

<p><b>SECTION 200500 – COMMON WORK RESULTS FOR PLUMBING AND MECHANICAL</b></p> <p>1.1 GENERAL CONDITIONS</p> <p>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.</p> <p>1.2 EXAMINATION OF SITE</p> <p>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.</p> <p>1.3 SCOPE</p> <p>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.</p> <p>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.</p> <p>C. By bidding, this contractor acknowledges his understanding of the work to be done and agrees to install complete and workable systems.</p> <p>1.4 CODES</p> <p>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.</p> <p>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. Variance from the plan and specifications made to comply with code must be approved by the Architect. If approved they shall be made with no increased cost to the Owner.</p> <p>C. In addition, the following published Standards and Regulations shall be adhered to as applicable to the work involved:</p> <ul style="list-style-type: none"> <li>• Latest issue of the Local, State, and International Building, Plumbing, Mechanical, Fire, Fuel Gas and Energy Conservation Codes.</li> <li>• Latest issue of any applicable ASHRAE Guideline</li> <li>• Latest issue of the SMACNA Handbook</li> <li>• Applicable NFPA Pamphlets</li> <li>• Applicable ANSI Standards</li> <li>• Occupational Safety and Health Act</li> <li>• Current Editions of Uniform Building Code</li> <li>• Latest issue of the State Air Pollution Control Regulations</li> <li>• Americans with Disabilities Act</li> <li>• Latest issue of the Facility Guidelines Institute (FGI) Guidelines</li> </ul> <p>1.5 DEFINITIONS</p> <p>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.</p> <p>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.</p> <p>C. The term "work" shall mean all obligations imposed upon the Contractor by the Contract Documents.</p> <p>1.6 ABBREVIATIONS</p> <ul style="list-style-type: none"> <li>• ADA - Americans with Disabilities Act</li> <li>• AGA - American Gas Association</li> <li>• AISI - American Iron and Steel Institute</li> <li>• AMCA - Air Moving and Conditioning Association, Inc.</li> <li>• ANSI - American National Standards Institute</li> <li>• ASHRAE - American Society of Heating, Refrigeration &amp; Air-Conditioning Engineers, Inc.</li> <li>• ASME - American Society of Mechanical Engineers</li> <li>• ASTM - American Society for Testing and Materials</li> <li>• AWWA - American Water Works Association</li> <li>• BPVC - Boiler and Pressure Vessel Code of ASME</li> <li>• CISPI - Cast Iron Soil Pipe Institute</li> <li>• NFPA - National Fire Protection Association</li> <li>• SMACNA - Sheet Metal and Air-Conditioning Contractors National Association, Inc.</li> <li>• UL - Underwriters' Laboratories, Inc.</li> <li>• ETL - ETL Testing Laboratories, Inc.</li> <li>• OSHA - Occupational Safety and Health Administration</li> </ul> <p>1.7 PERMITS</p> <p>A. Obtain and pay for all licenses and permits, fees, inspection and certificates required for the execution of this work.</p> <p>B. Pay fees and charges for connection to outside services and use of property.</p> <p>C. Deliver permits and certificates to the Architect for transmittal to the Owner.</p> <p>1.8 RESPONSIBILITY</p> <p>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.</p> <p>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.</p> <p>C. The General Contractor shall pay for all fuel cost for operation of the equipment, unless indicated otherwise in the specifications.</p> <p>D. 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.</p>	<p>1.9 WORK TO BE DONE BY GENERAL CONTRACTOR</p> <p>A. Build in all openings, sleeves, chases, etc., for piping, as established, furnished and set by this contractor.</p> <p>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.</p> <p>C. Frame around and provide openings for ductwork, louvers, roof drains, etc.</p> <p>D. Build curb or install factory curb and provide flashing for roof mounted mechanical equipment. Provide heavy steel angle support under entire perimeter of roof curb for rooftop equipment. Metal deck and roof insulation shall be installed within the roof curb area of rooftop equipment for acoustical considerations.</p> <p>E. Provide lintels over wall openings.</p> <p>F. Build concrete base for equipment furnished and set by this contractor.</p> <p>G. Provide concrete housing for sewage ejector and pump pump basins.</p> <p>H. Paint all mechanical equipment so specified. Use paint which is specified by the Architect.</p> <p>I. Do excavation, provide moisture barrier, sand and/or gravel, tie down wire, and a minimum thickness of 3" of lightweight concrete for installation of duct below grade. Mechanical Contractor shall furnish duct and set in place in preparation for concrete pour.</p> <p>1.10 WORK TO BE DONE BY ELECTRICAL CONTRACTOR</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>D. The Electrical Contractor shall install the power factor correction capacitors furnished by the Mechanical Contractor for equipment so specified.</p> <p>1.11 ELECTRICAL REQUIREMENTS BY MECHANICAL CONTRACTOR</p> <p>A. Mechanical Contractor shall furnish all motors, motor interlocking control devices, certain magnetic starters, etc.</p> <p>B. Submittals shall include complete equipment wiring diagrams and temperature control drawings for all the equipment furnished.</p> <p>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.</p> <p>D. Provide one copy of Engineer approved shop drawings showing all wiring and temperature control requirements of all mechanical equipment to the Electrical Contractor.</p> <p>1.12 WORKMANSHIP AND COORDINATION</p> <p>A. Make installation substantially as shown on the plans.</p> <p>B. Pipe and duct 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.</p> <p>C. Equipment service clearances, per equipment manufacturers' specifications, shall be maintained from general construction. No pipe or ductwork shall be installed within these clearances. No piping, coils, or ductwork shall be installed above electrical panels, starters or switch gear, or in elevator equipment rooms.</p> <p>D. Cooperate with other contractors in their installation of work.</p> <p>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.</p> <p>F. Use only experienced mechanics.</p> <p>1.13 MATERIALS</p> <p>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.</p> <p>1.14 MATERIALS OF APPROVED EQUAL</p> <p>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.</p> <p>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.</p> <p>C. After contract is awarded, changes in specifications shall be made only as defined under "Substitution of Equipment".</p> <p>1.15 SUBSTITUTION OF EQUIPMENT</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>1.16 SUBMITTALS</p> <p>A. Contractor shall send to the Architect for approval submittals on all equipment, accessories, and components.</p> <p>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.</p> <p>C. Where catalog cuts are used, mark them to indicate equipment, capacities, controls, fittings, valves, sizes, etc.</p>	<p>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.</p> <p>E. All shop drawings shall be checked and signed by the mechanical contractor prior to submittal to the Engineer.</p> <p>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.</p> <p>G. Portions of the work requiring a shop drawing submittal shall not begin until the shop drawing has been approved by the Engineer.</p> <p>H. Submit wiring diagrams for all mechanical equipment requiring field wiring clearly showing all required connections.</p> <p>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.</p> <p>1.17 CUTTING AND PATCHING</p> <p>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.</p> <p>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.</p> <p>1.18 TESTING</p> <p>A. Furnish testing equipment and test all piping systems under methods and conditions as specified.</p> <p>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.</p> <p>C. Make all necessary replacements and repair and repeat tests until the entire system is approved and satisfactory.</p> <p>D. Test under pressure with liquid or gas as directed or specified.</p> <p>E. Refer to TAB and piping sections for further information on duct and pipe testing.</p> <p>1.19 PAINTING</p> <p>A. All painting shall be done by the General Contractor.</p> <p>B. Painting shall be for the following items: all piping, ductwork, frame work, and all equipment 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.</p> <p>1.20 LABELING</p> <p>A. Install mechanically engraved metal or plastic label at equipment, not less than 2-1/2 inches wide by 3/4 inch tall with letters between 1/4 inch and 1/2 inch tall. Utilize labels with pre-drilled holes and stainless steel rivets or self-tapping screws, or labels with contact-type permanent adhesive.</p> <p>B. Identify all service piping which is accessible for maintenance operation with semi rigid plastic markers complete with direction of flow arrows. Each marker must show approved color-coded background, proper color of legend, approved legend letter size and approved marker length. Use snap on or Type SNA markers on diameters 3/4" thru 5". Use strap-on or Type STR on diameter 6" and larger. Locate pipe markers at each valve, each branch and riser takeoff, each passage through wall or floor construction, each passage to underground and at 25 foot intervals on all horizontal pipe runs.</p> <table border="1"> <thead> <tr> <th>Pipe Diameter</th> <th>Marker Size</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>3/4" thru 2"</td> <td>1"x8"</td> <td>3/4"</td> </tr> <tr> <td>2-1/4" thru 7-7/8"</td> <td>2-1/4"x13"</td> <td>1-3/4"</td> </tr> </tbody> </table> <p>1.21 OPERATING INSTRUCTIONS</p> <p>A. Prepare and submit to the Engineer for approval three (3) copies of operating instructions made in conjunction with Equipment Manufacturer's representative. Instruction shall contain equipment starting sequence, interlocks, controls, switches, etc. which affect the equipment operation. Place copies in maintenance instructions brochure.</p> <p>1.22 MAINTENANCE INSTRUCTIONS</p> <p>A. Prepare a brochure in triplicate covering all systems and equipment furnished and installed under this contract. Each brochure shall include certified equipment drawings and/or catalog data as submitted, complete maintenance instructions, parts lists for each item of equipment, any special emergency operating instructions, all equipment warranties with starting dates identified, and a list of service organizations including addresses and telephone numbers.</p> <p>B. Brochures shall be bound in hard backed, three-ring binders with an index, sub-dividers and reinforced sheets.</p> <p>C. Label cover with the following:  Project name and address  Section of work covered by brochure, i.e., "Plumbing Heating, Ventilation, Air Conditioning", etc.  Name and address of Architect, Engineer, Contractor.  Telephone number of Contractor including night and emergency numbers.</p> <p>D. Brochures shall be submitted to the Engineer for approval and delivery to the Owner.</p> <p>1.23 LOOSE EQUIPMENT</p> <p>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.</p>	Pipe Diameter	Marker Size	Letter	3/4" thru 2"	1"x8"	3/4"	2-1/4" thru 7-7/8"	2-1/4"x13"	1-3/4"	<p>1.24 FINAL INSPECTION</p> <p>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.</p> <p>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.</p> <p>C. Submit TAB Report to Engineer for review at least 5 days prior to final inspection.</p> <p>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.</p> <p>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.</p> <p>1.25 GUARANTEE</p> <p>A. Guarantee all work, material and equipment for a period of one year after date of final certificate of acceptance by the Architect.</p> <p>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.</p> <p>C. Repairs and/or replacements shall be made with no cost to Owner.</p> <p><b>SECTION 200600 – MATERIALS AND METHODS COMMON TO PLUMBING AND MECHANICAL.</b></p> <p>1.1 PIPING SYSTEMS - GENERAL</p> <p>A. Pipe for piping systems shall be cut accurately to measurements taken on the job.</p> <p>B. Install offset connections for alignment of vertical to horizontal piping wherever required to make a true connection.</p> <p>C. Make branch connections with offsets to provide for movement with the expansion of the piping system.</p> <p>D. Install horizontal piping parallel to the building walls and partitions.</p> <p>E. Do not run piping through elevator equipment rooms, transformer vaults or other electrical equipment spaces or above electrical gear or panels.</p> <p>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 tappings, reduce pipe size immediately prior to entry.</p> <p>1.2 PIPE AND FITTINGS</p> <p>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.</p> <p>B. Mechanically Formed Tee Connections: (Optional)</p> <ol style="list-style-type: none"> <li>Mechanically extracted collars shall be formed in a continuous operation consisting of drilling a pilot hole and drawing out the tube surface to form a collar having a height of not less than three times the thickness of the tube wall. The collaring device shall be fully adjustable as to insure proper tolerance and complete uniformity of the joint.</li> <li>The branch shall be notched to conform with the inner curve of the run tube and dimpled to insure penetration of the branch tube into the collar is of sufficient depth for brazing and that the branch tube does not obstruct the flow in the main line tube.</li> <li>All joints shall be brazed in accordance with the Copper Development Association Copper Tube Handbook using B-cup series filler metal.</li> <li>Note: Soft Soldered joints will not be permitted.</li> <li>All mechanically formed branch collars shall be listed by the National Standard Plumbing Code, B.O.C.A., I.A.M.P.O., S.B.C.C., HUD, U. S. Army Corps of Engineers, and Underwriters Laboratory.</li> </ol> <p>C. Polyvinyl Chloride Pipe and Fittings conform to ASTM D2665.</p> <p>D. Cast Iron Soil Pipe and Fittings: weight in compliance with Specification; ASTM A-74 carrying the insignia of the Cast Iron Soil Pipe Institute.</p> <p>E. Cast Iron No-hub Pipe and Fittings: conform to Standard 301 of the Cast Iron Soil Pipe Institute.</p> <p>F. Copper tubing: seamless copper water tube conforming to ASTM Standard Specification B88.</p> <p>G. Black or Galvanized Steel Pipe and Fittings: For pipe 2" and smaller A-120/A53 continuous weld pipe, threaded and coupled, with 150# cast iron screwed fittings. For steel nipples close and short use extra strong weight. For black steel pipe 2 1/2" and larger A53 Grade B ERW electric resistance welded pipe, beveled plain end, with ASTM A234 butt weld fittings. Flanges for steel pipe ASA-B 16.5 flat face, 150# welding neck. For galvanized pipe 2 1/2" and larger use 150# cast iron screwed fittings.</p> <p>H. Weld in accordance with American Welding Society Code. Mitering and notching of pipe to form elbows and tees is not permitted.</p> <p>1.3 HANGERS AND SUPPORTS</p> <p>A. Manufacturers: Crane - B-Line - Grinnel - Unistrut - Elcen.</p> <p>B. Use strap type pipe ring hangers on pipe up thru 3" equal to Grinnel Fig. 69 or CT-69. Use standard duty clevis hangers on piping larger than 3" equal to Grinnel Fig. 260.</p> <p>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.</p> <p>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.</p> <p>E. Provide all surface mounted and concealed unistrut for pipe supports in all equipment rooms and above ceilings for pipe and duct 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.</p>	<p>F. Support fire water piping independent of all other piping.</p> <p>G. Size hangers on insulated pipe 3" and smaller to fit the pipe. Use copper plated hangers for copper pipe. Size hangers on insulated pipe 4" and larger to fit the insulation, and provide pipe sleeves and high density insulation inserts as specified under "Insulation and Pipe Covering".</p> <p>H. Space hangers 8'-0" on center for steel, iron, and copper pipe up to 1".</p> <p>I. Space hangers 10'-0" on center for steel, iron, and copper pipe above 1".</p> <p>J. Space hangers 5'-0" on center for cast iron soil pipe.</p> <p>K. Space hangers 4'-0" on center for PVC.</p> <p>L. Mount piping so that all runs are parallel and evenly spaced.</p> <p>M. 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.</p> <p>N. Two-Bolt Riser Clamps: MSS Type 8.</p> <p>O. Except as otherwise indicated, provide factory-fabricated hanger-rod attachments complying with MSS SP-58, of one of the following MSS types listed, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-69 and manufacturer's published product information. Use only one type by one manufacturer for each piping service. Select size of hanger-rod attachments to suit hanger rods. Provide copper-plated hanger-rod attachments for copper-piping systems.</p> <ol style="list-style-type: none"> <li>Steel Turnbuckles: MSS Type 13.</li> <li>Steel Clevises: MSS Type 14.</li> <li>Swivel Turnbuckles: MSS Type 15.</li> <li>Malleable Iron Sockets: MSS Type 16.</li> <li>Steel Weldless Eye Nuts: MSS Type 17.</li> </ol> <p>P. 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.</p> <ol style="list-style-type: none"> <li>Concrete Inserts: MSS Type 18.</li> <li>Top Beam C-Clamps: MSS Type 19.</li> <li>Side Beam or Channel Clamps: MSS Type 20.</li> <li>Center Beam Clamps: MSS Type 21.</li> <li>C-Clamps: MSS Type 23.</li> <li>Side Beam Clamps: MSS Type 27.</li> <li>Malleable Beam Clamps: MSS Type 30.</li> <li>Steel Brackets:</li> <li>Light Duty: MSS Type 31.</li> <li>Side Beam Brackets: MSS Type 34.</li> </ol> <p>Q. 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.</p> <p>R. 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> <p>S. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes, and so that maximum pipe deflections allowed by ANSI B31 are not exceeded.</p> <p>T. Insulated Piping: Comply with the following installation requirements:</p> <ol style="list-style-type: none"> <li>Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.</li> <li>Shields: Where low-compressive-strength insulation or vapor barriers are indicated on cold or chilled water piping, install coated protective shields.</li> <li>Saddles: Where insulation without vapor barrier is indicated, install protection saddles.</li> </ol> <p>1.4 VALVES</p> <p>A. Provide all valves required for operation, service, and maintenance of systems and equipment, i.e. shut off valves both sides of equipment, coils, etc.</p> <p>B. Where Used</p> <ol style="list-style-type: none"> <li>Domestic and Hydronic Piping shut-off valves 2" and smaller shall be ball valves</li> <li>Domestic and Hydronic Piping shut-off valves 2-1/2" and larger shall be butterfly valves.</li> </ol> <p>C. Ball Valves</p> <ol style="list-style-type: none"> <li>Ball valves two inches and smaller shall have a forged bronze body with screwed pipe ends for steel pipe and sweat ends for copper pipe. Body shall be two-piece assembly full port. Hard chrome plated brass ball or stainless steel ball with full port flow, self-aligning and free floating between two Viton seats (300 psi) to provide positive seal in either direction. Stem shall be brass or stainless steel and extended 1 1/4" above the valve to clear insulation and to receive molded packing brass packing nut and handle nut. Handle shall be constructed of zinc plated steel with partial plastic coating. Valve shall be rated for 150 psig at 180°F.</li> </ol>	<div data-bbox="2812 116 2961 385" data-label="Image"> </div> <div data-bbox="2784 415 2986 637" data-label="Image"> </div> <div data-bbox="2784 697 2986 854" data-label="Image"> </div> <div data-bbox="2812 993 2961 1336" data-label="Text"> <p><b>SOUTH LAKES  SPORTS PARK  WICHITA, KS</b></p> </div> <table border="1"> <tr> <td>Issue:</td> <td></td> <td></td> </tr> <tr> <td></td> <td>100% PLANS</td> <td>10/18/23</td> </tr> <tr> <td>JOB NO.</td> <td colspan="2">220008-003</td> </tr> <tr> <td>DATE</td> <td colspan="2">18 OCTOBER 2023</td> </tr> <tr> <td>PM</td> <td colspan="2">NLS</td> </tr> <tr> <td>DESIGNED BY</td> <td colspan="2">JCM</td> </tr> <tr> <td>DRAWN BY</td> <td colspan="2">JMC</td> </tr> <tr> <td>CHECKED BY</td> <td colspan="2">SMC</td> </tr> <tr> <td colspan="3" style="text-align: center;">MECHANICAL SPECIFICATIONS</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>M002</b></td> </tr> </table>	Issue:				100% PLANS	10/18/23	JOB NO.	220008-003		DATE	18 OCTOBER 2023		PM	NLS		DESIGNED BY	JCM		DRAWN BY	JMC		CHECKED BY	SMC		MECHANICAL SPECIFICATIONS			<b>M002</b>		
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