1.1 RELATED DOCUMENTS

A. Drawings and general provision of the contract, including General and Supplementary Conditions and Division 1 specification sections apply to work specified in this section.

1.2 SCOPE OF WORK

A. These specifications and the accompanying drawings are intended to provide for all labor and materials necessary for the installation of complete workable systems as specified herein or indicated on the drawings. The work required under this section of the specification shall include specifically, but is not limited to the following:

1. A system of cold water piping including connections to fixtures and equipment as shown or indicated on the drawings.
2. Hot water piping systems including connections to fixtures and equipment as shown or indicated on the drawings including all appliances.
3. A system of sanitary soil, waste, and vent piping including connections to fixtures and equipment as shown or indicated on the drawings.
4. All plumbing fixtures and equipment as hereinafter specified, completely installed and operational.
5. A system of thermal insulation for piping and equipment.
6. All necessary trenching and backfilling to install plumbing systems in this section.
7. All natural gas piping as shown or indicated.

1.3 CODES AND REGULATIONS

A. All work performed under this section shall conform with all local governing regulations and in case of conflicting requirements, the most stringent shall apply. Minimum requirements shall be the 2009 International Plumbing Code.
B. Handicap accessible fixtures shall be installed in accordance with the Americans with Disabilities Act (ADA) and the U.S. Architectural and Transportational Barriers Compliance Board (ATBCB) "Recommendations for Accessibility Standards for Children's Environments," Chapter 5. If a conflict exists, notify the architect prior to roughing in. A copy of this publication may be obtained from USATBCB, 1331 F. Street NW, Suite 1000, Washington, DC 20004-1111.
C. Should it be found that any part of the work shown or specified is not in accordance with local regulations, the Architect shall be so advised at the time of bidding and all work shall be installed as required to meet the local codes.

1.4 FEES AND PERMITS

A. The Contractor shall obtain and pay for all permits, fees for inspection and charges of every kind that may be necessary for fully completing the work. He shall make all necessary tests required by the City, County or State authorities, legal regulations and/or the Architect, and return to the Architect any certificates of approval issued in this district for plumbing work, etc., signed by the inspector in charge of each particular part of the work.

1.5 RECORD DRAWINGS

A. Contractor shall keep a set of reproducible sepias on site at all times and log all changes made during construction period. No deviations from the drawings and specifications shall be made without full knowledge and consent of the Architect. Record drawings shall show dimensions, locations, and depth of all buried and concealed piping, plugged outlets, and equipment, and shall be kept up-to-date. No backfilling of trenches will be permitted until as-built drawings are approved as up-to-date by the Architect. No plumbing progress payments will be approved unless as-built drawings are up-to-date. Depth of sewers shall be from a permanent benchmark as shown on contract drawings. Upon completion of work, sepias shall be turned over to the Architect.

1.6 COOPERATION

A. The Contractor shall lie out and proceed with his work so that this work will be executed in harmony with all other contractors and trades on the job.

1.7 VISITING THE PREMISES

A. The Contractor, before submitting his bid on the work, must visit the site and familiarize himself with all existing conditions. As a result of having visited the premises, the Contractor shall be responsible for the installation of the work as it relates to such existing conditions. The submission of a bid will be considered an acknowledgment on the part of the bidder of his visitation to the site.

1.8 VERIFICATION OF CONTRACT DRAWINGS

A. The drawings and specifications are intended to cooperate. Any materials, equipment, or systems related to this section and exhibited on the architectural and plumbing drawings, but not mentioned in the specifications are to be executed to the intent and meaning thereof, as if it were both mentioned in the specification and set forth on the drawings. Where the Contractor finds the specification and/or drawings to be in conflict or where they are not clear, it shall be brought to the attention of the Architect prior to submitting a bid. The drawings are diagrammatic and do not necessarily show or indicate all fittings, offsets, and accessories, which may be required. The Contractor shall carefully investigate the structural and finish conditions affecting all his work as well as the operational requirements of each system and shall arrange such work accordingly, furnishing such fittings, etc., as may be required for the proper and efficient functioning of each system. No unnecessary or unauthorized offsets will be permitted.

1.9 WORKMANSHIP

A. All workmanship performed under this section shall be executed in a first class manner in accordance with the best practices of the trade. The Architect reserves the right to accept or reject workmanship and determine when the contractor has complied with the requirements herein specified. Only competent mechanics skilled in their respective trades shall be employed by the Contractor.

1.10 RESPONSIBILITY OF BIDDER

A. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other document shall in no way relieve any bidder from any obligation with respect to his bid or the contract. The submission of a bid shall be taken as prima facia evidence of compliance with this paragraph and that he has included in his proposal every item of cost necessary for complete installation of the plumbing systems as shown and/or specified.

1.11 NOISE AND VIBRATION

A. This Contractor shall be held responsible for elimination of all noises or vibrations transmitted to occupied areas from equipment which he may install. This applies particularly to vibration and noises in piping, water hammer, and vibration from mechanical equipment transmitted through bases to building structure. He shall furnish and install anti-vibration bases, flexible connectors for piping, etc., as may be necessary.
B. Grading: Pipe shall be graded upward from source to facilitate drawings. Where low points are required because of long runs or where sections may be valved off, the low point will be provided with ¾" globe valve and hose nipple for draining.

1.12 SUBMITTAL DATA

A. Materials and equipment schedules shall be submitted as soon as practicable, but not later than 30 days after the date of award of contact, and before commencement of installation of any material or equipment. A complete schedule of the material and equipment proposed for installation shall be submitted for approval by the Architect. The schedule shall include catalogs, cuts, diagrams, drawings, specifications and such other descriptive data as may be required by the Architect. The schedule and supplementary data shall be submitted in six (6) copies, and approval obtained. All materials required to be submitted for approval under this section shall be submitted at one time. Partial submittals will not be considered. Each item submitted shall be identified by its applicable drawing number.
B. Where equipment named as equivalent or approved equal are proposed for use by the Contractor, he shall be responsible to coordinate any changes with all trades affected.
C. The following equipment and material shall be submitted for approval:

1. Valves
2. Cleanouts
3. Access Panels
4. Hose Bibbs
5. Floor Drains
6. Shock Absorbers
7. Insulation
8. All Plumbing Fixtures
9. Water Heaters

1.13 START-UP SERVICE

A. The Contractor shall put all items installed under this section into operation and shall instruct the Owner's maintenance personnel in all points requiring service and maintenance. Further, the Contractor shall make all adjustments and/or service requirements to said equipment during the first 60 days of actual occupancy.

1.14 MAINTENANCE DATA

A. Operational, maintenance, and space parts booklets shall be provided for all items of equipment requiring maintenance. Provide a minimum of three (3) copies and turn over to Architect. Bind in vinyl covered three-ring binders.

1.15 GUARANTEE

A. All materials and equipment provided and/or installed under this section of the specifications shall be guaranteed for a period of one year from date of acceptance of the work by the Architect. Should any trouble develop during this period due to defective materials or faulty workmanship, the Contractor shall furnish all necessary labor and materials to correct the trouble without any cost to the Owner. Any defective materials or inferior workmanship noticed at time of installation and/or during the guarantee period shall be corrected immediately to the entire satisfaction of the Architect.

PART 2 PRODUCTS

2.1 SOILS, WASTE, AND VENT SYSTEMS

A. Below grade sanitary soil and waste system shall be standard weight cast iron bell and spigot soil pipe and fittings tarred inside and outside. For cast iron pipe, joints shall be made tight with elastomeric gasketing. Above grade soil and waste piping shall be made with no hub cast iron soil pipe and fittings with heavy-duty "Husky" clamps. (No Exceptions)
B. Vent piping shall be the same as the "Waste Piping."
C. Fixture runouts shall be cast iron, PVC, or DWV copper piping with caulked, screwed, or sweat joints respectively with drainage pattern fittings.
D. Unions will not be permissible in soil, waste, or vent piping.
E. All vents shall be run twelve (12) inches above the roof and shall be flashed and counterflashed. Flashing shall consist of 16 oz. soft sheet copper or four (4) lb. lead, extending all around not less than nine (9) inches from the pipe. Counterflashing shall be turned down into the pipe and shall be made of 16 oz. copper or four (4) lb. lead. Coordinate with roofing system as per architectural sections.
F. Test fittings required for testing are not shown on the drawings, but shall be provided by the Contractor where required.
G. Grading: Minimum grade for soil pipe shall be as follows:

1. For 2-inch and 3-inch pipe, grade shall be ¼ inch per foot (minimum).
2. For 4 & 6-inch pipe, grade shall be 1/8-inch per foot (minimum).

H. PVC DWV pipe shall not be installed within any fire rated walls or ceilings. Piping located within rated assembles shall be service weight cast iron.

2.2 DOMESTIC WATER PIPING

A. Copper tubing shall be used for all piping. Type "L" tube shall be used above slab and type "K" tube shall be used below slab on grade. Sweat fittings shall be either cast brass or wrought copper. Solder joints shall be cleaned with steel wool or emery cloth before applying soldering paste (flux) using solder for domestic water tubing.
B. Grading: Pipe shall be graded upward from source to facilitate drawings. Where low points are required because of long runs or where sections may be valved off, the low point will be provided with ¾" globe valve and hose nipple for draining.

2.3 NATURAL GAS PIPING

A. Piping above grade shall be schedule 40 black steel ASTM A120 or type "K" copper. Fittings shall be 150 pound black malleable screw pattern for all sizes 2" and smaller. For black steel, fittings shall be either cast brass or wrought copper for copper (silver solder only).
B. Piping below ground shall be schedule 40 black steel with black welding fittings and shall be protected by mill wrapping, Republic Extru-Cost or type "K" soft copper with no joints, continuous runs only. This piping shall be completely sleeved with the sleeves sealed and vented to the outdoors. If welding is utilized, a certified welder with a current employer certification, must be current for last two years of applicable type of welds. All welds must be stamped. Owner reserves the right to x-ray any and or all welds. Underground gas piping below grade may be HDPE gas piping with fused connections installed in accordance with the requirements of the 2009 I nternational Fuel and Gas Code.
C. All piping shall be installed in accordance with NFPA recommendations and the 2009 International Gas Code complete with all necessary appurtenances.
D. Gas cocks shall be installed before each piece of equipment is connected to the system. Provide with drip leg at each and each shall be AGA approved.
E. Horizontal piping shall drain with a slope of 1" in 40'-0" to risers or low points as required. Drips shall be provided at all low points and at bottom of risers. Drips shall be same size as pipe it serves and a minimum of 12 inches long.
F. All piping connections shall be made with shellac joint or ground joint unions.

2.4 SLEEVES

A. All pipes passing through masonry or concrete construction shall be fitted with sleeves. Sleeves in bearing walls, floors, and/or beams shall be made of Schedule 40 galvanized steel pipe. Sleeves in other masonry walls or core-drilled openings shall be 26-gauge metal, fiber, or other approved material. Each sleeve shall extend through its respective wall, and shall be cut flush with each surface unless otherwise specified. Sleeves shall be two pipe sizes larger in diameter than the passing pipe when uncovered, and one pipe size larger than the overall outside diameter of the covering when the passing pipe is insulated. Space between all floor sleeves and passing pipes shall be made watertight by caulking with graphite asbestos rope packing and plastic waterproof caulking compound as approved by the Architect. All sleeves shall be properly installed and securely cemented in place. Where pipes pass through combustible materials, the openings shall be sufficiently large to provide 1" clearance between the pipe and the partition. All sleeves through floor or above grade in equipment space shall extend 1" above finished floor. All pipes and/or sleeves passing through fire rated assembles shall be fire stopped. Where piping penetrates vertically, use Holdrite HydroFlame non-metallic cast in place sleeves. For all wall penetrations above and below grade, use Advanced Products Innerlynx.

2.5 FLOOR, WALL, AND CEILING PLATES

A. All pipes passing through the floors, walls or ceilings of finished rooms shall be fitted with brass chrome plated floors, wall or ceiling plates, securely fastened in place by set screw. Plates shall be large enough to accommodate the piping and insulation. Wall and floor plates shall be of the deep pattern type where required.

2.6 HANGERS, CLAMPS, AND SUPPORTS

A. Piping shall be supported by hangers and clamps. When secured to concrete or masonry, concrete inserts or expansion type devices approved and recommended for the application shall be used. The use of explosive anchoring devices is prohibited. Hangers and clamps shall be of similar material as piping or coated as required to percent bimetallic electrolytic action.
B. Plastic piping shall be supported on four-foot intervals for horizontal runs and eight-foot intervals for vertical risers.
C. Hangers shall be adjustable "split ring and bolt" type or "clevis" type. Hangers for insulated pipe shall be of size to allow pipe covering to pass through the hanger without crushing. Where pipe covering passes through the hanger, the covering shall be protected with rib-lock Insu-Shield pipe saddles as manufactured by Insul-Coustic Corporation, Elcen Iso-Shields, or approved equal.
D. All hangers of one type shall be catalog items of one manufacturer.
E. No plumbers strap shall be used.
F. When hanger rods are over 18 inches in length, provide lateral bracing every fourth hanger.
G. Rod sizes for pipe hangers shall be as follows:

1. Pipe 2 inches and smaller - 3/8" rod
2. Pipe 2½ inches and 3 inches - ½" rod
3. Pipe 4 inches and larger - 5/8" rod

H. Support products shall be as cataloged by Fee and Mason, Grinnell, or approved equal.

2.7 UNIONS

A. Unions shall be provided on inlet and outlet of all apparatus and equipment.
B. Where valves are adjacent to equipment, unions shall be on downstream side of valves.
C. Unions in copper pipe shall be cast bronze, WOG pattern, ground joint, 150-psi type.
D. Unions in steel pipe shall be malleable iron, WOG female pattern, brass seat, ground joint, 150-psi type.

2.8 VALVES AND COCKS

A. Valves and cocks shall be installed where shown on the drawings and/or where found to be necessary for proper operation of the system. All branches from risers, all branches from mains, and all fixtures or equipment not having stops shall be provided with valves where
shown or not. Each bathroom group shall have an isolation valve for control
of the entire group. All isolation valves shall be ball valves.
B. All valves shall be the product of one manufacturer as cataloged by Watts, Nibco, or Apollo.
C. All valves and piping accessories shall be of American manufacture or NAFTA compliant.

2.9 CLEANOUTS

A. Provide accessible cleanouts at the foot of each soil and waste stack. Cleanouts shall be placed not more than 100 feet apart on straight runs. Cleanouts shall be as manufactured by Smith, Josam, Zurn, or approved equal.
B. In floors, cleanouts shall be cast body for inside caulking with nickel brass rim and floor plate scoriated and marked "CO" cast in the plate and held to the threaded brass integral plug by countersunk screw. In finished tile or terrazzo floors, cleanout shall have recess. In carpeted areas, cleanouts shall have carpet marker. Coordinate floor finishes with architectural drawings.
C. In areas above floors, cleanouts shall have cast brass plug tapped for machine screw with chromium plated, bronze access cover held in place with chromium-countersunk screw.
D. Cleanouts outside of building walls shall be cast iron with brass countersunk screw plug. Ferrule shall be set in 12" x 12" concrete pad minimum 6-inch thick flush with finished grade.

2.10 ACCESS PANELS

A. Provide Philip Carey, J.R. Smith, Zurn, or equal Smith Model #4761, 12" x 16," chromium plated steel access panels where valves, trap primers or shock absorbers occur in inaccessible walls or ceilings. All doors and covers to be completely removable from frames. All hinges must be concealed type. Steel frames shall be 16 gauge and doors 14 gauge.

2.11 WALL HYDRANTS

A. Wall hydrants shall be as scheduled on the drawings, with integral vacuum breaker. Fasten securely to wall. Verify wall thickness and rough-in requirements with architectural drawings.

2.12 DRAINS

A. Floor drains shall be equal to Zurn #ZN-415 with nickel brass strainer and trap guard. All floor sinks shall be Zurn #Z-1900 with the appropriate grate.

2.13 SHOCK ABSORBERS

A. Install permanently sealed water hammer arrestors where required. Arrestors shall be tested, certified, and sized per P.D.I. Standard WH201 at all locations. Install as per manufacturer's recommendations.
B. Air chambers of same materials and diameter as the supply pipe and 12 inches in height may be installed on a single fixture furnished with manually controlled compression type faucets.

2.14 THERMAL INSULATION WORK

A. All insulation work shall be performed by experienced insulation application mechanics thoroughly familiar with and experienced in the application of insulation materials. All insulation materials shall be applied in accordance with manufacturer's published recommended methods. Installation and finish of insulation materials shall meet with complete approval of the Architect. Contractor shall submit complete data for approval of materials and application methods as proposed for use. All piping shall be pressure tested and all surfaces shall be horoughly cleaned before covering is applied. Insulation materials including sealer, adhesive, finishes, etc.,
shall meet NFPA standards with regard to flame spread and support of combustion.

B. All piping as follows shall be covered with 1-inch thick heavy density fiberglass sectional pipe insulation equal to Owens-Corning Fiberglass 25 ASJ/SSL:
1. Domestic Cold Water
2. Domestic Hot Water (including hot water recirculation lines)
C. Fittings for the above shall be insulated with premolded fitting insulation of the same material and thickness as the adjacent insulation and shall be covered with a premolded plastic (PVC) vapor barrier and sealed with vapor barrier lagging adhesive. Adhere 3-inch wide butt joint strips over all end joints with vapor barrier adhesive. Covering adjacent to unions and other points of termination shall be finished with the plastic material neatly beveled. Insulate fittings on Armaflex insulation with flexible foam split and joints sealed with approved mastic. No additional finish is required on Armaflex insulation inside the building walls.
D. Contractor shall insulate hot water supply assembly and "P" trap with trap wrap kit as specified in fixture schedule.
E. It shall be the responsible of the insulation subcontractor to coordinate hanger locations and prevent crushing or breaking finishes.

2.15 PLUMBING FIXTURES

A. Provide rough-in for and connect to supply lines, waste and vent lines, all equipment, fixtures, drains, etc. specified herein or in other sections of the specifications which require such connection.
B. Provide stops in hot and cold water connections to each fixture equipment item, etc. Where not otherwise specified, stops shall be same as specified hereinbefore for gate valves. Provide deep escutcheon on all sinks and lavatories where waste pipe goes into wall. Anchor all supplies from wall securely within wall construction.
C. Fixture item numbers are indicated on the drawings by means of the "P" numbers. Fixture plate numbers are for descriptive purposes only. Fixtures by American Standard, Kohler, or Eljer will be acceptable. All plumbing brass shall be the same manufacturer as the fixture unless otherwise indicated in the fixture schedule, or approved equal. All fixtures submitted for approval shall have rough-in measurements or attached rough-in sheets.
D. Similar and equal flush valves manufactured by Sloan Regal or approved equal. Similar and equal toilet seats manufactured by Church, Beneke, Olsonite, or approved equal will be acceptable.
E. All exposed pipe and fittings shall be chromium-plated brass unless otherwise indicated.
F. Color of all plumbing fixture to be white unless otherwise stated.
G. Provide the plumbing fixtures as indicated on the drawings.

2.16 WATER HEATERS

A. Insulated, storage type, enameled metal housing tanks (concrete interior) with gas boilers shall be by RBI or Lochinvar or approved equal with 5-year warranty as scheduled on the drawings. The water heaters shall also come with low water cutoff (manual reset), dual aqua stat high limit control with manual reset, remote aqua stat, outside air reset, gas cock, gas pressure regulator, 100% flame safeguard with manual reset, pressure relief valve, full shut off valve, and control panel.
B. Contractor shall be responsible for the installation permit.
C. Expansion tanks must be bladder type, no tanks larger than 320 gallons and have an ASME stamp as required by state.
D. Provide factory start up for all boilers and water heaters.
E. All boiler rooms are required to have a "kill" switch by the door.

2.17 BACKFLOW PREVENTOR

A. Double Check Assembly equal to Watts regulators.

PART 3 EXECUTION

3.1 PIPING INSTALLATION INSTRUCTIONS

A. The Contractor shall provide for expansion and contraction of all piping
and must make proper provisions so that there will be no undue strain on any of the piping or any part of the work.
B. Wherever changes in sizes of piping occur, changes shall be made with reducing fittings. The use of bushings will not be permitted.
C. Minimum bury for exterior piping shall be 18" below finish grade or as required by local code.
D. Cutting and boring through structural members shall be done only when approved by and under supervision of Architect and/or Structural Engineer.
E. All pipe openings shall be closed with wooden plugs or metal caps during construction. The plugs or caps shall be installed when the pipes are roughed-in and shall not be removed until final connections are made.
F. Fittings and lengths of pipe shall be examined internally before assembly and, if necessary, freed from scale or dirt. Piping shall be thoroughly blown out after assembly to remove foreign materials.
G. Plated, polished, or soft metal piping shall not show tool marks or abrasions.
H. Offsets in all piping above grade shall be made with fittings. Bending of pipe shall not be permitted.
I. All piping penetrations of fire proofing material shall be resealed using a U.L. listed fireproofing material.

3.2 EXCAVATION, TRENCHING, AND BACKFILLING

A. The Contractor shall do all excavation necessary for piping required in this section. He shall backfill all such trenches and excavations after work has been installed and tested, removing all surplus earth to such point as may be directed. Care must be taken in excavating that walls and footings and adjacent load bearing soils shall not be disturbed in any way except where lines must cross under a wall footing. Where a line must pass under a footing, the crossing shall be made by the smallest possible trench to accommodate the pipe. Excavations shall be kept free from water by pumping. Fill and backfill shall be in accordance with local plumbing code requirements and applicable requirements of "Earthwork" section.
B. Trenches will be made true to grade by means of substantial and accurately set batter boards not more than 50 feet apart with taut cord or wire stretched between them. Care shall be exercised to insure that the pipe is bedded on undisturbed earth.
C. Trenches located inside foundations walls and to a point five (5) feet outside of same shall be not less than 16 inches nor more than 24 inches wider than the outside diameter of the pipe to be laid herein. Bottoms of trenches shall be accurately graded with bell holes scooped out to provide uniform bearing and support of pipe on undisturbed soil throughout its entire length, except where other means of supporting pipe are indicated. No greater length of trench shall be left open in advance of pipe and utility laying than that, which is authorized or directed by the Architect.
D. Bottoms of trenches shall be so shaped that when pipe is in place, the lower fourth of the circumference for the full length of the barrel will be supported on undisturbed earth. Bell holes shall be dug so that no part of the weight of the pipe is supported by the bell, but shall be no larger than necessary for proper jointing. Soft spots under pipe shall be excavated to solid subgrade. Rock or rocky materials shall be excavated to at least six (6) inches below pipe invert. Pipe bed shall then be backfilled with fine gravel or coarse sand, well tamped in place.
E. Immediately after testing and/or inspection, the pipe trench will be carefully backfilled with earth free from clods, bricks, etc. to a depth one-half the pipe diameter and then firmly compacted in such a manner as not to disturb the alignment of joints of the pipe. Thereafter, the backfill shall be compacted tamped every vertical foot. No clods, rocks, stones, etc., shall be placed in the trench. The top 18 inches of fill shall be clean earth.
F. The Contractor shall be responsible for protecting his workmen, the workmen of others, or the work of others by shoring trenches and excavations where depth of trenches or excavations; wet, plastic or unstable soil, soil loaded with erected or stored materials; or any other such condition would cause a hazard. The Contractor may exercise his own judgment as to the necessity of shoring, but the Architect reserves the right to order shoring placed if he deems it necessary.

3.3 OPENINGS AND SLEEVE LOCATIONS

A. This Contractor shall coordinate with the work to be done under other sections in providing information as to the openings required in walls, slabs, and footings for all piping including sleeves where required.
B. Any drilling or cutting required for the performance of work under this section shall be the responsibility of this Contractor and the cost thereof shall be borne by him.
C. Sleeves shall be furnished, accurately located and installed in forms before pouring of concrete. This Contractor shall pay all additional costs for cutting of holes as the result of the incorrect location of sleeves. All holes through existing concrete shall be either core drill or saw cut. All holes required shall have the approval of the Structural Engineer prior to cutting or drilling. Sleeves shall be inserted and grouted into place.
D. It shall be the responsibility of this Contractor to ascertain that the openings are properly located.

3.4 MATERIALS AND EQUIPMENT

A. All materials and equipment furnished under this section of the specifications shall be new, of quality specified, and as listed in printed catalogs of the manufacturer. Unless otherwise specified, all items shall have the manufacturer's standard finish.
B. Each article of its kind shall be the standard product of a single manufacturer; however, the component parts of the plumbing system need not be the products of the same manufacturer.
C. Trade names or manufacturer's names and manufacturer's model or figure numbers used in this specification are used to establish the type, character, and quality of materials and equipment to be furnished. Approved equal products or other manufacturers will be accepted.
D. The Architect shall have the right to accept or reject material and equipment and determine when the Contractor has complied with the requirements herein specified.
E. All manufactured materials shall be delivered and stored in their original containers. Equipment shall be clearly marked or stamped with the manufacturer's name and rating.

3.5 STERILIZATION

A. The entire water distribution system shall be thoroughly sterilized with a solution containing not less than 50 parts per million of available chlorine. The chlorinating materials shall be acceptable by the State Board of Health authorities, and shall be introduced into the system in accordance with their recommendations. The sterilizing solution shall be allowed to remain in the system for a period of eight (8) hours during which time all valves and faucets shall be opened and closed several times. After sterilization, the solution shall be flushed from the system with clean water. The complete sterilization operation shall be approved by the State Board of Health authorities.

3.6 TESTS

A. The Contractor shall notify the Architect and the plumbing inspector three (3) working days before any tests are to be made. All tests shall be made in their presence. Repair of effects that are discovered as a result of inspection of tests shall be made with new materials. Caulking of screwed joints, cracks, or holes shall not be accepted. Tests shall be repeated after defects have been eliminated.
B. Tests of Sanitary and Storm Sewer: A water test shall be applied to all parts of the drain and vent system before piping is concealed or fixtures set in place. All openings to be plugged tight, the entire system filled with water to the top of vents through roof, and left at least 30 minutes without leakage. Also, perform a ball test, coordinate ball test with the Owners representative / construction director.

C. After fixtures are permanently connected and traps are filled with water, entire sanitary system shall be smoke tested in accordance with the requirements of the 2015 International Plumbing Code.

D. Test of domestic water piping shall be applied after installation of piping is concealed, before piping is covered, and before plumbing fixtures are connected. System shall be filled with water and kept under hydrostatic pressure of 150 pounds per square inch for two (2) hours with no leaks.
E. All gas piping shall be tested by 100-psi air pressure applied to all parts of system and held for five hours with no leaks.

F. All equipment and materials required for tests shall be provided by the Contractor.

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Augusta, GA

FINAL

No.	Description	Date

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PLUMBING SPECIFICATIONS

Project number	16031
Date	03/29/17
Drawn by	JJH
Checked by	CJD

P002

Scale	12" = 1'-0"

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