

SECTION 23 05 00 – COMMON WORK RESULTS FOR HVAC

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. General requirements for acceptance, provision, and installation of piping, mechanical, heating, ventilating and air conditioning system components, equipment, and related accessories are described in this Division and on Drawings for piping, heating, ventilating, and air conditioning. Division 23 Specifications shall be applicable to HVAC and Mechanical disciplines unless specifically noted otherwise.
- B. Provisions for the shipment, delivery, receiving, unloading, storage, on site transportation, installation, connection, support, alignment, lubrication, adjustment, securing, and grouting, for equipment are specified under this Division.
- C. On site transportation, placement, leveling, securing, support, alignment, lubrication, adjustment, connection of required piping services and grouting for process and utility equipment purchased under separate purchase order are described under this Division.
- D. Provision and installation of all other related mechanical and piping system components specified and required under this Division for proper establishment of fully operational installed process equipment.
- E. Provision and installation of all other items and equipment specified and required under this Division.

1.2 QUALITY ASSURANCE

- A. Codes and Standards: Work shall be governed by the latest edition of codes and standards
- B. Include start up assistance by factory trained Manufacturer's representative as defined in other sections.
- C. Guarantee in writing that Work under Division 23 will be free from defective materials and for one (1) year after final acceptance as a minimum performance level. Some equipment may be required to have a different time span, as listed in other Sections. Submit in accordance with requirements of Owner's General Conditions.
- D. Provide equipment installation personnel having minimum of three (3) years experience in setting, installing, aligning, and adjusting equipment installed under this Division.
- E. Provide items whose design and configuration are approved by authorities having jurisdiction and that have been reviewed by Owner's Representative.
- F. Provide furnished items that are new, first grade, physically and chemically suitable for intended application unless written permission is obtained from the Owner's Representative to reuse certain materials, devices or equipment.

- G. Provide Manufacturer's standard nameplate for each item of equipment furnished under this Division. Refer to Section 23 05 53 for further identification requirements.

1.3 SUBMITTALS

- A. Shop Drawings and Manufacturer's Data: Submit in accordance with requirements of Owner's General Conditions.
 - 1. Submit complete list of proposed manufacturers of all major items of Contractor-furnished equipment within 30 days of Owner Contractor agreement.
 - 2. Submit shop drawings and operating instructions as set forth in these Contract Documents.
 - 3. Unless otherwise specified within this Division, submit shop drawings for Contractor furnished equipment and pre purchased equipment installed by Contractor, piping system and accessories (including plumbing systems), and duct system and accessories for review prior to commencement of work including, but not limited to, following:
 - a. Complete Manufacturer's descriptive data including technical data.
 - b. Pipe connection sizes and types.
 - c. Materials of construction.
 - d. Dimensions and weight.
 - e. Performance data and operating curves.
 - f. Electrical data, including wiring diagrams.
 - g. Installation recommendations.
 - h. Spare parts list.
 - i. Recommended maintenance.
 - j. Drawings for fabrication and installation of piping and duct systems.
 - k. Pipe layout w/Vents and low pt drains identified.
 - 4. Process shop drawing data to ensure that it conforms to the requirements of the Plans and Specifications and that there are no omissions and/or duplications.
 - 5. Each shop drawing submission shall designate the exact item offered; unidentified items on Manufacturer's data sheets are not acceptable. Each submitted for equipment such as pumps, air handlers, fans, etc. shall be accompanied by its respective performance and operating curve.
 - 6. In each case, the various material submissions of related items, procured from a single Manufacturer or Supplier, shall be assembled in brochures or in other suitable package form and shall not be submitted in a multiplicity of loose sheets.
 - 7. The shop drawings shall include room by room tabulations of air distribution devices, fire dampers, valves and similar items.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Shipment and Delivery:
 - a. Identify equipment or shipping containers with following:

- b. Item name
 - c. Item number, if any
 - d. Purchase order number
 - e. Manufacturer and model number
 - f. Destination
 - g. Owner's name
 - h. Contractor's name
- 2. Receive, unload, remove from crate, and inspect all equipment and items specified and required under this Division for proper execution of this portion of Work.
 - 3. Protect all connections, fluid passages, working parts, and linings of items furnished under this Division from weather and physical damage during shipment.
 - 4. Upon receipt of items at Project site, examine surfaces and working parts for defects and damage.
 - 5. Return defective or damaged parts to Supplier for repair or replacement so that schedule of this portion of Work is not impaired.
 - 6. Identify all documents certifying quality and compliance with Specifications and deliver to Owner's Representative.

B. Storage:

- 1. Store items in dry, clean areas, safe from damage.
- 2. Maintain security and condition of all storage areas while items are stored.
- 3. Store pipe and equipment off floor or off ground.
- 4. Store small items and loose materials in clearly labeled, neatly arranged bins.
- 5. Protect ends of pipe, valves, and fittings from weather and abuse; keep open ends sealed or covered until removed for installation.
- 6. Store equipment and motors in safe, clean, dry areas, with open ends, ventilation inlets, and pipe connection points covered until removed for installation.
- 7. Store nonmetallic pipe, cement, adhesives, and solvents in cool, clean areas and in accordance with Manufacturers' instructions.
- 8. Store all stainless steel on wood.
- 9. Protect equipment subject to damage from falling objects with suitable protective covers.
- 10. Mark with purchase order number and equipment number and deliver to storage area spare parts and small items crated with equipment but not installed by Contractor under this Division.
- 11. At all times take every precaution to properly protect apparatus from damage. Include erecting temporary shelters to protect apparatus stored at the site, cribbing of apparatus above the floor of the construction, and covering of apparatus in the uncompleted building with plastic sheeting or other protective coating. Failure on the part of the Contractor to comply with the above to the satisfaction of the Owner's Representative will be sufficient cause for the rejection of the pieces of apparatus in question.

12. Responsibility for the protection of apparatus shall extend to presently installed apparatus. Erect temporary sheltering structures, provide temporary bracing and supports, or cover equipment as required or directed to afford proper protection.

C. Handling:

1. Unload, unpack, and handle items with extreme care; use slings, cradles, or other appropriate appurtenances.
2. Utilize lifting points provided to move equipment.
3. Prevent contact of stainless steel and copper alloys with carbon steel.
4. Handle items in accordance with special instructions of Manufacturer or Suppliers.
5. Adequately grease all machined surfaces.
6. Move items within building such that floors are not gouged or marred.
7. Repair or replace parts damaged during handling at no additional cost to Owner so that schedule of this portion of work is not impaired.
8. If part of equipment crate serves as a skid, leave bolted to equipment until just prior to transfer of equipment to its final location.
9. Protect painted and machined surfaces where exposed; avoid denting, marring, or unduly stressing equipment parts.

1.5 SITE CONDITIONS

- A. Interferences: Examine in advance location of ducts, plumbing and electrical systems and other components to be installed, and properly coordinate installation of work to avoid interference with same.
- B. Site Visit: The accompanying drawings do not indicate exact existing mechanical and electrical installations other than to identify modifications of and extensions thereto. Visit the site, inspect the installations and ascertain the conditions to be met and the work to be accomplished in removing and modifying existing work and in installing new work. Failure to comply with this shall not constitute grounds for any additional payments in connection with removing or modifying any part of the existing installations and/or installing any new work under this Division.

1.6 SEQUENCING

- A. Coordinate installation of equipment, equipment accessories, system accessories, and piping with installation of:
 1. Electrical cable trays and conduit
 2. Ductwork
 3. Horizontal and vertical support systems
 4. Slabs and trenches
 5. Any items dependent on piping system for support

- B. Coordinate installation of equipment with placement of supports and foundations and placement of associated or connected systems.
- C. Progress Schedule: Contractor shall coordinate progress schedules of all other Contractors and shall work in accordance with schedules for completion of Contract.
- D. Disturbance to Occupants: Since the building will continue in use throughout the construction period, carry out the work under this Division in such a manner as to minimize disturbance to the occupants.
- E. Service Interruptions: Should the work in the designated areas affect any services to the areas remaining in use, new permanent, temporary, or a combination of both shall be installed as required to enable those occupied areas to function properly. Additional valves required shall be installed without added cost to the Owner. Perform no work in the present building(s) which would interfere with its use unless special permission is granted in writing by the Owner. Included are operations which would cause objectionable noise or any service interruptions.

1.7 ENGINEERING DRAWINGS

- A. Drawings are not intended to show complete or accurate details of buildings, equipment, ductwork and piping in every respect. They indicate general layout, approximate locations, relations and arrangements and are not intended to show details of Manufacturer's equipment. Details of equipment shall be furnished by Manufacturer and Contractor for Owner's Representative approval.
- B. Contractor: Define locations and relations in the field and as satisfactory to Owner. Take all field measurements and be responsible therefor.
- C. Not all details of piping systems are shown on Drawings, nor are they specified herein. Piping shall be such as to legally pass all inspections by Inspection Department, State and Federal Authorities and Insurance Company having jurisdiction, and any changes or additions which may be necessary to obtain such inspection and approval shall be made by the piping contractor as a part of this Contract without additional cost to Owner.
- D. Contractor shall provide three dimensional CADD (Bin) models of all mechanical work coordinated with all other trades. Submit shop drawings of mechanical piping, ductwork and equipment coordinated with other trades for review with changes from Construction Documents noted on Drawing.

1.8 SUBSTITUTIONS AND SPACE ALLOCATIONS

- A. Comply with the General Conditions.
- B. Products: Comply with requirements as indicated in the General Conditions.
- C. Space Allocations: Comply with requirements as indicated in the General Conditions.
- D. Substitutions: Comply with requirements as indicated in the General Conditions. Do not substitute items without prior approval.

1.9 SALVAGED MATERIALS

- A. Reuse no salvaged materials except as noted on the Drawings, specified herein, or directed by the Owner's Representative in writing. Remove from the premises all present materials falling under this Division which are removed from the existing building(s) and/or systems.
- B. Comply with Owner's salvaged material requirements for this Project.

PART 2 -

2.1 MATERIALS

- A. In describing an item of equipment, it may be described singularly, even though there may be a multiplicity of identical items. Also, where a description is only general in nature, the exact size, duty, space arrangement, horsepower requirement and other data shall be determined by reference to plans, details and schedules. All equipment and materials shall be USA made. Provide proof of US Manufacture.
- B. Equipment called for on the plans and not listed herein shall be provided and installed as though it were fully described herein. Similarly, equipment called for herein shall be completely provided and installed, whether fully detailed or not on the plans and/or schedules.
- C. Provide pipe, pipe system accessories, duct accessories, and equipment attachments unaffected by conditions of service and adjacent atmosphere.
- D. Furnish all tools, cap screws, nuts, steel shims or shim stock, cinch anchor, anchor bolts, bolt sleeves, and proper quantities and grades of lubricant required to properly install, secure, lubricate and adjust equipment, including items purchased under separate purchase order and installed under this Division.
- E. Provide proper quantities and grades of chemicals and appropriate media required to clean and test equipment.
- F. Erection Equipment:
 - 1. Provide and maintain equipment required to transport, erect, and install all items, including those purchased under separate purchase order.
 - 2. Equip power operated equipment with pneumatic tires or rubber treads if used within building.
 - 3. Maintain motor operated equipment such that no oil or grease is dropped on finished floors.
- G. Provide OSHA approved guards for belt drives and motor couplings. Provide 1/2 inch hole in guard at center of equipment drive shaft where belt drive is used.
- H. Interchangeability:
 - 1. Provide completely interchangeable components, assemblies, and parts where such items have the same part number.
 - 2. All interchangeable components shall be interchangeable without modification.

PRODUCT DATA SHEET 1 - No asbestos or asbestos containing products are allowed.

- 2.1 Where dimensions, ratings, and characteristics are not known or specified, determine compliance using Manufacturer's design limits.**

PART 3 - EXECUTION

Not used.

END OF SECTION