

## SECTION 15010

### BASIC MECHANICAL REQUIREMENTS

#### A. GENERAL

##### 1. RELATED DOCUMENTS

- 1.1 Drawings and general provisions of the Contract, including the General Conditions, the Supplementary General Conditions, the Special Conditions, the Supplementary Special Conditions and all Division-1 Specifications sections, apply to the Work of this Sections, and the other sections of Division 15.

##### 2. SUMMARY

- 2.1 This Section includes general administrative and procedural requirements for mechanical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 1:
  - 2.1.1 Submittals. Coordination drawings. Record documents. Maintenance manuals. Rough-in. Mechanical installations. Cutting and patching.
- 2.2 Related Sections: The following sections contain requirements that relate to this section:
  - 2.2.1 Division 15 Section “ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT”, for factory-installed motors, controllers, accessories, and connections.
  - 2.2.2 Division 15 Section “BASIC MECHANICAL MATERIALS AND METHODS”, for materials and methods common to the remainder of Division 15, plus general related specifications, including:
    - a. Access to mechanical installations.
    - b. Excavation for mechanical installations within the building boundaries, and from building to utilities connections.

##### 3. SUBMITTALS

- 3.1 General: Follow the procedures specified in Division 1 Section “SUBMITTALS”.
- 3.2 Increase, by the quantity listed below, the number of mechanical related shop drawings, product data, and samples submitted, to allow for required distribution plus two copies of each submittal required, which will be retained by the Mechanical Consulting Engineer.
  - 3.2.1 Shop Drawings – Initial Submittal: 1 additional blue- or black-line prints.

• SUBMITTALS (Cont.):

- 3.2.2 Shop Drawings – Final Submittal: 1 additional blue- or black-line prints.
- 3.2.3 Product Data: 1 additional copy of each item.
- 3.2.4 Samples: 1 additional as set.
- 3.3 Additional copies may be required by individual sections of these Specifications.

4. COORDINATION DRAWINGS

- 4.1 Prepared coordination drawings in accordance with Division 1 Section “PROJECT COORDINATION”, to a scale of  $\frac{1}{4}'' = 1'-0''$  or larger; detailing major elements, components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Indicate locations where the space is limited for installation of access and where sequencing and coordination of the Work, including (but not necessarily limited to) the following:
  - 4.1.1 Indicate the proposed locations of piping, ductwork, equipment, and materials. Include the following:
    - a. Clearances for installing and maintaining insulation.
    - b. Clearances for servicing and maintaining equipment, including tube removal, filters removal, and space for equipment disassembly required for periodic maintenance, as recommended by equipment manufacturers.
    - c. Equipment connections and support details.
    - d. Exterior wall and foundation penetrations.
    - e. Fire-rated wall and floor penetrations.
    - f. Sizes and locations of required concrete pads and bases.
    - g. Valve stem movement.
  - 4.1.2 Indicate scheduling, sequencing, movement, and positioning of large equipment into the building during construction.
  - 4.1.3 Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings, and their relationship to other penetrations and installations.
  - 4.1.4 Prepare reflected ceiling plans to coordinate and integrate installations, air outlets and inlets, light fixtures, communications systems components, sprinklers, and other ceiling-mounted items.

5. RECORD DOCUMENTS

- 5.1 Prepare record documents in accordance with the requirements in Division 1 Section “PROJECT CLOSE-OUT”. In addition to the requirements specified in Division 1, indicate the following installed conditions:
  - 5.1.1 Mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (e.g., traps, strainers, expansion compensators, tanks, etc.). Valve location diagrams, complete with valve tag chart. Refer to Division 15 Section “MECHANICAL IDENTIFICATION”. Indicate actual inverts and horizontal locations of underground piping.
  - 5.1.2 Equipment locations (exposed and concealed), dimensioned from prominent building lines.
  - 5.1.3 Approved substitutions, Contract Modifications, and actual equipment and materials installed.
  - 5.1.4 Contract Modifications, actual equipment and materials installed.
- 5.2 Engaged the services of a Land Surveyor or Professional Engineer registered in the state in which the project is located as specified in Division 1 Section “FIELD ENGINEERING” to record and verify the locations and invert elevations or underground installations.

6. MAINTENANCE MANUALS

- 6.1 Prepare maintenance manuals in accordance with Division 1 Section “PROJECT CLOSE-OUT”. In addition to the requirements specified in Division 1, include the following information for equipment items:
  - 6.1.1 Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
  - 6.1.2 Manufacturer’s printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.
  - 6.1.3 Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.
  - 6.1.4 Servicing instructions and lubrication charts and schedules.

**7. DELIVERY, STORAGE, AND HANDLING**

- 7.1 Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

**B. PRODUCTS**

1. NOT APPLICABLE

**C. EXECUTION**

**1. ROUGH-IN:**

- 1.1 Verify final locations for rough-in with field measurements and with the requirements of the actual equipment to be connected.
- 1.2 Refer to equipment specifications in Divisions 2 through 16 for rough-in requirements.

**2. MECHANICAL INSTALLATIONS**

- 2.1 General: Sequence, coordinate, and integrate the various elements of mechanical systems, materials, and equipment. Comply with the following requirements:
- 2.1.1 Coordinate mechanical systems, equipment, and materials installation with other building components.
- 2.1.2 Verify all dimensions by field measurements.
- 2.1.3 Arrange for chases, slots, and openings in other building components during progress of construction, to allow for mechanical installations.
- 2.1.4 Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
- 2.1.5 Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
- 2.1.6 Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.

• MECHANICAL INSTALLATIONS (Cont.):

- 2.1.7 Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
- 2.1.8 Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirement's conflict with individual system requirements, refer conflict to the Architect.
- 2.1.9 Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
- 2.1.10 Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practicable, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.
- 2.1.11 Install access panel or doors where are concealed behind finished surfaces. Access panels and doors where are concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section "ACCESS DOORS" and Division 15 Section "BASIC MECHANICAL MATERIALS AND METHODS".
- 2.1.12 Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at specified slope.

3. CUTTING AND PATCHING

- 3.1 General: Perform cutting and patching in accordance with Division 1 Section "CUTTING AND PATCHING". In addition to the requirements specified in Division 1, the following requirements apply:
  - 3.1.1 Protection of Installed Work: During cutting and patching operations, protect adjacent installations.
- 3.2 Perform cutting, fitting, and patching of mechanical equipment and materials required to:
  - 3.2.1 Uncover Work to provide for installation of ill-timed Work.
  - 3.2.2 Remove and replace defective Work.

• CUTTING AND PATCHING (Cont.'):

- 3.2.3 Remove and replace Work not conforming to requirements of the Contract Documents.
- 3.2.4 Remove samples of installed Work as specified for testing.
- 3.2.5 Install equipment and materials in existing structures.

**END OF SECTION 15010**