

SECTION 15000

BASIC MECHANICAL REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Section includes basic mechanical requirements to complete the work as shown on the Contract Drawings and as specified herein. Provide all work and miscellaneous items, not specifically mentioned by reasonably inferred for complete operable systems.

1.02 DESIGN REQUIREMENTS

- A. Design anchorage and secure mechanical equipment in accordance with applicable code. In addition, design anchorage and secure equipment to withstand a lateral force of 0.6 times the weight of the equipment, if such requirement is more stringent.

1.03 SUBMITTALS

- A. General: The following are in addition to the submittal requirements in the individual Division 15 Sections.
 - 1. Material list
 - 2. Manufacturer's data: Certified by the factory's corporate officer
 - 3. Shop drawings: As required under the general requirements specified in this Section and as required under individual Division 15 Sections.
 - 4. Calculations: Structural calculations showing that equipment anchorage will withstand applicable lateral force. Submit other calculations as specified in individual Sections. Calculations shall be signed and sealed by professional engineer licensed in the State of California.
- B. Material List:
 - 1. Submit a complete list of material and equipment proposed for the job, including manufacturer's name.
 - 2. Reference all listings to paragraphs to which they are applicable.
 - 3. List only name of manufacturer. Catalog numbers and performance data not to be included at this time.
 - 4. Submit complete list of materials and equipment, even if same as specified or shown on the Contract Drawings.

- C. Manufacturer's Data:
 - 1. Submit after review of material list. Include data for all material and equipment that will be installed.
 - 2. Include complete catalog information such as construction, capacity, types, pump curves, sizes, finish, mounting methods and operating noise levels. Provide factory certified submittals.
 - 3. Reference all listings to paragraphs to which they are applicable and submit in brochure form.
 - 4. For any material specified as ASTM, Federal Specifications, or industry standards, furnish the manufacturer's certification that the material furnished for the work does in fact equal or exceed such requirements.
- D. Submittals shall be factory or manufacturer certified.
- E. Shop Drawings: Submit the following at 3/8 inch scale or larger, in order to show all pertinent features of the equipment and method of installation and connection to the work. These requirements are in addition to those specified in Section 01300, Submittals and Deliverables.
 - 1. Equipment layout drawings to scale, including equipment, ductwork, piping, including plumbing, accessories, showing clearance for operating and servicing. Indicate bottom elevations for all equipment. Indicate all existing equipment and ductwork, piping, and point of connection of new work.
 - 2. Piping diagrams of all major systems, showing all equipment, accessories, and sizes.
 - 3. Wiring diagrams shall include all low and line voltage wiring and equipment.
- F. Submit Operations and Maintenance Manuals (O&M Manuals) as specified in Sections 01730, Operations and Maintenance Manuals, all mechanical equipment and systems in.

1.04 COORDINATION

- A. Perform Work in cooperation with all other trades in order to secure the best arrangement of the Work. Make no changes in the work without the written approval of the Engineer.
- B. Verify that utility requirement characteristics of operating equipment are compatible with utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical and electrical work, which are indicated diagrammatically on the Contract Drawings. Follow

routing shown for pipes, ducts, and conduit as closely as practicable. Place runs parallel.

- D. Scaled and figured dimensions are approximate. Before proceeding with any work, carefully check and verify dimensions.
- E. Equipment size and locations shown on the Contract Drawings are based on the dimensions of a particular manufacturer or dimensions of typical equipment of class indicated. Check the Contract Drawings, as well as actual equipment dimensions, and ensure that the equipment will fit into the spaces provided. If required for coordination with other work or if requested by the Engineer, prepare shop drawings indicating a suitable arrangement of proposed equipment.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. For exterior storage of fabricated products, place on sloped supports, above ground.
- B. Provide off-site storage and protection when site does not permit on-site storage or protection.
- C. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

PART 2 – PRODUCTS

2.01. MATERIALS - GENERAL

- A. Provide materials, including auxiliary equipment, unless otherwise noted.
- B. Materials shall be of the quality specified. Materials or equipment damaged in shipment or otherwise damaged prior to installation shall not be repaired at the job site, but shall be replaced with new material.
- C. Verify that items specified by manufacturer's name and product number meet the requirements of the Specifications. Do not assume when a manufacturer's name and product name or number appears in these Specifications that the manufacturer and standard catalogue item meets the requirements of the Specifications.
- D. Equipment installed as part of the Work shall have local representation, local factory authorized service, and a local stock of repair parts, unless an exception is approved by the Engineer.
- E. Manufacturer for each type of material shall be the same throughout the Work.

2.02 MATERIALS

- A. Sleeves for Walls and Slabs: Schedule 40, galvanized steel pipe.

- B. Protect metallic structures against corrosion. Provide equipment with manufacturer's standard rust-inhibiting treatment and the finish, unless otherwise specified.
- C. Ferrous fittings, such as anchors, bolt rods nuts and miscellaneous parts, except stainless steel fittings, shall be hot dip galvanized.
- D. Sealing Compound: An incombustible, permanently plastic, waterproof non-staining compound leaving a finished smooth appearance.
- E. Backer: An incombustible fibrous glass recommended for specified application.

PART 3 – EXECUTION

3.01 GENERAL

- A. Prior to commencing work of this Section, inspect the installed work of other trades and verify that such work is complete to the point where this installation may commence. Verify that the completed installation will conform with all pertinent codes and regulations, the Contract Drawings, approved submittals, and the referenced standards. In the event of discrepancy, notify the Engineer immediately and proceed as directed.
- B. Follow the manufacturers' published directions in installation of piping, equipment, and material, except when otherwise required in the Contract Documents.
- C. Install and use material and equipment only in a manner for which it is approved and manufactured.
- D. Do not use aluminum in contact with earth and, where connected to dissimilar metal, protect with suitable fittings and treatment.
- E. Provide anchor bolts for all equipment placed on concrete pads and slabs. Anchor bolts shall be the size and number recommended by the equipment manufacturer, complying with structural calculations, and located by means of templates.

3.02 SLEEVES AND OPENINGS

- A. Provide sleeves for each pipe passing through slabs and walls, whether shown or not.
- B. Set all pipe sleeves and inserts in place before concrete is poured. Coordinating the placing of these items to avoid delaying concrete placing operations.
- C. Sleeves for non-insulated pipe shall be two pipe sizes larger than pipe passing through or a minimum of 1/2 inch clearance between inside the sleeve and outside pipe.

D. Length of sleeve as follows:

Sleeve Locations	Sleeve Length
Slabs	Equal to depth of slab construction including finish. Extend minimum of 2 inches above floor level in finished area and in pipe areas.
Roofs	Equal to depth of slab construction including insulation.
Walls	Equal depth of construction and terminated flush with finished surfaces.

E. Seal space between the pipe and the sleeve under all escutcheons with a sealing compound or pack with backer to within 1/2 inch of both wall faces and provide sealing compound on both faces.

3.03 REPAIR AND RESTORATION

A. Repair, grout, refinish, and apply touch-up paint, as necessary to make the facility like new, where structures are affected by the installation of mechanical systems.

3.04 ADJUSTMENT, CLEANING, AND OPERATION PRIOR TO COMPLETION

- A. When mechanical or electrical equipment is operable and with the written permission of the Engineer, the Contractor may operate equipment. Supervise such operation. The warranty period shall, however, not commence until the date specified in General Provisions 4.6, Guaranty of Work.
- B. Regardless of whether equipment has or has not been operated, clean and adjust equipment before Final Acceptance. Replace filters if equipment has been operated and as otherwise required in the Contract Documents.

3.05 TRAINING

A. When training is required under other Sections of Division 15, provide the services of manufacturer’s qualified factory trained field service engineer for a one, eight hour working day session at the site to instruct Owner personnel in the operation and maintenance of the pump units. This eight hour working day session for training is separate and independent of the requirements set forth for the manufacturer’s representative for start-up and testing. Utilize operation and maintenance manuals as text for instruction.

END OF SECTION