

DIVISION

15

MECHANICAL

SECTION 15010

MECHANICAL - GENERAL PROVISIONS

15010.1 GENERAL

RELATED DOCUMENTS

General Provisions of Contract, including General, Supplementary and Special Conditions apply to the work in this section.

DESCRIPTION OF WORK

Extent: Work required under this section consists of all mechanical work and related items necessary to complete the work indicated on the drawings and/or described in the specifications.

Work Included: Without restricting volume or generality of above Extent work performed under this section shall include, but is not limited to the following:

Furnish all labor, equipment, tools, transportation, etc., and furnish and install all materials and equipment necessary for mechanical work hereinafter described all in accordance with the specifications and accompanying drawings.

Specifications and accompanying drawings intended to show and describe complete mechanical installation, fully erected, properly installed in workmanlike manner and left in proper operating condition, with Contractor furnishing and installing everything necessary to complete the job.

Furnish all labor, equipment, tools, materials, accessories, etc., for all rough-ins and final connections, complete, for all equipment indicated on the drawings, or equipment furnished by others.

Related Work: Without restricting required work, the following items of related work are specified and included in other sections of these specifications:

Paint mechanical equipment, pipe, duct, etc.

Furnish and install toilet room accessories.

Install prefabricated fan curbs and air curbs.

Furnish and install temporary water supply and sanitary facilities for construction phase.

Install base flashings and pitch pockets.

GENERAL REQUIREMENTS

Regardless of titles and subdivisions herein employed, consider these specifications as one complete document with General Section applying to all other sections.

Check mechanical specifications and drawings with remainder of set, and bring to Architect's attention any conflicts or variations as soon as noted.

Specifications and accompanying drawings apply to all contracts or subcontracts entered into for supplying material or labor for construction of work specified herein and shown on drawings.

Adequately protect against injury all installed and existing material, equipment, motors, fixtures, piping, insulation, etc.

Replace lost or damaged items prior to acceptance of work.

Adequate and competent supervision shall be provided by this section to assure that work is done in accordance with good standard practice and workmanship and with intent of drawings and specifications.

INSTALLER'S QUALIFICATIONS

All contractors submitting bids for the work under this contract shall be specialists in their field and shall have the personal experience, training and skill to construct a properly operating mechanical system as described by the contract drawings.

If required, the contractor shall be able to furnish evidence of having not less than three years experience and having been responsible for at least three projects comparable in size and complexity to this one.

WORKMANSHIP

All work performed shall be in accordance with best standards of practice by workmen skilled and qualified in type of work to be done. Schedule and perform mechanical work to avoid delays to project.

CODES AND STANDARDS

All work shall be installed in strict accordance with all existing local, parish/county and state codes and ordinances having jurisdiction, and shall also be in accordance with the latest edition of the following national codes:

- National Fire Protection Association
- Standard Building Code
- Standard Mechanical Code
- Standard Plumbing Code
- Standard Gas Code
- Americans with Disabilities Act

All mechanical and plumbing systems, including material and workmanship, shall be in accordance with the latest edition of the following industry standards:

- ASHRAE - American Society of Heating Refrigeration and Air Conditioning Engineers
- ASPE - American Society of Plumbing Engineers
- SMACNA - Sheet Metal and Air Conditioning Contractor's National Association
- AMCA - Air Moving and Conditioning Association
- UL - Underwriter's Laboratories, Inc.
- NEMA - National Electrical Manufacturer's Association
- ANSI - American National Standards Institute
- ASTM - American Society for Testing and Materials
- ASME - American Society of Mechanical Engineers
- NBBPVI - National Board of Boiler and Pressure Vessel Inspectors (for pressure vessel and boilers)

Local codes shall take precedence over state codes which shall take precedence over national codes and industry standards.

If any conflicts are found between specifications and drawings and above authorities, notify Architect as soon as conflicts are discovered and above codes and requirements will govern.

PERMITS AND INSPECTIONS

Secure all permits and inspections and pay all fees, assessments and taxes necessary for completion and acceptance of work. Notify Architect and proper authorities in ample time when any work is ready to be inspected or tested.

Obtain certificates of inspection and approval, as applicable to various portions of work, from inspection agency having jurisdiction.

No work shall be buried or concealed without inspection and approval from the architect

VISIT TO JOB SITE

Visit and examine job site and check with utility authorities concerned in order to become familiar with all existing conditions pertinent to work to be performed. No additional compensation will be allowed for failure to be so informed.

DRAWINGS

Bidders must review drawings and specifications of other disciplines including plans, details, diagrams, notes, etc., in order to understand structural conditions, construction requirements, clearances, capacities and methods of installation and erection. Structural and other conditions may require certain modifications and adjustments from conditions shown. Such deviations are permissible; however, specified sizes, capacities and requirements affecting satisfactory performance and operation of installation shall remain unchanged.

Due to small scale of drawings, it is not possible to show all fittings or offsets or to show all accessories. Take advantage of available space and stack ductwork, piping and accessories vertically as required for fit and access.

Contractor is responsible for accuracy of clearances and for coordination with other trades. No equipment, ductwork, piping, etc. shall be fabricated or installed without full coordination. Make allowance in bid for job conditions and interferences which will require offsets in ductwork, piping, etc.

Contractor shall remove and relocate, without additional compensation, any item that is installed without required coordination and is found to be in conflict with other trades. If field measurements show that equipment, ductwork, etc. cannot fit in the allotted space, it shall be brought to the attention of the architect prior to ordering or installing the equipment.

In event of conflict, any item exposed to view in finished work shall take precedence over items, which are concealed, such as ductwork, piping, etc. Generally, ductwork shall take precedence over piping unless piping requires a specific slope.

Whenever it becomes necessary to shift equipment or pipes, such changes shall be referred to Architect for approval.

Ask for details whenever uncertain about method of installation.

SERVICES

Make all necessary arrangements and pay all costs involved for securing utility service connections from utility authority concerned for services.

All costs incurred for new services shall be included in the contractor's bid. No additional compensation shall be awarded for failure to determine the costs and to include them in the bid.

PRODUCT SUBMITTALS

Submit equipment and fixture product data sheets in accordance with requirements described in General, Supplementary and Special Conditions of the Contract Documents prior to releasing equipment for manufacture or shipment. Product data sheets shall be manufacturer's printed literature specifically marked to indicate size and model numbers of equipment being furnished. All accessories required by the contract documents shall be clearly marked.

System capacities for air conditioning systems, fans, etc. shall be clearly and completely indicated on a system summary sheet prepared specifically for that system, fan, etc. The summary sheet shall indicate equipment number designations, manufacturer's model numbers, capacities, electrical characteristics, etc. General data sheets shall not be acceptable for indicating system performance.

All data submitted shall be checked against specifications and drawings. For equipment requiring electrical connections, no approval shall be final or deliveries authorized until electrical characteristics and provisions for wiring are coordinated and cleared with Electrical Section by letter through Contractor or Architect.

Review of product submittals does not relieve the contractor of responsibility for compliance with the contract documents for system capacities or for fitting the equipment in the allotted space. Review is for general compliance with the contract documents.

Submittals are required for the following items:

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| • Plumbing fixtures and accessories | Air conditioning equipment |
| Floor drains | Fans |
| Water heaters | Pumps |
| Hose bibbs | Grilles, diffusers, registers, etc. |
| Access panels | Dampers, louvers, etc. |
| Manufactured hangers and supports | Vibration isolators |
| Cleanout covers | Piping insulation |
| • Valves (all types) | Flexible duct |
| | Starters, speed controllers, etc. |

SHOP DRAWINGS

Submit shop drawings in accordance with requirements described in General Supplementary and Special, Conditions of the Contract Documents prior to releasing equipment for

fabrication or shipment. Shop drawings shall consist of plans, sections, elevations and details as required to clearly indicate size and location of equipment or products being provided. Drawings shall indicate required clearances of equipment being installed by others and shall show clearances with relations to mechanical equipment.

Shop drawings shall be submitted as follows:

- One reproducible vellum
- Two blue line prints

Submit shop drawings for the following:

- Field fabricated hangers and supports

MATERIALS AND EQUIPMENT

All materials and equipment must be new and product of reputable manufacturer regularly engaged in manufacture of product concerned. All materials shall bear the name of manufacturer and shall be of best quality obtainable unless specified or noted otherwise.

All materials and equipment must be of design, type, strength, etc., to satisfactorily accomplish purpose intended.

All equipment shall be purchased from authorized factory representative with established office in New Orleans area, if manufacturer has such an office.

MATERIAL SUBSTITUTIONS

Substitutions must be requested in conformance with requirements stated in the Supplementary General Conditions.

No irregular or informal substitution requests will be considered.

PROTECTION OF WORK

Contractor shall protect all equipment, fixtures and work from damage. Damaged work will be rejected and replaced at the expense of the Contractor. Where possible, all rooms containing new fixtures or equipment shall be kept locked until the building is turned over to the Owner. Immediately after installation of each fixture, it shall be covered with a fixture protector.

Piping shall be racked and handled in a manner to prevent entrance of dirt and foreign matter. Open pipe ends shall be plugged or capped during erection.

FRICITION LOSSES, ELECTRICAL RATINGS & SPACE REQUIREMENTS

The values of air and water friction losses, electrical current ratings and space requirements for various pieces of equipment, as contained in these Specifications or as shown on the Drawings, are estimated values and sizes and have been used in obtaining specifications for equipment and for sizing pipe, ducts, electric wiring and motor controls. Any necessary changes in ones shown shall be the responsibility of the Contractor, and shall be subject to the approval of the Architect. Contractor shall pay all costs for additional labor and material required including costs of any other Contractor involved.

EXCAVATION AND BACKFILL

Do all excavation and backfilling required for mechanical work, unless indicated otherwise on drawings.

Properly and safely slope, reinforce and shore excavations and be responsible for any damages caused by cave-ins, washouts or undermining as a result of these excavations.

Backfill with clean river sand unless otherwise indicated on the drawings or in these specifications. Keep all debris, roots, pieces of wood and pipe, and other trash out of backfill. Add backfill in layers not exceeding twelve inches in depth and tamped to original density. Remove all excess material from premises.

CUTTING AND PATCHING

Be responsible for all cutting, fittings, etc., affecting mechanical work and coordinate with trades or other sections involved. Do not endanger any work by cutting, excavating or other operations, and do not cut or alter work of any other sections except with specific consent of Architect. Workmen skilled and qualified in trades involved shall do all cutting required under supervision of Contractor's Job Superintendent.

Cutting for piping by Mechanical Section; cutting for ductwork and equipment entry by General Section.

Insure that all necessary chases, openings for pipes, ducts, etc., are provided at proper time as work of other sections progresses; otherwise, be held responsible for all such provisions at own expense.

All patching for mechanical work by General Section.

THIMBLES, INSERTS AND EXPANSION SHIELDS

Set in place, as formwork progresses, all necessary inserts and thimbles as required. Cutting of beams, concrete floors or walls not permitted without authorization from the architect.

All thimbles set in walls and all thimbles set in concrete floors that are concealed in walls or chases, shall be of 20 gauge galvanized iron.

Where pipes pass through upper floors other than in chases or walls, thimble shall be of schedule 40 galvanized pipe (plain end) with top of thimble set one inch above finished floor to prevent wash-water from dripping below.

Size thimbles to allow freedom around pipe or around pipe and insulation where pipe is insulated. Caulk between thimble and piping with fire proof caulking.

FLOOR AND CEILING PLATES

Furnish and install properly sized chrome plated brass escutcheon plates to conceal openings where piping or hangers pass exposed through floors, ceilings or walls.

BUCKS, GROUNDS, CHASES, LINTELS, BLOCKOUTS AND GROUTING

Provided by General Section. Mechanical Section responsible for properly informing Contractor of proper locations and sizes and for any errors or omissions in placing same.

MISCELLANEOUS DRAINS

Install drains for all relief valves, piping and equipment requiring it and run to suitable outlet.

FLASHING AND COUNTERFLASHING

Install all items of mechanical work such as pipes, ducts, etc., penetrating roofs a sufficient distance from walls, eaves, etc., to permit proper application of flashings and counterflashings.

Flash vent pipes through built up roofs and pitched shingle roofs with four pound lead, well turned down into piping and extending twelve inches beyond outside of pipe. Provide lead vent cap. For other types of roofs, contractor shall provide suitable types of flashing as required by the roof manufacturer.

Mechanical work requiring less than an eight-inch roof opening shall be provided with flashed pitch pockets of suitable sizes unless detailed otherwise on the plans.

Roof drains shall be flashed with four pound lead, extending twelve inches beyond outside of drain. Flashing furnished by Mechanical Section to Contractor for installation.

Flashings and counterflashings for other than vent pipes and drains to be of gauges and construction specified in roofing and sheet metal sections of specifications. Coordinate with roofer.

Flashing and counterflashings shall be furnished under this section and installed by the general contractor.

ACCESS PANELS

This section shall furnish all access panels to Contractor for installation, necessary for proper access to dampers, valves, traps, cleanouts, fixture connections, motors, drives or other items installed under this contract, except where such panels are shown and/or specified under other sections of specifications.

Panels shall be KARP TYPE DSC or equal, with continuous piano hinges, screwdriver lock, prime coat steel. Access panels being installed in wet locations such as toilet rooms. Exterior, etc. shall be stainless steel. Exact size and location subject to Architect's approval.

Access panels in ductwork as hereinafter specified by Mechanical Section.

PAINTING

No painting shall be done under this division of specifications. All exposed equipment, pipes, grilles, louvers, fan housings, etc., shall be painted under other divisions of specifications. Also refer to "IDENTIFICATION OF PIPING".

Protect all factory finishes. Where damaged, finish to be renewed at this section's expense. This section responsible for preservation of paint and finishes on mechanical equipment and materials during and after installation.

IDENTIFICATION OF PIPING

All service piping which is accessible for maintenance operations shall be identified with semi-rigid plastic (not pressure-sensitive) identification markers.

Direction of flow arrows is to be included on each marker, unless otherwise specified.

In conformance with "Scheme for the Identification of Piping Systems" (ANSI A13.1-1981), each marker must show (1) approved color-coded background, (2) proper color of legend in relation to background color, (3) approved legend letter size, and (4) approved marker length.

For pipes with outside diameter under 3/4 inch (too small for color bands and legends), brass identification tags (1 1/2 inch diameter with depressed 1/4 inch high black-filled letters above 1/2 inch black-filled numbers) will be fastened securely by meter seals or brass jack chain at specified locations.

Locations for pipe markers and identification tags to be as follows:

1. Adjacent to each valve and fitting.
2. At each branch and riser take off.
3. At each pipe passage through walls, floors or ceilings.
4. On all straight pipe runs every 25 feet.

HANGERS AND SUPPORT WORK

Hang all piping 1½ inches and larger on ten foot maximum centers; ¾" to 1" on 7'-6" maximum centers; ½ inch and below on 4'-0" maximum centers.

Hang all cast iron piping at every hub for pipe lengths and every other hub for fittings groups. Support vertical runs of piping with flat steel bar clamp hangers at each floor, or as detailed on drawings.

Hangers in building solid or split-type supported by vertical steel rods from masonry inserts, expansion shields or beam clamps. Where two or more piping runs are parallel, and grade to the same point, trapeze-type structural steel hangers may be used. All steel hanger materials shall be primed and painted. Brass, copper or lead insert hangers for insulated copper piping. Piping hangers below grade shall be ¼ inch round stainless steel.

Provide galvanized steel saddle between covering and pipe hanger on insulated pipes; pipe up to four inch diameter, 18 gauge x 12 inches long.

Support all piping independently of all equipment and arrange hangers to isolate any vibration transmission from piping to structure.

Perforated strap or band hangers not permitted.

Furnish and install steel supports and framework for each item of equipment or fixture in accordance with the manufacturer's recommendations or as detailed on drawings. All such work shall meet all applicable requirements specified under structural steel.

All mechanical work supported on walls or partitions by means of appropriately sized galvanized toggle bolts.

INSTALLATION OF PIPING

Install all piping so that it may expand and contract freely without damage to equipment, other work or injury to piping system. Support piping independently of all equipment.

Install necessary swing joints, expansion joints or offsets to protect piping systems, equipment or other work from damage whether indicated on drawings or not.

Install unions adjacent to all screwed cocks, control valves, discharge from relief valves. Flanged fittings are considered equivalent to union connections.

Install piping parallel and/or perpendicular to building floor, wall or ceiling planes, unless otherwise shown on drawings.

