

1 GENERAL

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 Provide complete systems as called for, and/or shown, and/or specified. Plumbing Contractor shall furnish and completely install the system, service, equipment, or material named, together with other associated devices, equipment, materials, wiring, piping, etc., as required for a complete satisfactory operating installation. Other subcontractors, as required to perform work called for, shall be responsible to the Plumbing Contractor. Secure all permits for work and inspections as required.

1.3 Coordination: Before submitting his bid, Contractor and manufacturer shall carefully check all plans and specifications for every trade and shall include in bid all work to be provided by him. All trades shall coordinate their work with that of other trades so as to avoid interferences and conflicts of work indicated. Work must be completed as scheduled by the Architect. Determine at time of bidding to avoid misunderstanding. Any discrepancies noticed at time of pre-bid meeting and/or inspection of site by those inspecting for bidding the project, shall be brought to the Architect's attention immediately, so that corrections can be made by Addendum prior to bid date.

1.4 Work Priority Over the Other Trades:

A. All contractors for the Mechanical-Electrical trades are to be governed as follows and work in cooperation with one another to fit piping and ductwork into the structure as job conditions may demand. All final decisions as to right of way and run of pipe, ducts, etc., to be made by Architect.

B. In general, priority is to be arranged as follows:

- 1. Sprinkler heads.
2. Recessed lighting fixtures.
3. Sheet metal duct work/HVAC units.
4. Plumbing waste lines, down spouts and vents.
5. Refrigeration lines.
6. Sprinkler lines.
7. Heating lines.
8. Plumbing water lines.
9. Electrical conduits.
10. Control air lines or conduits.

1.5 All work shall be performed in a workmanlike manner following the best practice for the construction indicated.

1.6 Codes & Standards:

A. Work performed under this contract shall be governed by the latest AIA General Conditions.

B. The Plumbing Contractor's work shall conform to all prevailing codes and regulations pertaining to their work.

C. All materials shall conform to applicable standards of such devices, including AGA and UL requirements.

D. Materials and workmanship shall comply with applicable local, state and federal codes and local utility company regulations.

1. In case of differences between building codes, local, state and federal laws, and utility company regulations and contract documents, most stringent shall apply. Promptly notify Architect/Engineer in writing of any such difference prior to submitting bid.

2. Applicable codes shall include, but not necessarily be limited to the following:

- a. 2018 Chicago Plumbing Code
b. Americans with Disabilities Act (ADA)
c. ANSI Accessibility Standards
d. 2006 International Fuel Gas Code (IFGC)
e. 2002 National Electrical Code - NEC
f. Local code amendments to local ordinances or codes.
g. ASTM, AWWA, WWP, etc. and other similar codes, standards, specifications
h. Where reference is made in these or other specifications, it shall be the latest revision at the time of call for bids unless specifically noted on plans or in specifications.
i. Should work be performed which does not comply with requirements of applicable building codes, state and federal laws, industry standards and utility company regulations, changes for compliance shall be done at contractor's expense.
j. Each trade shall cooperate with and assist other trades on project in conformance with trade jurisdictional rulings and shall perform work which is within its jurisdiction.
k. Notify Architect/Engineer of any materials or apparatus believed to be inadequate, unsuitable, in violation of laws, ordinances, rules or regulations of authorities having jurisdiction prior to submitting bid.

E. Electrical equipment, wiring, gas burning equipment, handling and storage equipment, all drain piping, refrigeration piping, insulating materials, etc., shall comply with requirements of NFPA, NEC, UL, AGA, OSHA, EPA, IBC, state and federal safety codes; for a particular type installation and shall be so labeled where applicable.

1.7 Permits & Fees: The Plumbing Contractor is to be responsible for the obtaining of his respective permits and their cost, as well as other fees necessary to the project including inspections. Permits and fees shall also be included for all required natural gas, water, sanitary, storm, building department requirements, etc.

1.8 Materials: All materials are to meet or exceed the minimum standard of A.S.T.M. and the approval of state and local codes responsible for such approvals. In no case shall used or reconditioned material be used. All shall be in new and working order. All materials shall be of USA make.

1.9 New Fixtures: Regular and ADA compliant requirements. Fixtures - Commercial grade complete with all associated trim, supports, carriers, etc.

1.10 Submittals:

- A. Submit signed shop drawings for all required equipment and material items prior to start of construction.
B. Provide maintenance manuals.
C. Provide "As-Built" record drawings on reproducible mylar sepios for all required systems and associated components.

1.11 Openings, Sleeves and Chases:

A. Contractor shall set sleeves and inserts required for piping, hangers, intakes, louvers, ventilators, ductwork, curbs, etc., in construction. Contractor to furnish General Contractor with complete information as to size and location of openings through walls, floors, roofs, etc., for installing this work. If this information is not supplied before new walls, floors, roofs, etc., are built, respective Contractor shall furnish, cut and patch all required openings for installation of equipment, material, devices, etc., as required and approved by the Architect. For new construction, General Contractor will cut holes through roof and Roofing Contractor will do all flashing, roof patching, etc., unless otherwise noted. Roof openings 18" and larger shall be framed with headers connected to roof joists with steel members framed between. All roofing work and equipment to meet requirements of National Association of Roofing Contractors.

1.12 Equipment Installation (FBO) - Furnished by Others:

A. Equipment marked (FBO) shall be furnished and installed by Equipment Contractor.

B. The exact locations for apparatus, fixtures, equipment and piping shall be obtained from the Equipment Contractor or his representative in the field, and the work shall be laid out accordingly. If this Contractor should fail to ascertain such locations before proceeding with his work and if this work does not conform to the intended design, this Contractor shall revise his work, at no additional cost, as directed by the Owner. The Owner reserves the right to make minor changes in the locations of piping and equipment, up to the time of roughing-in and installation without additional charge.

C. Work by Equipment Contractor: The following work will be done by the Equipment Contractor at no expense to any other contractor:

- 1. Furnishing, installing, fitting to the building, setting, bolting in place of kitchen equipment and other equipment marked "FBO".
2. Furnishing to the Plumbing Contractor, on the job, loose plumbing trim including all above deck faucets, vacuum breakers, gas cocks, automatic valves, etc.
3. Furnishing of approved detailed shop drawings showing method of installing loose trim and making of final connections; wiring and control diagram.

D. Work by Plumbing Contractor: Plumbing Contractor shall provide all traps and below deck supplies and shut-off valves, make all final connections, and perform testing.

1.13 Examination of Work:

A. Contractor shall carefully examine the site for the work to eliminate misconceptions of fact, to verify dimensions, elevations, location of existing equipment, services, piping and to observe features affecting working conditions, transportation and storage facilities. Contractor shall give due consideration to same in preparing proposals/bids as exceptions will not be considered after awarding of contract, nor will Contractor be entitled to any extra compensation for his failure to determine conditions or connections at the site.

B. The run of all lines shown on drawings is to be regarded as diagrammatic and tentative. Contractor shall carefully verify location, depth, and size of line service, etc., to which connection is proposed. Before installing any service, line connections, etc., Contractor shall assure that they can be run/made as contemplated without trapping or interfering with footing, other piping, fixtures, etc. Any necessary deviation shall be referred to Architect/Engineer for approval/authorization before any line or service are run.

1.14 Warranty: All systems, materials, equipment items, etc. shall be guaranteed in writing for a period of one year after systems have been accepted by the Owner.

2 PRODUCTS

2.1 Piping:

A. Domestic Water Piping Above Grade:

1. Interior, above grade, piping shall be Type L hard copper seamless tube per ASTM B88 with wrought copper, bronze, or cast brass, 125 lb. and 250 lb. fittings with lead free solder joints, conform to NSF-61 standard.

B. Domestic Water Piping Below Grade:

- 1. Below grade, piping shall be Ductile Iron Water Pipe per ASTM A 377.
2. Below grade, piping shall be Type K hard copper seamless tube per ASTM B88.

D. Sanitary Drainage and Storm Water Piping Above Grade:

- 1. Service weight (SV) cast iron hub and spigot pipe and fittings, 2" through 15", per ASTM A74. Rubber gasket joints per ASTM C564.
2. Type M hard copper tube per ASTM B306. Cast bronze drainage pattern fittings per ANSI B16.23. Lead-free solder joints per FS QQ/571d.

E. Sanitary Drainage and Storm Water Piping Below Grade:

1. Service weight (SV) cast iron hub and spigot pipe and fittings per ASTM A74. Rubber gasket joints per ASTM C564.

F. Vent Above Grade:

- 1. Service weight (SV) cast iron hub and spigot pipe and fittings, 2" through 15", per ASTM A74. Rubber gasket joints per ASTM C564.
2. Type M hard copper tube per ASTM B306. Cast bronze drainage pattern fittings per ANSI B16.23. Lead-free solder joints per FS QQ/571d.

G. Vent Below Grade:

- 1. Service weight (SV) cast iron hub and spigot pipe and fittings, 2" through 15", per ASTM A74. Rubber gasket joints per ASTM C564, CISPI HSN 68T.
2. Type K hard copper tube per ASTM B88. Cast bronze drainage pattern fittings per ANSI B16.23. Lead-free solder joints per FS QQ/571d.

2.2 Piping And Equipment Insulation:

A. All domestic water piping shall be covered with 1" minimum fiberglass insulation with factory-applied all-purpose jacket consisting of high-density, white kraft paper bonded to aluminum foil and reinforced with fiberglass yarn, stapled 6" O.C. and sealed with vapor barrier adhesive or using self-sealing lap. Covering shall be equal to Manville Products Micro-Lok 650 and shall be suitable for services from 35ø F to 650ø F, 3.5 pound density. Covering shall be Armstrong, Knaf, Manville, Owens-Corning or equivalent make. Covering on piping shall be continuous through hangers and sleeves. Hangers on piping shall encircle pipe covering, bear on a 20 gauge sheet metal plate four diameters long. Ends of covering shall be neatly tapered and sealed. Any mildewed covering must be replaced. Fittings shall be covered with a Zeston fitting cover and factory-supplied fiberglass insert where available, all installed according to manufacturer's instructions. 1/2" Armaflex insulation may be used in lieu of the above, in concealed areas with space limitations.

2.3 Pipe Hangers:

A. Hangers for domestic water piping shall be copper, copper lined or copper plated. Other hangers to be steel. Hang pipe along walls with ring type or bracket type return line hangers; other piping with adjustable steel rods and ring type clevised hangers. Hangers to be double nutted or coach screw type by Crane, Crawford, Fee Mason, Grinnell or equivalent make. Hangers spacing for copper piping shall be as follows: 1/2" - 1-1/4"; 6.0' O.C., 1-1/2" and above: 10.0' O.C. Hanger spacing for steel piping shall be as follows: All sizes - 12.0' O. C. Hanger spacing for PVC piping shall be as follows: All sizes - 4.0' O.C.

B. All hangers shall be on exterior of pipe insulation. Place hanger within 1' of each horizontal elbow. Support horizontal soil waste and storm piping near each hub. Support vertical piping at every floor line. Where multiple pipes can be installed in parallel at the same elevation, provide several or trapeze hangers. Where practical, support riser piping independently of connected horizontal piping.

2.4 Plumbing Specialties:

A. Valves:

- 1. Acceptable Manufacturers: Apollo, Hammond, Milwaukee, Mueller, Nibco, Powell, Rockwell-Nordstrom, Stockham, Watts
2. Bronze Valves: NPS 2 inches and smaller with threaded ends; Ferrrous Valves: NPS 2-1/2 inches and larger with flanged ends, unless otherwise indicated.

A.1 Gate Valves (GV)

- 1. In insulated piping gate valves shall be rising stem type.
2. Bronze Gate Valves. Gate Valves 2-1/2 inches and smaller: MSS SP-80; Class 125, 200-psi cold water pressure (CWP) or Class 150, 300-psi CWP; ASTM B 62 cast bronze body and bonnet, solid bronze wedge, copper silicon alloy rising stem, teflon-impregnated packing with bronze packing nut, threaded or soldered end connections; and with aluminum or malleable iron handwheel.
3. Cast Iron Gate Valves. Gate Valves 3 inches and larger: MSS SP-70; Class 125, 200-psi (CWP) ASTM A 126 cast iron body and bonnet, solid cast iron wedge, brass-alloy stem, outside screw and yoke, teflon-impregnated packing with 2-piece packing gland assembly, flanged end connections; and with cast iron handwheel.

A.2 Ball Valves (BV)

- a. Insulated Piping Systems:
1) Forged brass body and trim, two piece, full port, metal insulated 3" high stem extension lever handle, adjacent union with sweat ends, 3/8" through 4", 400 psi working pressure for WOG installations.
b. Non-Insulated Piping Systems:
1) Forged brass body and trim, two piece, full port, metal insulated extension lever handle, adjacent union with sweat ends, 3/8" through 4", 400 psi working pressure for WOG installations.

A.3 Check Valves (CKV):

- 1. Bronze body, 2-1/2 inches and under, 125 lb. SWP, 200 lb. WOG working pressure, adjacent union with threaded ends, swing check with brass disc and hinge and pin, screw in cap for clear water only.
2. 3 inches and larger, swing check valves MSS SP-71, Class 125, 200-psi CWP, ASTM A 126 cast iron body and bolted cap, horizontal disc, flanged or grooved end connections.

A.4 Plug Valves (PL):

1. Iron body, 1/2" through 4", threaded ends, wrench operated, to 150 deg. F operating temperature at 150 psig CWP with ambient temperatures of -20 to 150 deg. F for WOG installations.

B. Cleanouts and Cleanout Access Covers (CO):

1. See schedule on drawings.

C. Drains

1. See schedule on drawings.

D. Gas Cocks:

1. 2-1/2" and Smaller: Screwed iron body with brass trim and flat head. 3" and larger: Flanged iron body with iron trim and square head.

E. Water Heaters:

1. See schedule on drawings.

F. Plumbing Fixtures:

1. See schedule on drawings.

G. Non-freeze Wall Hydrants:

1. See schedule on drawings.

G. Backflow preventers:

- 1. Reduced-Pressure-Principle Backflow Preventers, ASSE 1013, Continuous-pressure applications, Bronze body for NPS 2 inches and smaller; cast iron body with interior lining complying with AWWA c550 or that is FDA approved NPS 2-1/2 inches and larger, Air-Gap Fitting ASME A112.1.2, matching backflow-preventer connection.
2. Double-Check Backflow-Prevention Assemblies, ASSE 1015, Continuous-pressure applications, cast iron body with interior lining complying with AWWA C550 or that is FDA approved, flanged and connections.
3. Dual-Check-Valve Backflow Preventer, ASSE 1024, Continuous-pressure applications, bronze body with union inlet connections.

3 EXECUTION

3.1 General:

A. The Plumbing Contractor shall include all requirements as noted herein and as required to provide a complete, safe, operating building plumbing system.

B. System and equipment installations shall include, but not be limited to the following:

- 1. Backflow prevention:
a. Install backflow preventers in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.
2. Cleanouts:
a. Cleanouts shall be installed at points as noted on the drawings as well as at the foot of each soil, waste or interior downspout stack, and at other points as required for easy system maintenance. Cleanouts shall be full size of the pipe up to 4", and 4" size for pipes above 4". Grease all cleanout plugs.
b. Floor Cleanouts: It shall be the responsibility of this Contractor to determine the type of floor covering to be used at each cleanout location and to rough-in and install each cleanout flush with the finished floor construction.

3. Domestic cold water system:

a. Provide a domestic cold water piping system to all fixtures and equipment requiring same, including valves, hangers and pipe insulation.

4. Domestic hot water system:

a. Provide a domestic hot water piping system to all fixtures requiring hot water, including valves, hangers, pipe insulation.

5. Natural gas system:

a. Provide a natural gas piping system. Gas pressure at meter outlet shall be 2 psi.

6. Fixtures:

- a. Install each fixture with trap, easily removable for servicing and cleaning. At completion, thoroughly clean plumbing fixtures and equipment.
b. Provide chrome plated rigid or flexible supplies to fixtures with loose key or wheel handle stops, reducers and escutcheons, all as specified.
c. Install wall mounted fixtures with approved chair carriers or steel plates as specified, model to suit installation.
d. Caulk between fixtures, wall and/or floor with butyl rubber, non-absorbent caulking compound. Point ends.
7. Mount fixtures at heights indicated on architectural drawings.

8. Natural gas distribution system:

a. Provide a natural gas piping system to all equipment requiring natural gas which includes the gas water heater and the heating equipment. Piping system shall be complete with valves and hangers. Piping in concealed spaces shall have welded joints. Piping on roof shall be supported on 4" x 4" supports with walkway pads. Piping on roof shall be free to expand and contract.

9. Interior sanitary sewer system:

a. Provide an interior sanitary sewer and vent piping system including overhead piping, underground piping, vent through roof, hangers, excavation, backfilling and compaction.

10. Interior storm water system:

a. Provide an interior storm water system including overhead piping, underground piping, roof drains, hangers, excavation, backfilling and compaction.

11. Sleeves or Penetrations:

a. All pipe penetrations through walls and floors shall have sleeves. Sleeves shall be caulked in a fireproof and waterproof manner.

12. Trenching:

a. Provide a minimum of 3" granular bedding meeting CA13, CA14 or CA6 modified per ASTM D-2321 under all underground or underfloor piping. Granular bedding shall extend to a minimum of 12" above the spring line of the pipe. Compact to 95% per ASTM D1557.

13. Testing:

- a. All piping systems shall be pressure tested to meet all requirements of all applicable codes and including the following requirements:
1) All water piping shall be tested to 125 PSI for two hours.
2) Gas piping shall be tested to 100 PSI for two hours.
3) All waste, vent and storm sewer system shall be tested with water with 10' of head.
4) Exterior sanitary sewers shall be air tested.

14. Chlorination

1. All exterior and interior water systems shall be chlorinated before placing the systems into service. Sterilization procedures shall conform to AWWA Standard C601. Sterilizing agent shall be retained in the piping system long enough to kill all bacteria with a minimum of 24-hour retention time. The affidavit of compliance shall be the bacteriological tests certifying that the water held in the piping system, equipment or storage facility is free of coliform bacteria contamination for two consecutive days.

15. Cleaning:

1. Contractor shall be responsible for cleaning of his equipment, systems, and shall remove all debris created by him from the premises. Entire work area shall also be broom cleaned.

16. Identification:

- 1. Provide pipe markers on all piping systems per ANSI A13.1 Scheme for the Identification of Piping Systems and 253.1 Safety Color Code for Marking Physical Hazards and include arrows to show normal direction of flow. Locate pipe markers as follows:
a. Wherever piping is exposed to view in non-concealed locations.
b. On piping above removable acoustical ceilings.
c. Near each valve and control device.
d. Near each branch connection.
e. Near locations where pipes pass through walls or floors/ceilings or enter non-accessible enclosures.
f. At access doors and similar access points.
g. Near major equipment items and other points of origination and termination.
h. Spaced intermediately at maximum spacing of 50 feet along each piping run, except reduce spacing to 25 feet in congested areas of piping and equipment.
i. Fuel gas piping shall be identified at intervals of not more than 50 feet in exposed locations, not more than 25 feet in concealed locations and not less than once in any room or space.

G. Guarantee:

1. Contractor shall guarantee all equipment, apparatus, materials and workmanship entering into this contract and shall replace all parts at his own expense which have proven defective within one (1) year from formal acceptance. Individual items shall be guaranteed as called for in addition to the above.

H. Record Documents:

1. Contractor to retain on site one (1) complete marked up set of "As-Built" project prints to be turned over to the Owner at completion of project. Final record copies shall be submitted for review, same as required for shop drawings. Contractor shall retain copy of project for his records.



I hereby certify that these plans were prepared under my supervision and that they comply to the best of my knowledge with all the building codes and ordinances of the city of Chicago, IL.

Table with columns: NO., DATE, DESCRIPTION, PERMIT SET, PROGRESS SET, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

A. WILLIAM SEEGERS ARCHITECTS
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Drawing Title:
1st Floor Upgrade Repairs
2101 S. Michigan Avenue
Chicago, IL

DESCRIPTION:
PLUMBING SPECIFICATION
JOB NO. 1701
DRAWN BY: -
CHECKED BY: -
DATE: 10-06-17
SHEET NO.
P2.00
MCA #4731