

SECTION 200500 – COMMON WORK RESULTS FOR PLUMBING, AND MECHANICAL

1.1 GENERAL CONDITIONS

A. The General Conditions, Supplemental General Conditions, Special Conditions and General Requirements are part of this contract and shall be referred to as they apply to this section of the specifications.

1.2 EXAMINATION OF SITE

A. Visit the site, inspect the existing conditions, and check the drawings and specifications so as to be fully informed of the requirements for completion of the work. Lack of such information shall not justify an extra to the contract price.

1.3 SCOPE

A. The Mechanical Work shall include labor, materials, and equipment to install systems as shown on plans and hereinafter specified. The installation shall include all labor, materials, tools, transportation, equipment, services, and facilities, required for the complete, proper, and substantial installation of all mechanical work shown on the plans, and/or outlined in these specifications. The installation shall include all materials, appliances, and apparatus not specifically mentioned herein or noted on the drawings, but which are necessary to make a complete working installation of all mechanical systems.
B. Show on prints in red ink all changes from original plans made during the installation. Return these prints to the Architect upon completion of the project.
C. By bidding, this contractor acknowledges his understanding of the work to be done and agrees to install complete and workable systems.

1.4 CODES

A. Execute work in compliance with all applicable Federal, State and Municipal laws, codes, ordinances, and local customs regarding the trade to perform the work.
B. Codes shall govern in case of any direct conflict between codes and plans and specifications; except when plans and specifications require higher standards than those required by code.
C. In addition, the following published Standards and Regulations shall be adhered to as applicable to the work involved:
Latest issue of the Local, State, and International Building, Plumbing, Mechanical, Fire, and Energy Conservation Codes.
Latest issue of any applicable ASHRAE Guideline
Latest issue of the SMACNA Handbook
Applicable NFPA Pamphlets
Applicable ANSI Standards
American Standards Association Code for Mechanical Occupational Safety and Health Act
Current Editions of Uniform Building Code
Latest issue of the State Air Pollution Control Regulations
Americans with Disabilities Act

1.5 DEFINITIONS

A. It shall be understood that the drawings and specifications complement one another, and items specified shall also meet the criteria set forth on the drawings.
B. Where any device or item is referred to in the singular sense (such as "the unit"), such reference applies to as many devices as are required to complete the installation as shown on the drawings.
C. The term "work" shall mean all obligations imposed upon the Contractor by the Contract Documents.

1.6 ABBREVIATIONS

ADA – Americans with Disabilities Act
AGA – American Gas Association
AISI – American Iron and Steel Institute
AMCA – Air Moving and Conditioning Association, Inc.
ANSI – American National Standards Institute
ASHRAE – American Society of Heating, Refrigeration & Air-Conditioning Engineers, Inc.
ASME – American Society of Mechanical Engineers
ASTM – American Society for Testing and Materials
AWWA – American Water Works Association
BPVC – Boiler and Pressure Vessel Code of ASME
CISPI – Cast Iron Soil Pipe Institute
NFPA – National Fire Protection Association
SMACNA – Sheet Metal and Air-Conditioning Contractors National Association, Inc.
UL – Underwriters' Laboratories, Inc.
ETL – ETL Testing Laboratories, Inc.
OSHA – Occupational Safety and Health Administration

1.7 PERMITS

A. Obtain and pay for all licenses and permits, fees, inspection and certificates required for the execution of this work.
B. Pay fees and charges for connection to outside services and use of property.
C. Deliver permits and certificates to the Project Manager for transmittal to the Owner.

1.8 RESPONSIBILITY

A. This contractor will be held responsible for any and all damage to any part of the building or to the work of other contractors, as may be caused through his operation.
B. The operation and maintenance of the New Mechanical Equipment during construction shall be the responsibility of this contractor until the acceptance of the building by the Owner.
C. This Contractor shall make all provisions for entry of equipment, installed under this Contract, to the installed location. This Contractor shall provide openings in existing construction if necessary. This Contractor shall do all repair necessary to restore the building to the original condition. During the period of entry of equipment and removal of trash, no disruption of the Owner's normal business shall occur.

1.9 WORK TO BE DONE BY GENERAL CONTRACTOR

A. Build in all openings, sleeves, chases, etc., for piping, as established, furnished, and set by this contractor.
B. Mechanical Contractor shall furnish bolts, brackets, hangers, etc., required for work established and arrange for General Contractor to build into concrete structure. General Contractor shall install all factory sleeved fire dampers, furnished by Mechanical Contractor, in walls and floors.
C. Build concrete base for equipment furnished and set by this contractor.

1.10 WORK TO BE DONE BY ELECTRICAL CONTRACTOR

A. The Electrical Contractor shall provide all motor starters complete with auxiliary contacts where required for the function of this system unless specifically noted otherwise on the plans or in these specifications.
B. All required line voltage wiring for the mechanical control system shall be furnished and installed by the Electrical Contractor under supervision of the Control Manufacturer's representative.
C. Check mechanical specifications to verify wiring requirements for motor driven equipment. Provide complete wiring for the equipment including all required interlocking. Provide complete wiring for power factor correction capacitors.

1.11 ELECTRICAL REQUIREMENTS BY MECHANICAL CONTRACTOR

A. Mechanical Contractor shall furnish all motors, motor interlocking control devices, certain magnetic starters, etc.
B. Submittals shall include complete equipment wiring diagrams and temperature control drawings for all the equipment furnished.
C. Submittals shall show all wiring connections, starters, auxiliary contactors, interlocking selector switches, separate control voltage power supplies, for each and every item of equipment, etc., requiring wiring.
D. Provide one copy of Engineer approved shop drawings showing all wiring and temperature control requirements of all mechanical equipment to the Electrical Contractor.

1.12 WORKMANSHIP AND COORDINATION

A. Make installation substantially as shown on the plans.
B. Pipe routing and equipment location shown on the drawings are schematic in nature. Make alterations in location of apparatus or piping as may be required to conform to building construction without extra charge.
C. Equipment service clearances, per equipment manufacturers' specifications, shall be maintained from general construction. No pipe shall be installed within these clearances. No piping shall be installed above electrical panels, starters or switch gear.
D. Cooperate with other contractors in their installation of work.
E. The ductwork shall take precedence over all pipe work except where it is necessary to maintain an even grade or specific slope on the piping.
F. Use only experienced mechanics.

1.13 MATERIALS

A. Material and equipment shall be new, of best quality and design and free from defects. A manufacturer's nameplate affixed in a conspicuous place will be required on each major component of equipment stating manufacturer's name, address, and catalog number.

1.14 MATERIALS OF APPROVED EQUAL

A. Where items of equipment and/or materials are specifically identified herein by a manufacturer's name, model, or catalog number, only such specific items may be used in the base bid, except as hereinafter provided.
B. Unless requests for changes in base bid specifications are received and approved and noted by addendum prior to the opening of bids, the successful contractor will be held to furnish specified item.
C. After contract is awarded, changes in specifications shall be made only as defined under "Substitution of Equipment".

1.15 SUBSTITUTION OF EQUIPMENT

A. After execution of the contract, substitution of equipment of makes other than those specifically named in the contract documents will be approved by the Engineer only if the equipment named in the specifications cannot be delivered to the job in time to complete the work in proper sequence to work of other contractors, due to conditions beyond control of the contractor.
B. Requests for substitutions must be accompanied by documentary proof of equality or difference in price and delivery, if any, in form of certified quotations from suppliers of both specified and proposed equipment.
C. The Owner shall receive all benefits of the difference in cost involved in any substitution, and the contract altered by change order to credit Owner with any savings so obtained.

1.16 SUBMITTALS

A. Contractor shall send for approval submittals on all equipment, accessories, and components.
B. Submittals shall be in electronic format (PDF) and all submittals by each trade shall be submitted together as a package to be reviewed together. Incomplete submittals packages or submittals sections sent in a piecemeal manner will not be reviewed until all sections are received.
C. Where catalog cuts are used, mark them to indicate equipment, capacities, controls, fittings, valves, sizes, etc.
D. Reference each item to applicable specification paragraph number and plan sheet number. Reference items not appearing in base specification to applicable alternate numbers, change order numbers, letters of authorization, etc.
E. All shop drawings shall be checked and signed by the mechanical contractor prior to submittal to the Engineer.
F. Shop drawings submitted without contractor's signature or approval and verification will not be approved. Quantities will not be checked or verified. It is the contractor's responsibility to provide the proper quantities required to complete the job.
G. Portions of the work requiring a shop drawing submittal shall not begin until the shop drawing has been approved by the Engineer.
H. Submit wiring diagrams for all mechanical equipment requiring field wiring clearly showing all required connections.
I. Engineer's acceptance of Compliance Submittals will not relieve Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and Engineer has given written approval to the specific deviation, nor shall any acceptance by Engineer relieve Contractor from responsibility for errors or omissions in Compliance Submittals.

1.17 CUTTING AND PATCHING

A. Notify the General Contractor in ample time, of the location of all chases, sleeves, and any other openings required in connection with the work of this contract.
B. Cutting and patching made necessary because of failure to comply with the above shall be done by the General Contractor at the expense of the Mechanical Contractor.

1.18 TESTING

A. Furnish testing equipment and test all piping systems under methods and conditions as specified.
B. Test for a period of not less than 12 hours in the presence of the architect. Provide photographic evidence signed off by the GC superintendent.
C. Make all necessary replacements and repair and repeat tests until the entire system is approved and satisfactory.
D. Test under pressure with liquid or gas as directed or specified.
E. Refer to TAB and piping sections for further information on pipe testing.

1.19 PAINTING

A. All painting shall be done by the General Contractor.
B. Painting shall be for the following items: all piping, framework, and all accessories not furnished with factory finish, etc., in all exposed areas of the building and/or as noted on the drawings. Omit painting of piping in tunnels and in concealed areas.

1.20 LOOSE EQUIPMENT

A. All keys and special wrenches furnished with the equipment shall be kept in a safe place during construction and presented to the Owner at the completion of the project.

1.21 FINAL INSPECTION

A. Final inspection will be made upon written request from the Mechanical Contractor after the project is completed and Test and Balance (TAB) has been complete.
B. Furnish a workman familiar with this project to accompany the Engineer on final inspection and have available ladders, drop cords, and other equipment as required to gain access to any portion of this system.
C. Submit TAB Report to Engineer for review at least 5 days prior to final inspection.
D. This contractor and his principal sub-contractors shall be represented at the inspection by a person of authority responsible to demonstrate to the Engineer that his work conforms to the intent of the plans and specifications.
E. Extra inspections made necessary by the Mechanical Contractor's failure to comply with the conditions as set forth above shall be charged to the contractor at the inspector's time both on the job and spent in travel between the office and the project site.

1.22 GUARANTEE

A. Guarantee all work, material, and equipment for a period of one year after date of final certificate of acceptance by the Architect.
B. During the year guarantee period the mechanical contractor shall be responsible for any defects which develop in the mechanical systems. Upon notification of a defect by the Architect, (s)he shall make immediate effort to correct it and shall notify the Architect when this work is completed.
C. Repairs and/or replacements shall be made with no cost to Owner.

SECTION 200600 – MATERIALS AND METHODS COMMON TO PLUMBING, AND MECHANICAL.

1.1 PIPING SYSTEMS – GENERAL

A. Pipe for piping systems shall be cut accurately to measurements taken on the job.
B. Install offset connections for alignment of vertical to horizontal piping wherever required to make a true connection.
C. Make branch connections with offsets to provide for movement with the expansion of the piping system.
D. Install horizontal piping parallel to the building walls and partitions.
E. Do not run piping through elevator equipment rooms, transformer vaults or other electrical equipment spaces or above electrical gear or panels.
F. Valves, strainers, control valves, check valves and fittings shall be full size of the line they serve. Make change in pipe size noted on plans after last fitting on larger pipe. When supply pipes are larger than equipment tapings, reduce pipe size immediately prior to entry.

1.2 PIPE AND FITTINGS

A. Each piece of pipe must be clearly labeled or stenciled with manufacturer's name, type of pipe and length, in accordance with ASTM standards. All pipe must be new. Re-processed pipe which has been cleaned and re-finished due to extended yard storage will not be accepted. All pipe must be corrosion free. Submit shop drawings on piping along with certified mill specifications.
B. Polyvinyl Chloride Pipe and Fittings conform to ASTM D2665.
C. Copper tubing: seamless copper water tube conforming to ASTM Standard Specification B88.
D. Weld in accordance with American Welding Society Code. Mitering and notching of pipe to form elbows and tees is not permitted.

1.3 HANGERS AND SUPPORTS

A. Manufacturers: Crane – B-Line – Grinnel – Unistrut – Elcen.
B. Use strap type pipe ring hangers on pipe up thru 3" equal to Grinnel Fig. 69 or CT-69.
C. Use inserts or supporting members in construction above for overhead suspension. Set inserts or supporting members for hangers in form for concrete construction. Use expansion inserts only where approved by the Architect's inspector.
D. Use heavy welded steel brackets for wall suspension. Mount brackets and wall supports on masonry walls with bolts through the wall and a suitable steel back plate on the back of the wall.
E. Provide all surface mounted and concealed unistrut for pipe supports in all equipment rooms and above ceilings for pipe mounting. Unistrut shall all be at a minimum of heavy 12 ga., 1-5/8" construction. Contractor shall insure adequate support of each unistrut section based on the load that section is to handle.
F. Use copper plated hangers for copper pipe.
G. Space hangers 8'-0" on center for copper pipe up to 1".
H. Space hangers 10'-0" on center for copper pipe above 1".
I. Space hangers 4'-0" on center for PVC.
J. Mount piping so that all runs are parallel and evenly spaced.
K. Except as otherwise indicated, provide factory-fabricated vertical-piping clamps complying with MSS SP-58, of one of the following types listed, selected by Installer to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.
L. Two-Bolt Riser Clamps: MSS Type 8.

M. Except as otherwise indicated, provide factory-fabricated building attachments complying with MSS SP-58, of one of the following MSS types listed, selected by Installer to suit building substrate conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods. Provide copper-plated building attachments for copper-piping systems.

- i. Concrete Inserts: MSS Type 18.
ii. Top Beam C-Clamps: MSS Type 19.
iii. Side Beam or Channel Clamps: MSS Type 20.
iv. Center Beam Clamps: MSS Type 21.
v. C-Clamps: MSS Type 23.
vi. Side Beam Clamps: MSS Type 27.
vii. Malleable Beam Clamps: MSS Type 30.
viii. Steel Brackets: MSS Type 31.
ix. Light Duty: MSS Type 34.
x. Side Beam Brackets: MSS Type 34.

N. Install hangers and supports to allow controlled movement of piping systems and to permit freedom of movement. Resting of pipe in framing or structural members is not permitted.
O. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
P. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes, and so that maximum pipe deflections allowed by ANSI B31 are not exceeded.
Q. Insulated Piping: Comply with the following installation requirements:
1. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.
2. Shields: Where low-compressive-strength insulation or vapor barriers are indicated on cold or chilled water piping, install coated protective shields.
3. Saddles: Where insulation without vapor barrier is indicated, install protection saddles.

1.4 VALVES

A. Provide all valves required for operation, service, and maintenance of systems and equipment.

1.5 JOINTS

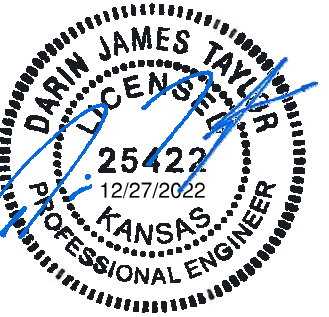
A. Provide joints of type indicated in each piping system.
A. Full and clean cut.
B. Ream to the full inside diameter of the pipe with all burrs removed.
C. Sweat joints in copper tubing – with 95-5 solder.
D. Braze copper tube-and-fitting joints in accordance with ANSI B31.
E. Solder copper tube-and-fitting joints in accordance with recognized industry practice. Cut tube ends square, ream to full inside diameter, and clean outside of tube ends and inside of fittings. Apply solder flux to joint areas of both tubes and fittings. Insert tube full depth into fitting, and solder in manner which will draw solder full depth and circumference of joint. Wipe excess solder from joint before it hardens.
F. Use insulating unions on HVAC lines where steel and copper pipe are joined.
G. Use brass ferrules on plumbing systems where dissimilar metals are joined.

1.6 UNIONS

A. Unions 2" and Smaller (150 WSP – 200 WOG): Standard Weight brass to iron seat malleable iron body with screwed ends – Walworth #7712 or #7762 – equivalent Crane or Stockham.
B. Install wherever necessary for repair, replacement, or service of the equipment or system.

1.7 COVER PLATES

A. Provide chrome plated brass cover plates attached to the sleeves independent of the pipe on all pipes which pass through floors, walls, and ceilings, in finished rooms. Beaton Corbin Co. Style 2-BC for copper tube and 13-BC for standard pipe.
B. Manufacturer: Subject to compliance with requirements, provide pipe escutcheons of one of the following:
i. Chicago Specialty Mfg. Co.
ii. Producers Specialty & Mfg. Corp.
iii. Sanitary-Dash Mfg. Co.
C. Provide pipe escutcheons as specified herein with inside diameter closely fitting pipe outside diameter, or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Furnish pipe escutcheons with nickel or chrome finish for occupied areas.
D. Pipe Escutcheons for Moist Areas: For waterproof floors, and areas where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split or split hinged.
E. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged.
F. Install pipe escutcheons on each pipe penetration thru floors, walls, partitions, and ceilings where penetration is exposed to view; and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.



CITY OF WICHITA, KS

CHENEY VARIABLE FREQUENCY DRIVE UPGRADE CHENEY, KS

Table with 2 columns: Field Name, Value. Fields include Issue, JOB NO. (217043-012), DATE (DECEMBER 2022), PM (RDB), DESIGNED BY (DJT), DRAWN BY (DJT), CHECKED BY (DJT).

MECHANICAL SPECIFICATIONS

M3.1

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