SECTION 220000

PLUMBING WORK

1.01 GENERAL

A. All work of this Section shall be governed by the requirements of the Conditions of the Contract and the entire Division #1, General Requirements.

B. Due to the nature of the work and the rigid time schedule required, the utmost cooperation between Contractors must be attained.

C. Refer to Section 235000 for Supplementary Conditions for Mechanical and Electrical Work, the requirements of which are part of this work.

D. PC shall visit site to ascertain existing conditions, access available and to take measurements for items related to the work.

E. PC shall provide concrete pads for all plumbing equipment.

F. PC shall be a firm regularly engaged in the installation of Plumbing systems for a period of at least five (5) years and shall have the licenses and certificates required by local regulations. License/certificate holder shall be an Owner or Officer in the firm and have a minimum of five (5) years employment.

G. All electrical components shall bear U.L. labels.

H. PC shall obtain all permits and pay all fees related to his work.

I. All work shall be in accord with International Plumbing and International Fuel Gas Code, local codes and regulations.

J. PC shall provide Owner with invoices and other data required for utility rebate.

K. PC shall become familiar with drawings if other trades and its impact/effect on the plumbing work.

L. PC shall fire-stop openings around pipes passing through floors and walls.

M. Refer to Section 235000 for coordination drawing requirements.

N. The following abbreviations shall apply:

- GC - General Contractor
- PC - Plumbing Contractor or Sub-Contractor
- HC - Heating Contractor or Sub-Contractor
- EC - Electrical Contractor or Sub-Contractor

1.02 QUALITY ASSURANCE

A. Requirements given herein may be affected by other related requirements of the project specifications. Correlation of contract requirements is the responsibility of the Contractor.

B. All plumbing work on this project shall be governed by this specification.

1.03 SCOPE OF WORK INCLUDED

A. PC shall provide all labor, material and appliances required for a complete plumbing installation as shown on drawings and hereinafter specified, including, but not limited to, the following principal items:

1. Removals and Relocations
2. Work in Connection with other Trades
3. Plumbing Fixtures and Trim
4. Drains
5. Water heaters
6. Hot Water Recirculation Pump and Controls
7. Hot and Cold Water Piping
8. Waste Soil and Vent Lines
9. Flashing (for plumbing work only)
10. Wall Hydrants and Hose Bibbs
11. Pipe and Equipment Identification
12. Fittings and Valves
13. Gas Supply
14. Disinfection of Water Systems
15. Cleanouts and Deck Plates
16. Insulation and Covering
17. Hangers
18. Access Doors
19. Sleeves
20. Escutcheons
21. Shop Drawings
22. Testing
23. Permits
24. Guarantees

1.04 REMOVALS AND RELOCATIONS

A. Refer to Section 235000.

1.05 WORK IN CONNECTION WITH OTHER TRADES

A. PC shall provide proper roughing to all equipment requiring plumbing. PC shall provide shut off valves on all services to each item of equipment.

B. Electric Wiring: PC shall furnish motor starters, controls and other electrical equipment as specified and deliver same to EC at job site for installation and wiring.

C. PC shall be responsible for correct installation and operation of material furnished under his contract whether or not installed by him.

D. PC shall be responsible for obtaining roughing dimensions prior to initiating work.

1.06 START-UP, TESTS AND ADJUSTMENTS

A. Unless otherwise specified, all new and altered water piping systems shall be hydrostatically tested to 125 psig. Tests shall be of four (4) hour duration, during which time piping shall show no leaks and during time no sealing of leaks shall be permitted.

B. After completion of roughing work, and before work is covered, open ends of new and altered sanitary stormwater and vent systems shall be securely closed except ends of highest openings, and entire system shall be filled to overflow point with water and subjected to a 10 feet pressure test for one (1) hour.

C. A smoke test shall be applied to entire altered drainage system after all fixtures have been set.

D. PC shall furnish and pay for all labor, material and equipment require for testing. Defects disclosed by tests shall be repaired, if permitted by Architect, or replaced without extra charge so directed. PC shall furnish services of a qualified person, thoroughly familiar with the job, to operate and make all adjustments so that the systems and control equipment shall operate as intended. This man shall make adjustments including balancing of the water, gas and piping systems in cooperation with qualified representatives of mechanical equipment manufacturers and temperature control manufacturer. Architect is to be notified when this balancing is to be performed.

1.07 DISINFECTION OF WATER SYSTEM

A. Upon completion of all tests and necessary repairs or replacements all new mains and repaired portions of, or extension to, existing water piping system shall be subjected to a disinfection procedure as herein specified. System to be disinfected shall include portions of water piping, and any systems that may be connected to the same supply sources. Disinfection shall be applied to all piping included in contract from main cutoff valve through all appurtenances connected thereto.

B. These systems shall be thoroughly flushed with water to remove sediment. Following this flushing, they shall be disinfected in accordance with the following methods.

C. System shall be so chlorinated that a chlorine residue of not less than 10 PPM remains in the water after 24 hours standing. Water from existing distribution system or other source or supply shall be controlled so as to flow slowly during the application of chlorine. Rate of chlorine mixture flow shall be in such proportion to the rate of water entering pipe that chlorine dose applied shall produce 10 PPM, after 24 hours standing. This may be expected with an application of 25 PPM.

D. In the process of chlorinating the system, all valves and other appurtenances shall be operated while the pipeline is filled with the chlorinating agent.

E. Following chlorination, all treated water shall be thoroughly flushed from the system at its extremities until the replacement water throughout its length shall upon test proved comparable in quality to the water served the public from the existing water supply system and approved by the Public Health Authority having jurisdiction. This satisfactory quality of water delivered by the new system should continue for a period of at least three (3) full days as demonstrated by laboratory examination of samples taken from a tap located and installed in such a way as to prevent outside contamination. Samples should never be taken from an unsterilized hose or from a fire hydrant because such will seldom meet bacteriological standards. After systems are drained, they shall be thoroughly flushed with fresh water, and returned to service.

1.08 PROTECTION OF MATERIAL AND WORK

A. Openings left in floors and roofs for passage of lines of soil, drain, waste, vent and supply pipes shall be covered and protected. Set traps shall be sealed with anti-freeze solution. Precaution shall be taken against freezing during cold weather.

Pipes shall be protected with suitable coverings, as soon as set. Open ends of pipes shall be closed by proper fittings, to prevent obstruction and damage. Use of water closets and other plumbing fixtures during the progress of work is strictly prohibited.

1.10 METHODS OF FASTENING

A. Except where otherwise specified, where fastenings are made to wood, there shall be used long screw or lag screws; to brick work, cement, stone and marble, approved long expansion bolts; to fireproof block work, approved toggle bolts and to iron work, approved bolts and nuts; to concrete slabs, approved expansion bolts. Use of wood plugs and nailing not permitted. Sundries used in connection with galvanized iron shall be galvanized, those in connection with brass or copper work shall be brass or copper, finished to match the connection work.

1.11 GENERAL INSTALLATION OF PIPE

A. Run and arrangement of pipes shall be approximately as shown on drawings and as directed during installation, and shall be straight and direct as possible, forming right angles or parallel lines with building walls and other pipes, and be neatly spaced.

B. No pipe shall be installed where headroom will be interfered with unless conditions are such that it is approved by Architect and unavoidable. Offsets will be permitted only where walls reduce in thickness or beams interfere with direct runs; offsets shall be made at an angle of 45° to the vertical, in no case shall the space between pipes, partitions, walls, etc., exceed 5". Risers shall be erected plumb and true, standing free from but close to walls, and other pipes and neatly spaced. Horizontal runs of piping shall be supported from floor or roof slab or other structural member above, shall be of size and arrangement noted on plans, shall be erected as closely as possible to bottom of floor slabs, ceilings, or beams as the case may be, and shall be so graded as to drain to low points at drawcocks.

C. Roughing underground or concealed in floor or wall construction shall be properly installed and inspected before any roughing is covered up. Work covered up before being inspected shall be uncovered and recovered at expense of PC. Plugged fittings shall be installed as required and when called for.

D. Reducer fittings shall be used in making reductions in sizes of pipes, bushings not allowed. Suitable shock arrestors shall be provided as called for in other sections.

1.12 IDENTIFICATION OF EQUIPMENT, PIPING AND CONTROLS

A. All equipment shall be stenciled or labeled with Lamacoid plates screwed thereon which shall indicate system service.

B. Motor starters shall be provided with Lamacoid plates which indicate system served.

C. All valves shall be tagged with 2” brass plated tags and chain and a valve chart schedule framed and wall mounted shall be provided where directed.

D. Piping Identification, Coding and Painting

E. All piping in Boiler, Fan, Storage and Equipment Rooms and all piping above accessible ceiling shall be coded and identified as herein specified.

F. Apply color-coded polyvinyl chloride pipe bands identifying pipe contents and direction of flow.

G. Apply bands on 15' centers on piping in Equipment Rooms and 25' elsewhere on straight runs; at valve locations at point where piping enters and leaves a partitions, wall, floor or ceiling.

H. Apply bands at exit and entrance points to each vessel, tank or piece of equipment.

I. Bands widths shall be 8" for pipes up to 10" diameter and 16" wide for larger diameter piping. Letter heights stating service shall be preprinted on band, ¾" high for 16" bands.

J. For insulated pipes, apply bands after insulation and painting work has been completed.

K. Provide ten (10) additional bands of each type for future use by Owner's personnel.

L. Follow manufacturer's instructions for application procedures using non-combustible materials and contact adhesives.

M. All piping shall be color coded in full accordance with ANSI 13.1, 1981 Standards. Pipe markers shall be as manufactured by Seton Name Plate Corp., or equivalent.

N. All piping which is not insulated, tanks and equipment shall be painted. Equipment provided with a factory finished coating shall be cleaned and touched up as necessary. Equipment provided with a factory primer shall be given two (2) coats of enamel paint after installation. Pipe, hangers, support and equipment shall be primed and given two (2) coats of enamel paint. Color for piping and tanks shall be in accordance with ANSI 13.1, 1975 Standard, color of equipment and supports shall be as directed by Architect.

1.13 WATER SERVICE

A. Existing water service shall be reused.

1.14 WATER PIPING

A. Cold, Hot Water and Hot Water Recirculation Piping Above Ground: Cold and hot water lines shall be type "L" hard temper, copper.

B. Joints and take-offs shall be made using wrought copper fittings and Silverbrite no lead solder.

1.15 DRAINAGE AND VENTS

A. Below Slab: Soil, waste, and vent shall be U.S. manufactured service cast iron, with hub and spigot joints, neoprene rings.

B. Above Slab: Soil, waste and storm piping, risers and horizontal runs shall be U.S. manufactured no-hub banded with no-hub joints. Vent piping to be solid core schedule 40 PVC.

C. As an alternative NSF listed Uponor straight length PEX-A, join with Uponor Pro Pex expansion fitting may be used for mains and NFS listed Uponor PEX-A tubing joined with Pro Pex expansion fitting maybe used for branches.

D. All cast iron soil pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institution (CISPI) and be listed by NSF International.

E. All couplings for hub less cast iron pipe and fittings shall conform to CISPI 310 and be certified by NSF International.

1.16 VALVES

A. Valves for pipe sizes of 2 ½" or less shall be Apollo 70-200 or Milwaukee Series 150, for sizes 3" and larger Milwaukee Series C, lug type butterfly valves shall be provided.

B. Valve construction materials shall be lead free.

C. Provide sectional valves at each water branch feed take off.

D. Provide shut-off valves to isolate each item of equipment for maintenance service and replacement.

E. All valves shall be located for easy access and operation and shall be installed with stems in the vertical position.

F. Provide drip valves at low points in various systems. Drip valves shall be lock shield and have threaded hose ends.

1.17 JOINTS

A. Exposed threads on exposed finished piping in toilet rooms and finished areas or at fixtures will not be acceptable. Joint compound for intended service shall be used on screwed joints, and shall be applied to male thread only. Wicking not permitted.

B. Cast iron drain piping receiving hot water wastes or discharge from high temperature heated equipment, such as wastes from coils of water heaters, shall be made up with rust proof joints.

C. Joints between cast iron and wrought iron, steel brass or other piping shall be made as above. End of screwed piping shall have a ring or coupling screwed on to form a spigot and also where there is a difference in the sizes of the pipes.

D. Connections between lead and steel pipe shall be made with brass pipe nipples, IPS, and sweat joints; for cast iron pipe, extra heavy brass ferrules and sweat joints shall be used.

E. Joints on copper pipe, shall be made with streamline soldering fittings and Silverbrite lead free solder.

1.18 SLEEVES

A. Provide pipes passing through footings and exterior and masonry walls with steel pipe sleeves, inside diameter of which should be at least 1" greater than the outside of the pipe passing through it. Include Link Seals. Sleeves in exterior walls shall have space between pipe and sleeve caulked watertight. Sleeves shall be large enough to receive covering on insulated pipes. Sleeves shall be properly arranged to hold in position during construction.

B. Provide metal sleeves 3" larger diameter than hot water pipes passing through floors, walls and partitions.

1.19 FLASHING

A. Vent Terminals: Vent and other plumbing pipes through roof shall be flashed watertight. Flashing shall be 4 lb. lead extending not less than 12" on each side of the pipe, outside the barrel and terminate 1'-0" above the roof with roof fitting.

B. Provide at top of vent stacks a 4 lb. lead vent cap.

C. Floor Drains and Floor Sinks: Flashing shall be 4 lb lead extending not less than 18" on all sides. Turn down into floor drain flashing clamp.

1.20 PIPE SUPPORTS, HANGERS AND INSERTS

A. Underground Pipe: Pipes laid underground shall be firmly bedded in solid ground under body of pipe. Where suitable bearing cannot be obtained because of the ground being disturbed by excavation, or for any other reason, pipe shall be supported by concrete piers, or by approved brackets, or holdfasts secured to the walls, or they shall be supported on ties and planks, of if below structural slab, on hangers tied into slabs.

B. Overhead Horizontal Pipe: Horizontal drains, vents, supplies or other piping shall be supported at intervals to 12'-0" for 6" and over; 10'-0" for 4" and 5" pipe; 8'-0" for 1 1/2" to 3" pipe; 6'-0" for under 1 1/2" pipe, and where bell and spigot pipe is suspended, a hanger shall be placed ahead of each hub supported at a maximum of 5 feet intervals by adjustable steel or malleable iron hangers; pipe hangers, supports, etc., shall be primed with one coat of red lead and linseed oil before installation. Hangers shall be of the clevis type as manufactured by Grinnell Figure 260 or for heavier leads beyond maximum recommended loads, Grinnell Figure 212 or 216. Provide lead shields where copper tubing is utilized. Do not hang piping or equipment from other trades.

C. Perforated Strap: Perforated strap iron and temporary wire supports are not permitted.

D. Provide approved sheet metal shields to protect insulation at areas of contact with hangers and supports. Provide protective saddles as required, installed in approved manner. Shields to be Lok Shield by Anvil. For pipes 2" and above, shields to be T-2000 Calsil with ASJ jacket by Thermal Pipe Shields.

E. Hangers used to support copper or brass piping shall be copper coated or brass, where hanger is in contact with the pipe.

1.21 INSULATION AND PIPE COVERING

A. General: Insulation work shall be performed under this section and work shall be done in strict accordance with manufacturer's recommendations. Insulation shall be continuous at hangers, provide sheet metal shields.

B. Joints shall be butted firmly together. Workmanship shall be done as to leave a smooth finish with no raveled edges.

C. Above ground, cold water, hot water and hot water recirculating piping insulation shall be multi-purpose 4 lb. per cu. ft. density 1" thick molded glass fiber with maximum "K" factor of 0.22 at 75°F. mean temperature, as manufactured by Owens Corning, or equivalent. All insulation shall have a factory applied low

pressure pipe insulation flame retardant white jacket ASJ. Longitudinal lap and 4" wide flame retardant joint seal strips shall be cemented neatly in place with Insul-Coustic Sure Stik white 210 or equivalent.

D. All insulation materials adhesives, mastics and jacket assemblies shall be UL rated and classified. Ratings shall not exceed:

- Flame Spread 25
- Fuel Contributed 50
- Smoke Developed 50

E. Fittings and Valves: Fittings and valves shall be insulated with molded fiberglass to form a smooth outer surface with adjacent insulation. Fitting's insulation shall be covered with white vapor barrier cement followed by glass tape and a finishing coat of cement or lagging adhesive, or Zeston Jackets.

F. Provide fiberglass insulation with fitted PVC jackets for handicap waste.

1.22 GAS SUPPLY

A. General: All work shall be performed in strict accord with State, Local and Gas Supply Company requirements; as well as standards of fire Underwriters, NFPA.

B. Service:

1. Existing gas service to be reused.

C. Pipe:

1. Schedule 40 standard black pipe free from flaws or other defects and of true and uniform section. Minimum size of gas piping shall be ¾".

D. Fittings:

1. Aboveground: For exposed pipe 2" and smaller – threaded heavy malleable iron beaded fittings.

E. Installation of Pipe:

1. Main distribution pipes shall be suspended from ceiling and/or walls. All connections shall be made with fittings. Whenever gas lines are unavoidably trapped, an accessible drip shall be provided. The bottom of all risers and all equipment connections shall be provided with a capped dirt leg.

2. Threaded joints shall be made with approved compound. Burrs made in cutting pipe shall be removed. Where piping of different sizes are joined, reducer fittings shall be used; bushings will not be permitted. All connections shall be taken from top or sides of mains and not from bottom.

3. Piping shall not run in Corridors, Stairs, Lobbies or Exits. Where necessary to cross a Corridor, provide a metallic, gas tight sleeve, extending and open to room on each side.

F. Valves: General Use – Rockwell Fig. 143 or equivalent.

G. All gas equipment shall bear the American Gas Association, (A.G.A.) listing and approval.

H. Wrenches shall be supplied for all wrench operated valves. Wrenches shall be turned over to the Owner.

I. All regulators and reliefs shall be vented to outdoors. Vent lines shall be run full size, with vent line for each regulator or relief run separately and shall terminate in an approved vent cap.

J. Tests of Gas Systems:

1. Tests shall be paid for by PC and shall be made in presence of Architect, Engineer, Owner or their representatives, gas supply company representatives and local authorities having jurisdiction of the work to be tested, and may be directed, and at least 72 hours advance notice shall be given. All new and existing piping/equipment to be tested.

2. Shop tests shall be made of appurtenances and material before delivery to the site. These tests shall not relieve the PC of responsibility for defects discovered after appurtenances and materials are installed.

3. Source of test pressure shall be isolated before pressure tests are performed.

4. Aboveground Piping: Test with air at 50 psig for a period of not less than 2 hours without showing any drop in pressure. All joints and fittings shall be soap tested and inspected.

5. Underground Piping: Test with air at 150 psig for a period of not less than 2 hours without showing any drop in pressure. Test shall be performed prior to coating of joints and all joints and fittings shall be soap tested. Piping lengths shall be back-filled prior to testing, so as to restrain pipe during test.

6. After testing is successfully completed, the entire gas distribution system shall be purged, all equipment and appliances shall be checked.

K. PC shall furnish and pay for materials, supplies labor and attendance required in connection with tests.

L. Defects disclosed by tests shall be repaired, if permitted by Architect, or replaced without extra charge if so directed.

M. PC shall also be responsible for work of the other trades that may be damaged or disturbed by tests or repair or replacement of his work, and shall, without extra charges, restore to its original condition any work of other trades so damaged or disturbed, engaging original contractors to do work of restoration.

1.23 HYDRANTS AND HOSE BIBBS

A. Exterior wall hydrants shall be Woodford Model B67 backflow protected (ASSE 1052), non-freeze automatic draining, ¾" size, mounted 24" above grade. Construction shall be brass.

B. Interior hose bibbs shall be Woodford Model 26, chrome plated, backflow protected (ASSE 1052) hose bibb mounted 18" above finished floor.

C. Equivalent of J.R. Smith, Zurn, or Josam.

1.24 CLEANOUTS

A. Cleanouts shall be provided in following locations: On traps except earthenware traps and traps of drain below slab, at ends of and at points in change of direction of drains and branch drains at offsets, at the ends of branch, soil and waste pipes, at base of stacks and leaders, at intervals of not greater than fifty (50) feet, and at other points indicated on plans. Cleanouts shall be of same nominal size as the pipes up to 6", and such cleanouts shall be at least 6" for 8" and larger pipes.

B. Cleanouts for cast iron shall consist of tapped extra heavy cast iron ferrules, caulked into cast iron fittings with an extra heavy brass tapered screw plug with raised head; cleanouts for steel or wrought iron pipe shall consist of extra heavy brass screw plug in a drainage fitting.

C. Cleanouts turning up through floor shall be made by means of long sweep ell or "Y" and 1/8" bend, into which shall be caulked an extra heavy cast iron ferrule with an extra brass tapered screw plug with a raised head. This shall be covered with a non-skid deck type cleanout plate brought up flush with finished floor as manufactured by J. R. Smith #4023 FCG. Cleanouts in walls shall be covered with J. R. Smith #4402. Exposed surfaces of floor cleanouts shall be nickel bronze; wall cleanouts chrome plated. Cleanouts in carpeted areas shall be J. R. Smith #4023 YFCU. Cleanouts in tiled areas shall be J. R. Smith #4208 FCU. Equivalents of Zurn or Josam.

1.25 VACUUM BREAKERS AND BACKFLOW PREVENTERS

A. Provide where indicated and/or as required by code, vacuum breakers, which shall be installed and set at least 4" above the flood level of equipment or fixture to prevent water contamination.

1.26 WATER HEATERS

A. Provide a gas fired tankless water heater. Refer to drawings for manufacturer, model and capacity.

B. Provide piping, valves and trim as shown on drawings.

C. Provide polypropylene intake, vent and concentric fittings.

1.27 DOMESTIC HOT WATER RECIRCULATION PUMP AND CONTROLS

A. Circulating Pump: Provide hot water circulating pump as shown. Pump shall be all bronze, bronze body and cast bronze closed type dynamically balanced impeller, carbon and stainless steel rotary seals, rubber mounted, overload protected flexible steel spring drive coupling porous bronze stainless steel shaft.

B. Pump shall be Bell & Gossett Series 100-3/4” flanged 1/12 HP, 1 phase, 120 volt. Pump shall be tested and made tight at 150 psig internal pressure. Pumps shall be capable of pumping 4 GPM at 10 foot head.

1.28 MIXING VALVE

A. Provide mixing valves for domestic hot water heaters, Symmons Thermostatic Type, Temperature Control.

B. Mixing valve shall be automatic, adjustable, thermostatic type, of size shown on drawings.

C. Hot and cold water inlets shall have integral stops and checks, outlet shall have a thermometer.

D. Mixing valve Model and installation to be as detailed on drawings.

1.29 PLUMBING FIXTURES

A. Provide as indicated and described, set in best workmanlike manner and left in first class condition upon completion.

B. Numbers used are taken from catalog of companies noted, unless otherwise noted all fixtures to be white.

C. All escutcheons shall be of similar design, smooth pattern. All exposed parts chromium plated, including parts furnished for fixtures by others.

D. All trim, stops, etc. shall be vandal resistant.

E. Mounting heights of fixtures for normal and handicap use shall be as directed by Architect.

F. Before installing fixtures, blow out water lines to remove any foreign matter. Fixtures shall be provided complete with traps, fittings, vents, etc., and in accordance with local plumbing codes, fixtures left complete, ready for use.

G. Water Closet (Wall Mounted): American Standard “Afwall” 2257.101 wall mounted, elongated bowl, back spud, vitreous china, 1.28 GPF. Provide with Zurn floor mounted carrier and Sloan Solis Flush Valve 8111, 1.28 GPF and Church 9500C seat, mount at height as directed by Architect.

H. Water Closet (Floor Mounted): American Standard “Madera” 3043.001, floor mounted, elongated bowl, top spud, vitreous china, 1.28 GPF, Provide with Sloan Solis Flush Valve 8111, 1.28 GPF and Church 9500C seat.

I. Lavatory (Family Restroom): American Standard “Wheelchair users lavatory” 9140.047, vitreous china, front overflow. Provide with American Standard “NEXTGEN-Selectronic” 775B.105 electronic touchless faucet with battery backup, Symmons thermostatic mixing valve for each lavatory, grid strainer, floor mounted carrier, loose key stops, cast brass trap and nipple to wall flange.

J. Lavatory (Wall Mounted): The Splash Lab "Monolith A Series" TSL.MON.A.XXX trough sink. Length as shown on drawings. Provide with American Standard “NEXTGEN-Selectronic” 775B.105 electronic touchless faucet with battery backup. Provide Symmons thermostatic mixing valve for each lavatory, grid strainer, pair of loose key stops, cast brass trap and nipple to wall flange.

K. Urinal (Wall Mounted): American Standard "Washbrook Flowise" 6590.001, wall mounted, vitreous china with Sloan Solis Flush Valve 8186, 0.125 GPF.

L. Counter Sink: ELKAY Model ELUHAD191655PD 18-gauge, stainless steel undermount sink provide with Chicago faucet 434-ABCP.

M. Utility Sink: Fiat FL-1 with steel legs and model A-1 deck faucet.

1.30 FLOOR DRAINS, FLOOR SINKS AND INTERCEPTORS

A. Toilet Room, Floor Drains: Zurn Z-415 with Type S square strainer, seepage pan and membrane clamp. Provide with deep seal traps.

B. Provide trap seals to all floor drains.

1.31 SHOP DRAWINGS

A. All manufactured items shall be submitted for review before installation of same. Submission shall be in form of manufacturer's standard printed sheets, pamphlets or bulletins and shall be clearly indicated thereon as to size, type, etc.

B. Review of submission shall mean review of equipment and/or fabrication as to design and performance only.

C. PC shall be responsible for scheduling quantities, physical size to suit allowable space electrical characteristics, etc.

D. Any additional costs incurred due to substitution of equipment shall be borne by PC.

E. The following items require a submission of shop drawings:

1. Plumbing Fixtures and Trim
2. Recirculation Pump and Controls
3. Mixing Valve
4. Cleanouts and Deck plates
5. Pipe, fittings, valves and usage
6. Water heaters
7. Insulation and covering
8. Hangers and supports
9. Drains and Interceptor
10. Wall hydrants and hose bibbs
11. Pipe and equipment identification materials

1.32 ALTERNATES

A. Alternate #1: All domestic hot, cold and recirculating piping to be installed to allow for drain down in winter. Provide point of use water heaters for Family Restroom 105, 106, 111 and 112. Heaters to be Chronomite, Model CM-206, 120 volt, 2.4kw, 20 amp.

1.33 GUARANTEE

A. Refer to Sections 235000.

END OF SECTION