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220500 GENERAL DESCRIPTION AND SCOPE - PLUMBING (P)

1.0 GENERAL DESCRIPTION

These plans and specifications cover furnishing all labor, materials, transportation and equipment to provide a complete and operative plumbing system for the conversion of the existing Peekskill Firehouse to a commercial kitchen incubator.

2.0 SCOPE

These plans and specifications include but are not limited to the following:

1. Relocate and upgrade the existing water service.
2. Water supply piping, hot and cold, including piping insulation.
3. Fixtures including supply and drainage fittings.
4. Sanitary drainage, waste and vent piping.
5. Storm drains piping, roof drains, including pipe insulation.
6. Grease-laden sanitary drainage, waste, truck gray water connection, and vent piping.
7. New building grease-laden sewer from building to grease interceptor and sampling station, then to municipal system.
8. Temporary water supply system.
9. Excavation, backfill, cutting and patching.
10. Removal of existing systems.
11. Condensate drains from new HVAC unit.
12. New natural gas-fired water heater.
13. Natural gas piping additions and removals.
14. Testing and rendering operative of all new systems.
15. Meeting of all codes and ordinances.

16. Coordination with utility company, meeting inspection requirements and payments of all fees.

220505 GENERAL CONDITIONS - PLUMBING (P)

1.0 GOVERNING CONDITIONS

General Conditions of the Plumbing Contract shall be in accordance with:

1. "Standard General Conditions of the Construction Contract per AIA 201" - latest edition.
2. "Instructions to Bidders - AIA" - latest edition.
3. Special conditions of the contract as included in general construction documents.

2.0 DRAWINGS

Plumbing installation shown in drawings and on supplementary drawings supplied.

3.0 SHOP DRAWINGS AND APPROVALS

Furnish shop drawings for approval, six copies on all major items of equipment. Items requiring shop drawings are:

All equipment shown on drawing legend and schedule.

The materials, workmanship, design and arrangement of all work installed under the contract shall be subject to the approval of the engineer.

If material or equipment is installed before it is approved, the contractor shall be liable for the removal and replacement at no extra charge to the owner if, in the opinion of the engineer, the material or equipment does not meet the intent of the drawings and specifications.

The words "or approved equal" shall be understood to follow the name of all manufacturers stated herein and on the drawing legend and schedule, unless otherwise stated.

4.0 WORKMANSHIP

Provide neat mechanical appearance. Provide minor alterations to accomplish. Conceal all piping in all finished areas.

With submission of bid, the contractor shall give written notice to the engineer of any materials, apparatus, or omissions believed to be in violation of laws, ordinances, rules or regulations of authorities having jurisdiction. In the absence of such written notice, it is mutually agreed that the contractor shall include the cost of providing all systems in accordance with applicable regulations without extra compensation.

5.0 MATERIALS

Provide the best-accepted industry standard equipment and materials. Entire installation shall conform to principles and practices of National Plumbing Code and shall meet New York State Plumbing Code requirements.

Substitutions of equipment or materials other than those indicated on the drawings may be made only upon written approval from the engineer. The contractor shall submit their substitution for approval before releasing order for fabrication and/or shipment. Engineer reserves the right to disapprove such substitutions provided, in their opinion, the item offered is not equal to the item specified.

Where such approved deviation requires a different quantity and arrangement of ductwork, piping, wiring, conduit and equipment from that specified or indicated on the drawings, subject to approval of the engineer, the contractor shall provide any such ductwork, piping, structural supports, insulation, controllers, motors, starters, electrical wiring and conduit, and any other additional equipment required by the system, at no additional cost to the owner.

6.0 GUARANTEE

Contractor shall guarantee all workmanship, materials and performance for a period of one year from the date of the certificate of completion and acceptance of their work. The contractor shall promptly correct, without cost to the owner, such defects upon notice from the owner to do so.

7.0 CODES, PERMITS, INSPECTIONS

Comply with plumbing code requirements of the municipality in which located, NYS Building Code and National Plumbing Code. Materials per code hereinbefore mentioned. Furnish permit and certificate of final inspection from municipality. Contractor shall pay all fees and inspections and same shall be included in the contract amount.

8.0 EXCAVATION AND BACKFILL

Provided by plumbing contractor for all plumbing requirements, including service water piping, natural gas piping and sewer.

9.0 ROOF PENETRATIONS

All roof penetrations and expansion joints with proper anchors and guides shall be provided by the contractor where necessary, and/or when shown on drawings. Anchors and guides shall be complete with counter flashings.

Plumbing contractor shall do all cutting, fitting and patching necessary as a part of their contract to provide for their piping equipment unless otherwise stated.

Contractor shall layout all plumbing facilities in advance of the GC pouring or laying walls for all

chases, sleeves, etc. The GC shall be responsible for locations of same.

10.0 TESTS

Labor, material, instruments and power required for testing shall be furnished by this contractor.

Tests shall be performed in the presence and to the satisfaction of the engineer and such other parties as may have legal jurisdiction.

Pressure tests shall be applied to piping only before connection of equipment. In no case shall piping, equipment or accessories be subject to pressure exceeding their rating.

All defective work shall be promptly repaired or replaced and the tests shall be repeated until the particular system and component parts thereof receive the approval of the engineer.

Any damages resulting from tests shall be repaired, and damaged materials replaced, all to the satisfaction of the engineer.

The duration of tests shall be as determined by all authorities having jurisdiction, but in no case less than the time prescribed in the specification.

Equipment and systems which normally operate during certain seasons of the year shall be tested during the appropriate season. Tests shall be performed on individual equipment, system and

their controls. Whenever the equipment or system under test is interrelated with and depends upon the operation of other equipment, systems and their controls, for proper operation, functioning and performance, the latter shall be operated simultaneously with the equipment of system tested.

No piping in any location shall be closed up, furred in or covered before testing.

The entire drainage and vent system shall have all openings plugged to permit the entire system to be filled with water to the upper level of the highest vent stack above the roof. When a portion of the system is being tested, a vertical stack ten feet above the highest horizontal line to be tested may be installed and that portion of the system filled with water. The water shall remain in the system for a four-hour period minimum, without any lowering of the water level at the overflow.

After setting of fixtures and/or equipment, the entire waste and vent system shall be subjected to a smoke test as follows: Fill all trap seals with water. Introduce into the system through a suitable opening, a thick penetrating smoke which is produced in openings above roof, close the vent openings and continue introducing smoke until a pressure of one inch of water has been built up. Maintain pressure for fifteen minutes minimum before starting inspection. Smoke shall not be visible from any joint, fixture connections and/or fixture.

11.0 JOB CONDITIONS

Contractor shall inform themselves of all job conditions, entrance clearances, etc. for their

equipment and material. They shall so consider in their estimates. No extras shall be allowed in their failure to do so.

12.0 SLOPES

All horizontal soil, waste, or storm piping of 3-inch diameter or less shall be run in a uniform grade at not less than ¼" per foot unless otherwise indicated. All horizontal soil waste, or storm piping larger than 3 inches in diameter shall be run in a uniform ratio at not less than ⅛" per foot. All vent piping shall be so graded as to free itself quickly of any condensation.

13.0 PIPING - GENERAL

Pipe Expansion - All pipe connections shall be installed to allow for freedom of movement of the piping during expansion and contraction without springing. Swing joints, expansion loops and expansion joints with proper anchors and guides shall be provided by the contractor where necessary, and/or when shown on drawings. Anchors and guides shall be subject to approval of the engineer.

Bases and Supports - The contractor shall provide all bases and supports not part of the building structure, of required size, type and strength as approved by the engineer, for all equipment and materials furnished by them.

All equipment, bases and supports shall be adequately anchored to the building structure to prevent shifting of position under operating conditions.

Sleeves, Inserts and Anchor Bolts - The contractor shall provide and will be held responsible for the location of, and maintaining in proper position all sleeves, inserts and anchor bolts required for their work. In the event that failure to do so requires cutting and patching of finished work, it shall be done at the contractor's expense.

Escutcheons - Contractor shall provide escutcheons on pipes wherever they pass through the floors, ceilings, walls or partitions.

Escutcheons for pipes passing through outside walls shall be solid, cast brass, flat type secured to pipe with a setscrew.

Escutcheons for pipes passing through floors shall be split-hinged, case brass type designed to fit pipe on one end and cover sleeve projecting through floor on the other end.

Escutcheons for pipes through interior walls, partitions and ceiling shall be split hinged, cast brass, chromium plated type.

14.0 PAINTING

The contractor shall paint all unpainted, non-insulated, non-galvanized ferrous metal surfaces of pipes, equipment, fixtures, hangers, supports and accessories as follows:

Exposed - One prime coat of gray lead and oil paint. Gas piping shall be yellow instead of gray.
Concealed - One coat of black asphaltum paint.
Underground - Two coats of black asphaltum paint.

Uncoated or otherwise unfinished canvas jackets or insulation shall be painted with one coat of glue sizing as soon as possible after installation.

15.0 CLEANING PIPING

This contractor shall thoroughly clean all piping, ducts, and equipment of all foreign substances inside and out before being placed in operation.

If any part of the system should be stopped by any foreign matter after being placed in operation, the system shall be disconnected, cleaned and reconnected wherever necessary to locate and remove obstructions. Any work damaged in the course of the removal of obstruction shall be repaired or replaced when the system is reconnected at no additional cost to the owner.

During the course of construction all ducts and pipes shall be capped in an approved manner to insure adequate protection against the entrance of foreign substances.

16.0 ACCESS DOORS AND PANELS

Furnish and install flush type access doors or panel with metal frame for all valves or apparatus located in chases, walls or floors. Finish shall be prime coated.

17.0 SLEEVES AND INSERTS

This contractor shall be held responsible for the location of and maintaining in proper position, sleeves, inserts and anchor bolts supplied and/or set in place by them. In the event that failure to do so requires cutting and patching of finished work, it shall be done at this contractor's expense by the concrete and/or masonry contractor.

All pipes passing through floors, walls or partitions shall be provided with sleeves having an internal diameter of 1" larger than the outside diameter of the pipe or insulation on covered lines.

Sleeves passing through lightproof or soundproof walls, floors and partitions and through firewalls shall be made tight using approved caulking materials.

Sleeves through floors and all other walls shall be Schedule 40, black steel pipe, set flush with finished wall or ceiling surfaces, but extending ½" above finished floors.

Sleeves through outside walls shall be Schedule 40 black steel pipe with 150 lb. black steel slip-on welding flange welded at the center of the sleeve and shall be painted with one coat of bitumastic paint inside and outside. The space between sleeve and pipe shall be packed with

oakum to within 2" of each face of the wall. The remaining space shall be packed and made water tight with a waterproof compound.

Sleeves through masonry floors or interior masonry walls shall be Schedule 40 black steel pipe, set flush with finished wall or floor surfaces.

Sleeves through interior partitions shall be 22-gauge galvanized sheet steel, set flush with finished surfaces of the partitions.

Inserts shall be individual or strip type of pressed steel construction with accommodation for removable nuts and threaded rods up to ¾" diameter, permitting lateral adjustment. Individual inserts shall have an opening at the top to allow reinforcing rods up to ½" diameter to be passed through the insert body. Strip inserts shall have attached rods with hooked ends to allow fastening to reinforcing rods.

220510 SUPPLEMENTAL GENERAL CONDITIONS (P)

1.0 CONTRACTUAL RELATIONSHIP WITH OWNER

Upon award of this contract, the contractor shall save harmless the owner and their agents from any or all causes of action arising out of the contractor's negligence.

2.0 O.S.H.A.

All work on this project shall be accomplished in accordance with Federal Statutes such as the Occupational Safety and Health Act (1970).

3.0 OTHER GENERAL CONDITIONS

3.1 Intent - It is the intent of these plans and specifications to provide alterations and/or new construction as indicated on the drawings and in the specifications to provide complete, new systems in every respect, capable of operating as designed. It is not intended that every fitting, minor detail or feature be shown on drawings.

The contractor shall be responsible for any detail necessary for completion of these systems in accordance with good practice.

Installation shall be executed so as to contribute to efficiency of operation, minimum maintenance, accessibility and sightliness. The installation shall conform and accommodate itself to the building structure, its equipment and its usage. No piping or equipment shall be installed in such a manner as to interfere with the operation of any doors or windows.

Requirements specified herein shall govern applicable portions of mechanical and electrical sections whether so stated herein or not.

3.2 Regulations and Certificates - All work shall be done in strict accordance with rules and regulations of local and state authorities having jurisdiction over such work, utility companies operating where apparatus is being installed, National Fire Protection Association, IEEE and insurance companies. Where discrepancies occur between above regulations and these plans and specifications, requirements of the regulations shall take precedence, except that these specifications shall be minimum requirements and that no changes shall be made without approval of the engineer.

Complete approval of all above mentioned authorities shall be secured and their certificates of approval shall be delivered to the owner before final acceptance. Any and all drawings or documents required (in addition to contract drawings) shall be furnished in order to secure above-mentioned approvals.

3.3 Drawings and Measurements - Contract drawings for mechanical and electrical work are

in part diagrammatic, intended to cover the general design and extent of the systems and indicate general arrangement of equipment, ducts, conduits, piping and approximate sizes and locations of equipment and outlets.

Drawings are not intended to be scaled for roughing-in measurements nor to serve as shop drawings. Where drawings are required for these purposes or have to be made from field measurements, they shall be prepared by the various trades and coordinated by the contractor.

Where job conditions require reasonable changes from indicated locations and arrangements, such changes shall be made without cost to the owner.

Exact locations of all grilles, registers, plumbing fixtures, electrical fixtures, panelboards, etc., shall be governed by plans, elevations and details.

3.4 Record Drawings - During the course of construction the respective contractor shall keep a careful record (in drawing form) of all deviations from the work as shown on the contract drawings on the installation of pipes, ducts, electric outlets, equipment, invert elevations, etc. These drawings shall be delivered to the engineer before the final certificate of payment is issued.

3.5 Accessibility - Locate all equipment which must be serviced, operated or maintained, in fully accessible position. Equipment shall include but not be limited to valves, traps, cleanouts, motors, controllers, drain points, etc. Furnish access doors where required. Minor deviations from the drawings may be made to allow for better accessibility, but changes of magnitude or which involve extra cost shall not be made without approval.

3.6 Access Doors and Panels - Furnish flush type door or panel with metal frame for all dampers, valves, cleanouts or apparatus located in chases, walls or floors. Finish shall be prime coat.

3.7 Quiet Operation - All equipment shall operate under all conditions of load without any sound or vibration which is objectionable to the opinion of the engineer. In case of moving machinery, sound or vibration noticeable outside of room in which it is installed or annoyingly noticeable inside its own room will be considered objectionable. Sound or vibration conditions considered objectionable by the engineer shall be corrected in approved manner by the contractor at the latter's expense.

3.8 Covering of Work - No pipe fittings or other work of any kind shall be covered up or hidden from view before it has been examined or approved by the engineer or other authority having jurisdiction. Any unfaithful or imperfect work or material which may be discovered shall be removed and corrected immediately before being condemned, and other work and materials shall be furnished which shall be satisfactory to the engineer.

3.9 Waterproofing - Where any work pierces waterproofing, the installation shall be as approved by the engineer. Contractor shall furnish all necessary sleeves, caulking and

flashing as required to make the openings absolutely watertight.

3.10 Excavation and Backfill - All excavation and backfill shall be by the contractor who is furnishing and installing the respective equipment. Cleanup, resurface and resod all disturbed areas.

3.11 Site Conditions - Prior to bid submission, this contractor shall familiarize themselves with the site and understand all the conditions under which they will be obligated to operate in performing their part of the contract. No allowance will be subsequently made in this connection to this contract or for any errors through omission or negligence on their part.

4.0 FIRESTOPPING

All penetrations through fire and smoke rated walls, floors, and ceilings shall be thoroughly sealed with 3M Brand Fire Barrier CP25WB latex based caulk, or approved equal. Install in accordance with manufacturer's instructions.

5.0 EQUIPMENT RETURNS

As part of this contract, contractors shall ensure that suppliers of any and all equipment supplied for this project agree to accept the return of any equipment on this project that is in undamaged condition and has not been put into service with a maximum restocking fee of 25%, up until the date of certified substantial completion of the project.

6.0 COORDINATION OF TRADES

It is understood that coordination between all of the trades on this project is the responsibility of the construction manager (if any), the general contractor (if any) and the trades themselves. This coordination will include meetings and discussions as needed among the parties noted above, and preparation of coordination drawings as needed. The cost of this coordination work shall be included in the contractors' bids. It is not the responsibility of the engineer to perform this coordination. No extra charges will be paid to any contractor that is due to additional work being performed due to lack of coordination between the trades.

7.0 BUILDING SERVICES SHUTDOWNS

All building services shutdowns, including electric, gas, water, and telephone utilities, and HVAC, sprinkler, and plumbing systems in existing buildings, for the purpose of performing cutovers and tie-ins of new systems, shall be strictly coordinated with the appropriate utility companies and the building owner. For work in existing buildings, it will be required to perform this work outside of normal building operation hours and the cost for this is to be included in the bids.

221116 WATER SUPPLY SYSTEM (P)

1.0 SERVICE

Furnish and install relocated water service as shown on drawings. Underground services shall be Type K copper piping complete with curb cocks, corporation taps and all appurtenances as required by local water department per building address. Furnish and install electric heat tape on water service including all wiring insulation, etc. to keep same from freezing, when piping is located in unheated spaces.

2.0 WATER HEATER

Furnish and install water heater as shown on plans. All water connections to heater by plumbing contractor. Electrical power connections by electrical contractor. Water heater system shall be provided with shutoff valves, pressure and temperature relief valves per ASME specifications. Locate as shown.

3.0 PIPING AND SUPPLY

All piping supply shall be Type “L” copper above grade inside of building. Use Type “K” for all other supply piping. No Type “M” shall be permitted. All fittings shall be wrought copper. Clean all areas to be connected using fine sand cloth. Solder using paste type non-corrosive flux of petrolatum base. Joints shall be soldered within an hour of flux applications. All copper shall be tempered type and shall not be bent. Furnish proper mechanical support before soldering. All solder for Type “L” shall be 95-05 or approved equal. Type “K” underground copper shall be silver soldered.

All fixtures shall be provided with separate valves. Furnish and install at accessible locations at all fixtures.

Furnish and install non-freeze hose bibbs at locations shown.

4.0 HANGERS

Furnish and install pipe hangers in accordance with the following spacing schedule:

Size Pipe	Ctr to Ctr Spacing
≤ ½”	6’
¾” to ≤ 1”	8’
1-¼” to ≤ 2”	10’
2-½” to ≤ 5”	12’

5.0 AIR CHAMBERS

Furnish and install full size air chambers as follows:

Locations	Height
Top of all main risers	2'-0"
Each fixture	1'-0"

The above applies to all hot and cold pipes and fixtures.

6.0 PIPING INSULATION

All domestic cold, hot water supply, and recirculation piping shall be insulated with Certain Teed 500-degree Snap-on Heavy Density Pipe insulation, or approved equal. The insulation shall have an average thermal resistance of at least 4.0 (square foot) (degrees F)/BTUH per inch of thickness on a flat surface at a mean temperature of 75 degrees F.

Application - Insulation shall be applied over clean dry pipe with all joints butted firmly together.

Do not install insulation when air temperature is lower than 35 degrees or higher than 120 degrees. Do not leave adhesive strip exposed to air. Adhere self-sealing lap immediately after removing paper backing.

Fittings and valves shall be insulated and fitted with Manville Zeston PVC pipe fitting covers and Hi-Lo Temp Insulation Inserts, or approved equal. Insulation thickness shall be as per New York State Energy Code.

All piping insulation shall comply with New York State Energy Code Requirements.

INSULATION SCHEDULE (DOMESTIC WATER PIPING 140° AND BELOW)			
RUNOUTS	≤ 1-¼"	1-½" TO ≥ 4"	≥ 5"
Cold Water	½"	1"	1"
Hot Water	1"	1-½"	1-½"
Hot Water Recirc	1"	1-½"	1-½"

All piping shall be marked with pipe identification by Seton, or similar.

7.0 STERILIZATION OF WATER PIPING

Water piping shall be sterilized by introducing into the system a solution of liquid chlorine or sodium chlorine. Chlorine content of solution shall not be less than 50 ppm. Solution shall remain the system not less than eight hours during which time all faucets, valves, etc., shall be opened and

closed not less than three times each, at intervals of not less than 30 minutes.

At conclusion of eight-hour period, flush sterilizing solution from system. Re-flush as many times as may be required with fresh water until residual chlorine content in any part does not exceed 0.05 ppm.

8.0 VALVES

The entire plumbing system shall be provided with valves so located that they can be operated, replaced and repaired and afford complete control of the water to each group of fixtures, each riser and wherever else required.

Each fixture shall have supply stops. Exposed supply stops shall be polished chrome finish.

All valves shall be 150 lb. type that can be repacked under pressure when wide open. Where possible, one make of valve shall be used throughout (NIBCO, Jenkins, Crane or Walworth).

Provide 125# sweat globe valves for drains and blow-offs.

Valves ¾" and smaller shall be ball or globe valves, larger size shall be solid wedge type gate valves. Valves two inch and smaller shall be all bronze with screwed or sweat type ends. Valves 2-½" and larger shall be iron body bronze-mounted gate valves with screwed or flanged ends.

9.0 PRESSURE REDUCING VALVES AND BACKFLOW PREVENTORS

Furnish and install pressure reducing valves and/or backflow preventors as shown on drawings and as required by local municipality.

10.0 TEMPORARY WATER SUPPLY

Plumbing contractor shall furnish and install piping for temporary water supply to building from existing supply to building for the use of all trades.

221316 DRAINAGE, WASTE, AND VENT SYSTEM (P)

1.0 DRAINAGE, WASTE AND VENT

All piping above grade shall be Type DWV copper or no-hub cast iron down to 6" above grade. All piping below this point, in slab and below grade shall be service weight cast iron. All copper piping connections shall be soldered using standards hereinbefore described. All cast iron piping shall be no-hub above grade bell and spigot type below grade and shall have neoprene insert joints.

All lines shall be sloped ⅛" per foot minimum. All horizontal changes of direction shall be ⅛ bend (45 degree maximum). Vertical changes shall be "TY".

2.0 SEWERAGE

Provide and install new extra heavy cast iron pipe building sewer from building to connection at system as directed by engineer. Provide house trap only if required by local code. Piping shall slope minimum of ⅛" per foot with cleanouts located as outlined below. Bell end of pipe to be placed uphill.

Provide 6" of crushed stone on top of undisturbed or properly compacted soil at bottom of excavation. Then provide 4" minimum of clean sand on sides of pipe followed by 12" of select fill, then complete with clean fill. Restore excavation area to original condition. Plumbing contractor shall coordinate and cooperate with, and meet all requirements of, the local municipal sewer department or jurisdiction.

3.0 CLEANOUTS

All cleanouts shall be closed gas tight by heavy cast bronze screw type plugs with raised hex heads. Plugs shall be full size up to and including 4".

All cleanouts in finished floors shall have a heavy cast bronze plug with straight thread and tapered shroud that seals against caulk lead seat in body, coated cast-iron extension body with cut off serrations and polished brass access cover and frame with integral lugs for adjustment to level of finished floor. (Zurn, Smith, Wade)

Wall cleanouts shall be covered with 6" nickel bronze cover set flush with finished wall and held in place by means of integral anchoring lugs. (Zurn, Smith, Wade)

All cleanouts in finished floors to be covered with linoleum or other applied composition flooring materials shall have recessed inlay type nickel cover.

Soil, waste and storm drains shall be provided with cleanouts at the base of each stack, at every change or direction greater than 45 degrees and at least every 50 feet (maximum) on all horizontal runs.

221323 - SANITARY WASTE INTERCEPTORS (P)

1.0 RELATED DOCUMENTS

1.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

2.0 SUMMARY

A. Section Includes:

1. Grease interceptors.

3.0 DEFINITIONS

FRP: Fiberglass-reinforced plastic.

PP: Polypropylene plastic.

4.0 SUBMITTALS

A. Product Data: For each type of interceptor indicated. Include materials of fabrication, dimensions, rated capacities, retention capacities, operating characteristics, size and location of each pipe connection, furnished specialties, and accessories.

B. Shop Drawings: For each type and size of precast-concrete interceptor indicated.

1. Include materials of construction, dimensions, rated capacities, retention capacities, location and size of each pipe connection, furnished specialties, and accessories.

C. Coordination Drawings: Interceptors, drawn to scale, on which the following items are shown and coordinated with each other, based on input from Installers of the items involved:

1. Interceptors.
2. Piping connections. Include size, location, and elevation of each.
3. Interface with underground structures and utility services.

5.0 PROJECT CONDITIONS

A. Interruption of Existing Sewer Services: Do not interrupt services to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sewer services according to requirements indicated:

1. Notify Owner no fewer than seven days in advance of proposed interruption of service.
2. Do not proceed with interruption of sewer services without Owner's written permission.

6.0 GREASE INTERCEPTORS (INCLUDING SAMPLING STATIONS)

A. Grease Interceptors: Precast concrete complying with ASTM C 913.

1. Include rubber-gasketed joints, vent connections, manholes, compartments or baffles, and piping or openings to retain grease and to permit wastewater flow.
2. Structural Design Loads:
   a. Light-Traffic Load: Comply with ASTM C 890, A-8 (ASSHTO HS10-44).

b. Medium-Traffic Load: Comply with ASTM C 890, A-12 (ASSHTO HS15-44).
c. Heavy-Traffic Load: Comply with ASTM C 890, A-16 (ASSHTO HS20-44).
d. Walkway Load: Comply with ASTM C 890, A-03.

3. Resilient Pipe Connectors: ASTM C 923 (ASTM C 923M), cast or fitted into interceptor walls, for each pipe connection.
4. Steps: Individual FRP steps, FRP ladder, or ASTM A 615/A 615M, deformed, 1/2-inch (13-mm) steel reinforcing rods encased in ASTM D 4101, PP, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch (300- to 400-mm) intervals. Omit steps if total depth from floor of interceptor to finished grade is less than 60 inches (1500 mm).
5. Grade Rings: Reinforced-concrete rings, 6- to 9-inch (150- to 225-mm) total thickness, to match diameter of manhole frame and cover.
6. Manhole Frames and Covers: Ferrous; 24-inch (610-mm) ID by 7- to 9-inch (175- to 225-mm) riser with 4-inch- (100-mm-) minimum width flange and 26-inch-(660-mm-) diameter cover.
   a. Ductile Iron: ASTM A 536, Grade 60-40-18, unless otherwise indicated.
   b. Gray Iron: ASTM A 48, Class 35, unless otherwise indicated.
   c. Include indented top design with lettering cast into cover, using wording equivalent to "GREASE INTERCEPTOR".

B. Capacities and Characteristics:
1. Refer to drawings for specific characteristics.

7.0 EARTHWORK

A. Excavating, trenching, and backfilling are specified elsewhere in the specifications and on the contract drawings.

8.0 INSTALLATION

A. Install precast-concrete interceptors according to ASTM C 891. Set level and plumb.
B. Install manhole risers from top of underground concrete interceptors to manholes and gratings at finished grade.
C. Set tops of manhole frames and covers flush with finished surface in pavements. Set tops 3 inches (75 mm) above finish surface elsewhere, unless otherwise indicated.
D. Set tops of grating frames and grates flush with finished surface.
E. Set metal and plastic interceptors level and plumb.
F. Set tops of metal interceptor covers flush with finished surface in pavements. Set tops 3 inches (75 mm) above finish surface elsewhere, unless otherwise indicated.

9.0 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
B. Make piping connections between interceptors and piping systems.

10.0 IDENTIFICATION

A. Arrange for installation of green warning tapes directly over piping and at outside edges of underground interceptors.
   1. Use warning tapes or detectable warning tape over ferrous piping.
   2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

221319 FLOOR DRAINS AND ROOF DRAINS (P)

1.0 FLOOR DRAINS

Provide and install floor drains in mechanical rooms and others as shown on plans. Provide extra heavy cast iron drain and vent pipes to floor drain trap. All areas served by floor drains shall have hose bibb or similar permanent water source made available by this contractor.

Floor drains shall have cast iron body with bottom outlet and nickel bronze stainer sized as shown on plans. Drains shall be manufactured by Zurn or approved equal.

Install floor drains as shown on drawing with bottom outlet caulk connection. Provide with trap and internal backwater valve with bronze valves and seat. Provide strainer as shown on plan.

2.0 ROOF DRAINS

Furnish and install roof drains of type, size and catalog number shown. All piping shall run horizontally in minimum of 5’-0” before connection of vertical leader. Insulate all above ground piping within building.

3.0 PIPING INSTALLATION

Provide underground drain piping as shown on plot plan to dry well as shown on plot plan and drawing. Provide interior horizontal and vertical piping for roof drains. All piping shall be similar in quality, type and installation to sanitary waste and vent piping.

4.0 PIPING INSULATION

Provide 1” insulation for all roof drain piping including body of roof drains and storm pipe of horizontal and vertical runs (including elbows) of interior down spout piping in all areas.

224000 FIXTURES AND INSTALLATION (P)

1.0 SCHEDULES OF EQUIPMENT CONNECTIONS

Furnish and install all fixture connections as indicated on the drawings. If not indicated on the drawings, furnish and install all fixture connections as follows:

	SUPPLIES H	SUPPLIES C	DRAIN	VENT	TRAP CONNECTION
LAVATORIES	¾”	¾”	1-½”	1-¼”	1-¼”
SINKS	¾”	¾”	2”	1-½”	1-½”
MOP SINKS	¾”	¾”	3”	1-½”	3”
URINALS	—	¾”	2”	1-½”	—
WATER CLOSETS (FLUSH VALVE)	—	1”	4”	3”	—
WATER CLOSETS (FLUSH TANKS)	—	¾”	4”	3”	—
FLOOR DRAINS	—	—	3”	1-½”	3”
WATER COOLERS	—	¾”	1-½”	1-¼”	1-¼”
SHOWERS	¾”	¾”	2”	1-½”	2”
HOSE BIB	—	¾”	—	—	—

All supply piping shall be hard drawn type “L” copper only. All sanitary and vent piping shall be type DWV Copper or service weight, no hub cast-iron above grade and Bell & Spigot service weight cast iron below grade.

2.0 SCHEDULE OF EQUIPMENT

Shown on drawings.

3.0 FIXTURE INSTALLATION

Fixture trim, faucets, stop valves, escutcheons and waste pipe exposed to view in finished areas

shall be brass with polished chromium plating over nickel finish, guaranteed not to strip or peel.

Faucet locations shall be uniform with the cold-water faucet on the right side of the fixture and hot water on the left.

This contractor shall be responsible for providing these portions of the fixture trim which are not supplied with the fixture, but are required for the complete installation. All fixtures shall be carefully checked to determine the portion which must be provided to complete the installation.

All fixtures shall be provided with separate stop valves for hot and cold water so that each fixture may be separately controlled without effecting any other fixture.

Provide a capped air chamber 18" long with one size larger than the branch on each hot and cold-water riser to each fixture.

4.0 HOSE BIBBS

Furnish and install non-freeze hose bibbs outside at locations shown. Provide hose bibbs inside at locations shown.

5.0 CARRIERS

Furnish and install fixture carriers on all lavatories. See legend and schedule for type and size.

6.0 EQUIPMENT BY OTHERS

All fixtures, equipment or apparatus furnished by others or indicated on the drawings as N.I.C. (Not in Plumbing Contract) will be furnished complete with faucets, strainers and tail pieces. This contractor shall provide all traps, supply risers, etc. required and shall also provide a valve or stop in each individual supply riser to each piece of equipment, fixture or apparatus. All final connections and all indirect waste piping shall be under this section of the specifications.

Where not supplied with the equipment, fixtures or apparatus, this contractor shall furnish all necessary valves, gauges, piping, traps, etc. required to provide a complete installation complying with all applicable codes and regulations.

Before installation of any drains, sleeves or piping, this contractor shall coordinate their work with the equipment supplier and shall make any changes in the location of the drains, piping, etc., as shown on the plans that may be required by the type of equipment being installed. Any changes resulting from the failure of this contractor to coordinate their work before installation shall be made at no expense to the owner.

Where fixtures or equipment are not installed at completion of the contract, all services shall be plugged or capped ready for installations.

Where final connections are noted as being N.I.C., this contractor shall provide valved, capped

connections terminating not more than 5’-0” from piping or equipment to be serviced.

7.0 FIXTURE INSTALLATION HEIGHTS

Refer to drawings for fixture installation heights.

225000 NATURAL GAS PIPING AND INSTALLATION (P)

1.0 DESCRIPTION

This contractor shall furnish and install labor, materials, equipment and transportation to extend gas piping from utility meter to new equipment as shown on drawings.

2.0 EQUIPMENT AND INSTALLATION

All piping shall be ASTM A53, Schedule 40 black steel piping with malleable iron fittings certified for gas piping use. Provide shut off valve and drip leg for all equipment connections. All piping 3" and smaller shall have threaded connections. All piping larger than 3" shall have welded connections.

Piping to be routed to be concealed above ceilings or as otherwise directed. Route clear of obstructions. Piping shall run parallel and perpendicular to building lines.

3.0 STANDARDS

All piping materials furnished and methods of installation shall be strictly in accordance with National Fuel Gas Code, NFPA Rule #54. All welding shall be in accordance with API 1104.

Entire gas piping, controls, burner fuel installation, appurtenances shall be furnished and installed in accordance with NFPA which is hereby made a part of these plans and specifications as though reprinted herein. NFPA Code may be read at office of Engineer.

4.0 TESTS

Gas piping shall be thoroughly tested and certified by contractor to have been tested in accordance with NFPA. Contractor must provide certification in writing upon completion before final payment.

Entire installation shall be leak-tested by contractor.

Gas piping shall be tested with compressed air at a test pressure of not less than 100 PSI and this pressure held for at least one hour with no loss in pressure.

Paint all gas and other piping in this contract in accordance with US government color code standards.

The owner reserves the right to non-destructively test (i.e. ultrasonic or radiographic) any welds, at the owner's expense, for conformance to API 1104. All welders shall be certified by an agency acceptable to the local authority having jurisdiction. Any welds found not to be in accordance with API 1104 shall be replaced or redone at the contractor's expense.

5.0 APPROVALS

Entire gas piping installation shall be inspected and approved by gas servicing utility company.