect/Engineer. Any equipment finish that is damaged or chipped, shall be spot painted to match existing surface. Any miscellaneous metals used by this Contractor that are not galvanized shall be given two coats of paint in color specified by Architect. Any rusty or corroded finishes shall be thoroughly cleaned and painted two coats of paint - one prime and one finish coat.

#### 1.11 TESTS AND GUARANTEES

- A. After completion of his work, and when the building is ready for occupancy, this Contractor shall operate the air conditioning or heating system for a period of two days. During the tests, the Contractor shall adjust controls, outlets, etc.
- B. The Contractor shall repeat operational sequence during heating and/or cooling season, whichever had not been subject to prior test period.

#### 1.12 SHOP DRAWINGS

- A. Materials and equipment schedules shall be submitted as soon as practicable but not later than thirty (30) days after the date of award of contract, and before commencement of installation of any material or equipment. A complete schedule of the material and equipment proposed for installation shall be submitted for approval. The schedule shall include catalogs, cuts, diagrams, drawings, specifications and such other descriptive data as may be required by the Engineer. All materials required to be submitted for approval under this section shall be submitted at one time. Partial submittals will not be considered. They will be returned as "not approved".
- B. Shop drawings shall be submitted for approval on the following items of equipment: Subject drawings shall include all data pertinent to the performance and installation of all equipment.

Air Distribution Devices - grilles, diffusers, dampers  
Insulation materials

## Exhaust fans

### 1.13 QUALITY OF MATERIALS AND EQUIPMENT

- A. It is not the intent of these specifications to limit material and/or equipment selections to one manufacturer; however, the Engineer reserves the right to be the final and sole judge with regard to equals.
- B. Approvals of equipment is based on capacities, equality of workmanship and components, or general and special construction features. Approval of equipment does not relieve the Contractor of coordination responsibility with other trades. Equipment shall fit within the physical space of equipment shown and have same general connection as that shown on drawings. Proper clearances shall be maintained for servicing and maintaining equipment.
- C. Where equipment submitted varies from the general arrangement of that specified, Contractor shall submit detailed sheetmetal and equipment brochures. Shop drawings shall indicate any and all sheetmetal, electrical, piping and structural changes required to facilitate change. Any and all additional costs incurred by changes will be borne by this Contractor.

## PART 2 – PRODUCTS

### 2.01 EXHAUST FANS

- A. All exhaust fans shall bear the AMCA Seal of Approval and shall be currently listed in the current AMCA Directory.

### 2.02 CEILING EXHAUST FAN

- A. Ceiling exhaust fan for toilet rooms shall be ceiling mounted type fans with 1/2" thick acoustical lined steel housing, direct drive centrifugal fan, back draft damper and integral aluminum ceiling grille. Fan control and capacities shall be as scheduled. Fans shall be equal to Greenheck SP Series. Fan discharge shall be through weather tight wall boxes with recessed back draft dampers and discharge louvers as shown on plans.

### 2.03 DUCTWORK

- A. The sizes, runs, and connections of ducts shall be as indicated. Adhere to drawings as closely as possible. The right is reserved, however, if required to meet structural or other interferences, to vary run and shape of ducts and offsets during progress of work, at no extra cost to the Owner. Ductwork specified herein shall have rectangular cross section, unless otherwise indicated.
- B. Materials - Methods of Construction: Details of construction and materials not specified herein shall be in accordance with SMACNA Low Velocity and ASHRAE "Guide" recommendations. Fabricate ductwork in workmanlike manner with airtight joints presenting smooth surface on inside, neatly finished on outside. Seal all duct joints airtight with approved tape or mastic before insulation is applied. Construct ductwork air extractors, spin-in taps with air scoops, turning vanes, splitter dampers, etc., to ease air flow and balancing of air. The joint between the trunk duct and any air extractor or spin-in tap shall be sealed with approved tape or mastic. Unless otherwise indicated, where square elbows have to be used, provide fixed deflectors. Construct, brace and support ducts in manner that they will not sag or vibrate to any perceptible extent when fans are operating at maximum speed and capacity. Ductwork shall be galvanized sheet steel unless otherwise specified. Distance between joints of any size duct shall not exceed 8'.

- C. Flexible ductwork shall not exceed 8' in length. Flexible ductwork shall be equal to Thermaflex Type M-KB with 1"-1 lb. density insulation (minimum "R" value = 6) with metalized film vapor barrier, and conform to UL-181 as a Class I duct.
- D. Sheet metal gauges for rectangular duct construction shall be:

Steel U.S. Std. Gauge	Maximum Size Inches	Type of Transverse Joint Conn.	Bracing
26	Up to 12	S-Drive, pocket or bar clips, on 7'-10" centers with tape or mastic	None
24	13 to 24	S-Drive, pocket or bar clips, on 7'-10" centers with tape or mastic	None
24	25 to 30	S-Drive, pocket or bar clips, on 7'-10" centers with tape or mastic	1x1x1/8" angle 4' from joint

- E. Duct Support: Support horizontal ducts with hangers spaced not more than 8' apart, place hangers at changes in directions. Use strap hangers for ducts up to 30" wide, angle hangers for ducts over 30" wide. Make strap hangers 1" by 16-gauge minimum, extended down both sides of duct and turn under bottom 2" minimum, fasten sides and bottom with sheet metal screws.
- F. Provide flexible duct connections between ducts and heat pump unit. Connectors shall be constructed of 29 ounce neoprene-coated fiberglass approximately 6" wide, bordered by crimping to sheet metal and fastened to ducts with screws not more than 2" on centers.

#### 2.04 DAMPERS

- A. Manual Volume Dampers: Dampers shall be similar to Arrow or American Warming and Ventilating, Inc., and equal to Ruskin CD50 low leakage aeroblade type with operator and locking quadrant.
- B. Dampers of same materials as duct, at least one gauge heavier than duct, reinforced where directed, shall have an accessible location indicating quadrant, locking device for adjusting and locking dampers in position.
- C. Stiffen duct at damper location, install damper in manner to prevent rattling.
- D. Provide splitter and deflecting vanes for control of air volume and direction, and for balancing system where indicated, specified, directed or required.

#### 2.05 GRILLES AND DIFFUSERS

- A. Supply air grilles and diffusers shall be sized not to exceed a N.C. level of (25). Ceiling diffuser shall be equal to Titus series TDC-AA- adjustable type with 24" x 24" lay-in panel supply diffuser with balancing damper of size and capacity as indicated on drawings. Delete panel for ceiling diffusers installed in rigid ceilings.
- B. Install and fasten ceiling diffuser and grilles as per manufacturer's detailed drawings, use gaskets to make airtight joints with adjoining construction, join neatly with adjoining finished surface.

## 2.06 INSULATION

- A. Exterior duct insulation shall be applied outside of all heating and air conditioning ductwork in accordance with SMACNA Standards. Insulation shall be constructed of glass fiber and shall be 1.0 pound density, 2" thick and comply with NFPA Bulletins 90A and 90B (minimum R value = 6). Insulation shall be wrapped and shall be secured with duct bands. All joints in insulation shall be butted together and brushed with adhesive.
- B. Exhaust duct insulation shall be 1" thick, 1.0 pound density foil faced glass fiber type.

## PART 3 – EXECUTION

### 3.01 TESTING AND BALANCING

- A. Reference Specification Section 15200 – Testing and Balancing Air Distribution Systems.

### 3.02 CLEANING VENTILATING SYSTEMS

- A. All ducts shall be thoroughly cleaned and blown out to prevent any debris from damaging fan wheels or discharging through diffusers when systems are placed in operations. All temporary connections required for blowing out the system, cheesecloth for all duct openings, and any other equipment or labor for cleaning shall be provided by the heating and ventilating subcontractor. All filters shall be renewed after ventilating systems have been cleaned. The cost of renewal shall be borne by the General Contractor.

END OF SECTION 15800

## **SECTION 16100 - ELECTRICAL**

### **PART 1 - GENERAL**

#### **1.01 RELATED DOCUMENTS**

- A. The General and/or Special Conditions Sections are a part of this specification and the Contractor shall consult them in detail for instructions pertaining to this work. Section 16 is sub-divided for convenience only.

#### **1.02 SCOPE**

- A. Furnishing of all labor, material, equipment, supplies, and services necessary to construct and install the complete electrical systems as shown on the drawings and specified herein. Work shall include but is not necessarily limited to the following items:

- Demolition
- Grounding
- Interior Distribution/Branch Circuits
- Lighting
- Equipment Connections

#### **1.03 JOB CONDITIONS**

- A. Site Inspections: Before submitting proposals, each bidder should visit the site and should become familiar with all job conditions and shall be fully informed as to the extent of the work. No consideration will be given after bid opening date for alleged misunderstanding as to the requirements of work involved in connecting to the utilities, as to requirements of materials to be furnished, or as to the extent of demolition required.
- B. Existing Conditions: All utilities, existing systems, and conditions shown on the plans as existing are approximate, and the Contractor shall verify before any work is started.
- C. Scheduled Interruptions: Planned interruptions of utilities service, to any facility affected by this contract, shall be carefully planned and approved by the Architect at least ten (10) days in advance of the requested interruption. The Contractor shall not interrupt services until specific approval has been granted by the Architect. The request shall indicate services to be affected, date and time of interruption and duration of outage. Request for interruption of service will not be approved until all equipment and material required for the completion of that particular phase of work are on the job site. The work may have to be scheduled after normal working hours.
- D. Maintaining Service: Any existing service (or operating system) which must be interrupted for any length of time shall be supplied with a temporary service as necessary for continuation of the normal operation of this facility.
- E. Removal of Existing Work: Where noted or indicated on the drawings, or specified herein, existing electrical materials and equipment shall be removed from the building. All materials designated to be removed by the Contractor, and not required to be reinstalled, including scrap, shall become the property of the Contractor, and shall be promptly removed from the site. Hazardous materials shall be disposed of in approved hazardous material disposal facility. Existing items required to be removed temporarily in order to properly install new work shall be replaced in a satisfactory manner upon completion.

#### 1.04 TEMPORARY POWER

- A. Furnish and maintain temporary wiring system for light and power for use during construction by all trades. Use solidly grounded system. Limit over-current protection to 20 amperes on No. 12 conductors. Pay for all charges incurred while furnishing power for construction. Verify whether charges for electrical power consumption are specified in Division One; if so, payment of bills for power consumption are not included under this section.
- B. Accidental Interruptions: All excavation and/or remodeling work required shall be performed with care so as not to interrupt other existing services (water, gas, electrical, sewer, sprinklers, etc.). If accidental utility interruption resulting from work performed by the Contractor occurs, service shall be immediately restored to its original condition without delay, by and at the expense of the Contractor, using skilled workmen of the trade required.

#### 1.05 CODES, PERMITS AND INSPECTIONS

- A. The installation shall comply with all local, state, and federal laws and ordinances applicable to electrical installation and with the regulations of the latest published edition of the National Electrical Code (N.E.C.) where such regulations do not conflict with those laws and ordinances. The Contractor shall obtain and pay for all permits and inspection fees, and after completion of the work, shall furnish the Architect a certificate of final inspection and approval from the applicable local inspection authorities. Any charges by a utility for providing service as shown shall be included in the bid and paid by the Contractor.

#### 1.06 DRAWINGS AND SPECIFICATIONS

- A. The drawings and these specifications are complimentary each to the other. What is called for by one shall be as binding as if called for by both. Where the drawings and/or specifications differ as to quantity or quality, the greater quantity or higher quality shall be provided. Omissions from the drawings and specifications of details of work which are evidently necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such work. In any case of discrepancy in the figures or catalog numbers, the matter shall be submitted to the Architect, who shall promptly make a determination in writing. Any adjustment by the Contractor shall be at the Contractor's own risk and expense. Electrical drawings are diagrammatic only. Do not scale these drawings. All equipment shall be installed in accordance with manufacturer's recommendations and any conflicting data shall be verified before bidding.

#### 1.07 STANDARDS OF MATERIALS AND WORKMANSHIP

- A. Materials: All materials shall be new and shall be listed and approved by the Underwriters' Laboratories, Inc., in every case where a standard has been established for a particular type of material in question. All work shall be executed in a workmanlike manner and shall present a neat appearance.
- B. Prior Approvals: Equipment and materials of the same type or classification and used for the same purpose, shall be products of the same manufacturer. It is the intention of these specifications to indicate a standard of performance and quality for all materials incorporated in this work. Manufacturer's names and catalog numbers are used to designate the item of equipment or material as a means of establishing grade and quality. Where several manufacturers are named, only those named manufacturers' products will be considered and the Contractor's bid shall be on their products. The first named of several manufacturers is the manufacturer whose product was used in engineering

the project. Other named manufacturers, although acceptable as manufacturers, shall guarantee that their product will perform as specified and will meet space requirements. Where performance characteristics of such equipment differs from the equipment scheduled on the drawings, the Architect shall reserve the right to reject it. Where use of such equipment requires different quantity or arrangement of foundations, supports, ductwork, piping, wiring, conduit and any other equipment, the Contractor shall furnish said changes and additions and pay all costs for all changes to the work and the work of others affected by using such equipment.

- C. For approval of products other than those specified, bidders shall submit to the Architect, a request in writing, at least ten (10) days prior to bid date. Requests received after this time will not be reviewed or considered regardless of cause. Requests shall clearly define and describe the product for which approval is requested. Requests shall be accompanied by manufacturer's literature, specifications, drawings, cuts, performance data, model numbers, list of references or other information necessary to completely describe the item. Approval will be in the form of an Addendum to the specifications issued to all prospective Prime Contract Bidders on record. The Addendum will indicate the additional products which are approved for this project.
- D. If a bidder proposes to use substitute materials or equipment for the following items, he shall obtain a minimum of ten (10) days before Bid "Prior Approval" or longer as described in "Instructions to Bidders" for the items indicated below:
  - 1. Lighting fixtures
- E. Approval on other items shall be handled in the normal manner, as described in "Instructions to Bidders", under the heading "Approval of Materials".
- F. Substitutions: Reference to a particular product by manufacturer, trade name, or catalog number establishes the quality standards of material and equipment required for this installation and is not intended to exclude products equal in quality and similar design. The Architect reserves the sole right to decide the equality of materials proposed for use in lieu of these specified. It shall be the Contractor's responsibility to furnish the information and data sufficient to establish the quality and utility of the items in question, including furnishing samples if required.
- G. Shop Drawings: The Contractor shall submit a list of items proposed for use. He shall also submit catalog data and shop drawings on proposed systems and their components lighting fixtures, and wiring devices. Where substitutions alter the design or space requirements, the Contractor shall defray all items of cost for the revised design and construction including costs to all allied trades involved. Data shall be submitted within ten (10) calendar days after the contract is awarded. Provide six (6) copies of shop drawings unless a greater number of copies is required by the General Conditions. Each submittal data section shall be covered with an index sheet listing Contractor, Sub-Contractor, Project Name, and an index to the enclosed submittals.
- H. Each major section of submittals such as power, equipment, lighting equipment, fire alarm, etc., shall be secured in a booklet or stapled with a covering index which lists the following information:
  - 1. General contractor with phone number and project manager.
  - 2. Subcontractor with phone number and project manager.
  - 3. Supplier of equipment with phone number and person responsible for this project.
  - 4. Index of each item covered in submittal and model number as proposed in the attached.
  - 5. Any deviation from contract documents shall be specifically noted on submittal cover index and boldly on specific submittal sheet.

## 1.08 DOCUMENTATION

- A. Operating and Maintenance Manuals: At completion of the work, furnish three (3) copies of written operation instructions which shall include manufacturer's descriptive bulletins, operating and maintenance manuals and parts lists of all equipment installed. Also include in such instructions, the specified size and capacity ratings of all equipment installed. Each set of instructions shall be assembled into a suitable looseleaf type binder and presented to the Architect for delivery to the Owner.
- B. Record Drawings: Maintain one extra set of black-line, white print drawings for use as record drawings. Records shall be kept daily, using colored pencil. As the work is completed, relevant information shall be transferred to a reproducible set, and copies made to be given to the Architect.
- C. Comply with the following for all work specified in Division Sixteen. As-built information shall be shown to scale, using standard symbols listed in the legend. As a minimum, show the following:
  - 1. Location of stub-outs, dimensioned from permanent building lines.
  - 2. Location and depth of under-slab and in-slab raceways.
  - 3. All routing of raceways.
  - 4. Corrected panelboard and equipment schedules.
  - 5. Corrected circuit numbers as they appear on panelboard directories.
  - 6. Corrected motor horsepower and full load amperages.
  - 7. Number, size, type of insulation, and number of wires in each conduit or multiconductor cable whether in conduit or exposed.
  - 8. Location of junction boxes and splices.
  - 9. Location of access panels.

## 1.09 INTERFACE WITH OTHER CONTRACTS

- A. It shall be the responsibility of the Contractor to cooperate with all other crafts working on this project. All cutting, trenching, backfill, and structural removals to permit entry of the electrical system components shall be done by this Contractor. All patching and finishing shall be done by the General Contractor.

## 1.10 EQUIPMENT FURNISHED UNDER OTHER SECTIONS

- A. This Contractor shall furnish and install complete electrical roughing-in and connection to all equipment furnished under other sections as indicated on drawings. All such equipment shall be set in place as work of other sections.

## 1.11 EQUIPMENT CONNECTIONS

- A. In general, provide electrical power and control systems connections to all equipment shown on drawings. Included are wiring raceways, disconnects, starters, and other devices shown. Excluded are devices furnished integrally with the manufacturer's package and work specified in other sections of these specifications.
- B. Residential appliances are furnished with cords and cord caps, and will be set in place by contractors performing work under other divisions of specifications. Packaged air conditioning units are all with starters and contactors. Provide disconnecting means and connect. Low voltage control of these devices is specified for installation in Division 15.



## 1.12 GROUNDING

- A. Provide grounding and bonding systems in strict accordance with the latest published edition of N.E.C., except where more stringent requirements are specified herein. Inter-connection of neutral and ground is not permitted except at service entrance equipment. Install grounding conductors to permit shortest and most direct path to ground. Concealed joints shall be made by Cadweld method. Where grounding conductors are in raceway, bond conductor and raceway at both ends. Grounding and bonding fittings used shall be UL listed and be compatible with metals used in system. Sheet metal type strap are not acceptable.
- B. A green insulated ground conductor shall be run in all branch circuit and feeder conduit with phase and/or neutral conductors. Ground conductor shall be sized per NEC or as noted on drawings. Minimum size #12 AWG. Conduit box to device strap or yoke screw connection is not sufficient. Provide an insulated grounding jumper for receptacle circuits.

## 1.13 GUARANTEE AND SERVICE

- A. Upon completion of all tests and acceptance, the Contractor shall furnish the Owner of a written guarantee covering the electrical work done for a period of one (1) year from date of acceptance. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Upon notice from the Architect or the Owner, the Contractor shall, during the guarantee period, rectify and replace any defective material or workmanship and repair any damage caused thereby without additional cost.

## PART 2 – PRODUCTS

### 2.01 GENERAL

- A. All equipment and materials shall have ratings established by the recognized independent agency or laboratory. The Contractor shall apply the items used on the project within the ratings and subject to any stipulations or exceptions established by the independent agency or laboratory. Use of equipment or materials in applications beyond that certified by the agency or beyond that recommended by the manufacturer shall be cause for removal and replacement of such misapplied items.

### 2.02 WIRING METHODS

- A. Conduit Systems: Acceptable types of conduit:
  - 1. Hot dipped galvanized rigid steel (GRS) - Shall be galvanized steel, protected inside and outside.
  - 2. Electrical Metallic Tubing (EMT) - Shall be steel, protected inside and outside by a coating of approved corrosion-resistant material such as zinc or cadmium.
  - 3. Rigid Nonmetallic - Shall be polyvinyl chloride (PVC), schedule 40 or schedule 80, as indicated on the drawings.
  - 4. Flexible Metallic Conduit (½" min. trade size) (FLEX) - shall be galvanized steel, protected inside and outside.
  - 5. Liquid Tight Flexible Metallic Conduit (½" min. trade size) (LQFLEX) - shall be galvanized steel, protected inside and outside with an extruded outer liquid tight, non-metallic, sunlight resistant jacket. Use with standard liquid tight fittings.
- B. Raceway Fittings:

1. Rigid Metal Conduit - Shall have threaded fittings, galvanized steel or threadless compression galvanized steel or threadless compression cadmium plated malleable iron. Fittings shall be rain tight/concrete tight.
  2. Electrical Metallic Tubing (EMT) - Material of steel or malleable iron is acceptable. Couplings and connectors shall be concrete and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 2" and smaller. Use set screw type couplings with four set screws each for conduit sizes over 2". Use set screws of casehardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding. Indent type connectors or couplings are prohibited. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.
  3. Rigid Non-Metallic Conduit - shall have polyvinyl chloride (PVC) fittings suited for the purpose and joined together by a method approved for the purpose. Schedule 80 conduit sections may be joined together with threaded fitting connectors.
  4. Flexible Metal Conduit - fittings shall be zinc plated steel or cadmium plated malleable iron screw type with insulated throat and angular wedge fitting between convolutions of conduit.
  5. Liquidtight Flexible Metal Conduit - fittings shall be cadmium plated, malleable iron or steel with compression type steel ferrule and neoprene gasket sealing rings, with insulated throat.
- C. Conduits installed in earth fill, in concrete, or in solid masonry structures shall be PVC 40. Where PVC 40 is used, the 90° elbows rising above grade or extending through the concrete envelope shall be GRS with 2 coats of bitumastic applied to conduit prior to installation. PVC 40 conduits subject to mechanical injury and all exterior exposed conduits shall be GRS.
- D. Conduits used for connection to recessed lighting fixtures shall be FLEX not over 6 feet in total length. Conduits for connection to motors or vibrating equipment shall be LQFLEX not less than 18" long and not over 60" long.
- E. Conduits run concealed in the hollow space of non-masonry walls or above suspended ceilings shall be EMT. Exposed conduits shall be run at right angles to or parallel with building lines and exposed structure. In all cases, conduit runs shall be grouped together where possible and shall be supported from the building structure, not for any suspended ceiling support system.
- F. PVC 80 shall be used only as indicated on the drawings and shall be UL listed as sunlight resistant. Install conduits passing through building sidewalls or through beams below grade with expansion/deflection fittings. Install expansion fittings where conduit crosses an expansion joint. Where conduit penetrates damp-proofing membranes, cut the membrane carefully around the conduit and seal the joint with pressure sensitive tape.
- G. Conduit Identification: Paint all conduit runs every ten feet. This painting shall be accomplished by painting the conduit fittings to comply with the space limitation. Conduits shall be painted the following colors:
- |                  |        |
|------------------|--------|
| 1. 208V and 240V | White  |
| 2. 480V          | Orange |
| 3. Fire Alarm    | Red    |
| 4. Intercom      | Yellow |
| 5. CATV          | Black  |
| 6. Clocks        | Green  |
| 7. Data          | Blue   |
- H. Support raceways securely with pipe straps, wall brackets, conduit hangers or ceiling trapeze. Fastenings shall be by wood screws or screw type nails to wood, by toggle bolts to concrete block, expansion bolts on concrete or brick, and beam clamp types on steel or bar joists. Raceways shall

not be fastened to suspended ceiling supports but must have independent support from the structure. Supporting devices shall be of materials having corrosion protection at least equal to the raceway. A support shall be provided as close as practical to, and not exceeding 18" from an unsupported box or from change of direction. In horizontal runs, this support may be omitted if the box is independently supported and the box connection is not made with chase nipple or threadless box connector. In vertical runs, load produced by weight of the raceway and conductors shall not be carried by the raceway terminal, but must be carried entirely by conduit supports. Install conduit supports in strict accordance with the following table, except as required by support for boxes and changes in direction:

MAXIMUM SUPPORT TRADE SIZE	LOCATION OF RUNS	SPACING
½, ¾	Exposed, Horizontal	7 feet
1 and larger	Exposed, Horizontal	10 feet
All sizes	Concealed, Horizontal	10 feet
½, ¾	Exposed, Vertical	7 feet
1, 1 ¼	Exposed, Vertical	8 feet
1 ½ and larger	Exposed, Vertical	10 feet
All sizes	Concealed, Vertical	10 feet

- I. For conduit runs that are not sized on drawings, the maximum conduit fill shall be computed using the requirements for Type THW conductors although the actual wiring is with Type THWN or other type of conductors having smaller cross-sections. This requirement is made to provide spare conduit capacity.
- J. Install all required sleeves for conduits passing through concrete slabs. Fire proof space between conduit and sleeve after installation using mineral wool.
- K. Provide seals for any opening through fire-rated walls, floors, or ceilings used as passage for electrical components such as conduit or electrical boxes. Cracks, voids, or holes up to 4" diameter shall be filled with putty, caulking, or one-piece intumescent elastomer which is non-corrosive to metal, compatible with synthetic cable jackets, and capable of expanding 10 times when exposed to flame or heat. For openings 4" or greater use a sealing system capable of passing 3-hour fire test in accordance with ASTM E-814. Sealing system shall consist of wall wrap or liner, partitions, and end caps capable of expanding when exposed to temperatures of 250 to 350°F.
- L. Conductors: All conductors shall be installed in conduit. Conductors for building wiring shall have THHN/THWN, 600 volt insulation and shall be soft-drawn copper of standard American Wire Gauge (AWG) size. Minimum size shall be No. 12. 20 amp branch circuits more than 100 feet in length shall be upsized to No. 10. Provide individual neutral conductors for all single-pole branch circuits. Tied breaker handles are not acceptable. All wire No. 8 and larger shall be stranded. All branch circuits No. 10 and smaller shall be wired with color-coded wire with the same color used for a system throughout the building. Power feeders and branch circuits larger than No. 10 shall either be fully color coded or shall have black insulation and be similarly color coded with tape or paint in all junction boxes and panels. Where tape or paint is used to identify conductors, apply at all terminations, junction boxes, pull boxes and wireways. Apply tape, butt lapped, or paint for a minimum distance of 2" and, where applied to ends of conductors, start at cut end of the conductor insulation. Tape shall not cover manufacturers conductors shall be color coded or labeled as necessary for clear identification. Color coding of all conductors shall be as follows:

Grounding	Bare or Green
120/240 volt Single Phase	

Phase Conductors:	φA-Black, φB-Red
Neutral:	White
120/240 volt Three Phase (Delta)	
Phase Conductors:	φA-Black, φB-Orange, φC-Blue
Neutral:	White
208Y120 volt Three Phase (wye)	
Phase Conductors:	φA-Black, φB-Red, φC-Blue
Neutral:	White
480Y277 volt Three Phase (wye)	
Phase Conductors:	φA-Brown, φB-Orange, φC-Yellow
Neutral:	Natural Grey

## 2.05 JUNCTION AND PULL BOXES

- A. Junction and pull boxes shall meet requirements of National Electrical Code. Standard manufactured boxes shall be listed by Underwriters' Laboratories, Inc. Where custom designed and fabricated boxes are needed, they shall meet the construction standards of Underwriters' Laboratories, Inc. and the N.E.C.
- B. Junction and pull boxes shall be installed where required by National Electrical Code and where necessary to facilitate pulling of wire or cable. Considerations are sizes of wire and cable, number of bends in raceway, and conductor support requirements in vertical raceways. Maximum distance between terminations at junction or pull boxes, cabinets, or other points of termination shall not exceed 250 feet for straight horizontal runs. This length shall be decreased 50 feet for each 90° bend.
- C. Junction boxes for exposed work shall be FS or FD type. Boxes shall be threaded, cadmium-plated iron with weatherproof stainless steel cover and neoprene cover gaskets.
- D. All junction boxes shall be provided with the following markings:
  - 1. 208 or 240 volt boxes: Paint white and mark with panelboard/circuit number.
  - 2. 480 volt boxes: Paint Orange and mark with panelboard/circuit number.
  - 3. Intercom Boxes: Paint Yellow.
  - 4. Fire Alarm Boxes: Paint Red.
  - 5. Clock Boxes: Paint Green.
  - 6. CATV Boxes: Paint Black.
  - 7. Data Boxes: Paint Blue.
  - 8. Junction Boxes Containing Emergency Circuits: Paint box color of voltage and provide a Red Strip. Label with panelboard/circuit number.

## 2.06 OUTLETS

- A. Outlet boxes shall be one piece or projection welded, galvanized stamped steel for gang sizes required. Where several devices are located on drawings in the same general location, use multi-gang boxes. Sectional boxes are not acceptable. Boxes shall be sized in accordance with National Electrical Code. Boxes required for communications systems, mechanical control devices, etc., shall be installed under this section of the specifications. Verify outlet box locations and sizes required for systems other than electrical power from shop and manufacturer's drawings, and install outlets as

per those requirements.

- B. Boxes for wall and ceiling outlets shall finish flush and straight. Wall outlets in exposed concrete block, masonry, and tile walls shall be installed with extra deep square corner boxes or with standard boxes and square cornered tile wall covers so that conduit offsets are not required. Openings in concrete blocks or masonry walls shall be saw cut with an opening tolerance of 1/8" on all sides, the opening shall have bottom of box at nearest masonry joint to dimension indicated. For other wall finishes, boxes shall be installed with plaster or device type covers as required. No outlets shall be installed back-to-back. Where outlets occur in stud walls back to back on opposite sides, they shall be isolated by a stud between them.
- C. Multi-Outlet Assemblies (Horizontal Mounting) shall be electrically pre-wired steel raceways with receptacles mounted 24" on center, equal to Wiremold Catalog No. V4000HR1024, equipped with two-circuit power wiring, and ready to accommodate Pass & Seymour activation inserts.
- D. Multi-Outlet Assemblies (Vertical Mounting) shall be electrically pre-wired steel raceways with receptacles mounted 24" on center, equal to Wiremold Catalog No. V4000TD8, equipped with two-circuit power wiring, and ready to accommodate Pass & Seymour activation inserts.

## 2.07 WIRING DEVICES

- A. Colors: Wiring device and wall plate colors shall be selected by Architect for individual rooms from one of the following colors (unless another color is noted): Almond, black, brown, white, gray, ivory, or light almond.
- B. Receptacles: Duplex receptacles shall be specification grade, 20 amps, 125 volts with grounding terminal.
- C. Switches: Switches shall be specification grade, 20 amps, 120/277 volts A-C only, single pole, three-way or four-way as shown, single throw with screw terminals arranged for side wiring.
- D. Device Plates: Shall be of the constructed of polycarbonate.
- E. Ground Fault Receptacles: Furnish and install receptacles with ground fault circuit interrupters as indicated on plans. Receptacles shall be NEMA 5-20R configuration with 120V ac 20 amperes circuit rating. All receptacles shall be such depth as to permit mounting in outlet boxes 1 1/2" or greater in depth without the use of spacers. Units shall have line and load terminals such that connection to load terminals will provide ground fault protection for other receptacles. All receptacles shall accept standard duplex wall plates. All receptacles shall be noise suppressed and shall be UL listed.
- F. Automated Lighting Controls: Where indicated on the drawings, provide occupancy sensors, time switches, control relays and wiring for automatic control of lighting fixtures. Controls shall be as manufactured by Watt-Stopper, Hubbell, Cooper, or Leviton.

## 2.08 LIGHTING FIXTURES

- A. Provide wired, cleaned, and with lamps specified, all fixtures designated on drawings. Contractor shall verify the ceiling construction for correct trim and support arrangement of lighting fixtures; corrosion resistant plaster frames are required in plaster ceilings. Shop drawing submittals shall consist of properly identified copies of manufacturer's catalog pages showing all features and accessories specified.

- B. Secure mounting and support of all lighting fixtures shall be accomplished under this section of these specifications. Lighting fixtures shall be installed plumb, square, and level with the ceiling, wall, and in alignment with adjacent lighting fixtures. Mounting heights indicated shall be to the bottom of the fixture for ceiling-mounted fixtures and to center of fixture for wall-mounted fixtures. Lay-in troffer fixtures shall be supported with a minimum of 4 ceiling support wires per fixture and not more than 6 inches from each corner of the fixture. For fixtures smaller in size than the ceiling grid, provide a minimum of four wires per fixture. Do not support fixtures by ceiling acoustical panels. All concealed fixture mounting accessories shall be securely tied to structure. Flexible connections to fixtures shall not exceed 6 feet in length. Fixtures shall be solidly grounded to raceway system.
- C. In areas where the reflected ceiling plan is shown, all work shall be in conformance with this plan. If the ceiling grid is installed other than shown on the electrical plan, it shall be the responsibility of the installer of the lighting fixtures to call this fact immediately to the attention of the Architect and Contractor, and work shall not proceed until Architect's decision in the matter is obtained.
- D. LED drivers shall be highly efficient, class A noise rating, 0.9 or greater power factor, power supplies rated for the wattage requirements of the fixture. THD at full load shall be <10% at 120v and <20% at 277v. <3% line regulation, <1W stand-by power. LED power up time to be <1 sec. Load regulation <5%. Provide over voltage protection, non-latching output short circuit protection, current reduction LED load temperature protection. Ambient operating temperature range -30 degrees Celsius to 50 degrees Celsius at 85% non condensing relative humidity. Driver shall meet ANSI C62.41 Cat.A 2.5kv transient protection. Power supply shall be field programmable with 1mA resolution. Programmer shall not require the power supply to be powered up or connected to AC line voltage while programming. Provide integrated configurable LED thermal protection. Drivers shall be universal voltage input. Power supply shall be UL Class 2. LED dimming drivers shall provide continuous flicker-free dimming from 100%-1%.
- E. All lamps shall be the product of one manufacturer and shall be as manufactured by General Electric Osram/Sylvania, or Phillips. HPS lamps shall comply with the current published ANSI standards.

## 2.09 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protections: Take necessary precautions to protect all material, equipment, apparatus, and work from damage. Failure to do so to the satisfaction of the Architect will be sufficient cause for the rejection of the material, equipment, or work in question. Contractor is responsible for the safety and good condition of the materials installed until final acceptance by the Owner.
- B. Cleaning: Conduit openings shall be capped or plugged during installation. Fixtures and equipment shall be tightly covered and protected against dirt, moisture, chemical, and mechanical injury. At the completion of the work, the fixtures, material and equipment shall be thoroughly cleaned and delivered in condition satisfactory to the Architect.

## PART 3 - EXECUTION

### 3.01 EXCAVATION, TRENCHING AND BACKFILLING

- A. Trenches for all underground conduits shall be excavated to the required depth. The bottom of trenches shall be tamped hard. Before backfilling the excavation shall be cleaned of trash and debris. Backfill shall consist of excavation or borrow of sand, gravel, or other approved material free of trash, lumber, sawdust or other debris. Backfill shall be placed in 9" thick moistured and hand or machine tamped layers. Backfill shall be brought to suitable elevation above ground to

provide for anticipated settlement and shrinkage. All paving broken up shall be repaired and returned to the original condition.

3.02 PAINTING

- A. Contractor shall touch-up or refinish all items of electrical equipment furnished with a factory finish coat of paint and which may have been damaged regardless of cause.

3.03 TESTING AND BALANCING

- A. Balance all single phase loads connected to all panelboards to ensure an approximate equal division on these loads on main power supply serving building. All tests shall be made in accordance with the latest standards of the IEEE and the NEC. The installation shall be tested for performance, grounds and insulation resistance. "Megger" type instruments shall be used. Contractor shall perform circuit continuity and operational tests on all equipment furnished or connected by Contractor. The tests shall be made prior to final inspection. The Contractor shall provide all testing equipment and all costs shall be borne by him. Written reports shall be made of all tests. These reports shall be turned over to the Architect at time of final inspection. All faults shall be corrected immediately.

3.04 CLEANING UP

- A. The Contractor shall remove all oil, grease, or other stains resulting from his work performed in the building or the exterior thereof.

END OF SECTION 16100