

## SECTION 01042

### MECHANICAL AND ELECTRICAL COORDINATION

#### PART 1 - GENERAL

##### 1.1 REQUIREMENTS

- A. Provide necessary work and services required for the complete installation of heating, ventilating, air conditioning, plumbing, and electrical systems as shown on the Drawings. For convenience, Drawings showing primarily H.V.A.C. have been numbered with an "M", Drawings showing primarily electrical have been numbered with an "E" and Drawings showing primarily plumbing have been numbered with a "P".
- B. Make installations in a manner that complies with applicable codes and laws. Where the requirements of Contract Documents exceed code requirements, comply with the Contract Documents.
- C. Perform electrical Work in accordance with the latest edition of the National Electrical Code as minimum standards of quality and safety.
- D. All contract drawings are applicable to these subcontractors. The General Contractor is responsible for trade coordination. Any conflicts or omissions within the drawing set and/or as recognized by the various trades must be brought to the Owner's and Architect's attention prior to contract execution.

##### 1.2 RELATED SECTIONS

- A. Section 01200 - Project Meetings.
- B. Section 01300 - Submittals.
- C. Section 01600 - Material and Equipment: Product options and substitutions.
- D. Section 01650 - Starting of Systems.
- E. Section 01700 - Contract Closeout.
- F. Division 15 - Mechanical.
- G. Division 16 - Electrical.

##### 1.3 CONTRACT DRAWINGS

- A. The Drawings are schematic in nature but indicate how the various components are integrated with other parts of the building. Determine exact locations by job measurement, by checking the requirements of other trades, and by review of Contract Documents.
- B. The Drawings indicate general routing of the various parts of the systems, but do not indicate all sizes, fittings, offsets, and run outs, which are required. Provide correct sizes, fittings, offsets, and run outs required to fit the system into spaces allocated to them. Locate all light fixtures, vents, and supply grilles to conform to the ceiling grid system. Examine the Drawings to become familiar with this requirement.

#### 1.4 COORDINATION SUBMITTALS

- A. Conform to the requirements of Section 01300 - Submittals.
- B. Review shop drawings, product data, and samples for compliance with Contract Documents and for coordination among work of all sections of the Project Manual. Transmit to Contractor for review, then transmit to Architect.
- C. Check field dimensions and clearances and relationship to available space and anchors.
- D. Check compatibility with equipment and Work of other sections, electrical characteristics, and operational control requirements.
- E. Check motor voltages and control characteristics.
- F. Coordinate controls, interlocks, wiring of pneumatic switches, and relays.
- G. Coordinate wiring and control diagrams.
- H. Review the effect of any changes on work of other sections.
- I. Equipment and material submittals shall show sufficient data to indicate complete compliance with Contract Documents as follows:
  - 1. Proper sizes and capabilities.
  - 2. Ability to fit in the available space in a manner that will allow proper service.
  - 3. Construction methods, materials, and finishes.
  - 4. List of accessories.
- J. Product data shall include the contract item designation, building, and proposed model number.
- K. If proposed air devices are different than models specified, indicate the specified model and beside it the proposed model for each type of device. Do not list quantities.
- L. For any item to be installed in or on a finished surface (such as tee bar, acoustical ceiling, plaster wall) certify that applicable Contract Documents have been checked and that the item submitted is compatible with the surface finish on which it is to be installed.
- M. All Submittals shall be bound into three ring binders with hard plastic covers, with a table of contents listing all items in that specific submittal. Loose catalog sheets or drawings will not be acceptable. A separate submittal will be required for each type of equipment, e.g., lighting fixtures, switchgear, lighting panels, clock system, mechanical equipment, plumbing items, and ductwork accessories, each in a separate brochure. Miscellaneous apparatuses such as transformers, contactors, time switches, and safety switches may be contained in one submittal.
- N. Auxiliary system submittals shall contain sufficient information to show conformance with the specifications and shall include a description of the operation of each system to aid the consultant in the evaluation of each submittal.
- O. Verify and coordinate maintenance of Record Documents.

#### 1.5 COORDINATION DOCUMENTS

- A. Shop Drawings: Sheet metal, piping, mechanical, and electrical fabrication Shop Drawings shall show equipment, ductwork, and piping, including piping in plumbing chases, sized, and drawn in

exact location to be installed. Produce Drawings at 1/4-inch scale with all ductwork and piping sized accordingly. Ductwork and piping larger than 3 inches shall be shown with double lines.

B. Coordination Drawings:

1. Coordination Drawings (**responsibility of the GC**) are Drawings which indicate relationships between the various systems and other components of the building such as beams, columns, ceilings, and walls. They shall be drawn to scale and shall include plans, elevations, sections, and other details as required to clearly define the relationships of the various components. Indicate ducts, conduits, sprinkler systems, light fixtures, piping, and miscellaneous equipment on one Drawing for each floor or level. Refer to Mechanical and Electrical Specifications for additional requirements.
2. Prepare coordination drawings to organize installation of Products for efficient use of available space, for proper sequence of installation, and to identify potential conflicts.
3. Prepare a master schedule to identify responsibilities under each section of Divisions 1 through 16 of the Specifications for activities which directly relate to this work, including submittals and temporary utilities. Identify electrical power characteristics and control wiring required for each item of equipment.
4. Maintain documents for the duration of the Work, recording changes due to site instructions, modifications, or adjustments.
5. After Architect review of original and revised documents, reproduce and distribute copies to concerned parties.

C. Interference Drawings:

1. Interference Drawings (**responsibility of the GC**) are supplementary to Coordination Drawings and indicate conflict between the various systems and other components of the building such as beams, columns, and walls. They shall be drawn to large scale and shall include plans, elevations, sections, and other details as required to clearly define the interference and to indicate the Contractor's proposed solution.
2. Submit Drawings for approval whenever job measurements and an analysis of the Drawings and specifications by the Contractor indicate that the various systems cannot be installed without significant deviation from the intent of the Contract. When such an interference is encountered, Work shall cease in the general areas of the conflict until a solution to the question has been approved by the Architect.

## 1.6 OPERATING MANUALS, SERVICE DATA, AND WARRANTIES

- A. Upon completion of the project, provide four copies of the service manual for each type unit of equipment. Each manual shall contain complete operation instructions and information required for performing periodic minor maintenance on the equipment. Include the following information:
  1. Identification of each major part of the unit by the manufacturer's part number.
  2. Wiring diagrams for electrical items and components.
  3. List of necessary service parts and equipment for maintenance.
  4. Separate spare parts list stating the estimated quantities of spare parts normally required to service the equipment for a period of one year.
  5. Manufacturer's catalogs containing optional accessory items available for the equipment.
- B. Warranties: In addition to the one-year warranty specified in the Conditions of the Contract, assume all responsibility for special guarantees which may be required concerning installation, operation or performance of equipment, materials, and systems provided by a distributor, manufacturer or subcontractor.
- C. Owner's Instructions: At the completion of the Project, arrange and conduct instructional classes on the mechanical, electrical, and plumbing systems for the Owner's operating personnel. The instruction shall be categorized into layout and orientation, operation, and maintenance of each system.

### **1.7 MANUFACTURER'S DIRECTIONS AND SUPERVISION**

- A. Follow manufacturer's directions for installation, testing, and operation of all apparatuses and equipment provided.
- B. Where supervision by a manufacturer is required in the specification, pay all costs, and follow all instructions and recommendations of the manufacturer, who shall supervise the installation, connection, startup adjustment, instruction of the Owner, and final tests of equipment and systems. Where two or more manufacturer's equipment is interrelated, coordinate the Work and supervision.
- C. Provide a letter from the manufacturers whose supervision is required stating that they have supervised the installation, and their equipment or system is operating satisfactorily in detail and in every respect and that the Owner's representative has been instructed in the operation and maintenance.

### **1.8 REQUIREMENTS FOR EQUIPMENT**

- A. Provide equipment with necessary parts and accessories even though the parts and accessories are not specifically mentioned herein.
- B. Provide a factory applied finish on all exterior surfaces. Touch up or refinish items which have the finish marred, before final acceptance.
- C. Rotating parts shall be in static and dynamic balance.
- D. Electrical materials shall bear the stamp of approval of the Underwriter's Laboratory.
- E. Noise: Eliminate any abnormal noises, which are not an inherent part of the systems as designed. Abnormal buzzing and rattling of equipment, piping, ducts, and air devices and squeaks in rotating equipment components will not be acceptable.

### **1.9 PROTECTION OF EQUIPMENT**

- A. Do not deliver equipment to the jobsite until progress of construction has reached the stage where equipment is actually needed, or until equipment can be stored inside a building to protect equipment from the weather. Equipment allowed to stand in weather will be rejected, and new equipment of a like kind shall be used.
- B. Adequately protect equipment from damage after delivery to job site. Cover with heavy drop cloths as required to protect from plaster, dirt, paint, water, adverse weather conditions, and physical damage.
- C. Equipment which has been damaged by construction activities will be rejected, and new equipment of a like kind shall be used.
- D. At the time of Substantial Completion, equipment shall be clean.

### **1.10 COORDINATION**

- A. Coordinate the mechanical and electrical Work with that of other trades in order that the various components of the systems shall be installed at the proper time, shall fit the available space, and shall allow proper service access to those requiring maintenance, including equipment specified in other Divisions.
- B. Coordinate progress schedules, including dates for submittals and for delivery of products.

- C. Conduct conferences among Subcontractors and others concerned with the Work, to establish and maintain coordination and schedules, and to resolve coordination matters in dispute.
- D. Participate in progress meetings. Report on progress of Work to be adjusted under coordination requirements, and any required changes in schedules. Transmit minutes of meetings and reports to concerned parties.
- E. Remove and relocate items which are installed without regard to proper access as directed by the Architect, at no additional cost to the Owner.
- F. Provide materials with trim to match and fit properly with the types of adjacent ceiling, wall, and floor finishes installed. Model numbers in specifications or scheduled on Drawings are not intended to designate the required trim.
- G. Provide mechanical equipment with electrical characteristics compatible with that shown on Electrical Drawings and described in Electrical Division of the specifications.
- H. Prior to the fabrication of ductwork or the installation of devices in the ceilings, review the Drawings to ascertain that the locations of devices in the ceilings create a pattern which is compatible with the reflected ceiling plan and the spacing of the various ceiling mounted devices.
- I. In certain instances, the Architect may require relocation of outlets and switches. Where relocation is within 3 feet of the location shown in the Drawings, and when Contractor is informed of necessary relocation before Work is begun on this portion of the job, no extra compensation will be allowed.

#### **1.11 EQUIPMENT START-UP**

- A. Verify utilities, connections and controls are complete and equipment is in operable condition as required by Divisions 15 and 16.
- B. Observe startup and adjustments; record time and date of start-up, and results.
- C. Observe equipment demonstrations in the company of the Owner's representative; record times and additional information required for Operation and Maintenance Manuals.

#### **1.12 INSPECTION AND ACCEPTANCE OF EQUIPMENT**

- A. Prior to inspection, verify that equipment is tested and operational, and clean.
- B. Assist Architect with inspection. Prepare list of items to be completed and corrected.

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

Not Used

#### **PART 3 - EXECUTION**

Not Used

END OF SECTION 01042