DIVISION 15

MECHANICAL

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ARCHITECTURE

INTERIOR DESIGN

PLANNING

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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. 15450 - MEDICAL GAS SYSTEMS
4. 15500 - FIRE PROTECTION SYSTEMS
5. 15510 - FIRE SUPPRESSION SYSTEMS
6. 15600 - HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS
7. 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. International Building Code
2. International Gas Code
3. International Fuel Gas Code
4. Louisiana State Plumbing Code - 2000 Edition
5. ASPE Data Book
6. ASHRAE Publications
7. Louisiana State Fire Marshal Act
8. SMACNA, Sheet Metal and Air Conditioning Contractors National Association
9. NFPA 101 - Safety to Life from Fire in Buildings and Structures Code
10. NFPA 90A - Installation of Air Conditioning & Ventilating Systems
11. NFPA 2001- Clean Agent Fire Extinguishing Systems
12. NFPA 13 - Sprinkler Systems
13. NFPA 26 - Supervision of Valves Controlling Water Supplies for Fire Protection
14. NFPA 70 - National Electrical Code
15. NFPA 72 - National Fire Alarm Code
16. NFPA 99 - Health Care Facilities
17. Compressed Gas Association - P-2.1 Standard for Medical Surgical Systems in Hospitals

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

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

C. 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 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 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. Fire alarm work (wiring and raceways) associated with work of this Division shall be work of other Divisions.

D. 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.

E. 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.

F. 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.

1.10 MANUFACTURER'S RECOMMENDATIONS

Equipment and materials provided under this Division of the specifications shall be installed according to manufacturer's recommendations. Each manufacturers' 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.

1.11 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.

1.12 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.

1.13 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.

1.14 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 and duct 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 systems, field verify positions of supply and return piping before performing any work. The directional flow arrows and piping labels indicated on the drawings shall be confirmed before performing any work. Report any discrepancies to the Architect before proceeding.

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

G. When connection to existing systems field verify the service of the existing pipe before performing any work.

1.15 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.

1.16 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 ¼" 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
Magnetic Starters
Plumbing Valves and Cocks
Cleanouts and Covers
Insulation
Plumbing Fixtures & Trim
Drains
Flow Measuring Devices
Medical Gas System Equipment
Medical Gas Installer Certification
Fire Protection Shop Drawings
Fire Protection Equipment

Fire Suppression Shop Drawings
Fire Suppression Equipment
HVAC Valves
HVAC Water Specialties
Flexible Duct and Fittings
Rooftop Units
Filters
Fans and Accessories
Dampers
Variable Speed Drives
Air Distribution Devices
Air Terminal Units
HVAC Control System Drawings
HVAC Control System Components
Testing and Balancing Contractor

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 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.

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, a non-enclosed area shall be equivalent to or greater than NEMA 3R type construction with drain and breather.

D. Where indicated on the drawings flush mounted enclosures shall be provided.

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. Two-speed starters shall have hand-off-high-low selector switches and pilot lights. 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.