

SECTION 230500**COMMON WORK RESULTS FOR HVAC****PART 1 - GENERAL****1.01 PRODUCT OPTIONS AND SUBSTITUTIONS**

- A. Refer to the Division 1 Sections for requirements in selecting products and requesting substitutions.

1.02 SCOPE OF WORK

- A. The following is a general listing of work items to be provided under this Contract. Work indicated is not necessarily all inclusive, nor shall it limit the extent of the work or exclude any work shown or specified and not listed.
- B. Work as indicated in the contract documents and as specified, including but not limited to the complete removal of material and equipment from the site.
- C. Furnish and install materials, equipment, and labor for a complete installation as specified in these contract documents.

1.03 PRODUCT LISTING

- A. Prepare a listing of major equipment and materials for the project. Submit this listing for approval.
- B. When two or more items of same material or equipment are required (pumps, valves, etc.) they shall be of the same manufacturer. Product manufacturer uniformity does not apply to raw materials, bulk materials, pipe, tube, fittings, sheet metal, wire, steel bar stock, welding rods, solder, fasteners, motors for dissimilar equipment units, and similar items used in work, except as otherwise indicated.
- C. Provide products which are compatible within systems and other connected items.

1.04 NAMEPLATE DATA

- A. Provide permanent operational data nameplate on each item of power operated equipment, indicating manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data. Locate nameplates in an accessible location.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.
- B. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage.

- C. Coordinate deliveries of materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.

1.06 DIMENSIONAL INFORMATION

- A. Dimensional information used for layout and locations shall be taken from architectural or structural drawings used by the construction trades.
- B. HVAC drawings are diagrammatic and have no dimensional significance. Do not scale. Locations of equipment and piping are to be as:
 - 1. Shown on the drawings;
 - 2. Directed in the field;
 - 3. Required for proper connection of equipment to be served;
 - 4. Required for proper symmetry in the space involved;
 - 5. With deviations made only with specific approval of Owner.
- C. Review the drawings of other trades and contractors, exchange shop drawings with them, cooperate in the preparation or prepare space layouts as required, to avoid conflicts and interferences with the installation of other trades in advanced stages of construction.
- D. Field verify all existing conditions and coordinate with other trades prior to fabrication and installation of equipment and material. Lack of field verification does not constitute a basis for additional monies during construction. Contractor assumes full responsibility for completeness of installation including coordination of work with other trades.
- E. Materials and equipment shall be shipped to the site knocked down to fit through existing building openings. Field verify the dimensions of existing openings and verify methods of delivery of materials and equipment prior to fabrication. Include in the bid price all costs associated with the disassembling and reassembling materials and equipment as required for delivery and installation.

1.07 SUBMITTALS

- A. Submit manufacturer's technical product data and installation instructions for materials and products.
- B. Record Drawings: At project closeout, submit record drawings of the installed work; in accordance with requirements of Division 1.

1.08 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance manuals for all equipment and materials specified herein.
- B. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
- C. Manufacturer's printed operating procedures to include start-up, break-in, routine and

normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions.

- D. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
- E. Servicing instructions and lubrication charts and schedules.

1.09 WARRANTIES

- A. Refer to Division 1 for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.
- B. Compile and assemble the warranties into a separated set of vinyl covered, three ring binders, tabulated and indexed for easy reference.
- C. Provide complete warranty information for each item to include product or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 ACCESSIBILITY AND CLEARANCES

- A. Install equipment and materials to provide required access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.
- B. Maintain working space as required by NEC 110.26 for live electrical components as follows:
 - a. Width: 30"
 - b. Height: 6'-6" or height of equipment.
 - c. Depth:
 - i. 0-150V to ground: 3'-0"
 - ii. 151-600V to ground, insulated/ungrounded parts other side: 3'-0"
 - iii. 151-600V to ground, grounded parts other side: 3'-6"
 - iv. 151-600V to ground, live parts both sides: 4'-0"

3.02 INSTALLATIONS

- A. Coordinate equipment and materials installation with other building components.
- B. Verify all dimensions by field measurements.
- C. Arrange for chases and openings in other building components to allow for installations.

- D. 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.
- E. Sequence, coordinate, and integrate installations of materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing-in the building.
- F. Coordinate the cutting and patching of building components to accommodate the installation of equipment and materials.
- G. Where mounting heights are not detailed or dimensioned, install overhead and materials to provide the maximum headroom possible.
- H. Install equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
- I. Coordinate the installation of materials and equipment above ceilings with suspension system, light fixtures, and other installations.
- J. Coordinate connection of systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations and controlling agencies. Provide required connection for each service.

3.03 CUTTING AND PATCHING

- A. This Article specifies the cutting and patching of equipment, components, and materials to include removal and legal disposal of selected materials, components, and equipment.
- B. Refer to the Division 1 Sections for general requirements for cutting and patching.
- C. Do not endanger or damage installed work through procedures and processes of cutting and patching.
- D. Arrange for repairs required to restore other work, because of damage caused as a result of the installations.
- E. No additional compensation will be authorized for cutting and patching work that is necessitated by ill-timed, defective, or non-conforming installations.
- F. Perform cutting, fitting, and patching of equipment and materials required to:
 - 1. Uncover work to provide for installation of ill-timed work;
 - 2. Remove and replace defective work;
 - 3. Remove and replace work not conforming to requirements of the contract documents;
 - 4. Remove samples of installed work as specified for testing;
 - 5. Install equipment and materials in existing structures;
 - 6. Upon written instructions from the Owner, uncover and restore work to provide for the Owner's observation of concealed work.
- G. Cut, remove and legally dispose of selected equipment, components, and materials as

indicated, including, but not limited to removal of piping, valves, trim, and other items made obsolete by the new work.

- H. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
- I. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
- J. Locate, identify, and protect mechanical and electrical services passing through remodeling or demolition area and serving other areas required to be maintained operational. When transit services must be interrupted, provide temporary services for the affected areas and notify the Owner prior to changeover.

END OF SECTION 230500