

Section 15050 – Plumbing General Conditions  
General conditions, a part of the contract documents, and specifications govern all work under this section of the specifications.

1.01 Scope

- The General Requirements of DIVISION 1 govern the work in this Section.
- Provide all labor, materials, tools and equipment necessary to complete the work, including installation of plumbing fixtures. All materials shall be new and shall be installed in a workmanlike manner and in accordance with the Drawings.
- Earthwork: Excavation and backfill of all trenches incidental to the plumbing work, as shown on the Drawings. Backfill shall be mechanically compacted to 90%.
- Sewer: A complete waste and sewer system from every fixture and location requiring same to City sewer line including connections to the sewer or private disposal system. Verify exact elevation and location. Include all necessary piping.
- Water: A insulated complete water system from Water Dept. service, connection to each fixture, appliance, and location shown on Drawings. Provide shut off valve prior to first takeoff.
- Hot Water: A complete insulated hot water system from water heater to every fixture, appliance and location shown on Drawings.
- Gas: A complete natural gas system from individual meters (meters installed by others) to rooftop units, and connection thereto.
- Fixtures, Etc: All plumbing fixtures, water pressure regulators and miscellaneous equipment required for a complete installation.
- Supports: Responsibility for all backing, supports and carrier for fixtures.
- Cutting and Patching: All cutting and patching of the construction work, rough finish and trim, which may be required for installation of equipment. All patching shall accurately match all surrounding work.
- Connection of Items Furnished and Installed by Others: Contractor shall make all plumbing and piping connections to equipment specified to be furnished by Owner or under other sections of these specifications including final connections to air conditioning and heating equipment.
- Sufficient approved water hammer arrestors (Wade "SHOCK STOP", or equal), shall be installed to prevent water hammer.
- After completion of work, all exposed fixtures, equipment and pipe shall be thoroughly cleaned.
- Accessibility: Unions, valves, traps, controls, etc., which must be located in an inaccessible location shall be provided with approved access doors (fitted in a framed hole), by the Plumbing Contractor.
- Related Work by Others: Contractor shall provide cut-out data for all sinks and laboratories to Laminated Plastic and Cultured Marble Contractors. Installation and connections of fixtures shall be by Plumbing Contractor.

2.01 Materials

- Cast Iron pipe: Service weight, cast iron bell and spigot pipe dipped in coal tar pitch. No-hub service weight, cast iron pipe may be used in above grade installations, when permitted by local code.
- Galvanized Pipe: Standard weight, schedule 40, galvanized steel pipe using banded malleable iron screw fittings.
- Copper Pipe: Cold, hard drawn seamless pipe with wrought copper and/or cast bronze "streamlined" fittings.
- ABS Schedule: ABS schedule 40 and 80 or PVC may be used when permitted by local code. Form core PVC piping will not be approved.
- Exposed Pipe: All exposed pipe shall be copper. Exposed piping in finished areas shall be chrome plated.
- Condensate Line: All condensate line shall be copper or schedule 40 PVC pipe, when permitted by local code.
- Water Main Shut-Off Valves: Watts or approved equal, gate valve, above grade below pressure regulator.
- Gas Main Shut-off Valves: Norstrom Fig. 1014, or approved equal, with lever type handle, placed on house side of meters.
- Hose Bibbs: See Plumbing Fixture Schedule.
- Pipe Sleeves and Supports:
  - All water piping running through masonry or concrete floors or walls shall be isolated from the structure with a sleeve as detailed on the Drawings. Maintain the framing of all wall and floor penetrations free of approved fire stop materials.

- All concealed horizontal water and gas piping exposed above ground and in furred areas, shall be supported in place with securely fastened solid pipe hangers not over 8'-0" apart and at each change in direction, (5'-0" on cast iron pipe).
- Pipe hangers shall be installed around the outside of insulation with vapor barriers, and insulation shall be protected against crushing by sheet metal jacket or proper area and weight.
- Approved insulation blocking shall be placed between sheet metal jacket and bottom of the pipe where jacket alone cannot prevent crushing. Insulation jacket or vapor barrier shall be sealed after installing blocking.
- Sleeves through walls shall be cut so as to be flush with the finished surface of the wall in each case and shall be made watertight.

11. Dielectric Isolators: Where incompatible piping materials come in contact, isolate from each other with dielectric isolators.

12. No water or drain lines permitted over or under electrical or telecommunications panels or telecommunications rooms.

3.01 Installation and Workmanship

- General Requirements:
  - Contractor shall examine the premises and satisfy himself of existing conditions under which he will be obligated to operate in performing his part of the work that will in any manner affect the work under the contract. The contractor shall cooperate with other trades so that the installation of all equipment may be properly coordinated.
  - All equipment furnished shall fit the space available, with connections, etc. in the required locations and with adequate space for operating and servicing. The drawings are generally diagrammatic and indicate the manner and method of the installation while the specifications and fixture list denote the type and quality of material and workmanship to be used. Where a conflict exists between the drawings and the specifications, the contractor shall promptly notify the Architect, whose decision shall be final. No allowance will be made subsequently in this connection on behalf of the contractor after award of the contract.
  - Permits and Inspection: Obtain and pay for any permits, inspections and certificates required in connection with the work. Contractor shall make all arrangements with utility companies for service and connections and pay all fees, charges, permits and meter costs.
  - Installations:
    - All plumbing shall be performed in strict compliance with all applicable codes and ordinances.
    - All piping, except fixture supplies, shall be concealed, cut accurately to exact measurements taken at the building, and worked carefully into place without forcing or springing. Changes in direction of all piping shall be made with fittings. There shall be no bent pipe. Changes in sizing of all piping shall be made with reducing fittings. There shall be no bushings used.
    - Install piping to obtain silent operation under normal use conditions. Provide sound deadening material completely between pipes and supports, and where pipes rest against each other.
    - Provide protective metal cover plates over studs and joists where pipes penetrate close to edge of stud or joist.
    - Provide chrome plated escutcheons where pipes pass through doors, walls and ceilings in finished spaces.
    - Temperature of Valves: Supply installed per manufacturer's instructions.
    - Pressure regulators (water) shall "blow" when pressure regulator valve where available utility pressure exceeds 80 p.s.i.g.
  - Gas Supply:
    - Pipe: Black pipe manufacturer's dipped and wrapped underground according to code, unwrapped 6" above grade. Locate shut-off valves close to fixture and appliance connections.
    - Install shut-off valves ahead of union connection at rooftop units.
    - Unions shall be installed on both sides of all equipment where required to facilitate removal of equipment.
    - Provide Maxitrol Model 325 pressure regulating valves at all gas appliances when distribution pressure is greater than 7" W.C.
    - Paint all exterior piping including piping installed on roof with two coats of rust inhibiting exterior paint. Color to match existing walls.

6. Hot and Cold Water Supply:

- Type "K" copper tubing, hard temper, cold drawn. Connections to equipment, apparatus and fixtures shall be made with 85% red brass pipe, iron pipe size, or compression angle stops. Provide dielectric unions where connecting piping of dissimilar materials.
- Below Ground (outside building): Type "K" copper piping, hard or soft temper.
- Fittings: Copper tubing, Lead-Free solder sweat, wrought copper. Adapters shall be used where copper tubing connects to iron pipe size piping or threaded valves.
- Provide Epoxy, or approved equal, threaded or flanged union insulating couplings between copper piping and water heater. Where copper pipes rest against steel or iron pipes or electrical conduit, separate with at least one layer of 15 lbs asphalt saturated rag felt or EPDM rubber sheet.

7. Soil Waste and Vent Piping:

- Below Ground: Standard weight cast iron, bell and spigot type, soil pipe and fittings extended five feet outside of building. From five feet outside of building to sewer, extra heavy vitrified clay pipe or P.V.C. pipe shall be used, as approved by local authorities.
- Above Ground: Copper, type DWV hard drawn, with solder sweat fittings, no-hub cast iron soil pipe, or standard weight cast iron bell and spigot type.
- Schedule 40 P.V.C. or A.B.S. piping may be used above or below ground when permitted by local codes.
- All waste piping shall be pitched a minimum of 1/4" per foot where possible. Piping greater than 4" diameter may be pitched at 1/8" per foot, only where required by existing conditions, subject to the approval of the authority having jurisdiction.

8. Cleanouts:

- Cleanouts, same size as pipe, shall be installed on soil and waste lines at every change of direction and at every 100 feet of run whether shown on the drawings or not; and shall be accessible in all cases. When occurring in finished wall or floor, set flush with surrounding surface.
- Cleanouts as a minimum shall be located so that all soil and waste lines within or under building are accessible for cleaning without passing through more than one ninety degree or two forty-five degree bends. Cleanout covers shall be set flush with floors and grade with exposed plastic nut at walls.
- See plumbing fixture specification for approved cleanout types.

9. Vents:

- Vents shall extend not less than 12" through roof. They shall be attached together where possible into a group of equivalent area. Vents shall be finished indicated on the drawing. All vents shall be a minimum of 10" diameter from dry fresh air intakes, or greater, as required by local code.
- Expansion and Contraction: All piping shall be installed with adequate provision for expansion and contraction using swing joints, pipe clamps, anchors and expansion joints. Fittings shall be so spaced that they will not interfere with sliding of pipe on supports.
- Pipe Hangers at Ceilings: All horizontal suspending piping shall be supported by suitable steel ring hangers with steel rod supports and turnbuckles capable of screen adjustment after installation. Hanger spacing for cast iron pipe shall not be greater than 5'; for all other offsets and changes in direction. Hanger rods shall be 3/8" for all pipe under 3", 1/2" for all pipe above 3" to 4", and 3/4" for all pipe above 5". Perforated pipe strap will not be acceptable.

12. Flashings:

- Openings in the roof for vent pipes shall be flashed and soldered watertight. Flashing for pipe shall not be lighter than 4 lb. per sq. ft. sheet lead and shall be made of two (2) pieces. The lower piece shall be at least 14" square and turned up around the pipe approximately 8". The top piece shall fit tightly and shall lap the lower piece 2" extended to the top of the pipe and turned down inside the pipe at least 1". EPDM roots shall be flashed with EPDM flexible boots, installed and sealed in accordance with the manufacturer's instructions.

13. Testing:

- Gas: All lines shall stand a pressure of 15 psi for a period of 15 minutes without perceptible drop.
- Water: Lines shall pass inspection of four (4) hours under 150 psi pressure. Before any use of system is made for domestic purposes, it shall be sterilized by slowly filling with water to which a sterilizing agent has been applied, at a rate giving 50 p.p.m. of chlorine, as determined by residual chlorine test at extremities of the line. After lines have been filled for a period of three hours, tests for residual chlorine shall show not less than 50 p.p.m. of residual chlorine after three (3) hours. The lines shall be flushed until all traces of chemical are removed.
- Soil and Waste: Lines shall pass inspection under head of water by system with water to top of highest vent stack.
- All testing shall be performed by contractor at his own expense.

14. Guarantee:

- All materials furnished and installed under this contract shall be new and free from all defects, and shall be guaranteed for a period of one year from the date of acceptance of the work.
- Fixtures: Fixtures shall be furnished and installed (except as excluded above) complete with all regular and necessary trim and accessories. Exposed trim and pipe shall be polished chrome plate. All fixtures white, unless noted.

15. Pipes and Trim:

- Cover Plates: Polished chrome brass placed on all exposed piping at the point it passes through wall, ceilings or floors. Plates shall fit piping snugly.
- Drains and P-traps: 17 ga. C.P. Brass where exposed to view extending to wall. Nominal size of drain and trap shall not be smaller than the pipe outlet to which it is attached.
- Install accessible hot and cold water stops at all fixtures.
- All water piping, horizontal and vertical, shall be insulated with fiberglass pipe insulation with a vapor barrier jacket. The minimum insulation on water piping shall be all service jacket. All insulating material shall have a maximum 25 flame spread rating and 0 smoke developed rating.

Section 15440 – Plumbing Fixtures

See plumbing fixture schedule.

- Water and fixtures shall be installed using methods as specified with the plumbing fixtures.
- The height of accessible water closets shall be a minimum of 17" and a maximum of 19" measured to the top of the toilet seat. Provide 18" from the center line of the water closet to the adjacent wall finish.
- Toilet flush controls shall be operable with one (1) hand, and shall not require tight grasping, pinching or twisting of the wrist. Controls for the flush valves shall be mounted on the wide side of the toilet areas, no more than 44" above the floor. The force required to activate controls shall be no greater than five (5) lbs.
- Where urinals are provided, at least one (1) shall have a clear space 30" wide by 48" long in front of the urinal.
- Lavatories: 2'-10" is the recommended height from the floor to the top of the lavatory. Insulate or cover all hot water and drain pipes under lavatory. No sharp or abrasive edges allowed under lavatory.

Section 15500 – Fire Protection Systems (if required)

1.01 Scope

- If required by applicable codes and agencies, a fire sprinkler system shall be installed to satisfy all code requirements. If an existing system is present, relocate heads and provide engineered plans if required by local jurisdiction.
- Required: Provide all labor, materials and equipment for the installation of a complete sprinkler system as required by the Fire Department or local code and ordinances. Comply with all requirements of NFPA 13 and local requirements.
  - Shop Drawings: Prepare shop drawings, including, but not limited to, drawings to Federal's Architect for approval by the local jurisdiction showing all materials and equipment. These drawings shall be complete in every detail showing all sprinklers, valves, piping, and fittings, and miscellaneous related items of work. All work shall be dimensioned to fit into available space, and coordinated with the ductwork, lighting equipment, structural members, etc.
    - Submit four (4) copies of the sprinkler shop plans to landlord within seven (7) days after work starts in space.
    - Coordinate drain down and hydratest with on-site tenant coordinator.
    - Sprinkler heads shall be centered in all 2'x2' ceiling tile modules.
  - Submit copies, as required, to the Fire Department prior to installation, for approval. Coordinate testing with the landlord and fire department.
- Existing Sprinklers/Systems: Raise, lower, relocate, and/or add to existing sprinkler heads as required for new ceilings and partitions to comply with all local codes and ordinances. Provide and install fire sprinklers in all concealed attic spaces. Obtain approvals and permits as required by local fire prevention bureau and local jurisdictions prior to commencing work.

PROJECT COORDINATOR



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ARCHITECTURAL PROJECT NO.: 80-7920  
MEP PROJECT NO.: 200183  
STRUCTURAL PROJECT NO.: ---  
O.V.N. PROJECT NO.: ---

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