

SECTION 15010 - MECHANICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract apply to the work specified in DIVISION 15 - MECHANICAL.

B. Separation of Division 15 into Sections is for convenience only and is not intended to establish limits of work. Sections are as follows:

1. 15010 - MECHANICAL GENERAL PROVISIONS
2. 15400 - PLUMBING SYSTEMS
3. 15600 - HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS
4. 15650 - HEATING, VENTILATING AND AIR CONDITIONING CONTROL SYSTEMS

1.2 SCOPE

Provide labor, materials and equipment for complete and operating systems.

1.3 CUTTING AND PATCHING

A. Cutting and patching for the work of this Division shall be in accordance with the requirements of the General Conditions.

B. Work of this Division shall include providing information for any required openings to those responsible for concrete slabs and other concrete members. Openings associated with work of this Division not indicated or specified in other Divisions, shall be work of this Division.

C. Field cut openings shall be located to avoid the reinforcing. Locations shall be subject to approval of the Architect.

D. No structural members shall be field cut or pierced without the written approval of the Architect.

1.4 DRAWINGS

The drawings are diagrammatic and are intended to show the general arrangement and approximate physical sizes of equipment, piping and ductwork. Every nut, bolt, brace,

hanger, piping or duct rise, drop, offset, etc., is not indicated or specified; each item required, necessary or incidental, for the proper and dependable operation of each system shall be provided under this Division whether specifically referred to or not. Refer to architectural drawings for necessary dimensions.

1.5 CODES AND PUBLICATIONS

A. Work shall be executed in accordance with the presently enforced Codes and Publications which shall include but shall not be limited to the following:

1. Jefferson Parish Building Code
2. Jefferson Parish Mechanical Code
3. Jefferson Parish Plumbing Code
4. ASPE Data Book
5. ASHRAE Publications
6. Louisiana State Fire Marshal Act
7. SMACNA, Sheet Metal and Air Conditioning Contractors National Association
8. NFPA 101 - Safety to Life from Fire in Buildings and Structures Code
9. NFPA 90A - Installation of Air Conditioning & Ventilating Systems
10. NFPA 70 - National Electrical Code

B. Where the above are at variance with the drawings or specifications, the more stringent requirements shall be applicable.

1.6 REVIEWS, PERMITS AND INSPECTIONS

A. Where equipment is located at exterior of buildings or structures, the minimum elevation for their installation shall be not more than 6" below existing building slab but a minimum of 4" above grade or 6" above the FEMA Base Flood Elevation. Contractor shall obtain this flood elevation from a licensed surveyor and pay the cost associated therewith. Contractor shall provide documentation to the Architect to confirm that this requirement has been met.

B. Apply for and pay for governmental and regulatory agency reviews, permits and inspections. Provide riser diagrams, sketches, etc. as required by regulatory agencies for permit issuance.

C. No work shall be concealed until approved by the governmental or regulatory agency inspectors and the Architect. Local regulations shall be adhered to.

D. Upon completion, a Certificate of Approval from the appropriate regulatory agencies shall be provided the Architect.

1.7 FEES AND DEPOSITS

A. Arrange for and pay inspection and service connection fees (sewer and water).

1.8 VISITING SITE

The Bidder shall visit the site of proposed work so that he may understand the facilities, difficulties, and restrictions attending the execution of the Contract. No additional compensation will be allowed for failure to be so informed.

1.9 UTILITY CONNECTIONS

A. Verify depth of each utility and resolve conflicts that may arise due to interference of existing mains that may prevent project utilities from connecting to existing mains prior to start of any work.

B. No additional compensation will be allowed for conflicts that occur due to the lack of coordination.

1.10 WORK IN OTHER DIVISIONS

A. Prior to bidding the Contractor shall coordinate items of work referred to as **"work of other Divisions"** to insure items are not omitted or duplicated.

B. Electrical work (wiring, raceways, and disconnect switches) associated with work of this Division, and not specified as work of DIVISION 16 - ELECTRICAL, shall be work of this Division.

C. Supports for work of this Division, except supports specifically indicated to be provided under other Divisions, shall be provided as work of this Division. Supports provided under other Divisions shall be checked and coordinated under this Division to ensure that they suit the work to be installed.

D. Painting, including painting of exposed insulation, exposed piping, and exposed ductwork not specified as work of DIVISION 9 - FINISHES, shall be work of this Division. Damaged surfaces of factory finished items shall be repaired to the satisfaction of the Architect as the work of this Division. Nameplates shall be protected until painting has been accomplished. Protection shall be removed and nameplates cleaned prior to acceptance of equipment.

E. Door grilles and access doors provided under this Division and not specified for installation as work of other Divisions, shall be installed as work of this Division.

1.11 MANUFACTURER'S RECOMMENDATIONS

Equipment and materials provided under this Division of the specifications shall be installed according to manufacturer's recommendations. Each manufacturer's application and installation instructions shall be reviewed prior to ordering equipment or commencing with the work. If the drawings or specifications show or describe any deviations from the manufacturer's recommendations the Contractor shall request clarification, from the Architect and provide as directed at no additional cost to the Owner.

1.12 GUARANTEE AND SERVICE

A. The equipment, materials and workmanship shall be guaranteed for one year after beneficial use of a particular system, beneficial occupancy of the building or final acceptance of entire project. Where specifically indicated extended warranties shall be provided. Beginning date of guarantee will be established only after written request is received by the Architect from the Contractor, and agreed upon by the Architect, stating the date the systems were turned over to the Owner for beneficial use or occupancy.

B. During the one year period of guarantee, any defects in equipment, materials, or workmanship shall be promptly corrected without cost to the Owner. Mechanical and associated electrical equipment shall be serviced and adjusted without cost during the guarantee period. Servicing and adjusting shall include labor, material, parts, etc., required during the first year. It includes but is not limited to:

1. Oiling motors.
2. Adjusting belts.
3. Adding refrigerant.
4. Adjusting and calibrating controls.

1.13 INTERRUPTION OF SERVICES

A. Services in existing buildings are to be kept in operation during renovations, except when specific permission is given to do otherwise. Before any services are interrupted, arrangements shall be made with the Owner to do this work at a time most convenient to the Owner. This procedure may involve working at night, on Saturday or Sunday, or at a special time of the year, with the length of time of the interruption agreed upon in advance. Once any service is interrupted, work to restore the service shall be on a continuous basis unless temporary service is provided or approval is obtained from the Owner to do otherwise. Temporary services indicated or required shall be provided as

work of this Division. Allowance shall be made in the bid for the cost of any overtime in this connection.

B. Provide valves, caps, plugs, flanges, piping, etc. as required so that the existing utility can be placed back into service with provisions for the utility to be extended without an additional shutdown.

1.14 DEMOLITION

A. Demolition work shall conform to the applicable requirements of DIVISION 1 - GENERAL REQUIREMENTS.

B. Existing fixtures, equipment, piping and/or ductwork not being re-used shall be disconnected and removed. Services serving the equipment being removed shall be removed back to the next piece of equipment which remains, or to the existing main and/or duct which remains, and shall be capped or plugged, unless otherwise noted on the drawings. Refer to architectural and mechanical drawings and specifications for more detailed requirements.

C. Care shall be taken in the removal of fixtures, equipment, piping and/or ductwork which the Owner elects to retain.

D. In the removal of existing fixtures, equipment, ductwork and/or piping, that portion of any system which remains shall continue to function as before.

E. Routings indicated for existing mechanical systems are approximate. Field verify existing conditions prior to ordering equipment or materials and make field adjustments as required.

1.15 EXISTING WORK

A. Exercise care in the installation of new work so as not to render any of the existing systems inoperable.

B. Should the installation of new fixtures, equipment, piping and/or ductwork require the temporary removal and reinstallation or modification and relocation of existing fixtures, equipment, piping and/or ductwork, the cost shall be included as work of this Division and no additional compensation will be allowed.

C. Where existing piping systems are indicated to be re-used, it is not possible to guarantee that the existing systems are completely suitable to be re-used. Before the systems are placed into service, a thorough check shall be made of existing equipment, piping systems, ductwork, etc., that will not allow new or existing equipment, piping, or duct systems to operate properly and shall notify the Architect of any deficiencies found. Submit a description of the proposed remedial work to correct any deficiencies along with a detailed cost estimate.

D. Verify field conditions, dimensions and sizes of existing piping and ducts, etc., required for work of this Division to connect with existing work now in place. Any discrepancies between the Contract Documents and the existing conditions shall be referred to the Architect prior to ordering materials or performing any work affected by these discrepancies.

E. When connecting to existing sewer systems, field verify location depth, size, slope, and direction of flow prior to performing any work.

1.16 EXISTING EQUIPMENT AND MATERIALS

Mechanical equipment removed and not indicated to be re-used shall be stored in one location on the site. Any equipment or material which the Owner does not designate to be retained shall become the property of the Contractor and shall be removed from the site by him.

1.17 SPECIAL CONDITIONS

No piping, ducts or other mechanical equipment foreign to electrical equipment shall pass through or above spaces dedicated to electrical panelboards, electrical distribution panels, electrical switchboards, and motor control centers. Work shall conform with NFPA 70. Working clearances and dedicated spaces at electrical equipment shall be maintained per NFPA 70. Coordinate with all trades.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

Equipment and materials shall be new and shall be listed by Underwriters' Laboratories, Inc. (UL) or Factory Mutual (FM) in categories for which standards have been set by that agency. Methods of installation shall be in full accord with the latest and best engineering practices.

2.2 SUBSTITUTIONS

A. Names of manufacturers and catalog numbers indicated in the Contract Documents are to establish a standard as to design and quality. Other products similar in design and of equal quality may be used if submitted to the Architect and found acceptable. Refer to General Conditions for additional information.

B. When the Contractor elects to use an acceptable alternate manufacturers' equipment, the Contractor shall be responsible to coordinate the change with the trades affected. The Contractor shall also pay for any additional work required under this Division as well as any other Division if the alternate equipment is used.

C. If required by Architect because of substitutions, submit for review 1/4" scale working drawings of equipment areas with plan and section views.

2.3 SUBMITTALS

A. Within 30 days after award of the Contract, and before executing any work, submit for review six copies of descriptive equipment literature or shop drawings **in one complete indexed and bound submittal** for the following items:

Access Doors	Flexible Duct and Fittings
Magnetic Starters	Condensing Units
Plumbing Valves and Cocks	Air Handling Units
Cleanouts and Covers	Fans and Accessories
Insulation	Air Distribution Devices
Plumbing Fixtures & Trim	HVAC Control System Drawings
Drains	HVAC Control System Components
Water Heaters	Testing and Balancing Contractor
Refrigerant Specialties	

B. The same equipment manufacturer shall be provided for multiple items of similar equipment, regardless of capacities, on this project, unless prior written deviation is given by the Architect.

C. Where applicable, submissions shall include installation drawings and brochures showing locations, methods of anchoring, connections to work of others, wall conditions at each particular installation and special floor mounting conditions.

D. Submittals shall be identified with project name, equipment name and number as indicated on the drawings, and specification paragraph reference. Submittals shall be properly marked to show proposed model number and accessories being provided and shall have the Contractor's stamp certifying that he has reviewed the submittal and found it to be in accordance with the specifications and drawings.

E. Submittals which do not comply with the above will be returned without review, for resubmittal.

2.4 ACCESS DOORS

A. Doors in gypsum board or masonry construction shall be Karp type DSC-214M or Milcor style M-Standard, 16-gauge steel frame and 14-gauge steel door construction, continuous piano hinge and a zinc chromate prime coat.

B. Doors in glazed or ceramic tile construction shall be same type as above except stainless steel construction.

C. Doors in inaccessible acoustical tile ceilings, or walls with wall covering shall be Karp type DSC-210, or Milcor style AT 16-gauge steel frame and 18-gauge steel panel construction, recessed door for acoustical tile or gypsum board covered with matching wall covering, concealed hinge with a zinc chromate prime coat, and exposed edges painted white when installed in acoustical tile ceiling.

D. Doors in fire rated partitions or ceilings (up to 1½ hour rating) shall carry the Underwriters' Laboratories "B" label; Karp style KRP-150FR or Milcor style.

E. Doors required in types of construction not hereinbefore specified shall suit the type and style of material in which installed.

F. Unless otherwise indicated, doors shall have screw driver operated locks.

G. Acceptable manufacturers: Boico, Croker, Karp, Milcor, or approved equal.

2.5 ENCLOSURES

A. Control equipment enclosures such as, but not limited to, starters, temperature control panels, etc., provided by the Contractor or provided as part of a packaged piece of equipment shall meet the following minimum standards unless specifically indicated otherwise.

B. Control equipment enclosures provided within the building shall be equivalent to or greater than NEMA 1 type construction.

C. Control equipment enclosures provided outside of the building, or a non-enclosed area shall be equivalent to or greater than NEMA 3R type construction with drain and breather.

2.6 MAGNETIC STARTERS

A. Provide combination type magnetic starters for three phase motors. Provide magnetic starters or contactors for single phase motors which start and stop as part of an automatic control sequence. Unless noted otherwise magnetic starters shall be across-the-line type rated per NEMA standards. Starters shall have under voltage protection when used with momentary-contact push button stations and shall have undervoltage release when used with maintained contact push button stations. Enclosures for starters shall be as hereinbefore specified. Starters in motor control centers shall be fully compatible with the motor control center. Provide two-speed starters for two-speed motors. Two-speed starters shall have timing relay for time delay between speed changes.

B. Starters shall be non-reversing type complete with integrally fused 120 volt control transformer, start-stop push button and pilot light or hand-off-auto switch and pilot light, where indicated, or as required for control. Starters for motors interlocked to run with other motors or which have automatic start-stop controls (exclusive of safety controls such

as firestats, freezestats, etc.) shall have hand-off-auto switch. Starter shall be wired so as not to by-pass safety controls when in the "hand" position.

C. Starter contacts shall be of silver alloy, and shall be of the double break type. The movable magnet and contact assembly, an arc hood in which the fixed contacts are mounted, solenoid cell, and thermal overload relays (one in each phase) shall be assembled and mounted on a heavy steel back plate. The only moving part shall be the magnet and contact assembly which shall move up and down. Each pole shall be enclosed in an individual arc chamber.

D. Starters for 5 horsepower and larger 3-phase motors shall include under voltage/phase-reversal/phase-loss protection relay wired into the control circuit.

E. Overload protective devices shall be selected in accordance with the motor nameplate, and shall be of the thermal inverse time limit type and shall include a manual reset type push button on the outside of the cover. Overloads shall operate on the melting alloy principle.

F. Starters shall have normally open and/or closed external electrical interlocks as required to suit equipment controlled.

G. Magnetic starters shall include a disconnect switch with visible blades and Class R fuse rejection features.

H. Acceptable manufacturers: Furnas Class 14, Square D Class 8536, GE Series 300 or approved equal.

2.7 MAGNETIC CONTACTORS

Magnetic contactors shall be Square D Series 8903-SMG70-V02 or equal, 30A, 3 pole, mechanically held, with 120 volt coil and non-fused disconnect.

2.8 MOTORS

A. Unless otherwise indicated, motors shall be NEMA Design B, constant speed, variable torque construction. Motors shall conform to the Energy Policy Act of 1992 and shall be of the premium efficiency type suitable for use with variable speed (variable frequency or voltage) motor drives. Electrical characteristics shall conform with the electrical supply as indicated on the electrical drawings.

B. Single-phase motors shall be split-phase or capacitor start type with built-in thermal overload. Three-phase motors shall be squirrel cage type.

C. Motors shall be guaranteed to operate continuously at full load with a 10% voltage variation above or below the specified voltage. Motors shall be rated for an ambient temperature of 40 degrees C and a temperature rise not to exceed 40 degrees C

with a 1.15 service factor. Motors shall have either sleeve or pre-lubricated ball bearings as required for the particular application.

D. Motors shall be copper wound. Open drip-proof (ODP) motors shall have Class B insulation. Totally enclosed (TE) or totally enclosed fan cooled (TEFC) motors shall have Class F insulation. Motors shall be T-frame conforming to NEMA MG13 and tested in accordance with NEMA MG1 Part 12 and IEEE Test Procedure 112, Method B. Nameplate information shall include the manufacturer's nominal and guaranteed efficiency values.

E. Unless noted otherwise on the drawings or in the specifications, housings for motors in indoor locations shall be open drip proof (ODP) type. Motors in outdoor locations or subject to excessive moisture shall be totally enclosed (TE) or totally enclosed fan cooled (TEFC) type. Belt drive motors shall have bases with provisions for adjustment in field.

F. Motors provided on equipment not as an integral part of the equipment but propelling the equipment by the use of belts, sheaves, couplings, etc., shall be as manufactured by Emerson, General Electric, Marathon, U.S. Electric, or approved equal. Alternate manufacturers requesting approval shall submit evidence of a factory authorized service facility within a reasonable distance of the project to service or replace motors under warranty. Motors manufactured by or specifically for equipment manufacturers and provided as an integral part of the equipment package need not comply with the requirements of this paragraph.

2.9 SAFETY PANS

A. Safety pans shall be fabricated from 18-gauge (min.) galvanized sheet steel. Sides of pans shall be a minimum of 2" high with top edges hemmed. Sides longer than 6'-0" shall have additional flat bar or angle top edge bracing to prevent sagging. Joints and seams shall be watertight. Pans shall extend at least 6" beyond the sides of the equipment it is serving.

B. Provide a 1" steel female pipe coupling in side of pan near the bottom for overflow piping connection.

2.10 PREPARED OPENINGS

A. Piping and tubing installed through masonry walls, floor/ceiling assemblies, and floors above grade shall pass through pipe sleeves.

B. Ducts installed through masonry walls and non-rated concrete floors above grade shall pass through 20-gauge galvanized sheet metal sleeves. Duct sleeve shall have a 1/2" maximum annular clearance around duct. Allowance shall be made for external duct wrap (if specified).

