

PLUMBING SPECIFICATIONS - COMMERCIAL			
PART 1: GENERAL	1.01 NOTE:	A. All work under this section shall be subject to the General Conditions hereinbefore written for the entire project, noting especially the reference to interlocking divisions for the Contractors responsible under each division. All requirements under this section shall apply to work under Division 15.	B. Where three or more manufacturers of one product are listed, the Contractor shall bid the job using one of these manufacturers. Should the Contractor desire to substitute another material or product for the material or product specified (if specifically permitted elsewhere within these contract documents), he shall apply in writing for such permission. Requests for substitutions must be submitted within fourteen (14) days after award of contract or notice to proceed, whichever shall occur first; shall state the credit (or extra cost) involved by the use of such substitution, the advantage to the Owner in accepting such substitution, and acknowledge that ramifications or impact on other trades and the Contractor's schedule have been considered and costs associated with the substitution are reflected in the request. The Contractor shall pay all costs to determine whether or not the proposed substitution including, but not necessarily limited to, the following:
1.02 SCOPE:	A. The Contractor shall provide and install all labor, equipment and materials shown on the Mechanical Drawings and specified under Division 15, or as required for complete and successfully operating mechanical and plumbing systems.	B. The Contractor shall examine the premises and fully account himself with all existing conditions so that all problems pertaining to work under this division are fully understood. No subsequent allowance will be made in this connection for any error of judgment or negligence on the Contractor's part.	C. The Contractor shall examine the premises and fully account himself with all existing conditions so that all problems pertaining to work under this division are fully understood. No subsequent allowance will be made in this connection for any error of judgment or negligence on the Contractor's part.
1.03 EXAMINATION OF PREMISES:	A. The Contractor shall examine the premises and fully account himself with all existing conditions so that all problems pertaining to work under this division are fully understood. No subsequent allowance will be made in this connection for any error of judgment or negligence on the Contractor's part.	B. The Contractor shall examine the premises and fully account himself with all existing conditions so that all problems pertaining to work under this division are fully understood. No subsequent allowance will be made in this connection for any error of judgment or negligence on the Contractor's part.	C. The Contractor shall examine the premises and fully account himself with all existing conditions so that all problems pertaining to work under this division are fully understood. No subsequent allowance will be made in this connection for any error of judgment or negligence on the Contractor's part.
1.04 CODES:	A. All plumbing work shall be done in strict accordance with all requirements of the International Plumbing and Building Codes (National Standard Plumbing Code), Local and State Department of Health and Mental Hygiene and the NFPA including specifically NFPA 54. Connections to public utilities shall be in accordance with applicable plumbing and building codes.	B. In addition, all work shall be installed in accordance with requirements of any applicable applicable building, plumbing, mechanical, fire and safety codes. Requirements set forth in the Occupational Safety and Health Act will be strictly adhered to.	C. Work shall conform to the requirements of the latest editions of the following codes, regulations, specifications and standards:
1.05 LAWS, ORDINANCES, PERMITS AND FEES:	A. The Contractor shall provide necessary notices, obtain and pay for permits, prepare all documents and obtain all necessary approvals of all Required Authorities having jurisdiction; obtain all required Certificates of Inspection for his work and deliver same to the Architect before notice for acceptance and final payment for the work.	B. The Contractor shall include in the bill, without extra cost to the Owner, all labor, materials, apparatus, drawings (in addition to Contract Drawings and documents) required to comply with all applicable laws, ordinances, rules and regulations.	C. The Contractor shall include in the bill, without extra cost to the Owner, all labor, materials, apparatus, drawings (in addition to Contract Drawings and documents) required to comply with all applicable laws, ordinances, rules and regulations.
1.06 GENERAL REQUIREMENTS:	A. Everything necessary for the completion of the work and successful operation thereof, whether they may be definitely specified or indicated or not, shall be furnished and completed in a manner corresponding with the rest of the work as though they were herein definitely described and specifically provided for.	B. The Contractor shall have competent foremen on the premises at all times to check layout and superintend the installation of all work included in this division of the specifications and to provide all information regarding locations and sizes of chases, openings, etc., and be responsible for the accuracy of such information. The foreman shall layout and superintend the installation of all hangers, inserts, sleeves and other work in masonry and concrete in advance of the work during construction of building, giving consideration to the work of other trades to prevent interference in the location of pipes, conduits, ducts and other equipment.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
1.07 SCHEDULE:	A. Within 30 days of contract date, the Contractor shall submit to the Architect for approval, a schedule showing make, type, manufacturer's specifications for each article of equipment or specialty and shall give dimensions, rated capacity, kind of material, finish, guarantees, etc., and such other detailed information as may be required. When approved, such schedule shall be an addition to the specifications here in with, and shall be of equal force, in that no variation will be permitted except with the approval of the Architect.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
1.08 QUALITY STANDARDS:	A. Manufacturers specified herein, under Division 15, represent products that meet the project's standards.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.01 ACCESS DOORS:	A. All concealed valves, dampers, traps, cleanouts, controls, fire dampers and other devices requiring manual operation or maintenance, shall be provided with metal access doors and frames. Doors shall be Zurn, Inland Steel Project Company "Milor", quality standard of the following Milor style:	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.02 EQUIPMENT FOUNDATIONS AND SUPPORTS:	A. All Contractors responsible for work under the Mechanical and Electrical Divisions are to provide concrete housekeeping pads under their respective equipment mounted on the floor or on the ground. Pads shall be 4" thick and shall extend 1" beyond each edge of the equipment supported and all edges shall be beveled.	B. Equipment suspended or supported from above shall be installed on metal hangers and supports and other supports properly attached to the structural system. Sub-framing of structural steel beams, angles or channels shall be provided for all items of mechanical equipment, where said framing is required, but not furnished under another section.	C. For pipe hangers and supports and spacing of each, see Pipe Hangers and Support section.
2.03 CONCRETE WORK:	A. All concrete work required under any section shall be provided and installed under the supervision of and shall be performed in accordance with the requirements of the general specifications for concrete work as hereinbefore written, except where indicated on other section. Coordinates to avoid omission or duplication.	B. Where new work causes interference with existing work, the new work or the existing work shall be provided and installed under the supervision of and shall be performed in accordance with the requirements of the general specifications for concrete work as hereinbefore written, except where indicated on other section. Coordinates to avoid omission or duplication.	C. Where new work causes interference with existing work, the new work or the existing work shall be provided and installed under the supervision of and shall be performed in accordance with the requirements of the general specifications for concrete work as hereinbefore written, except where indicated on other section. Coordinates to avoid omission or duplication.
2.04 SLEEVES AND ENCLOSURES:	A. Provide standard iron pipe size steel sleeves for all lines passing through concrete slabs and masonry walls. All sleeves shall be set before concrete is poured. Holes required in masonry shall be made with core drills in a manner approved by the Engineer.	B. Sleeves for pipes through walls and floors shall be of sufficient size to permit the insulation, where specified, to continue through the sleeves. Sleeves through floors shall be flush with the underside of the slab and extend 3" above finish floor in wet areas only. Projecting sleeves shall be welded with the floor. All sleeves shall be set before concrete is poured. Holes required in masonry shall be made with core drills in a manner approved by the Engineer.	C. Enclosures shall be used to conceal sleeve openings and openings in masonry walls. Ceiling and walls shall be chrome plated, properly secured in place. Floor plates shall be cup type, similar to Grinnel No. 400. At the Contractor's option, split-type enclosures equal in quality to one-piece type may be used.
2.05 IDENTIFICATION OF PIPING AND EQUIPMENT:	A. All service piping which is accessible for maintenance operations (except piping in finished spaces) will be identified with pressure-sensitive vinyl identification markers. Direction of flow arrows are to be included with the identification of the piping.	B. Where required by local codes, all piping shall be appropriately marked with color-coded bands of the locations and spacing required by the code.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.06 WATERPROOFING:	A. All waterproofing and damp-proofing of the building shall be cleaned and left unharmed by the installation of the work under this division. Wherever any of the work or piping under this division has to place waterproofing or damp-proofing, including outside walls, they shall be called to work in a manner satisfactory to the Architect and owner.	B. Where required by local codes, all piping shall be appropriately marked with color-coded bands of the locations and spacing required by the code.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.07 VALVE CHARTS AND TAGS:	A. All valves shall be provided with tags as specified in this section. Tags shall be secured to valve stems with metal chain. Stop valves on individual fixtures or equipment where their function is obvious, or where the fixture or equipment is immediately adjacent, need not be so equipped. Care shall be exercised in selection of equipment to prevent conflict between various trades. The Contractor shall furnish schematic drawings prepared on tracing paper showing locations, details of arrangement, etc., of all manual and automatic control valves indicating direction of flow and function. A point of this drawing shall have the approval of the Architect before being installed. Do not scale drawings.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.08 CLEANING:	A. At the conclusion of the work, the premises shall be left broom clean. All factory-applied enamel paint shall be cleaned and waxed with industrial quality wax.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.09 GUARANTEE:	A. In addition to the guarantee obligations contained in the GENERAL CONDITIONS, the Contractor shall guarantee the complete mechanical systems installation, as embraced by this specification, free from all mechanical defects for a period of one (1) year beginning from the day of final acceptance of the work by the Architect.	B. The guarantee period will only be implemented after the following conditions have been met:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.10 INSULATION:	A. Provide and install insulation as hereinafter specified for all piping systems where indicated.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.11 FIRE SAFETY CONSIDERATIONS:	A. All insulating materials used shall have Flame Spread Rating not exceeding 25, and a Smoke Developed Index not exceeding 50. These ratings shall be determined and verified by ASTM E-84, NFPA 255, or UL 723.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.12 MANUFACTURERS:	A. Insulation shall be by one manufacturer, either Owens-Corning or other manufacturers as specified hereinafter.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.13 PRODUCTS:	A. Horizontal piping shall be supported from above by heavy adjustable hangers. Where below bar joist construction, hangers shall be supported from structural channels welded to the top chords of at least two joists. Structural channels shall be Unistrut, or PHD. Where large numbers of pipes are grouped together, their individual hangers shall be attached to a proper size to suit frame width and hanger rods. Where hangers are required in existing structure, appropriate expansion shields and inserts will be allowed in concrete only. Do not hang from cinder or concrete blocks.	B. Hangers shall be spaced as follows:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.14 COOPER PIPES:	A. Horizontal piping shall be supported from above by heavy adjustable hangers. Where below bar joist construction, hangers shall be supported from structural channels welded to the top chords of at least two joists. Structural channels shall be Unistrut, or PHD. Where large numbers of pipes are grouped together, their individual hangers shall be attached to a proper size to suit frame width and hanger rods. Where hangers are required in existing structure, appropriate expansion shields and inserts will be allowed in concrete only. Do not hang from cinder or concrete blocks.	B. Hangers shall be spaced as follows:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
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2.16 CAST IRON PIPES:	A. Horizontal piping shall be supported from above by heavy adjustable hangers. Where below bar joist construction, hangers shall be supported from structural channels welded to the top chords of at least two joists. Structural channels shall be Unistrut, or PHD. Where large numbers of pipes are grouped together, their individual hangers shall be attached to a proper size to suit frame width and hanger rods. Where hangers are required in existing structure, appropriate expansion shields and inserts will be allowed in concrete only. Do not hang from cinder or concrete blocks.	B. Hangers shall be spaced as follows:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.17 VALVE CHARTS AND TAGS:	A. All valves shall be provided with tags as specified in this section. Tags shall be secured to valve stems with metal chain. Stop valves on individual fixtures or equipment where their function is obvious, or where the fixture or equipment is immediately adjacent, need not be so equipped. Care shall be exercised in selection of equipment to prevent conflict between various trades. The Contractor shall furnish schematic drawings prepared on tracing paper showing locations, details of arrangement, etc., of all manual and automatic control valves indicating direction of flow and function. A point of this drawing shall have the approval of the Architect before being installed. Do not scale drawings.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.18 CLEANING:	A. At the conclusion of the work, the premises shall be left broom clean. All factory-applied enamel paint shall be cleaned and waxed with industrial quality wax.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.19 GUARANTEE:	A. In addition to the guarantee obligations contained in the GENERAL CONDITIONS, the Contractor shall guarantee the complete mechanical systems installation, as embraced by this specification, free from all mechanical defects for a period of one (1) year beginning from the day of final acceptance of the work by the Architect.	B. The guarantee period will only be implemented after the following conditions have been met:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
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2.21 FIRE SAFETY CONSIDERATIONS:	A. All insulating materials used shall have Flame Spread Rating not exceeding 25, and a Smoke Developed Index not exceeding 50. These ratings shall be determined and verified by ASTM E-84, NFPA 255, or UL 723.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
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2.43 PRODUCTS:	A. Horizontal piping shall be supported from above by heavy adjustable hangers. Where below bar joist construction, hangers shall be supported from structural channels welded to the top chords of at least two joists. Structural channels shall be Unistrut, or PHD. Where large numbers of pipes are grouped together, their individual hangers shall be attached to a proper size to suit frame width and hanger rods. Where hangers are required in existing structure, appropriate expansion shields and inserts will be allowed in concrete only. Do not hang from cinder or concrete blocks.	B. Hangers shall be spaced as follows:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.44 COOPER PIPES:	A. Horizontal piping shall be supported from above by heavy adjustable hangers. Where below bar joist construction, hangers shall be supported from structural channels welded to the top chords of at least two joists. Structural channels shall be Unistrut, or PHD. Where large numbers of pipes are grouped together, their individual hangers shall be attached to a proper size to suit frame width and hanger rods. Where hangers are required in existing structure, appropriate expansion shields and inserts will be allowed in concrete only. Do not hang from cinder or concrete blocks.	B. Hangers shall be spaced as follows:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.45 STEEL PIPES:	A. Horizontal piping shall be supported from above by heavy adjustable hangers. Where below bar joist construction, hangers shall be supported from structural channels welded to the top chords of at least two joists. Structural channels shall be Unistrut, or PHD. Where large numbers of pipes are grouped together, their individual hangers shall be attached to a proper size to suit frame width and hanger rods. Where hangers are required in existing structure, appropriate expansion shields and inserts will be allowed in concrete only. Do not hang from cinder or concrete blocks.	B. Hangers shall be spaced as follows:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.46 CAST IRON PIPES:	A. Horizontal piping shall be supported from above by heavy adjustable hangers. Where below bar joist construction, hangers shall be supported from structural channels welded to the top chords of at least two joists. Structural channels shall be Unistrut, or PHD. Where large numbers of pipes are grouped together, their individual hangers shall be attached to a proper size to suit frame width and hanger rods. Where hangers are required in existing structure, appropriate expansion shields and inserts will be allowed in concrete only. Do not hang from cinder or concrete blocks.	B. Hangers shall be spaced as follows:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.47 VALVE CHARTS AND TAGS:	A. All valves shall be provided with tags as specified in this section. Tags shall be secured to valve stems with metal chain. Stop valves on individual fixtures or equipment where their function is obvious, or where the fixture or equipment is immediately adjacent, need not be so equipped. Care shall be exercised in selection of equipment to prevent conflict between various trades. The Contractor shall furnish schematic drawings prepared on tracing paper showing locations, details of arrangement, etc., of all manual and automatic control valves indicating direction of flow and function. A point of this drawing shall have the approval of the Architect before being installed. Do not scale drawings.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.48 CLEANING:	A. At the conclusion of the work, the premises shall be left broom clean. All factory-applied enamel paint shall be cleaned and waxed with industrial quality wax.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.49 GUARANTEE:	A. In addition to the guarantee obligations contained in the GENERAL CONDITIONS, the Contractor shall guarantee the complete mechanical systems installation, as embraced by this specification, free from all mechanical defects for a period of one (1) year beginning from the day of final acceptance of the work by the Architect.	B. The guarantee period will only be implemented after the following conditions have been met:	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.50 INSULATION:	A. Provide and install insulation as hereinafter specified for all piping systems where indicated.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.51 FIRE SAFETY CONSIDERATIONS:	A. All insulating materials used shall have Flame Spread Rating not exceeding 25, and a Smoke Developed Index not exceeding 50. These ratings shall be determined and verified by ASTM E-84, NFPA 255, or UL 723.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.52 MANUFACTURERS:	A. Insulation shall be by one manufacturer, either Owens-Corning or other manufacturers as specified hereinafter.	B. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.	C. The Contractor shall provide complete connections for equipment furnished under sections of this division, or under other divisions, or by the Owner, which requires connection under this Division.
2.53 PRODUCTS:	A. Horizontal piping shall be supported from above by heavy adjustable hangers. Where below bar joist construction, hangers shall be supported from structural channels welded to the top chords of at least two joists. Structural channels shall be Unistrut, or PHD. Where large numbers of pipes are grouped together, their individual hangers shall be attached to a proper size to suit frame width and hanger rods. Where hangers are required in existing structure, appropriate expansion shields and inserts will be allowed in concrete only. Do not hang from cinder or concrete blocks.	B. Hangers shall be spaced as follows:	