

3.0 EXECUTION

3.01 ARRANGEMENT

A. Follow the general piping layout, arrangement, schematics and details. Provide all offsets, vents, drains and connections to accomplish the installation. Fabricate piping accurately to measurements established at the project site to avoid interference with ductwork, other piping, equipment, openings, electrical conduits and light fixtures. Make suitable provision for expansion and contraction with expansion loops and offsets.

B. Water hammer arresters shall be installed at the top of each riser and on each fixture branch in accordance with Plumbing and Drainage Institute Standard WH201.

C. Cleanouts shall be provided at the base of all sanitary and storm risers.

3.03 MINIMUM HANGER SPACING

A. Pipe hangers or supports shall be provided within 18" of each horizontal fitting, equipment connection, valve, etc. and at not more than 10 ft. spacing along horizontal runs of straight, copper piping equal to or greater than 1-1/2" diameter, 6 ft. spacing for copper piping equal to or less than 1-1/2" diameter, and 4 ft. spacing for PVC piping in accordance with table 308.5 in the 2009 NCSPP. Follow Midstate guides for maximum vertical spacing of PVC pipe 2 inches and smaller.

B. Riser clamps shall be provided at each floor penetration.

3.04 FIRESTOPPING PVC PIPING

A. PVC \*\* storm \*\*, soil, waste and vent stacks penetrating fire-rated floors and walls shall be firestopped, firestopped, and waterproofed using ProSet Systems, Inc. Series 45 "Firestop" couplings and Series 90 "Code Red" firestop devices. All other PVC drain, waste, and vent piping penetrating fire-rated floors shall be firestopped and waterproofed using ProSet Systems Series 48 closet stubs, tub boxes, floor drains, shower drains, and "E-Z Flex" flexible couplings. All shall be installed in accordance with the manufacturer's instructions.

B. ProSet "Firestop" couplings used in the DWV system shall be of type I PVC conforming to ASTM D2655 standard. ProSet "Code Red" stack fittings shall be of gray cast iron conforming to ASTM A-48 standard. ProSet "E-Z Flex" connector couplings shall be of flexible PVC conforming to ASTM C594 and ASTM F477 performance standards. Band used for compression joint on the "E-Z Flex" coupling shall be #300 stainless steel. IPS P-70 Primer and Weld-on 795 cement or equal shall be used for all solvent welds in the system.

3.05 INSULATION INSTALLATION

A. Provide blanket insulation over all horizontal roof drain piping which is within the building and including the vertical risers to the roof drains and the underbody of the roof drains.

1. Blanket insulation shall be wrapped around the piping and underbodies of roof drains. Ends of insulation shall overlap at least 2" and bottom of insulation shall overlap pipe insulation at pipe connection to roof drain at least 3". Adhere insulation to roof drain underbodies with 100% coverage of fire retardant adhesive and tape all joints with 3" wide foil reinforced kraft tape.

B. Provide insulation over all above ground hot and cold water piping, except that no insulation is required on cold water lines installed inside interior plumbing chases (those chases with no exterior wall).

1. All joints and tears shall be sealed with matching white vapor barrier tape.

3.06 PIPING INSTALLATION ABOVE CEILING

A. All domestic hot and cold water piping installed above the insulated ceilings shall be installed just above (within 2") of the top of the finished ceiling with the building insulation over the piping to avoid freeze-up.

3.07 DISINFECTION

A. All domestic water piping installed under this Division shall be disinfected with chlorine before it is placed into operation. The chlorinating material shall be liquid chlorine conforming to Federal Specification BB-C-120 and shall be introduced to the system by experienced operators only. The chlorine solution applied to the piping sections or system shall contain at least fifty parts per million of available chlorine and shall remain in the sections or system for a period of not less than sixteen (16) hours. During the disinfection period, all valves shall be opened and closed at least four times. After the disinfection period, the chlorinated water shall be flushed from the system with clear water until the residual chlorine content is not greater than two-tenths parts per million (0.2 PPM). Submit certification to the Architect that the system was disinfected.

END OF SECTION

SECTION 22424  
WATER HEATERS AND ACCESSORIES

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Plumbing General Section 22010.

B. This Section 22424 and the accompanying drawings cover the provisions of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the water heating systems as specified herein and as shown. These systems include, but are not limited to, the following:

1. Water heaters
2. Hot water circulator

2.0 PRODUCTS

2.08 POINT-OF-USE WATER HEATERS

A. Point-of-use water heaters (POUWH) shall be a minimum of 5 gallons capacity each with 1500 watt, 120 volt, 1 phase elements, complete with thermostat, mounting shelf and ASME temperature and pressure relief valve.

B. Tank shall have steel jacket, glass lining and a minimum of 1" of insulation.

C. Water heaters shall meet the requirements of ASHRAE 90A-1999 and shall be U.L. listed.

D. Acceptable manufacturers are Lochinvar, State or Thermar

3.0 EXECUTION

3.01 INSTALLATION

A. The water heaters and accessories shall be installed in strict accordance with the manufacturer's recommendations and Control Documents.

B. All temperature and pressure relief valves shall be sized full size to an indirect waste such as nearest floor drain, service sink, sink tailpiece, etc.

END OF SECTION

SECTION 15450  
PLUMBING FIXTURES AND TRIM

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this section is governed by the Mechanical General Section 15010.

B. This Section 15450 and the accompanying drawings cover the provisions of all labor, fixtures, equipment, appliances and materials, and performing all operations in connection with the construction and installation of the plumbing fixtures and trim as specified herein and as shown.

C. All exposed piping, valves, stops, P-traps, etc. shall be chrome-plated. Also, all exposed piping penetrations through walls, floors or ceilings shall be provided with chrome-plated cast brass escutcheons.

D. All P-traps shall be minimum 17-gauge brass.

E. Flush valves shall have non-hold open feature, vacuum breakers and cover cap on angle-type stop.

F. Provide all final connections to all equipment and fixtures furnished by owner.

G. Unless otherwise specified in an individual fixture description, all enameled cast-iron and porcelain fixtures shall be white.

1.02 INTENT

A. It is the intent of this Section of the specifications to provide complete, operable, adjusted, clean plumbing fixtures as shown and specified, which are free of leaks, noise, air, vibration and waterflow fluctuations.

1.03 BASIS OF DESIGN

A. The basis of design is as outlined for each fixture in the 2.0 PRODUCTS subsection. Any proposed substitutions shall be proven equal in all respects to the equipment specified as the basis of design.

1.04 ACCEPTABLE MANUFACTURERS

A. Acceptable fixture manufacturers are American Standard, Eljer and Kohler provided that their units are equal in all respects for this specific project. Faucets and trim may be equal products as manufactured by Chicago, Delany, Zurn, T&S Bronze, Brass Works or Speakman.

B. Flush valves may be equal products by Zurn or Delany. Stainless steel sinks and drinking fountains shall be as manufactured by those companies specified for each specific item outlined under subsection 2.0 PRODUCTS.

2.0 PRODUCTS

2.03 SINKS

A. \*ADA\* Fixtures P-1A shall be undermount, two compartment, quartz with sound-dampening, 33" x 22" outside dimensions, 14-1/4" x 16-3/16" inside compartment dimensions, 3-1/2" deep. Eljay Model No. ELGUAD3319DWH, finish to be white. Faucet punching shall be single hole. Faucet set shall be single hole and shall be deck-mounted, lever-style black finish, gooseneck faucet with aerator and wrist blade handles; Delta "ESSA" 9913-DST Series with NO restriction and a stainless steel drain, cup strainer and rubber stopper. Provide complete plumbing package including 3/4" HP disposal. Provide with Insinkerator "EVOLUTION COMPACT" 3/4 HP disposal, disposal shall be powered by air switch in countertop and NOT a wall switch basis of design Insinkerator. Faucet to be provided by owner and installed by contractor.

3.0 EXECUTION

3.01 INSTALLATION

A. Units shall be installed as indicated and in conformance with the manufacturer's recommendations. Coordinate the actual units to be provided with all trades.

B. All plumbing fixtures shall be free of leaks, provided completely finished, trimmed, adjusted, cleaned and ready for use. They shall be properly secured to the structure by the use of thru-bolting, backplates, carriers, expansion shields (for floor mounting only) or toggle bolts.

C. Wall hung fixtures supported on chair carriers shall be bolted to the floor slab. Carefully coordinate space requirements and fixture mounting height requirements with supports being furnished.

D. Fixtures supported with wall hangers on masonry chase walls shall be fastened to the wall with not less than 3/8" bolts which shall pass through the wall and through a 1/4" x 4" wide steel backplate on the unfinished chase wall side.

E. Where fixtures are hung on single masonry walls without a pipe chase behind, they shall be mounted with 3/8" toggle bolts.

F. Fixtures on steel stud walls shall have a 1/4" x 4" wide steel backplate wired with 1/16" steel wire to the studs. Bolts not less than 3/8" shall secure the fixtures through the fixture hanger and the backplate.

G. All mounting holes provided in fixtures shall be used for support. In addition to the main hangers, 1/4" toggle bolts shall secure the bottom of all wall hung fixtures at each drilling provided for this purpose.

H. Mount wall-hung fixtures at the heights indicated on the Architectural Drawings or as prescribed by local code. Special attention is called to the installation requirements of the ANSI Handicap Code.

3.02 CLEANING AND ADJUSTMENT

A. The units shall be cleaned, tested and field-adjusted to provide optimum flow and drainage.

END OF SECTION

LEGEND	
---	COLD WATER
----	HOT WATER
-----	HOT WATER RETURN
-----	VENT
-----	SANITARY WASTE
-----	GAS
	WORK TO BE REMOVED
⊥	FLOOR DRAIN
⊥	HOSE BIBB
⊙	FLOOR CLEAN-OUT
⊖	WALL CLEAN-OUT

INSTANTANEOUS WATER HEATER SCHEDULE

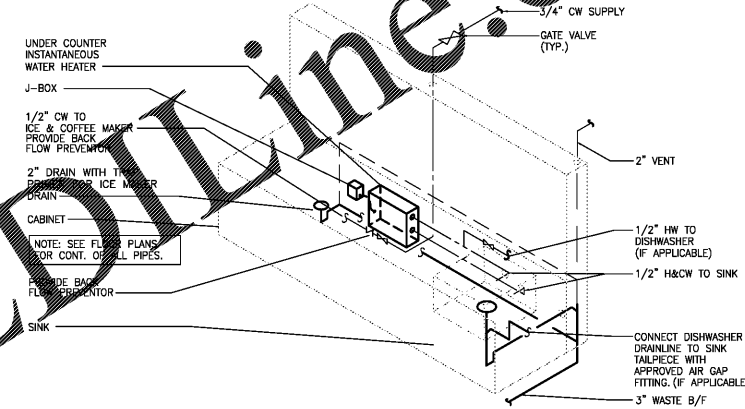
I.D. TAG	TYPE OF WATER HEATER	FLOW RATE (GPM)	TEMP RISE (°F)	POWER INPUT (KW)	ELEC. CHR. (VOLTS/PHASE)	BASIS OF DESIGN	REMARKS
WH-A	INSTANTANEOUS	1.00	57	8.31	277/1	CHRONOMITE M-30/277	①

① WATER HEATER SHALL BE PROVIDED WITH MICRO-ELECTRONIC CONTROLS TO ENSURE AN EXITING WATER TEMPERATURE MAX OF 110°F.

FIXTURE SCHEDULE

DESCRIPTION	WASTE	VENT	CW	HW	REMARKS
BREAK SINK (P-1)	3"	1-1/2"	1/2"	1/2"	①

① PROVIDE MIXING VALVE SET TO 110°F MAX.



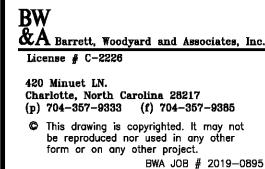
1 BREAK ROOM SINK DETAIL

NO SCALE

NOTE: BACK FLOW PREVENTOR SHALL MEET ASME A112 STANDARD.

ABBREVIATIONS

A/C	ABOVE CEILING	ID	INSIDE DIMENSION
AD	ACCESS DOOR	IN	INCHES
ADJ	ADJUSTABLE		
AFF	ABOVE FINISHED FLOOR	KW	KILOWATTS
AUTO	AUTOMATIC		
AC	AIR CONDITIONING	LB	POUNDS
AHU	AIR HANDLING UNIT	LWR	LOOP WATER RETURN
ARP	ACID RESISTANCE PIPING	LWS	LOOP WATER SUPPLY
BAL	BALANCING	MIN	MINIMUM
B/F	BELOW FLOOR	MAX	MAXIMUM
B/G	BELOW GRADE	MFR	MANUFACTURER
BHP	BRAKE HORSEPOWER	NC	NORMALLY CLOSED
BOC	BASE CLEANOUT	NG	NATURAL GAS
		NFGH	NON-FREEZE GROUND HYDRANT
		NFWH	NON-FREEZE WALL HYDRANT
		NO	NORMALLY OPEN
		NOM	NOMINAL
		OD	OVERFLOW DRAIN
EA	EACH	PSI	POUNDS PER SQUARE INCH
ECC	ECCENTRIC		
EFF	EFFICIENCY	RAD	RADIUS
EOD	EMERGENCY OVERFLOW DRAIN	RED	REDUCER
EW	ENTERING WATER TEMPERATURE	RS	REFRIGERANT SUCTION
		RTU	ROOFTOP UNIT
FO	FLOOR CLEANOUT		
FD	FLOOR DRAIN		
FLR	FLOOR		
FOB	FLAT ON BOTTOM		
FOT	FLAT ON TOP		
FS	FEET PER SECOND		
FPS	FEET PER SECOND		
FT	FEET		
		TEMP	TEMPERATURE
		TYP	TYPICAL
G	GATE		
GA	GAUGE		
GPM	GALLONS PER MINUTE	UON	UNLESS OTHERWISE NOTED
GL	GLOBE		
GCO	GRADE CLEANOUT	VA	VENT VALVE
		VTR	VENT THRU ROOF
HD	HUB DRAIN		
HP	HORSEPOWER		
HTG	HEATING	WC	WATER COLUMN
HW	HOT WATER (DOMESTIC)	WHA	WATER HAMMER ARRESTOR
HWR	HOT WATER RETURN	WT	WEIGHT
HWRR	HOT WATER REVERSE RETURN	W	WASTE
HWS	HOT WATER SUPPLY		



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SPECIFICATIONS, SCHEDULES,  
NOTES, & DETAILS - PLUMBING  
SCALE: AS NOTED

P0.2