

PART I: GENERAL - FIRE PROTECTION

1-1 DESCRIPTION:

All work on these drawings shall be done in strict accordance with these specifications.

The work included under this contract shall consist of the furnishing and installation of all equipment and material necessary and required to form the complete and functioning systems in all of its various phases, all as shown on the accompanying drawings and/or described in these specifications.

1-2 WARRANTY:

The contractor shall guarantee the work for a period of one year beyond date of final acceptance. During that period, the contractor shall repair or replace, at his own expense, any faults or imperfections that may arise due to defects in material and workmanship. Defects shall include, but not be limited to leaks, loose or missing parts, or noticeable deterioration of finish. During this period, the contractor shall actually perform all service work required.

1-3 PROJECT CONDITIONS:

The contractor shall visit the site of the work and fully understand the Conditions that affect the work, or the cost thereof, understand the existing utilities from which services will be supplied, verify locations of utility services, determine requirements for connections and determine in advance that equipment and materials proposed for installation fit into the confines indicated.

1-4 PERMITS AND FEES:

The contractor shall arrange and pay for all permits, fees, tests, and all inspections as required by governmental authorities.

1-5 COORDINATION WITH FIELD CONDITIONS:

The contract documents are schematic in nature in that they are only to establish scope and a minimum level of quality. All duct, pipe, or equipment locations as indicated on the documents do not indicate every offset or exact location. All offsets and exact locations shall be established by actual field measurements, coordination with the structural, architectural, and reflected ceiling plans. All offsets, and relocations as required by actual field conditions shall be performed by the contractor at no additional cost to the owner.

1-6 SUBMITTALS:

Contractor shall provide six sets of shop drawings of the entire sprinkler system including hydraulic calculations and submittals of sprinkler heads. Any deviations from the specified items shall be listed on the cover sheet and clearly itemized for all deviations.

1-7 QUALITY ASSURANCE:

All work shall be performed in accordance with all state, local, and federal codes and all authorities having jurisdiction, and N.F.P.A.

1-8 CERTIFICATE OF TESTING:

Furnish owner with test certificate certifying the system approved by the City Fire Marshall, Insurance Services Officials and Landford.

1-9 TESTING:

Upon completion of the installation, test the system and obtain approval of the local fire insurance rating organization having jurisdiction, particular attention is called to the requirements of N.F.P.A. 13 pamphlet.

PART II: PRODUCTS - FIRE PROTECTION

2-1 PRODUCTS AND MATERIALS:

A. SPRINKLER HEADS:

1. Temperature rating on fusible links to suit specific hazard area with a minimum margin or safety 50°F.
2. Automatic sprinklers installed in public areas with ceilings shall be concealed type with cover plate to match ceiling appearance. Sprinkler installed in non-public areas or stock rooms shall be pendant type.
3. Design and install the system so that no part will interfere with doors, windows, heating, plumbing, or electrical equipment. Do not locate sprinkler heads within 6" of lighting fixtures, HVAC diffusers and other obstructions. Sprinkler piping cannot penetrate ductwork or lighting fixtures.
4. Protect sprinkler heads against mechanical injury with standard guards.
5. No foreign pipe or fittings shall be allowed for this project.

B. PIPE:

1. Pipe shall be Schedule 40 or as required to match existing piping systems where such exist and are determined fit for use.
2. Run piping concealed above fumed ceilings and in joists to minimize obstructions. Expose only heads.

C. SUPPORTS:

1. Pipe hangers, equipment supports and associated anchors shall be in accordance with NFPA 13.
2. Hanger rods shall be galvanized all-thread.

END OF SECTION

PART I: GENERAL - PLUMBING

1-1 DESCRIPTION:

All work on these drawings shall be done in strict accordance with these specifications.

The work included under this contract shall consist of furnishing and installing the:

- A. Sanitary drainage waste and vent system
- B. Domestic hot and cold water supply and distribution systems
- C. All associated fixtures, equipment, accessories, and appurtenances

1-2 WARRANTY:

- A. The contractor shall guarantee the work for a period of one year beyond the date of final acceptance. During that period, the contractor shall repair or replace, at his own expense, any faults or imperfections that may arise due to defects in material and workmanship, including fixtures and pipe leaks. Defects shall include, but not necessarily be limited to: noisy operation, loose or missing parts, or noticeable deterioration of finish. During this period, the contractor shall perform all service work required.

1-3 PROJECT CONDITIONS:

- A. The contractor shall visit the site of the work and fully understand: the conditions that affect the work, the costs of the work, and the existing utilities from which services will be supplied. The contractor shall field verify locations of utility services and confirm in advance that equipment and materials proposed for installation shall fit into the confines indicated.

1-4 PERMITS AND FEES:

- A. The contractor shall arrange and pay for all permits, fees, tests, and all inspections as required by the Authorities Having Jurisdiction (AHJ).

1-5 COORDINATION WITH FIELD CONDITIONS:

- A. The contract documents are schematic in nature in that they are only to establish scope and a minimum level of quality. Pipe and equipment locations as indicated on the documents do not indicate every offset or exact location. All offsets and exact locations shall be established by actual field measurements, and coordination with structural, architectural, mechanical, and electrical trades. All offsets and relocations as required by actual field conditions shall be provided by the contractor at no additional cost to the owner.

1-6 SUBMITTALS:

- A. Contractor shall provide electronic submittals (PDF format) for all plumbing fixtures, equipment, and piping accessories. Any deviations from the specified items shall be listed on the cover sheet and clearly itemized for all deviations. The contractor shall also provide no less than two (2) printed and bound copies of (owner's) operating and maintenance manuals to the architect upon completion of the work.

1-7 QUALITY ASSURANCE:

- A. All work shall be performed in accordance with all applicable state, local, and federal codes; all authorities having jurisdiction, and generally accepted industry standards.

1-8 EQUIPMENT IDENTIFICATION:

- A. All equipment shall be clearly identified by means of permanently attached nameplates and all valves shall be clearly identified by means of wire-attached valve tags. Nameplates shall be engraved laminated plastic or etched metal. Valve tags shall be stamped or engraved metal.

1-9 REGULATORY REQUIREMENTS:

- A. Perform Work in accordance with plumbing and building codes and inspectors having jurisdiction.
- B. Conform to applicable codes for the provision and installation of all required backflow prevention devices. Provide certificate of compliance from authority having jurisdiction indicating approval of installation of backflow prevention devices. Provide backflow prevention assembly test and maintenance report for all devices. A printed and signed form by the licensed tester that performed the work shall be provided both to the Owner and to the Public Water System in accordance with TCEQ (Texas Commission on Environmental Quality) requirements.
- C. No PVC pipe or fittings will be allowed for any areas where pipe is to penetrate a fire rated assembly or is to be installed in a return air plenum unless the entire length of all such piping is encased within a minimum 2 hour fire rated enclosure.
- D. Provide a water pressure regulating valve assembly at the service entry where incoming water supply pressure is greater than 70 psi.

PART II: PRODUCTS - PLUMBING

2-1 SANITARY SOIL, WASTE, VENT PIPE, AND FITTINGS ABOVE GROUND (inside building):

- A. Pipe, 1-1/4" and 1-1/2": ASTM B306, copper drainage tubing (DWV).
- B. Fittings, 1-1/4" and 1-1/2": ASME B16.23, cast copper alloy solder joint drainage fittings or ASME B16.28 wrought copper and wrought copper alloy solder joint drainage fittings. Provide joints per ASTM B828 using ASTM B32 Alloy Grade Sn 50 solder.
- C. Pipe and fittings, 2" and larger: CISPI 301/ASTM A888 hubless cast iron pipe, service weight (SV), with hubless joints using ASTM C564 neoprene gaskets and ASTM C1277 stainless steel clamp and shield assemblies or ASTM A74 Bell & Spigot cast iron pipe and fittings with ASTM C564 neoprene compression type gaskets.
- D. Exposed pipe and fittings: Polished chrome over nickel plated brass.

2-2 SANITARY SOIL, WASTE, PIPE, AND FITTINGS BELOW GROUND:

- A. Pipe and fittings, 2" and larger: ASTM A74 Bell & Spigot cast iron pipe and fittings with ASTM C564 neoprene compression type gaskets.
- B. Provide minimum 60 mil polyethylene encasement for piping in aggressive soil conditions.

2-3 CLEANOUTS:

- A. Sizing: Shall be the same nominal size as the pipe they serve, up to 4 inches. For pipe larger than 4 inches, provide a 4 inch cleanout.
- B. Placement: Provide readily accessibly located, as indicated on Drawings and also as required by the prevailing code, whether shown on the Drawings or not.
- C. Construction: All cleanouts shall have tapered bronze plugs and secured scoriated covers. Provide with 18"x18"x4" thick concrete pad, where outside of the building on grade.

2-4 DOMESTIC WATER PIPING AND FITTINGS ABOVE GROUND:

- A. Piping: ASTM B88, copper tubing, hard drawn, type "L".
- B. Fittings: ASME B16.22, wrought copper solder joint or ASME B16.18 cast copper alloy solder joint. Provide joints per ASTM B828 using ASTM B32 Alloy E or HB lead-free solder.
- C. Unions 2" and smaller: ASME B16.22, wrought copper solder joint, ground seat.
- D. Dielectric connections: Lead-free, Watts or approved equal. Select gasket materials for compatibility with fluid, temperature, and pressure (no less than 175 psi minimum working pressure. Ends to match connections.
- E. No foreign pipe or fittings shall be allowed.
- F. Escutcheon Plates: Provide steel escutcheon plates with chrome plated or polished brass finish at locations where piping penetrates finished and semi-finished floors, walls or ceilings.

2-5 DOMESTIC WATER PIPING BELOW SLAB:

- A. Piping: ASTM B88, copper tubing, soft type "K" with no joints below slab for all sizes up to and including 2-1/2".
- B. Provide minimum 60 mil polyethylene encasement for piping in aggressive soil conditions.

2-6 DOMESTIC WATER VALVES ABOVE GROUND:

- A. Ball Valves: All bronze cast construction two piece body, full port, lead free, stainless steel ball, stem, and valve handle. Provide with threaded or solder connections, line sized unless specifically noted otherwise. NBCCO T/S-585-70-66-LF for all sizes up through 2 inch.
- B. Ball Bronze 600psi two piece body full port, stainless steel ball and stem, lefton seats and stuffing box ring, lever handle and balancing stops, solder or threaded ends with unions.

2-7 DOMESTIC WATER ACCESSORIES:

A. Exposed piping at plumbing fixtures:

1. Chrome plated brass pipe.

B. Pipe sleeves and plates:

1. Provide sleeves made from steel pipe or tubing for all pipes passing through concrete floors or walls. Sleeves for partitions shall be a minimum of 24 USS gauge galvanized iron. Size for outside diameter of insulation.
2. Fit uninsulated pipe passing through or entering from floors, finished walls, or ceilings with heavy cast brass, chrome plated escutcheons firmly secured to pipes with set screws.

C. Shock Arrestors:

1. Provide factory fabricated water hammer eliminators sized and located in accordance with plumbing and drainage institute standard "WH-201" bearing the seal of P.D.I.
2. Access doors: Provide access doors or panels of suitable size for ready servicing of water hammer arrestors, valves, and other devices where concealed in partitions.

2-8 HANGERS, ROOS AND SUPPORTS:

- A. Insulated pipe: Auto-grip Insul-speed hangers, Figure 880, by Fee and Mason Division, A-T-O, Inc., Manasquan, New Jersey or approved equal. Size to fit outside diameter of insulation.
- B. Uninsulated pipe: Adjustable band, copper plated and plastic coated hanger, Figure 381, Fee and Mason Division, A-T-O, Inc., Manasquan, New Jersey or approved equal.
- C. Anchors and rods: Support by approved rods and anchors from building members. Perforated metal tape is prohibited.
- D. All-thread hanger rods shall be galvanized.

2-9 JOINT MATERIALS:

- A. Hubless cast iron pipe joints: For above ground pipe, stainless steel couplings, per CISPI 301-82.
- B. Compression gaskets: For below ground, cast iron hub and spigot pipe and fittings as approved.
- C. Solder: ASTM B32-83, 95-S, tin-antimony, the use of solder containing more than 0.20 percent lead will not be permitted.

2-10 PLUMBING FIXTURES:

- A. General: Color shall be white. Fixtures shall be complete with all required specialties, trim, supports, and related items. Provide screwdriver operated stops and escutcheons on all piping brass F-trap with tubing drain to wall. Size to match balpiece with chrome plated escutcheon.
- B. Refer to construction documents for further specifications.

2-11 INSULATION:

- A. Domestic water: Insulate all pipe, fittings, and valves with factory molded fiberglass insulation of density not less than 3 pounds per cubic foot, and conductivity (K) not higher than 0.24 at 75 degrees F, mean temperature difference, with factory applied white vapor barrier jacket.

2-12 PIPE IDENTIFICATION:

- A. Pipe marking:
 1. All visible piping located in accessible spaces such as equipment rooms, ceiling space, under floor spaces, etc., shall be identified with all temperature pipe markers as manufactured by W.H. Brady Company, 431 West Rock Ave., New Haven, Connecticut or approved equal.
 2. Pipe shall be marked as follows:

COLOR	SYSTEM
Green	Sanitary sewer
Blue	Domestic cold water
Yellow	Domestic hot water
Red	Fire protection
 3. Provide flow arrows indicating direction of flow on regular intervals and on both sides of walls that are penetrated.

PART III: EXECUTION

3-1 GENERAL:

- A. Locate equipment requiring service and maintenance in fully accessible positions. Furnish access doors for this purpose if required.
- B. Runs and arrangement of piping shall be as shown, subject only to such changes and modifications as may be necessary to suit actual conditions at the building; to avoid interference or conflict with work of other sections. Install piping concealed in floor or in wall construction or excavations to prevent delay to other work and to allow ample time for necessary tests and approvals.
- C. Carefully check installations against structural, architectural, and mechanical drawings and note where walls, ceilings, beams, and pipe shafts are furred or enclosed. Piping shall not be furred in or covered before testing, inspection and approval.
- D. Hang horizontal piping runs from construction and above ceilings. Locate as closely as possible to structural members or bottom of slabs or beams to obtain maximum head room. If piping interferes with finished ceiling or wall surfaces, the Engineer shall be notified, and no work shall be installed until approved.
- E. Make joints between dissimilar piping by dielectric unions or flanges.
- F. Use reducing fittings whenever a change in pipe size occurs. The use of bushings will not be permitted.

3-2 INSTALLATION OF SANITARY SYSTEM:

- A. Pitch cast iron pipe within the building, minimum of 1/8" per foot for piping 4" and larger and 1/4" per foot for pipe 3" and smaller, in the direction of flow. Make changes in direction of drainage lines with 45° wyes, long turn wyes, or sweep bends. Use long turn fittings wherever space conditions permit. Provide waterproofing around all lines penetrating through foundation walls and floor slabs.
- B. Check and verify all inverts of lines at connection points prior to the installation of the various piping systems.
- C. Install traps on fixtures and equipment requiring connection to the sanitary system. Traps shall be of same size as the pipe on which they occur. Provide clean outs for all traps. Vent traps as shown and as required by local codes.
- D. Cleanouts: Provide at each change in direction and on a minimum of 75 foot centers at horizontal runs, or as stated in local code. Cleaning screws, deck plates, and other plugs shall be made up with graphite and oil only; use no grease or cement.
- E. Pitch vent lines to allow for condensation drainage.
- F. Where vent piping runs concealed in partitions, obtain exact dimensions and locations of partitions and use special care to ensure that lines are maintained in their proper locations and alignment.
- G. Flashing: Flash vents penetrating the roof structure with 6 pound sheet lead. Extend flashing riser beyond top of vent and turn over and roll down inside of pipe vent a minimum of 1/2" with skirt extending on all sides of the vent a minimum of 6".

3-3 INSTALLATION OF DOMESTIC WATER SYSTEM:

- A. Install domestic water system as shown. Piping shall traverse the building at the locations shown or as required to service fixtures requiring water and with the pipe sizes shown or specified. The service shall be valved at the point shown. Conceal water piping in finished areas.
- B. Begin the installation of the hot water piping system at the water heater and traverse the building at the locations shown or as required to service fixtures requiring hot water and with the pipe sizes indicated. Fit piping around the heater and equipment with sufficient number of unions to ensure easy dismantling for maintenance. Conceal hot water piping in finished areas.

3-4 HANGERS, ANCHORS, GUIDES:

- A. Support piping to maintain required grading and pitching of lines to prevent vibration, and to secure piping in place. Arrange to provide for expansion and contraction.
- B. The spacing of hangers shall not be greater than 10 feet on center for pipe larger than 1 inch; 8 feet for 1 inch pipe; 6 feet for pipe 3/4" and smaller. Same spacing shall apply to gas or other piping on roof.
- C. Support vertical lines at bases by an approved hanger placed in the horizontal line near the riser.
- D. Do not hang piping from the ductwork or piping of other trades. A common trapeze, properly supported and pitched, may be used.
- E. Make pipe sleeves watertight with 25 year siliconized sealant joints on both sides of foundation wall.

3-5 INSTALLATION OF PLUMBING FIXTURES:

- A. Protect fixtures and equipment during construction. Replace if damaged.
- B. Set fixtures level and square with relation to interior finish, floor, and wall lines. Space toilet room fixtures equidistant and at the same height from floor as shown.
- C. Cover metal fixture trimmings with non-corrosive grease or approved protective tape and maintain until construction work is complete. Upon completion, remove protection and labels; clean and polish fixtures and trimmings.

3-6 DISINFECTION OF WATER SYSTEM:

- A. Disinfect all water piping and equipment upon completion of piping installation in accordance with the requirements of the AWWA and local water authority. Following disinfection, flush water from the system through its extremities. Continue flushing until samples show the quality is comparable with the public water supply and complies with requirements of the public health authority having jurisdiction.

3-7 TESTING OF PLUMBING PIPING SYSTEMS:

- A. During the progress of the work and upon completion, tests shall be made as specified herein and as required by authorities having jurisdiction.
- B. Tests shall be conducted as part of this work and shall include all necessary instruments, equipment, apparatus, and service as required to perform the tests with qualified personnel.
- C. Tests shall be performed before piping of various systems have been covered or furred-in. For insulated piping systems testing shall be accomplished prior to the application of insulation.
- D. Leaks, damage, or defects discovered or resulting from test shall be repaired or replaced to a like new condition. Leaking pipe joints, or defective pipe, shall be removed and replaced with acceptable materials. Test shall be repeated after repairs are completed and shall continue until such time as the entire test period expires without the discovery of any leaks.
- E. Domestic Water:
 1. Pressure test at one and one half times the normal working pressure or 125 p.s.i.g. whichever is the greater, for 24 hours.
- F. Sanitary soil, waste, and vents, and storm:
 1. For pipe in ground, all joints shall be exposed and the piping system filled with water to a verifiable and visible level to 10' above the lowest portions of the system being tested.
 2. Piping above grade and on multi-level buildings only one floor level shall be tested at a time. Each floor shall be tested from a level below the structure of the floor to a level of the top of the highest vent. The pipes for the level being tested shall be filled with water to a verifiable and visible uppermost level and be allowed to remain so for 24 hours. There shall be no perceptible lowering of the water level in the system being tested.

END OF SECTION



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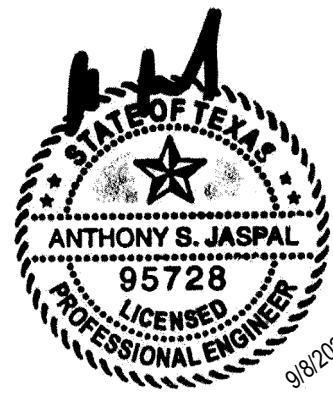
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△ Date	Description
09-08-2023	ISSUE FOR PERMIT, PRICING, AND CONSTRUCTION

Seal / Signature



Project Name

Woodlands Township - Office
Renovation

Project Number

02.9171.000

Description

PLUMBING SPECIFICATIONS

Scale

12" = 1'-0"

P7.01



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TBPE Firm Registration No. 2234

DBR Project Number 230237.000

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