	ABBREVI	ATI	ONS	GENERAL NOTES					
A		HZ	HERTZ	GENERAL PLUMBING REQUIREMENTS	30. All water piping inside the building thermal envelop				
AAV ABV	AUTOMATIC ADMITTANCE VALVE ABOVE	ICE ID	ICE MAKER INDIRECT DRAIN	1. Materials, equipment, and systems shall meet all pertinent requirements of the Underwriters Laboratory (UL), the American Society for Testing Materials (ASTM), American Water Works	with ASJ Max Fiberglas pipe insulation as follows: C supply and recirculation piping 1.25" dia and smalle recirculation piping 1.5" dia and larger, 1.5" thick in				
ACU AD	AIR CONDITIONING UNIT AREA DRAIN	IE IN W.C.	INVERT ELEVATION INCHES WATER COLUMN	Association (AWWA), American Gas Association (AGA), National Fire Protection Association (NFPA) and other nationally recognized agencies as well as the latest adopted edition of state and local					
AE	ANESTHESIA EXHAUST	KW	KILOWATT	code procedures, methods, and requirements, including the most stringent of health and safety standards as required and as interpreted by the authority having jurisdiction. Applicable codes	unheated spaces. Unless specifically noted and with				
AFF AHU	ABOVE FINISHED FLOOR AIR HANDLING UNIT	LAV LBS	LAVATORY POUNDS	and standards include, but are not limited to the following: "international plumbing, building, energy, mechanical, and fuel gas codes" applicable local and municipal codes and ordinances.	32. All sanitary sewer traps and grease waste piping that traced and insulated with 1" fiberglass minimum to				
AS AV	AIR SEPARATOR AUTOMATIC AIR VENT	LBS/HR LG	POUNDS PER HOUR LENGTH	 Bidders shall be licensed contractors in accordance with local and state laws. 	controlled with a sensor on the coldest portion of th drops below 45F.				
AW	ACID WASTE	LPR	LOW PRESSURE STEAM RETURN	3. Bidders shall thoroughly acquaint themselves with the conditions under which the work is to be	33. Provide and install LavGuard by Truebro, Inc. ADA o				
@ B	AT BOILER	LPS LWT	LOW PRESSURE STEAM SUPPLY LEAVING WATER TEMPATURE	performed. They shall examine all services, equipment, surfaces, etc., which this work is in any way dependent upon, and bring any discrepancies determined or omissions found in the drawings	finish, foam insulation on all exposed plumbing was				
BAS BFP	BUILDING AUTOMATION SYSTEM BACKFLOW PREVENTION DEVICE	MAU MAV	MAKEUP AIR UNIT MANUAL AIR VENT	to the owner's attention before submitting bid.	for hands-free devices, or any other sharp or abrasi full lavatory shield (LavShield by Truebro, Inc. or eq				
BHP BLDG	BRAKE HORESPOWER BUILDING	MAX	MAXIMUM	4. All installed systems, devices and related items shall be tested in place on site. Replace any and all contractor supplied defective devices, items or systems at contractor's own expense before	under all lavatories.				
BOP	BOTTOM OF PIPE	MBH MC	THOUSANDS OF BTU PER HOUR MECHANICAL CONTRACTOR	completion of the project.	34. All horizontal branches and vents 3" in diameter and minimum, unless otherwise noted. All horizontal bra				
BO BTUH	BOILER BLOW OFF BRITISH THERMAL UNITS PER HOUR	MCA MIN	MINIMUM CURRENT AMPACITY MINIMUM	5. Contractor shall guarantee all work for which materials are furnished, fabricated or field erected, all factory assembled equipment for which no specific manufacturer's guarantee is furnished, and all work in connection with installing manufacturer's guaranteed equipment. This contractor's	sloped at 1/4" per foot minimum, unless otherwise 35. Fabricate, install, inspect, test and purge natural ga				
CD CH	CEILING DIFFUSER /CONDENSATE DRAIN CHILLER	MOCP MPR	MAXIMUM OVERCURRENT PROTECTION MEDIUM PRESSURE RETURN	guarantee shall exist for a period of one (1) year from the date of final owner acceptance of the work and shall apply to defects in material and to defective workmanship of any kind.	2018, and with local gas company. Gas pipe shall b				
CHR	CHILLED WATER RETURN	MPS	MEDIUM PRESSURE STEAM	 The systems shown on the drawings shall be provided to serve all fixtures, equipment, and areas 	36. Contractor to install, size and trap refrigerant piping				
CHS CLG	CHILLED WATER SUPPLY CEILING	N N.C.	NITROGEN NORMALLY CLOSED	within the Building and 5'-0" beyond building unless noted otherwise. Systems shall include all equipment, appurtenances, safety devices, and controls necessary for the intended service.	37. All existing H.V.A.C. and piping/plumbing informatio original previous tenant design drawings. Contractor				
COND COP	CONDENSATE COEFFICIENT OF PERFOMANCE	NIC NO	NOT IN CONTRACT NITROUS OXIDE	7. All permits and fees required for the work shall be secured and paid for by the plumbing	being performed.				
CT	COOLING TOWER	N.O.	NORMALLY OPEN	contractor and included in bid price.	38. Any cutting or patching of the roof to be done by the original warranties.				
CU CV	CONDENSING UNIT CONTROL VALVE	NTS O	NOT TO SCALE OXYGEN	8. Anything drawn or specified on these plans shall not be construed to conflict with any local, municipal or state law, regulation or ordinance which governs the installation of any plumbing or	39. The general contractor shall coordinate all exterior				
CW D	DOMESTIC COLD WATER DRAIN	OFD P	OVERFLOW ROOF DRAIN PUMP	related work. Where any portion of the systems are not installed as in accordance with applicable laws, ordinances, regulations and codes, this contractor shall make all changes required by the	proposed installation and with civil drawings prior to points leaving the building can be met				
DC °F	DRY COOLER DEGREE FAHRENHEIT	P-1 PBD	PLUMBING FIXTURE IDENTIFIER PARALLEL BLADE DAMPER	enforcing authorities in a manner approved by the owner and without additional cost to the owner.9. Where job conditions require changes from the contract documents that do not change the scope	40. All access panels required in hard ceilings and wall contractor. Panels shall be wind-lock model stealth				
DH	DEHUMIDIFIER	PBD PC	PLUMBING CONTRACTOR	of installation or nature of work required, the contract documents that do not change the scope additional cost to the owner. No other changes may be made without written permission of the	41. All service valves, unions, gas cocks, etc., shall be				
DI DN	DEIONIZED WATER DOWN	PD PH	PRESSURE DROP PHASE	owner.	42. All sanitary piping located above food storage racks				
DOAS DS	DEDICATED OUTDOOR AIR SYSTEM DOWNSPOUT NOZZLE	PPM PRV	PARTS PER MILLION PRESSURE RELIEF VALVE	10. All equipment and fixtures shall be new and unused and installed in strict conformance to manufacturer's recommendations. Provide fixtures complete with all trim, stops, hangers, carriers	serving areas shall be copper pipe with soldered co				
DTR	DUAL TEMPERATURE RETURN	PS	PRESSURE SWITCH	supports, etc. including provision for the handicapped, if required. Where fixtures are accessible to the handicapped, fixtures must comply with all federal ADA regulations.	o 43. All refrigerant piping shall be wrapped with 1" Arma				
DTS DW	DUAL TEMPERATURE SUPPLY DISHWASHER	PSI PSIA	POUNDS PER SQUARE INCH POUNDS PER SQUARE INCH ABSOLUTE	11. Arrange for chases, slots, and openings in other building components to allow for plumbing	44. All sanitary piping shall be sloped at minimum 1/8" and located below first floor slab/grade shall be slo				
EA. EC	EACH ELECTRICAL CONTRACTOR	PSIG PTAC	POUNDS PER SQUARE INCH GAUGE PACKAGED TERMINAL AIR CONDITIONER	installations. Coordinate the cutting and patching of building components to accommodate installation of plumbing equipment and materials.	45. All indirect piping that is equal or greater then 4'-0"				
EFF	EFFICIENCY ELEVATION	RD	ROOF DRAIN	12. Do not endanger or damage installed Work through procedures and processes of cutting and	connection. f 46. Maintain a minimum clearance of 3'-0" in front of ele				
ER	EXHAUST REGISTER	RLA RL	RUNNING LOAD AMPS RAIN LEADER	patching. Provide repairs required to restore other work, because of damage caused as a result o plumbing installations.	installing plumbing systems in the same area. Pipe directly over panels or switch gear and where above				
ET EWC	EXPANSION TANK ELECTRIC WATER COOLER	RM. RO	ROOM REVERSE OSMOSIS SUPPLY	13. Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed. Plumbing contractor shall be					
EWH FWT	ELECTRIC WATER HEATER ENTERING WATER TEMPERATURE	RPM RR	REVOLUTIONS PER MINUTE REVERSE OSMOSIS RETURN	responsible for assuring all hangers and supports are anchored or attached to building elements adequate for intended plumbing system or equipment. Plumbing contractor to provide and install	47. All cleanouts, valves, air chambers, etc. are to be a panels where necessary. Plumbing contractor will be				
EX	EXISTING	RTU	ROOFTOP AIR HANDLING UNIT	nail plates where piping passes through stud(s) within 2" of nailing surface to protect pipe from nails or drywall screws.	questionable. Access panel sizes, locations, and fin as well as all other trades to avoid any conflicts. Ac				
EXT FCO	EXTERNAL FLOOR CLEANOUT	RX SF	REMOVE EXISTING SQUARE FOOT	14. Sequence, coordinate, and integrate installations of plumbing materials and equipment for efficier					
FCU FD	FAN COIL UNIT FLOOR DRAIN	SH SPEC.	SHOWER PROJECT SPECIFICATIONS	flow of the Work. Give particular attention to large equipment requiring positioning prior to closing-in the building.	48. All plumbing system valves shall be installed in a louse.				
FDC	FIRE DEPARTMENT CONNECTION FIRE DEPARTMENT VALVE	SS	STAINLESS STEEL STRUCTURAL	15. Where mounting heights are not detailed or dimensioned, install plumbing services and overhead	49. Provide stops and/or isolation valves to each indivi individual servicing unless noted otherwise on plans				
FDV FL	FLOOR	SW	STORM WATER	equipment to provide the maximum headroom possible while coordinating with other trades. 16. Install plumbing equipment to facilitate maintenance and repair or replacement of equipment	50. Indirect drain piping from fixtures, specialties, and				
FLA FOR	FULL LOAD AMPS FUEL OIL RETURN	TEMP TMV	TEMPERATURE THERMOSTATIC MIXING VALVE	components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.	other approved receptacles and terminated with an piping but not less than a 1 inch gap. Support pipin				
FOS FOV	FUEL OIL SUPPLY FUEL OIL VENT	TOP TP	TOP OF PIPE TRAP PRIMER	17. Coordinate the installation of plumbing materials and equipment above ceilings with suspension	drain source.				
FPM	FEET PER MINUTE	TWH	TANKLESS WATER HEATER	system, light fixtures, ductwork, conduit, and other installations. Coordinate plumbing equipment and materials installation with other building components.	51. Wherever possible, horizontal soil or waste pipe sha				
FS FSD	FLOOR SINK FIRE SMOKE DAMPER	TYP UH	TYPICAL UNIT HEATER	18. All pipes shall be of the size given on the drawings. All piping shall be run true to line. Pipes may	, 52. All vent terminations shall be coordinated with build				
FT FT ²	FEET SQUARE FEET	UON UR	UNLESS OTHERWISE NOTED URINAL	be moved, if necessary for installation, provided that the nature of the system is not changed. All pipes shall be concealed: located above ceiling, below floor or in walls, except where connection	roof mounted equipment. Adjust vent through roof				
FTR FW	FINNED TUBE RADIATOR FEED WATER PUMPED DISCHARGE	V VAC	VOLT / VACUUM VOLTS ALTERNATING CURRENT	is made to fixture or where concealment is not feasible.	53. Plumbing contractor shall install air chambers on verificature and piping to all shower valves. Install pist piping prior to drop to all individual flush valve fixtu				
GAL	GALLON	VB	VACUUM BREAKER	19. Coordinate connection of plumbing systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and	arrestors may be utilized for water headers serving shall be located upstream the last fixture served on				
GC GPM	GENERAL CONTRACTOR GALLONS PER MINUTE	VP VRF	VELOCITY PRESSURE VARIABLE REFRIGERANT FLOW	controlling agencies. Provide required connection for each service and coordinate all locations, sizes and invert elevations with site contractor.	location, or provide access panel. Size arrestors pe fixture load.				
GR GRH	GLYCOL RETURN GAS RADIANT HEATER	VTR W	VENT THRU ROOF WATTS	20. Plumbing service rough-in shall be based on information, drawings, equipment cuts, etc. prepared by the equipment supplier. Final plumbing connections shall be made from rough-in to equipment	1				
GS	GLYCOL SUPPLY	W/	WITH	after equipment is set in place.	and/or mixing valves whenever possible.				
GUH GV	GAS UNIT HEATER GRAVITY VENTILATOR	W/O WC	WITHOUT WATER CLOSET	21. Actual locations and mounting methods for fixtures and penetrations are subject to Architect's approval. All piping is shown schematically for clarity - coordinate with structure, ducts, lights,	55. Insulate all horizontal storm piping and exposed roo applicable). See plumbing insulation specification fo				
GW GWH	GREASE WASTE GAS WATER HEATER	WCO WF	WALL CLEANOUT WATER FILTER	utilities, etc. Verify all dimensions by field measurements.	56. The general contractor shall be responsible for rem				
Н	HUMIDIFIER	WG	WATER GAUGE	22. The hot and cold water supply line branches for all lavatories and sinks shall have Josam or Zurn water hammer arresters installed on the high point at the end of each branch line.					
HB HC	HOSE BIBB HEATING COIL	WH WS	WALL HYDRANT WATER SOFTENER	23. All above-ground water supply piping shall be Type L rigid copper. All below grade water supply	57. All submittals must be sent in pdf format, highlighte				
	DUAL TEMPERATURE RETURN DUAL TEMPERATURE SUPPLY	WSHP	WATER SOURCE HEAT PUMP	piping shall be Type K soft copper with at least 50' between joints. All joints shall be soldered with "lead-free" solder (e.g., 95-5).	architect to review and verify punch-list for correction				
HD HD	HUB DRAIN HEAT PUMP / HORSEPOWER			24. Flush and sterilize water system after connections are made in accordance with local regulations.	59. Plumbing contractor shall furnish record set of draw within 90 days of system acceptance.				
HP HPR	HIGH PRESSURE STEAM RETURN			25. All sanitary and storm waste piping below slab shall be cast-iron or solid-wall PVC. All grease waste piping shall be cast iron. Sanitary, storm and vent piping above grade shall be cast-iron or					
HPS HR	HIGH PRESSURE STEAM SUPPLY HOUR			galvanized steel, except that PVC may NOT be used in demising walls and may NOT be used in return plenum ceilings.					
HW	HOT WATER HW RECIRC/HEATING WATER RETURN			26. All condensate drain piping and indirect drains shall be DWV seamless copper tubing with					
HWS	HEATING WATER SUPPLY			soldered drainage fittings.					
ΗX	HEAT EXCHANGER			27. All floor penetrations and all exterior penetrations shall be completely waterproofed, firesafed, and sealed. All pipe penetrations of fire rated assemblies shall be sleeved and sealed as required to					
				maintain the rating of the assembly. Sleeves shall be used for all masonry penetrations. Proper sealing of penetrations as described here is the sole responsibility of the plumbing contractor.					
	NOTICE TO CON	IRA	CIORS:	28. Existing piping shown on drawings is based on original drawings, and location, mounting heights					
	OCCUPIED FA	ACIL	_ITY	and points of connection must be verified in field. All items that are indicated in bold print shall be considered new or relocated, unless otherwise noted.					

OCCUPIED FACILITY EXISTING FACILITY IS PARTIALLY OCCUPIED. CONTRACTOR SHALL COORDINATE

INTERRUPTIONS OF SERVICE WITH OWNER AND NOTIFY OCCUPANTS 48 HOURS BEFORE SERVICE INTERRUPTION. IF ACCESS TO OCCUPIED SPACE IS REQUIRED, ACCESS SHALL BE COORDINATED WITH OWNER AND OCCUPANTS AFFECTED SHALL BE GIVEN 48 HOURS NOTICE.

29. In general, do not abandon old piping - remove and dispose of properly, unless inaccessible or under slab, or unless noted otherwise.

lation specification for clarification. e responsible for removal and disposal of all construction debris and

pdf format, highlighted or redlined e general contractor shall prepare a punch list first and notify unch-list for corrections.

h record set of drawings with any deviations marked in red ink, otance.

lding thermal envelope shall be insulated with Owens Corning SSL II nsulation as follows: Cold water, 1/2" thick insulation; hot water g 1.25" dia and smaller, 1" thick insulation; hot water supply and	SYMBOL	PLUMBING SYN	MBOLS I	
nsulation as follows: Cold water, 1/2" thick insulation; hot water	SYMBOL		1	
		BEGGHII HIGH	SIMBUL	DESCRIPTION
	<u>۶</u> SAN	SANITARY PIPE	0	FLOOR DRAIN/HUB DRAIN
nd larger, 1.5" thick insulation.	∽——v-—-∽	VENT PIPE		FLOOR SINK
piping shall be run in outside walls, crawl space, attic, or other cifically noted and with heat trace.	<u>ج</u>	COLD WATER PIPE	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	SIAMESE CONNECTION
rease waste piping that is located in unheated areas shall be heat	<u>جـــــج</u>	HOT WATER PIPE	•	SPRINKLER HEAD
berglass minimum to prevent freezing. All heat tracing shall be e coldest portion of the piping and set to turn on if pipe temperature	<u></u>	HOT WATER RECIRC. PIPE	$\langle 1 \rangle$	EQUIPMENT IDENTIFIER
	Sw	STORM WATER PIPE	нрs	HIGH PRESSURE STEAM
by Truebro, Inc. ADA compliant, vinyl coated with standard white exposed plumbing waste and supply connectors underneath all	۰ ۲۰۰۰ OFD۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰	OVERFLOW DRAIN PIPE		MEDIUM PRESSURE STEAM
beled with an H If there are any instant water heaters, transformers vother sharp or abrasive objects under lavatory, provide and install	срс	CONDENSATE DRAIN PIPE	LPS	LOW PRESSURE STEAM
by Truebro, Inc. or equal), maintaining ADA required clearances	у с <u>с</u> у у	PUMPED CONDENSATE DRAIN PIPE	HPR	HIGH PRESSURE RETURN
ents 3" in diameter and over shall be sloped at 1/8" per foot	5 + − FD - − 1 − 5	FOUNDATION DRAIN PIPE	MPR	MEDIUM PRESSURE RETURN
oted. All horizontal branches and vents under 3" in diameter shall be um, unless otherwise noted (UON).	3	STORM WATER	LPR	LOW PRESSURE RETURN FEED WATER PUMPED DISCHARG
and purge natural gas systems in accordance with the latest IFGC			— FW — ВО — ВО —	BOILER BLOW OFF
pany. Gas pipe shall be schedule 40 black steel, UON.	۲۰۰۰ ۲۵ ۲۰۰۰ ۲۵ ۲۰۰۰ ۲۵ ۲۰۰۰ ۲۵ ۲۰۰۰ ۲۵ ۲۰۰۰ ۲۵	CONDENSER WATER SUPPLY PIPE	FOS	FUEL OIL SUPPLY
trap refrigerant piping per the manufacturer's recommendations.		CONDENSER WATER RETURN PIPE	FOR	FUEL OIL RETURN
g/plumbing information shown was obtained from field surveys or n drawings. Contractor <u>must</u> verify this information prior to any work	<u>۶</u>	CHILLED WATER SUPPLY PIPE	FOV	FUEL OIL VENT
	∽CWR∽	CHILLED WATER RETURN PIPE	GS	GLYCOL SUPPLY
roof to be done by the owner's roofing contractor so not to void any	ςΥwsς	HEATING WATER SUPPLY PIPE	GR	GLYCOL RETURN REVERSE OSMOSIS SUPPLY
coordinate all exterior plumbing inverts with actual site conditions,	۶HwR۶		RR	REVERSE OSMOSIS SUPPLY REVERSE OSMOSIS RETURN
civil drawings prior to construction, to ensure that all connection n be met	G G	NATURAL GAS PIPE	sw	STORM WATER
hard ceilings and walls shall be furnished and installed by the	کر میں PGک	PROPANE GAS PIPE	— o —	OXYGEN
ind-lock model stealth or approved equal with appropriate size.	ς	REFRIGERANT PIPE	NO	NITROUS OXIDE
s cocks, etc., shall be manufactured by Nibco or equal. ove food storage racks, above food preparation areas or above food	۶ CA۶	COMPRESSED AIR PIPE	— N —	NITROGEN
pipe with soldered copper drainage and waste fittings.	۶۶۶	FIRE PROTECTION PIPE	+	GAS OUTLETS
wrapped with 1" Armaflex insulation.	۶ <u>ـــــ</u> هٔ ۲.S.	OUTSIDE STEM & YOKE VALVE WITH TAMPER SWITCH		CONNECT TO EXISTING DEMOLISH TO THIS LOCATION
oped at minimum 1/8" per foot. All sanitary piping 2" and smaller lab/grade shall be sloped at 1/4" per foot.	ςι⊫ς	UNION		DRAWING NOTE
I or greater then 4'-0" long shall be provided with trap at equipment	ςς	PRESSURE REDUCING VALVE		REVISION SYMBOL
t of greater then in o long shatt be provided with trup at equipment	ςς	BALANCING VALVE	$\begin{pmatrix} 1 \\ 1 \end{pmatrix}$	EQUIPMENT IDENTIFIER
e of 3'-0" in front of electrical panels and 1'-0" either side when n the same area. Pipe systems, equipment, etc. shall not be routed	ςς	DIRECTION OF LIQUID FLOW		
gear and where above may be as close as 12 inches from lectrical codes where in doubt.	<u> </u>	GAS COCK		
nbers, etc. are to be accessible. Extend piping and provide access	∽_ ∽	BALL VALVE		
bing contractor will be required to demonstrate accessibility if it is zes, locations, and final color shall be coordinated with the architect	<u>۲</u>	GATE VALVE		
avoid any conflicts. Access panels required for this purpose are to be tor for installation by general contractor.	<u>∽&</u>	THREE WAY CONTROL VALVE		
nall be installed in a location and orientation that will permit intended	<u>۶</u> ۶	TWO WAY CONTROL VALVE		
	۲ <u></u> ۲	CHECK VALVE		
valves to each individual fixture or piece of equipment to allow for ted otherwise on plans.	۲ <u>۲</u>	WYE STRAINER		
ires, specialties, and equipment shall be routed to floor drain or	ې چې	PRESSURE GAUGE		
nd terminated with an air gap 2 times the diameter of the drain ch gap. Support piping so drain piping cannot be deflected from	<u>جــــــــــــــــــــــــــــــــــــ</u>	THERMOMETER		
	GS	PIPE DOWN		
soil or waste pipe shall come off top or at 45 degree vertically from g horizontally to riser.	0	PIPE UP		
coordinated with building structure, openings, air intakes, and other	γ <u><u></u> γ<u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>			
ust vent through roof locations to comply with applicable code.		ANGLE STOP VALVE		
all air chambers on vertical drop to individual sinks with spray er valves. Install piston-type water hammer arrestors on horizontal		HOSE BIB (SPIGOT)		
vidual flush valve fixtures. Piston- or diaphragm-type water hammer water headers serving a group of fixtures within the same chase and		WALL HYDRANT		
last fixture served on the header. Locate arrestors in accessible anel. Size arrestors per manufacturer's recommendation for related		WALL III URANI		
	NOTE:			

r possible. ping and exposed roof drain sumps with 1" thick insulation (where

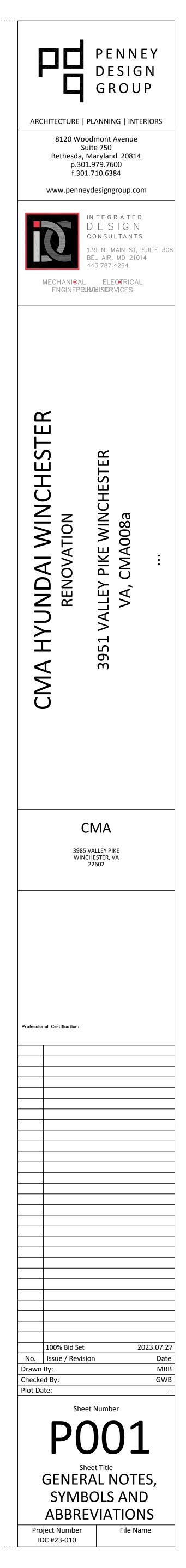
DRAWING CONVENTIONS

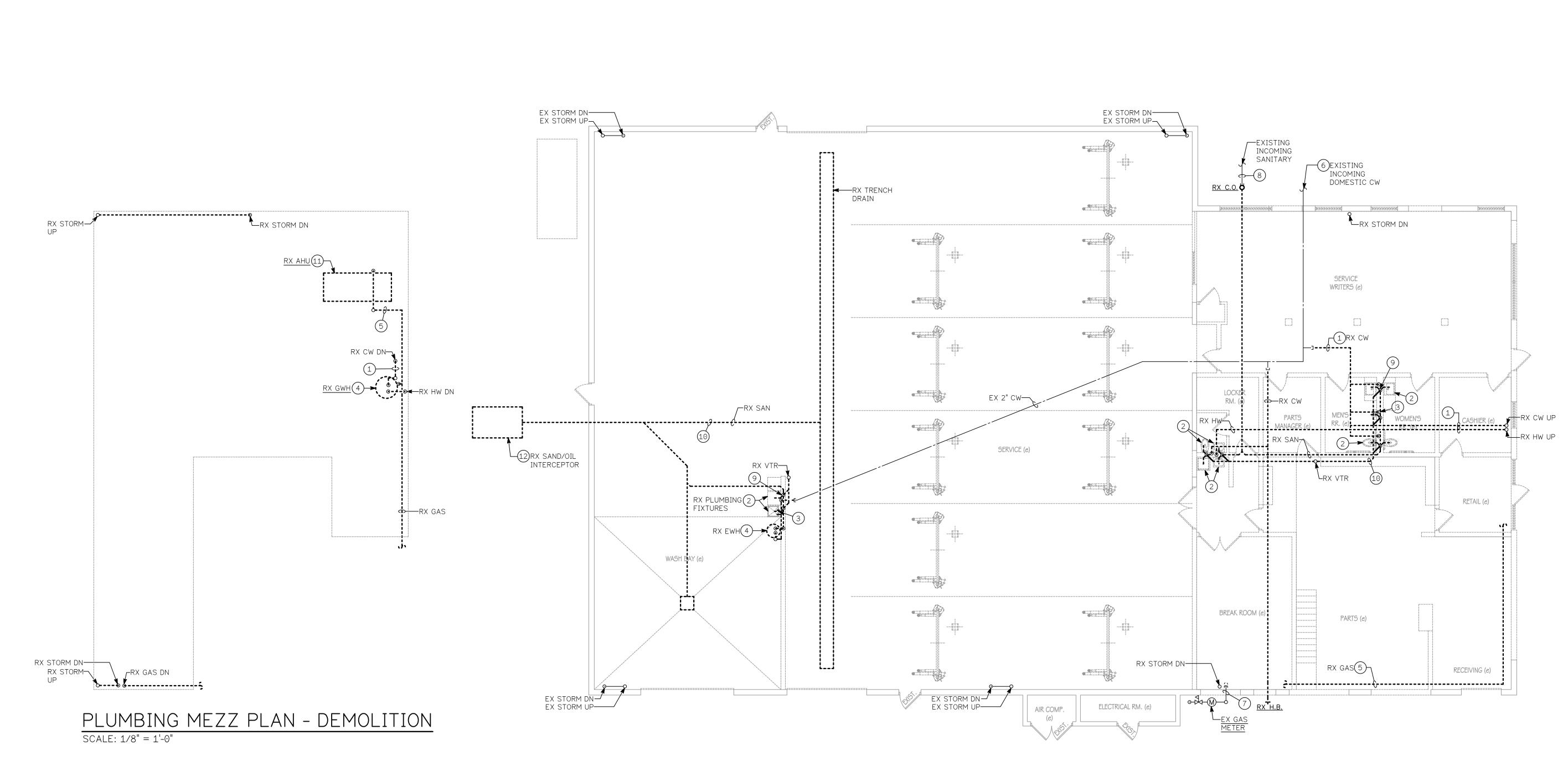
NEW WORK - HEAVY AND SOLID LINES

- ------ EXISTING TO REMAIN LIGHT AND SOLID LINES
- ----- REMOVE EXISTING HEAVY AND DASHED LINES

NOTICE TO CONTRACTORS

ALL CONTRACTORS PRIOR TO BID SUBMISSION PROCESS SHALL VISIT PROPOSED WORK SITE AND FIELD VERIFY ALL EXISTING CONDITIONS. ANY CONDITIONS THAT DIFFER FROM THAT SHOWN ON THESE PLANS SHALL BE REPORTED TO ARCHITECT/ENGINEER SO THAT NEW AND REVISED BID DRAWINGS OR INFORMATION MAY BE ISSUED. MODIFICATIONS TO SCOPE OF WORK WHICH RESULT FROM CONTRACTORS NEGLECT TO VISIT THE SITE PRIOR TO SUBMITTING BID, SHALL BE THE CONTRACTORS SOLE RESPONSIBILITY.



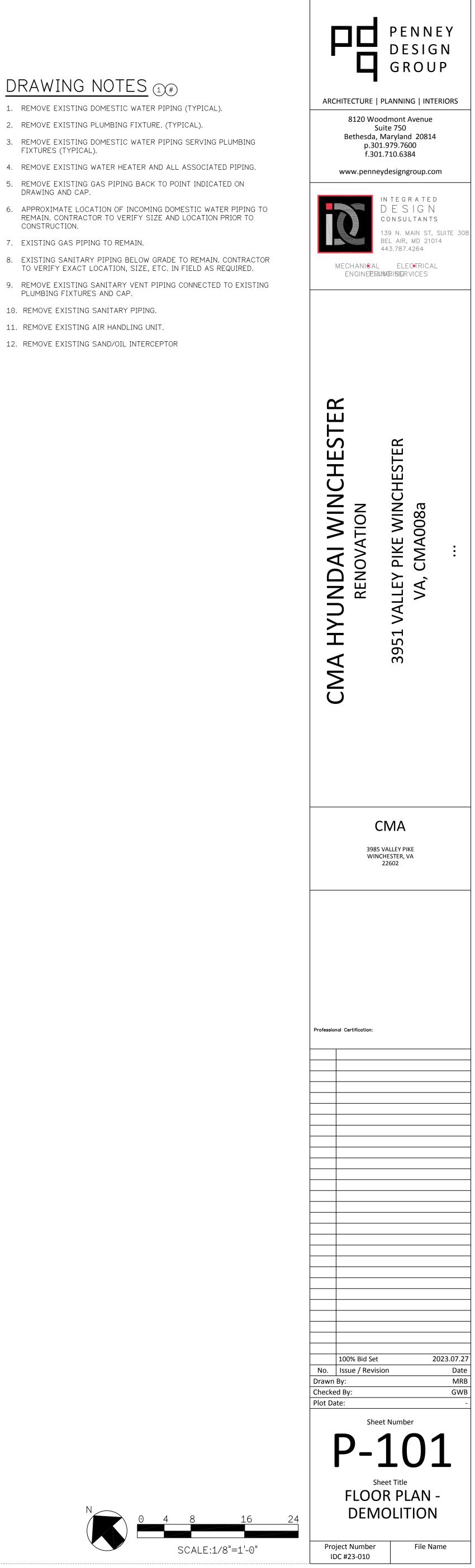


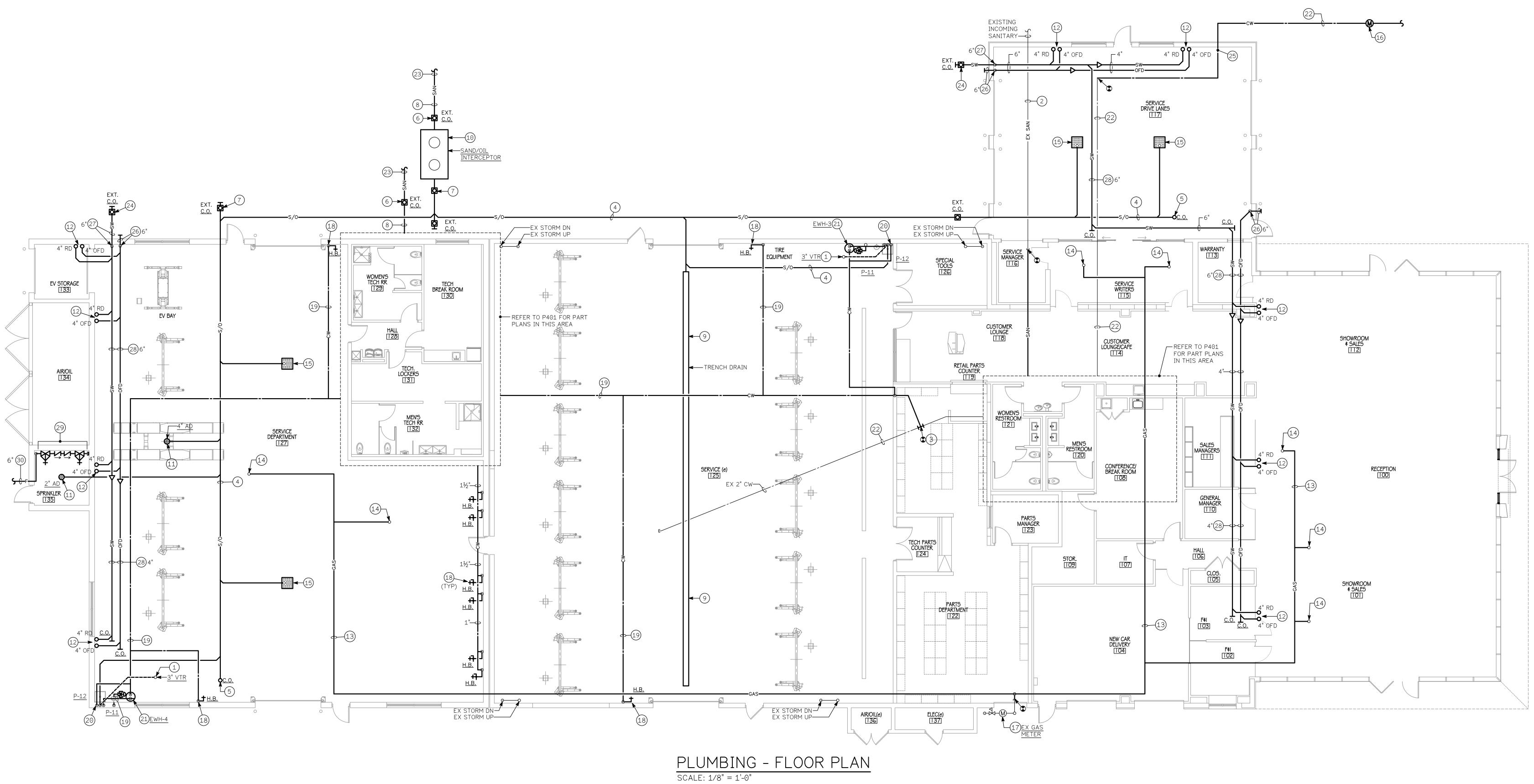
PLUMBING FLOOR PLAN - DEMOLITION SCALE: 1/8" = 1'-0"

DRAWING NOTES (1)(#)

- 1. REMOVE EXISTING DOMESTIC WATER PIPING (TYPICAL).
- 2. REMOVE EXISTING PLUMBING FIXTURE. (TYPICAL).

- DRAWING AND CAP.
- 6. APPROXIMATE LOCATION OF INCOMING DOMESTIC WATER PIPING TO REMAIN. CONTRACTOR TO VERIFY SIZE AND LOCATION PRIOR TO CONSTRUCTION.
- 7. EXISTING GAS PIPING TO REMAIN.
- TO VERIFY EXACT LOCATION, SIZE, ETC. IN FIELD AS REQUIRED.
- PLUMBING FIXTURES AND CAP.
- 10. REMOVE EXISTING SANITARY PIPING.
- 11. REMOVE EXISTING AIR HANDLING UNIT.
- 12. REMOVE EXISTING SAND/OIL INTERCEPTOR





DRAWING NOTES (1)(#)

- 1. SANITARY VENT PIPING UP THRU ROOF.
- 2. EXISTING SANITARY PIPING BELOW FLOOR SLAB/GRADE TO REMAIN.
- 3. CONNECT TO EXISTING DOMESTIC COLD WATER PIPING UNDERGROUND.
- 4. SAND/OIL PIPING BELOW FLOOR SLAB/GRADE SLOPED AT MINIMUM 1/8" PER FOOT.
- 5. SAND/OIL CLEANOUT IN FLOOR.
- 6. EXTERIOR SANITARY CLEANOUT (TYPICAL).
- 7. EXTERIOR SAND/OIL CLEANOUT (TYPICAL).
- 8. SANITARY PIPING BELOW GRADE SLOPED AT MINIMUM 1/8" PER FOOT.
- 9. 12" WIDE PRE-SLOPED TRENCH DRAIN WITH REMOVABLE HEAVY DUTY CAST IRON GRATE
- AND 6" OUTLET. 10. 2,000 GALLON SAND/OIL INTERCEPTOR LOCATED BELOW GRADE. UNIT SHALL BE JENSEN PRECAST MODEL JP2000EE-SO, MAYOR BROS, OR APPROVED EQUAL WITH H-20 HEAVY DUTY CONSTRUCTION. INSTALL PER MANUFACTURERS RECOMMENDATIONS AND LOCAL CODES. EARTH COVER SHALL NOT EXCEED 5'-0" OR PER LOCAL CODES. COORDINATE
- WITH CIVIL DRAWINGS. 11. AREA DRAIN WITH DEEP SEAL TRAP.
- 12. STORM AND OVERFLOW PIPING UP THRU ROOF TO DRAINS, SIZE AS INDICATED. COORDINATE EXACT HEIGHT OF OVERFLOW PIPE ABOVE ROOF WITH STRUCTURAL
- 13. GAS PIPING SUPPORTED HIGH FROM ROOF JOIST.
- 14. GAS PIPING UP THRU ROOF IN PITCH POCKET (TYPICAL).
- 15. 24"x24" AREA DRAIN WITH HEAVY-DUTY CAST IRON GRATE AND 4" OUTLET. WATTS MODEL FD-530 OR APPROVED EQUAL.
- 16. NEW WATER METER BY CIVIL.

ENGINEER.

- 17. EXISTING GAS METER ASSEMBLY TO REMAIN.
- 18. DOMESTIC COLD WATER PIPING DOWN ALONG WALL EXPOSED TO 24" ABOVE FLOOR WITH INTERIOR WALL MOUNTED HOSE BIBB (SPIGOT) WITH VACUUM BREAKER AND HOSE END
- CONNECTION (TYPICAL). WATTS SC8 OR APPROVED EQUAL.
- 19. DOMESTIC WATER PIPING SUPPORTED FROM STRUCTURE ABOVE CEILING.
- 20. DOMESTIC WATER PIPING DOWN INSIDE WALL AND EXTENDED TO FIXTURE(S)/ EQUIPMENT.
- 21. ELECTRIC WATER HEATER. SEE SCHEDULE FOR MORE DETAILS.
- 22. NEW DOMESTIC COLD WATER SERVICE. 23. REFER TO CIVIL DRAWINGS FOR CONTINUATION.
- 24. EXTERIOR STORM WATER CLEANOUT.

- WATTS MODEL SERIES LF7 OR APPROVED EQUAL.
- FINISH.
- 28. STORM WATER AND OVERFLOW PIPING SUPPORTED HIGH FROM TOP CHORD OF ROOF JOIST

25. BALL VALVE WITH LEAD-FREE, BRONZE ASSE1024 DUAL CHECK BACKFLOW PREVENTER.

26. OVERFLOW PIPING DOWN ALONG WALL AND THRU EXTERIOR WALL TO DISCHARGE NOZZLE AT 12" ABOVE GRADE. WADE MODEL 3940 OR APPROVED EQUAL WITH NICKLE

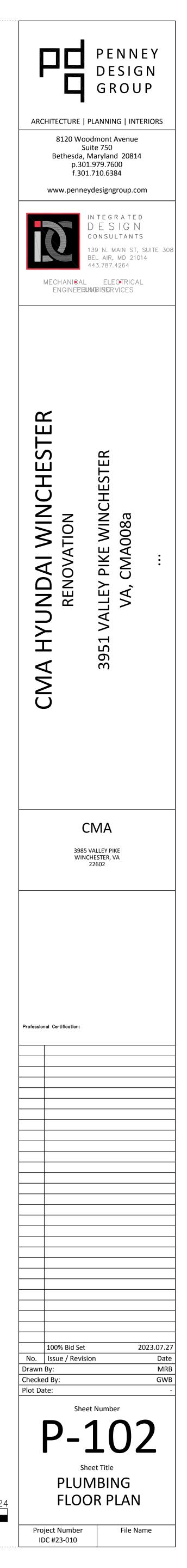
27. STORM WATER PIPING DOWN ALONG WALL AND THRU EXTERIOR WALL WITH CLEANOUT AT BASE OF RISER AND EXTENDED OUT TO 5'-0" BEYOND BUILDING.

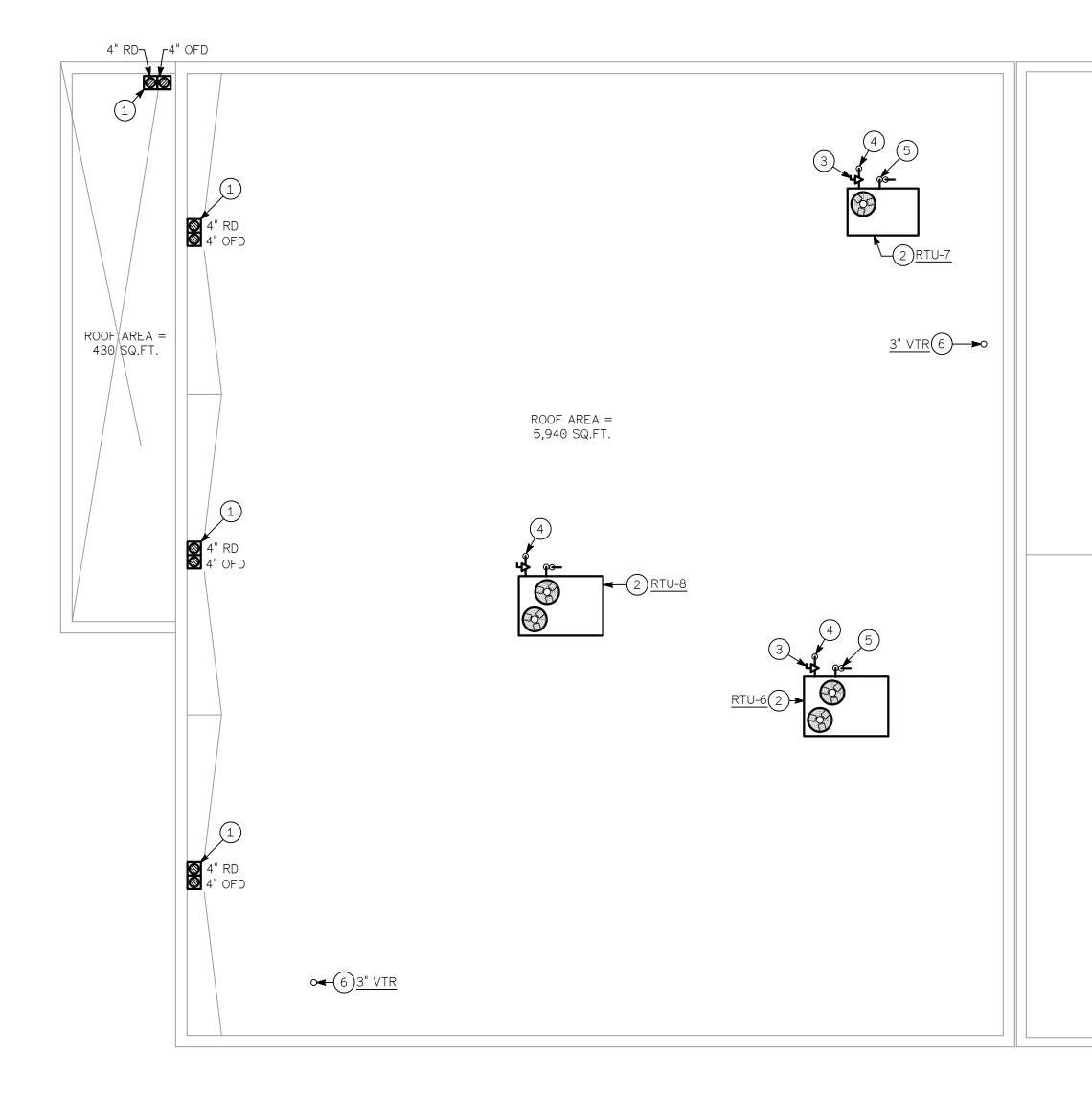
AND SLOPED AT MINIMUM 1/8" PER FOOT. 29. 6" FIRE PROTECTION PIPING MOUNTED FROM FLOOR/WALL AT APPROXIMATELY 36" ABOVE

FLOOR WITH U.L./F.M. LISTED AND COUNTY APPROVED OS&Y VALVES AND BACKFLOW PREVENTER ASSEMBLY. WATTS SERIES 709DCDAOSY OR APPROVED EQUAL. COORDINATE USAGE WITH THE LOCAL FIRE MARSHALL.

30. 6" FIRE PROTECTION SERVICE TO BUILDING BELOW GRADE AND EXTENDED OUT 5'-0" BEYOND BUILDING. REFER TO CIVIL DRAWINGS FOR CONTINUATION.





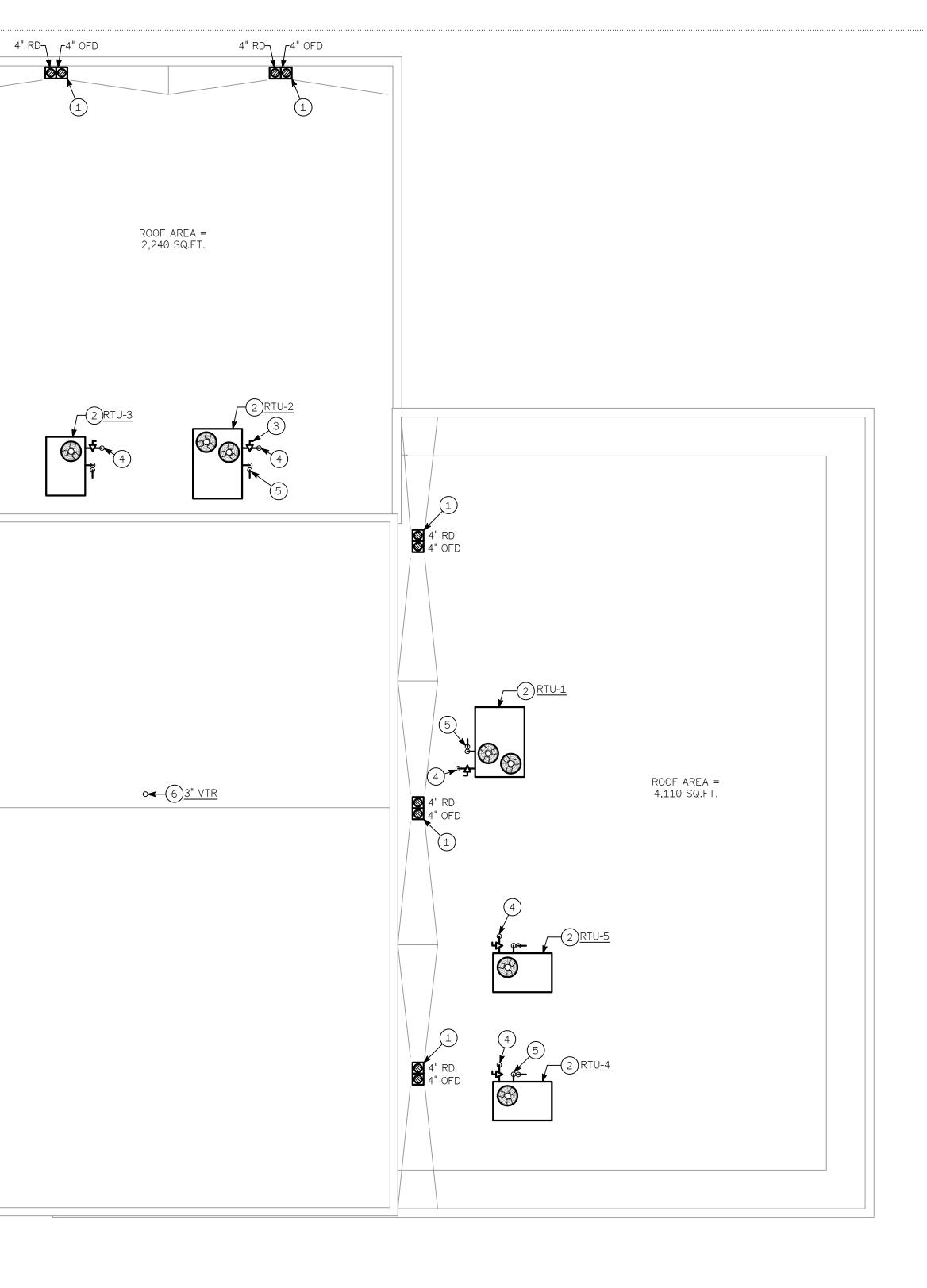


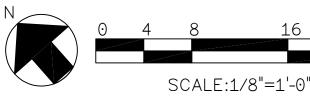
DRAWING NOTES (1)#)

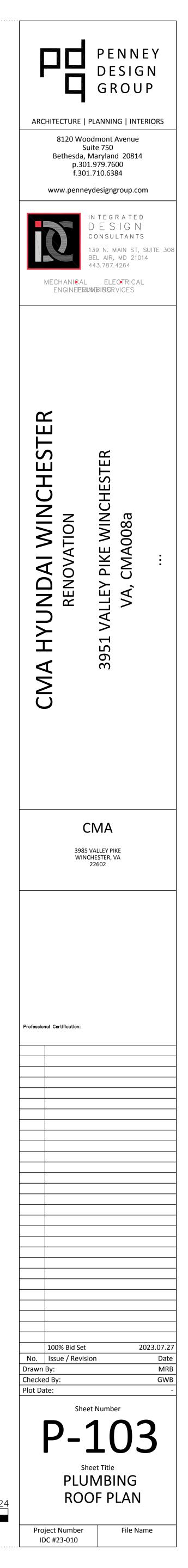
- 1. ROOF AND OVERFLOW DRAIN, SIZE AS INDICATED. COORDINATE EXACT HEIGHT OF OVERFLOW PIPE ABOVE ROOF WITH STRUCTURAL ENGINEER.
- 2. GAS FIRED ROOFTOP UNIT ON FACTORY CURB (TYPICAL). REFER TO SCHEDULE.
- 3. GAS COCK AND UNION AT CONNECTION TO EQUIPMENT (TYPICAL).
- 4. GAS PIPING UP THRU ROOF IN PITCH POCKET (TYPICAL).
- 5. FULL SIZE CONDENSATE DRAIN WITH DEEP SEAL TRAP (TYPICAL).
- 6. SANITARY VENT PIPING UP THRU ROOF.

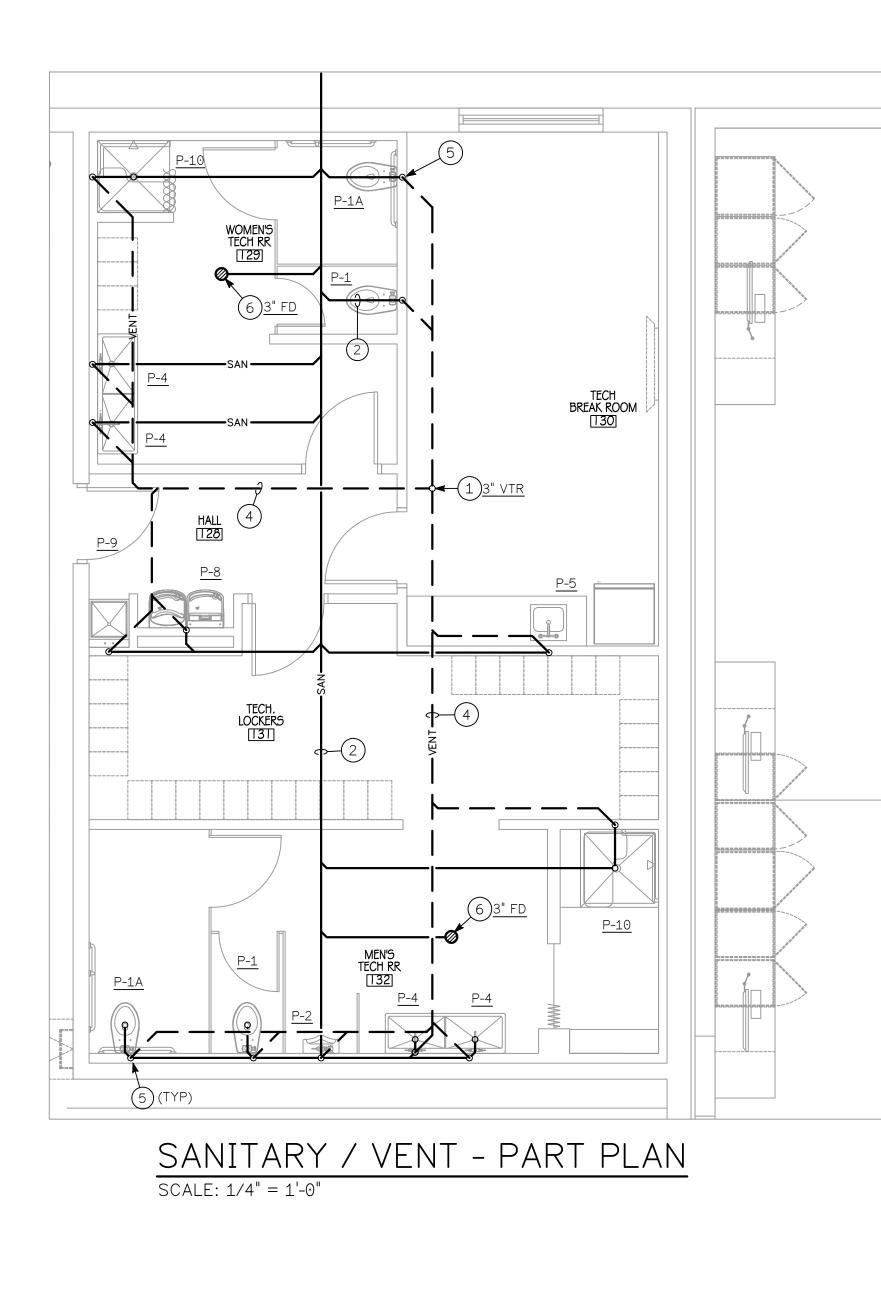
<u>3" VTR</u>6

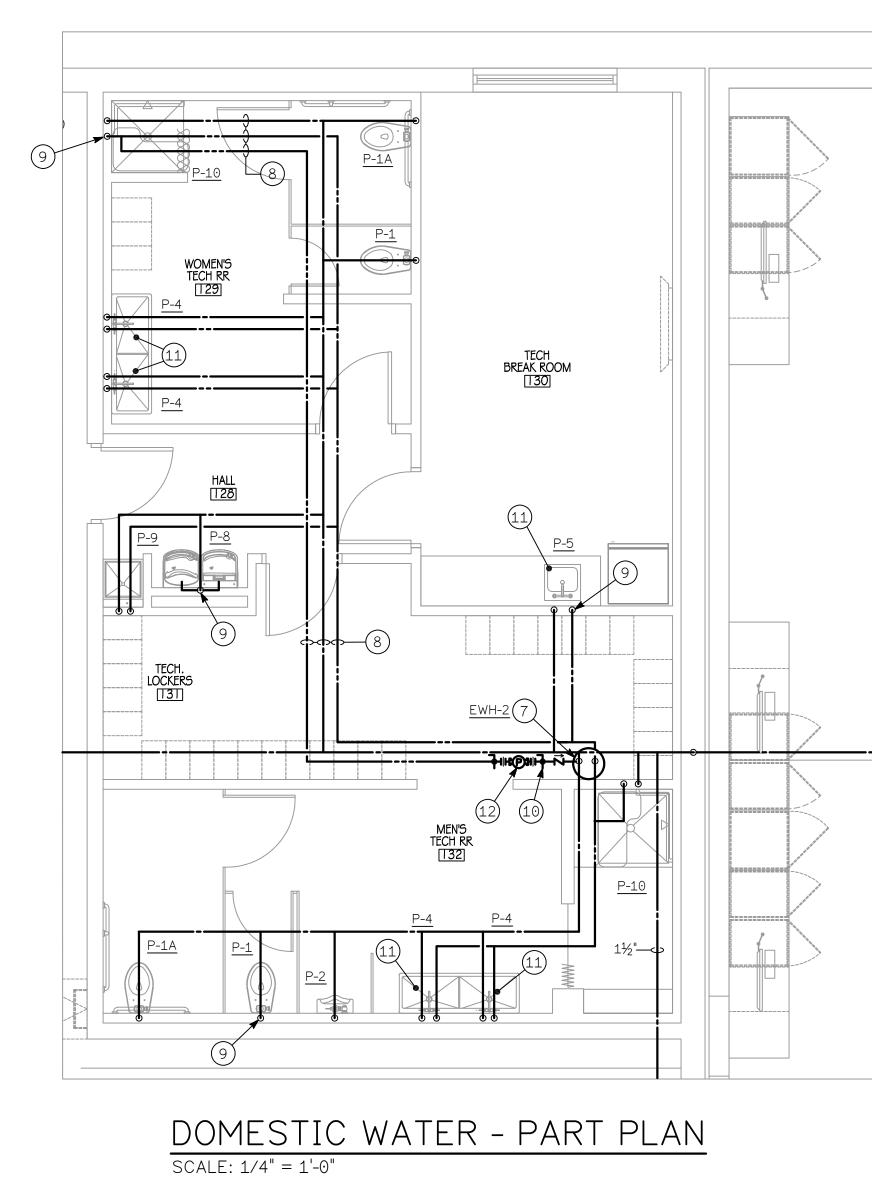
PLUMBING ROOF PLAN SCALE: 1/8" = 1'-0"

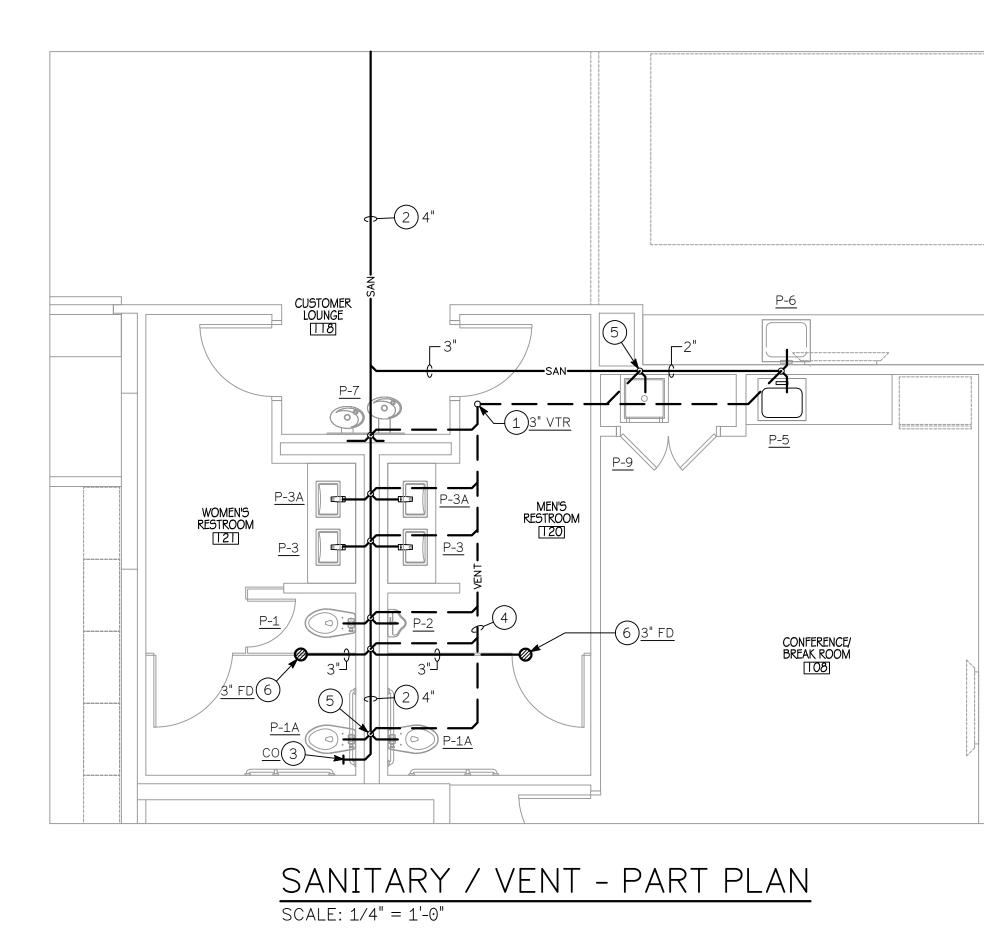


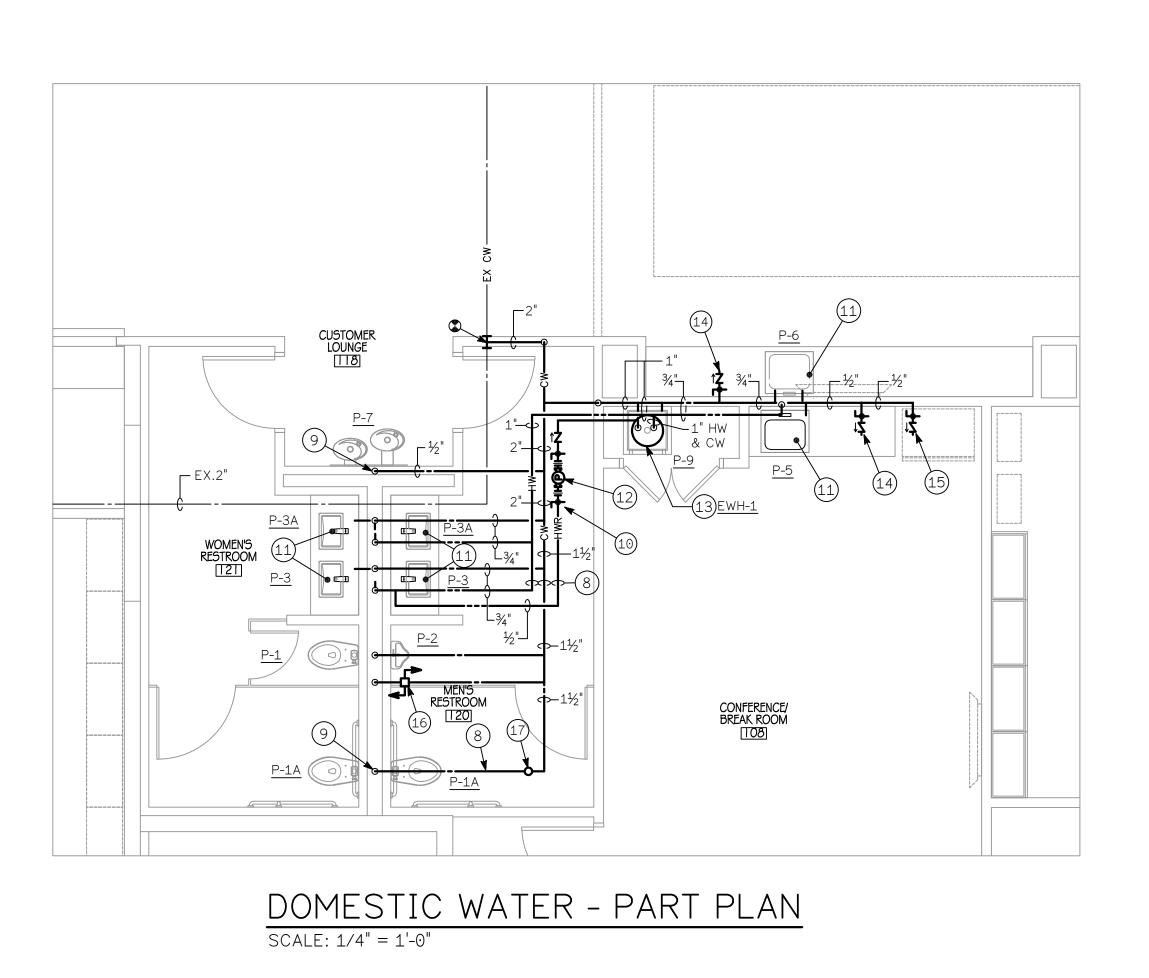










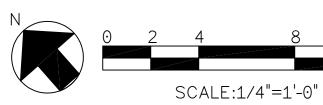


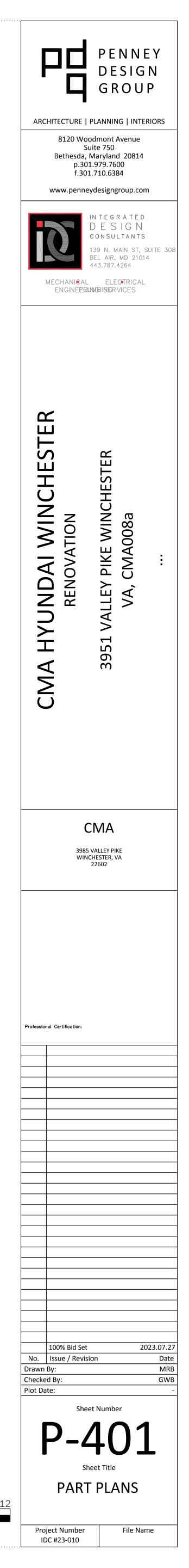
DRAWING NOTES (1)(#)

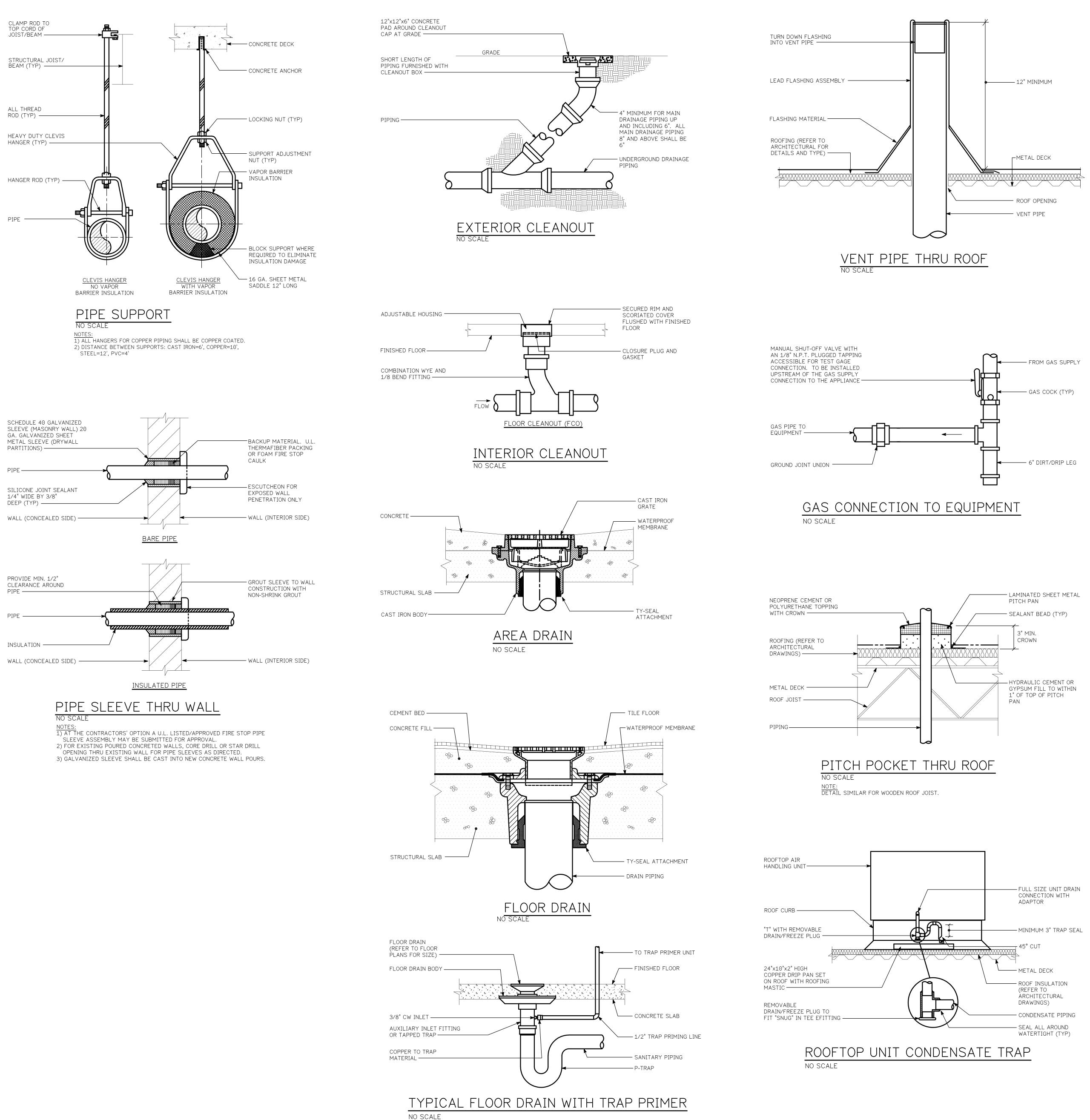
- 1. SANITARY VENT PIPING UP THRU ROOF.
- 2. SANITARY PIPING BELOW FLOOR SLAB/GRADE SLOPED AT MINIMUM 1/8" PER FOOT. ALL 2" SANITARY PIPING BELOW FLOOR SLAB/GRADE SHALL BE SLOPED AT 1/4" PER FOOT.
- 3. SANITARY CLEANOUT IN WALL (TYPICAL).
- 4. SANITARY VENT PIPING SUPPORTED HIGH FROM STRUCTURE ABOVE CEILING.
- 5. SANITARY VENT PIPING UP INSIDE WALL AND ROUTED ABOVE CEILING AS INDICATED (TYPICAL).
- 6. FLOOR DRAIN WITH TRAP PRIMER (TYPICAL), SIZE AS INDICATED.
- 7. ELECTRIC WATER HEATER MOUNTED ON PLATFORM ABOVE CEILING IN FULL SIZE DRAIN PAN. REFER TO SCHEDULE.
- 8. DOMESTIC WATER PIPING SUPPORTED HIGH FROM STRUCTURE ABOVE (TYPICAL).
- 9. DOMESTIC WATER PIPING DOWN INSIDE WALL AND EXTENDED TO FIXTURES (TYPICAL).
- 10. BALL VALVE (TYPICAL).

11. UNDERSINK THERMOSTATIC MIXING VALVE WITH TAMPER-PROOF LOCKING CAP AND SET AT 105°F. WATTS LEAD-FREE LFUSG-B-M1 OR APPROVED EQUAL WITH ASSE1070 LISTING.

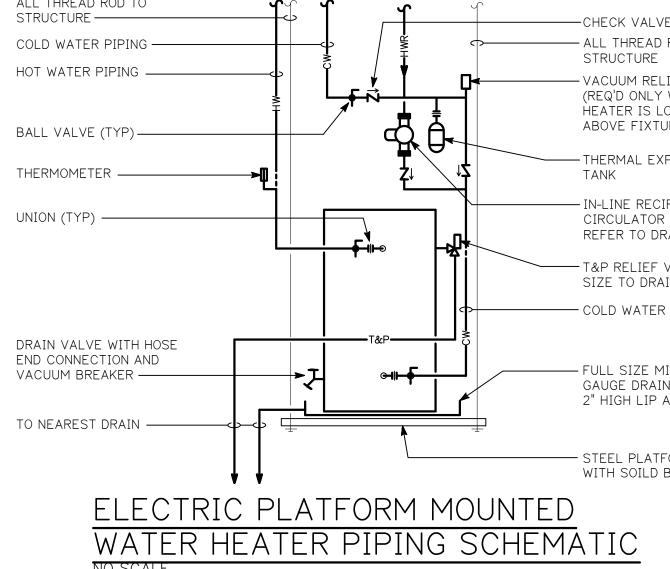
- 12. HOT WATER RECIRCULATING PUMP. TACO MODEL 007 OR APPROVED EQUAL, WITH ALL BRONZE CONSTRUCTION, 4 G.P.M. @ 9' HEAD, 1/25 HP, 115V/1Ø. PROVIDE TACO TIMER/AQUASTAT UNIT TO ENERGIZE PUMP DURING OCCUPIED TIMES AND MAINTAIN SYSTEM TEMPERATURE OF 140°F.
- 13. ELECTRIC WATER HEATER MOUNTED HIGH ON PLATFORM ABOVE MOP SINK IN FULL SIZE DRAIN PAN. REFER TO SCHEDLE.
- 14. DOMESTIC WATER PIPING STUBBED OUT BELOW COUNTER WITH BALL VALVE AND STAINLESS STEEL ASSE1022 DOUBLE CHECK VALVE FOR COFFEE MAKER. WATTS MODEL SD-3 OR APPROVED EQUAL.
- 15. DOMESTIC WATER PIPING STUBBED OUT AT WATER VALVE BOX MOUNTED APPROXIMATELY 48" ABOVE FLOOR FOR ICE MAKER CONNECTION. WATER-TITE MODEL W9700 OR EQUAL WITH 1/2" CONNECTION AND 1/4 TURN VALVE. PROVIDE LEAD-FREE, ASSE1024 BRONZE DUAL CHECK BACKFLOW PREVENTER UPSTREAM OF VALVE BOX, WATTS MODEL SERIES LF7 OR APPROVED EQUAL.
- 16. AUTOMATIC TRAP PRIMER/DISTRIBUTION UNIT LOCATED ABOVE CEILING WITH BALL VALVE AND ACCESS DOOR. EXTEND 1/2" PIPING TO EACH FLOOR DRAIN TRAP. UNIT SHALL BE PPP MODEL PR-500 PRIMER WITH DU-U-500 DISTRIBUTION UNIT, ASSE1018 LISTED, OR APPROVED EQUAL.
- 17. LEAD-FREE ASSE1010 LISTED WATER HAMMER ARRESTOR LOCATED ABOVE CEILING. WATTS MODEL LF15M2 OR APPROVED EQUAL.

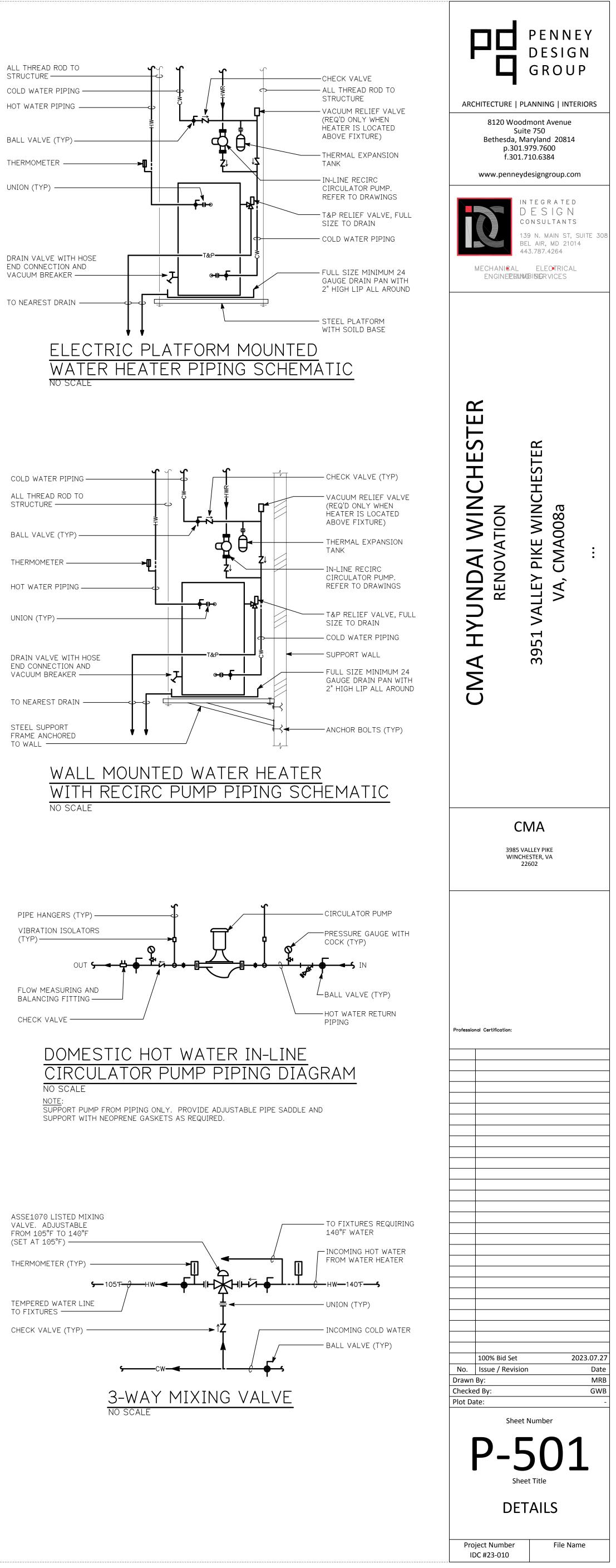


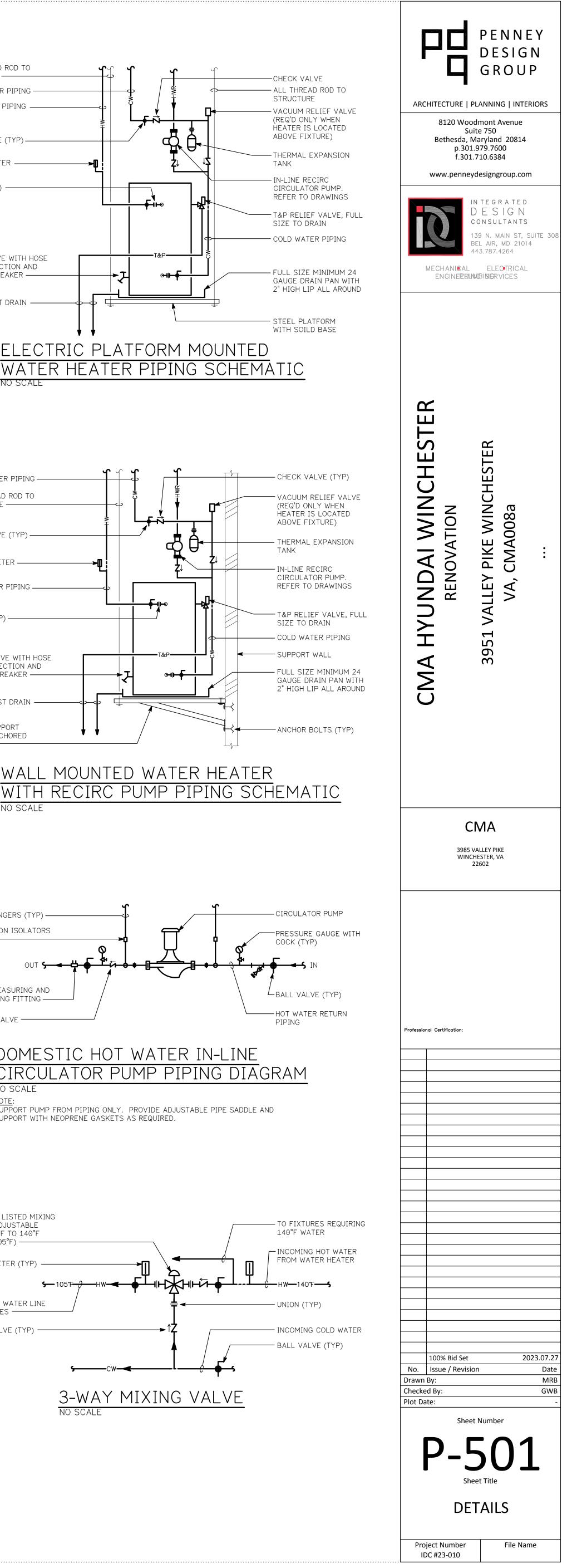


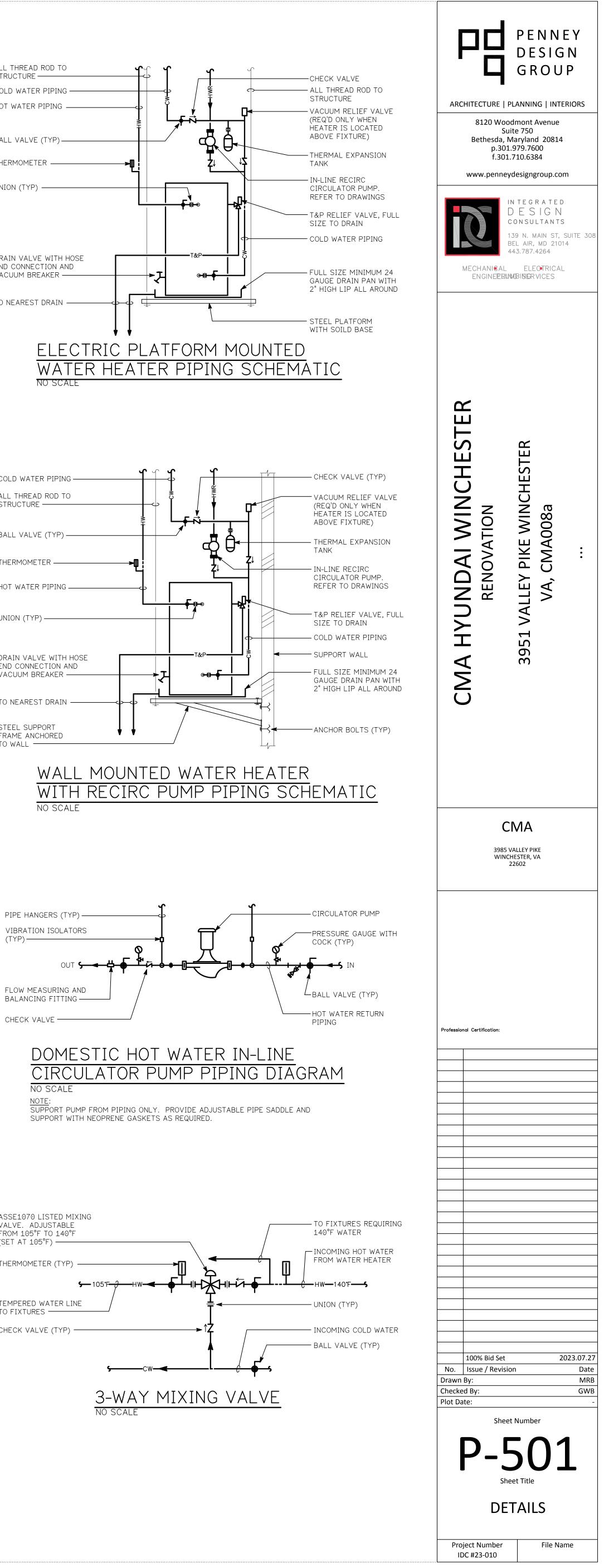


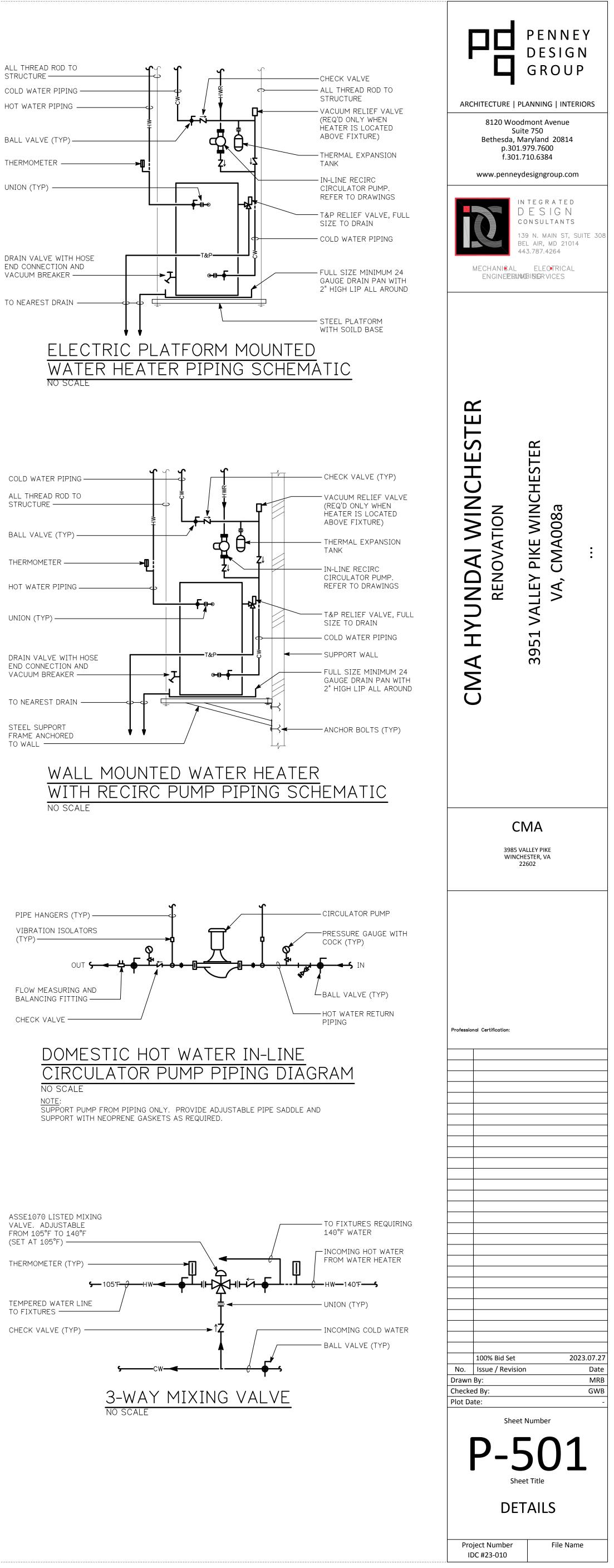












EXTERIOR WALL ------

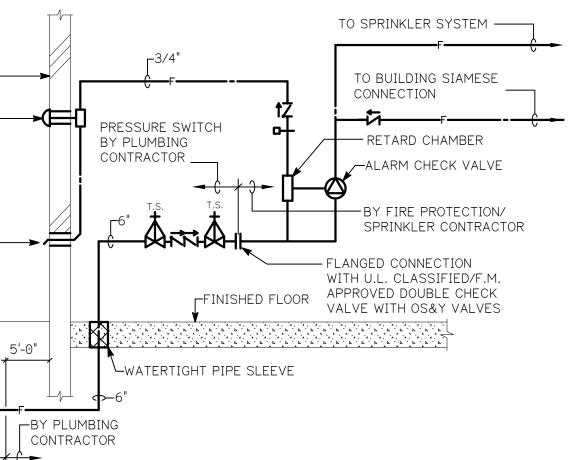
WATER MOTOR GONG ------

3/4" DRAIN THRU WALL ------

GRADE

BY UTILITY CONTRACTOR — | CONTRACTOR - (/ (► NO SCALE SPRINKLER CONTRACTOR.

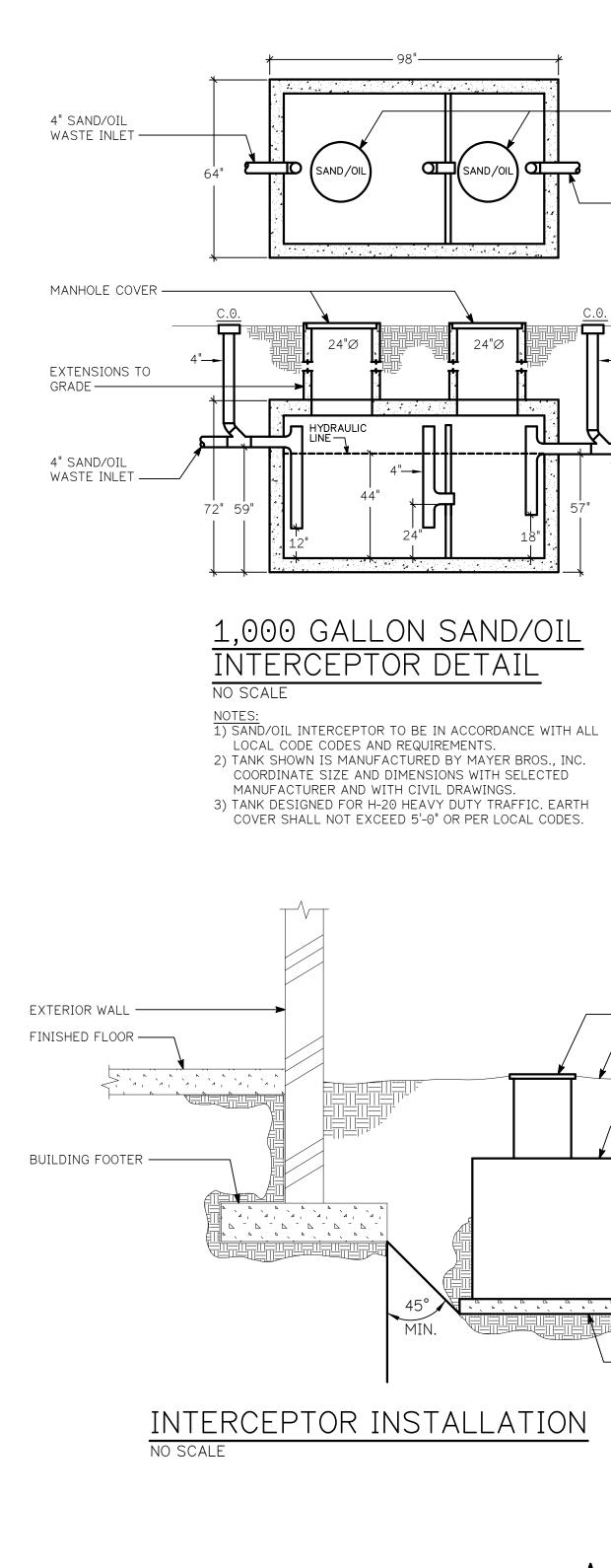
CONNECTION.

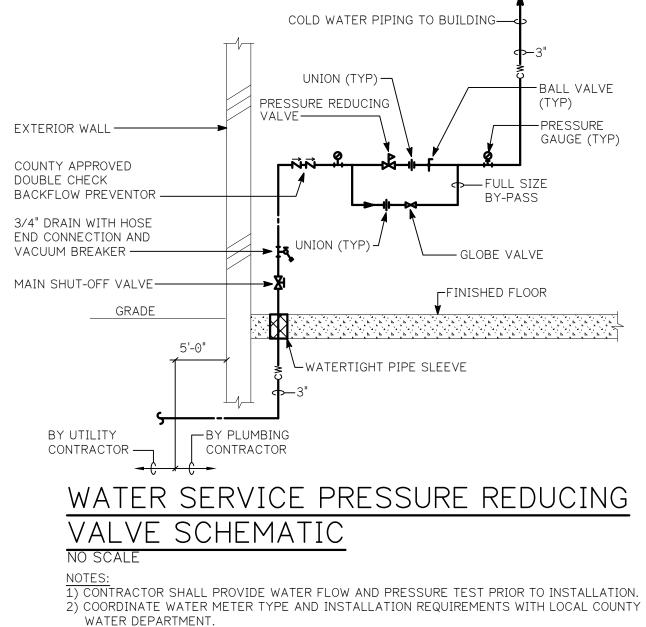


FIRE SERVICE PIPING SCHEMATIC

NOTES: 1) REFER TO FLOOR PLANS FOR PIPE SIZES. FINAL FIRE PROTECTION SYSTEM, PIPE SIZES AND SYSTEM DETAILS TO BE DETERMINED BY FIRE PROTECTION/

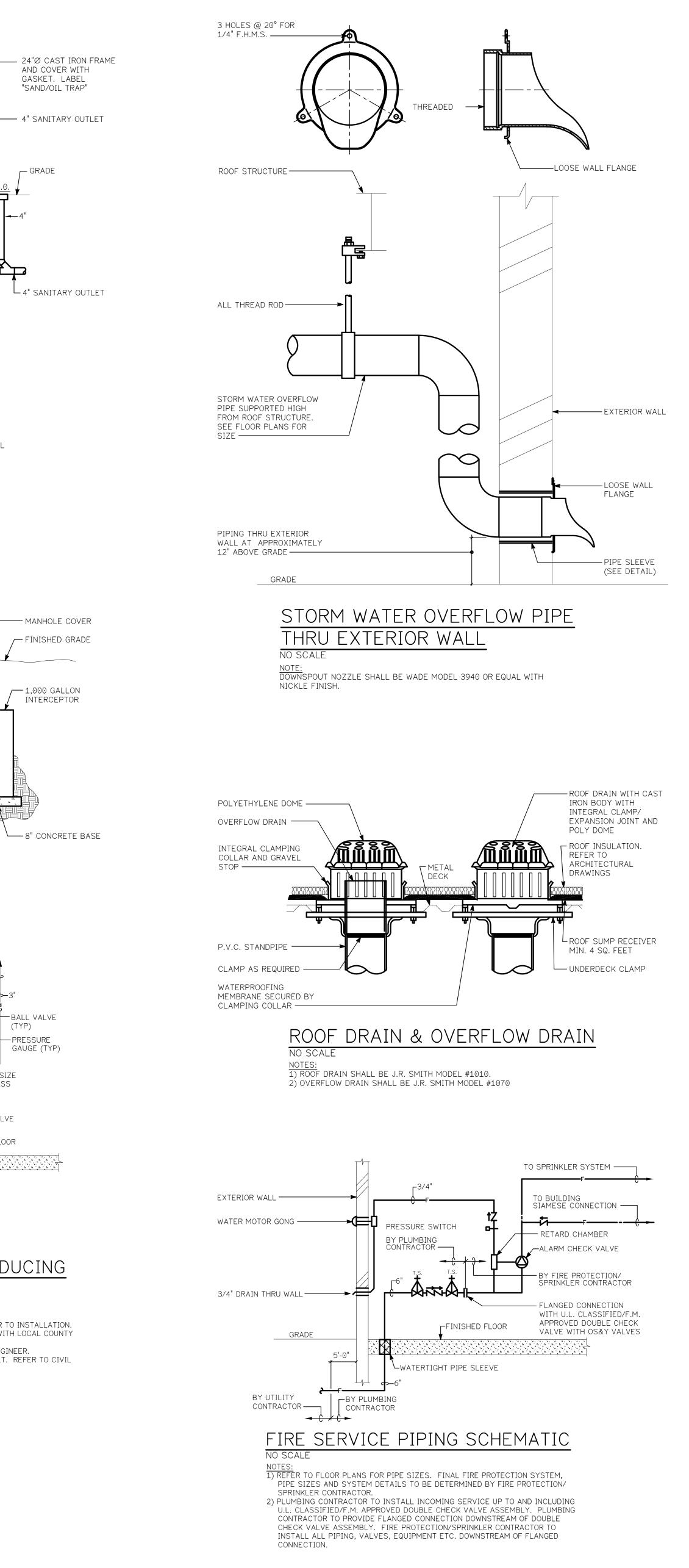
2) PLUMBING CONTRACTOR TO INSTALL INCOMING SERVICE UP TO AND INCLUDING U.L. CLASSIFIED/F.M. APPROVED DOUBLE CHECK VALVE ASSEMBLY. PLUMBING CONTRACTOR TO PROVIDE FLANGED CONNECTION DOWNSTREAM OF DOUBLE CHECK VALVE ASSEMBLY. FIRE PROTECTION/SPRINKLER CONTRACTOR TO INSTALL ALL PIPING, VALVES, EQUIPMENT ETC. DOWNSTREAM OF FLANGED





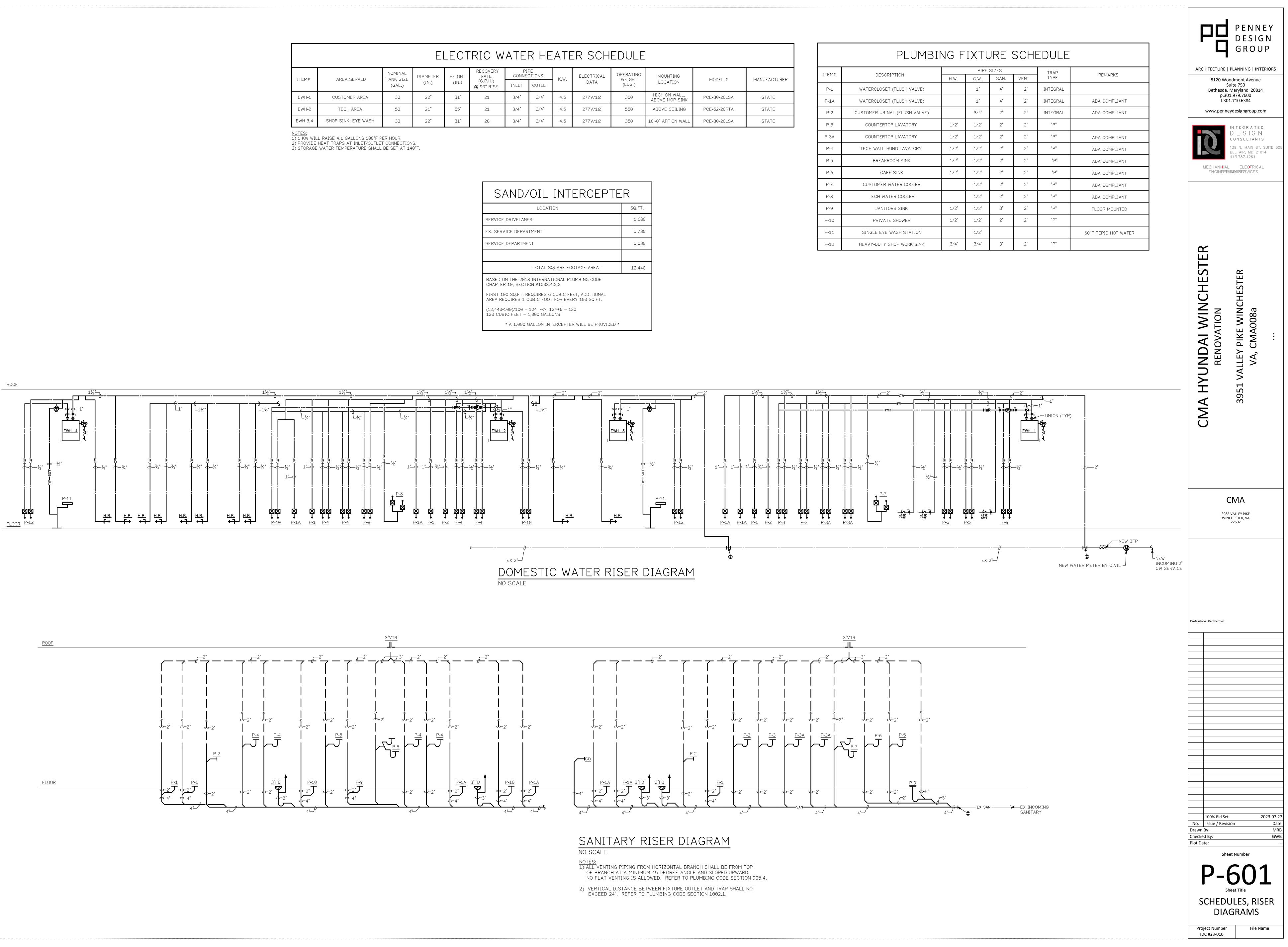
3) PRESSURE SHALL BE REDUCED TO 70 PSI. COORDINATE WITH CIVIL ENGINEER. 4) THE 2" DOMESTIC WATER METER WILL BE LOCATED OUTSIDE IN A VAULT. REFER TO CIVIL

DRAWINGS.



PENNEY DESIGN DESIGN GROUP ARCHITECTURE PLANNING INTERIORS 8120 Woodmont Avenue Suite 750 Bethesda, Maryland 20814 p.301.979.7600 f.301.710.6384 www.penneydesigngroup.com
IN TEGRATED DESIGN CONSULTANTS 139 N. MAIN ST, SUITE 308 BEL AIR, MD 21014 443.787.4264 MECHANICAL ELEOTRICAL ENGINEERUNDBIDER VICES
CMA HYUNDAI WINCHESTER RENOVATION 3951 VALLEY PIKE WINCHESTER VA, CMA008a
CMA 3985 VALLEY PIKE WINCHESTER, VA 22602
Professional Certification:
100% Bid Set 2023.07.27 No. Issue / Revision Date Drawn By: MRB Checked By: GWB Plot Date: - Sheet Number Plot Date: Sheet Number DETAILS Project Number

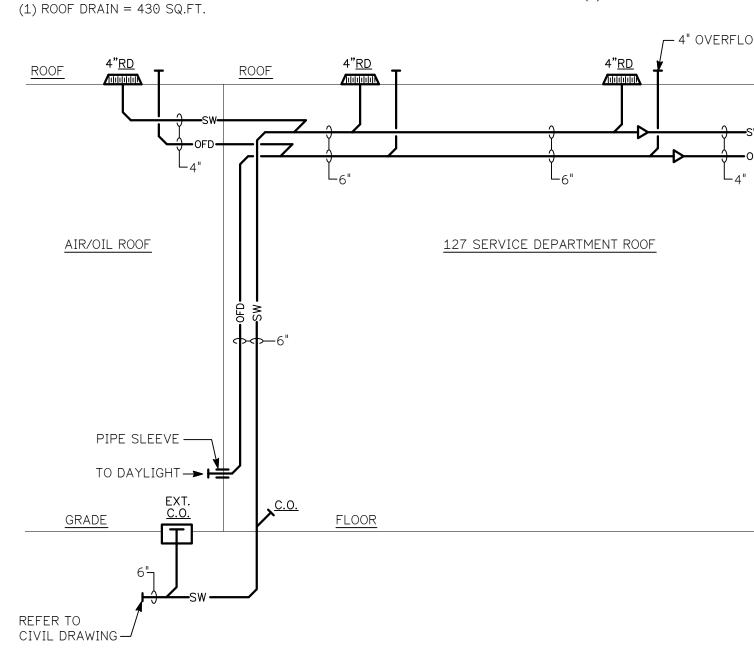
	ELECTRIC WATER HEATER SCHEDULE												
ITEM#	AREA SERVED	NOMINAL TANK SIZE (GAL.)	DIAMETER (IN.)	HEIGHT (IN.)	RECOVERY RATE (G.P.H.) @ 90° RISE	PI CONNE INLET		K.W.	ELECTRICAL DATA	OPERATING WEIGHT (LBS.)	MOUNTING LOCATION	MODEL #	MANUFACTURER
EWH-1	CUSTOMER AREA	30	22"	31"	21	3/4"	3/4"	4.5	277V/1Ø	350	HIGH ON WALL, ABOVE MOP SINK	PCE-30-20LSA	STATE
EWH-2	TECH AREA	50	21"	55"	21	3/4"	3/4"	4.5	277V/1Ø	550	ABOVE CEILING	PCE-52-20RTA	STATE
EWH-3,4	SHOP SINK, EYE WASH	30	22"	31"	20	3/4"	3/4"	4.5	277V/1Ø	350	10'-0" AFF ON WALL	PCE-30-20LSA	STATE
	DTES: 1 KW WILL RAISE 4.1 GALLONS 100°F PER HOUR.												



ELECIRIC	WAIER	HEAIER	SCHEDULE

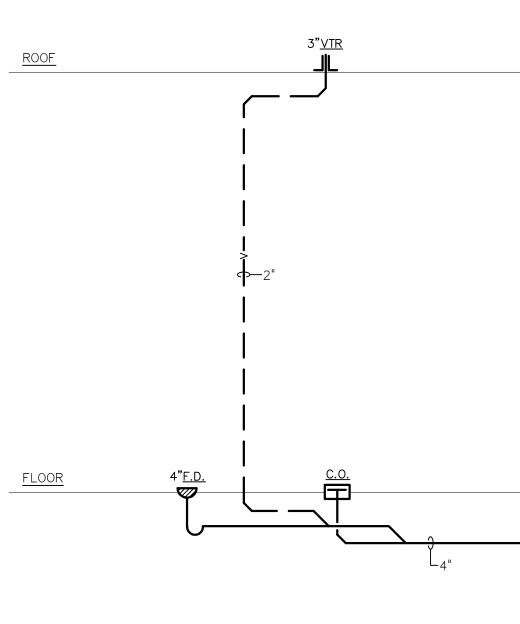
SAND/OIL INTERCEPTER					
LOCATION	SQ.FT.				
SERVICE DRIVELANES	1,680				
EX. SERVICE DEPARTMENT	5,730				
SERVICE DEPARTMENT	5,030				
TOTAL SQUARE FOOTAGE AREA=	12,440				
BASED ON THE 2018 INTERNATIONAL PLUMBING CODE CHAPTER 10, SECTION #1003.4.2.2					
FIRST 100 SQ.FT. REQUIRES 6 CUBIC FEET, ADDITIONAL AREA REQUIRES 1 CUBIC FOOT FOR EVERY 100 SQ.FT.					
(12,440-100)/100 = 124> 124+6 = 130 130 CUBIC FEET = 1,000 GALLONS					
* A <u>1,000</u> GALLON INTERCEPTER WILL BE PROVIDED *					

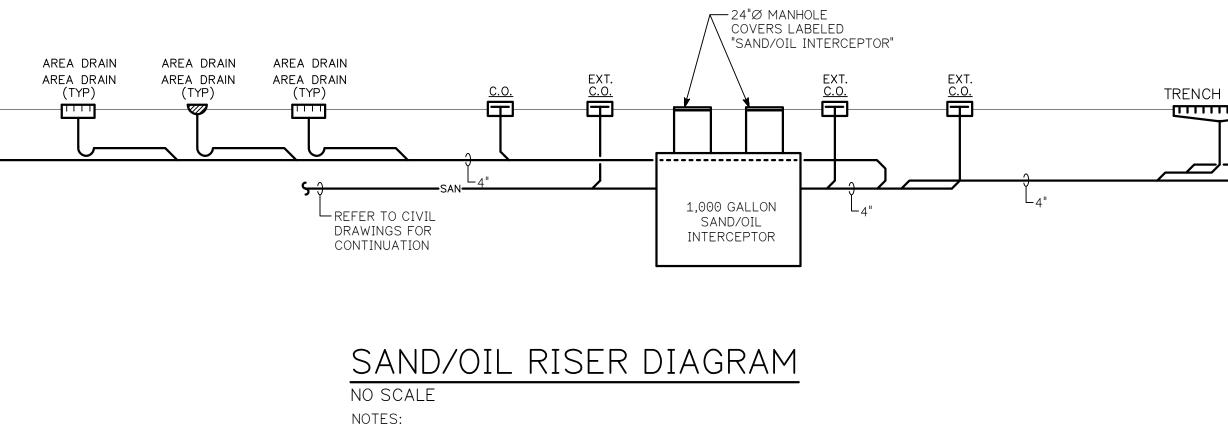
	DECODIDITION		PIPE	SIZES		TRAP	25141240
ITEM#	DESCRIPTION	H.W.	C.W.	SAN.	VENT	TYPE	REMARKS
P-1	WATERCLOSET (FLUSH VALVE)		1"	4"	2"	INTEGRAL	
P-1A	WATERCLOSET (FLUSH VALVE)		1"	4"	2"	INTEGRAL	ADA COMPLIANT
P-2	CUSTOMER URINAL (FLUSH VALVE)		3/4"	2"	2"	INTEGRAL	ADA COMPLIANT
P-3	COUNTERTOP LAVATORY	1/2"	1/2"	2"	2"	"P"	
P-3A	COUNTERTOP LAVATORY	1/2"	1/2"	2"	2"	"P"	ADA COMPLIANT
P-4	TECH WALL HUNG LAVATORY	1/2"	1/2"	2"	2"	"P"	ADA COMPLIANT
P-5	BREAKROOM SINK	1/2"	1/2"	2"	2"	"P"	ADA COMPLIANT
P-6	CAFE SINK	1/2"	1/2"	2"	2"	"P"	ADA COMPLIANT
P-7	CUSTOMER WATER COOLER		1/2"	2"	2"	"P"	ADA COMPLIANT
P-8	TECH WATER COOLER		1/2"	2"	2"	"P"	ADA COMPLIANT
P-9	JANITORS SINK	1/2"	1/2"	3"	2"	"P"	FLOOR MOUNTED
P-10	PRIVATE SHOWER	1/2"	1/2"	2"	2"	"P"	
P-11	SINGLE EYE WASH STATION		1/2"				60°F TEPID HOT WATER
P-12	HEAVY-DUTY SHOP WORK SINK	3/4"	3/4"	3"	2"	"P"	



TOTAL ROOF AREA = 430 SQ.FT. / (1) ROOF DRAIN = 430 SQ.FT.

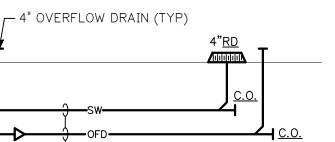
TOTAL ROOF AREA = 5,940 SQ.FT. / (3) ROOF DRAINS = 1,980 SQ.FT. EACH



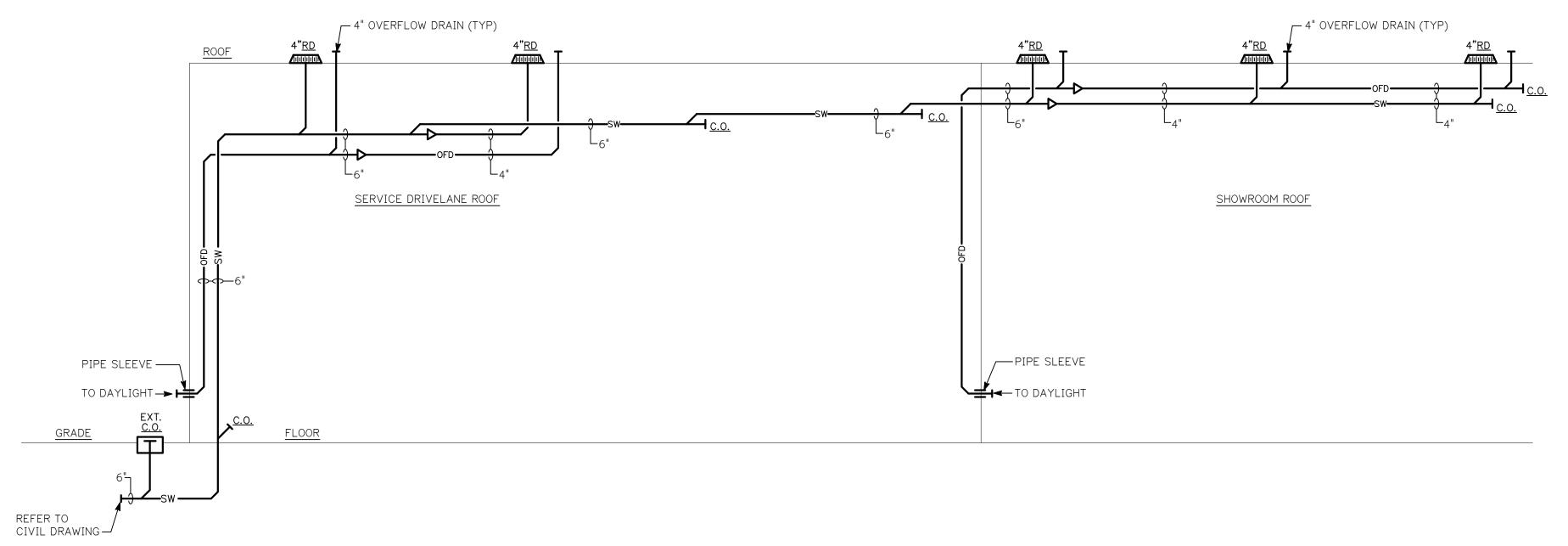


NOTES: 1) ALL VENTING PIPING FROM HORIZONTAL BRANCH SHALL BE FROM TOP OF BRANCH AT A MINIMUM 45 DEGREE ANGLE AND SLOPED UPWARD. NO FLAT VENTING IS ALLOWED. REFER TO PLUMBING CODE SECTION 905.4.

2) VERTICAL DISTANCE BETWEEN FIXTURE OUTLET AND TRAP SHALL NOT EXCEED 24". REFER TO PLUMBING CODE SECTION 1002.1.

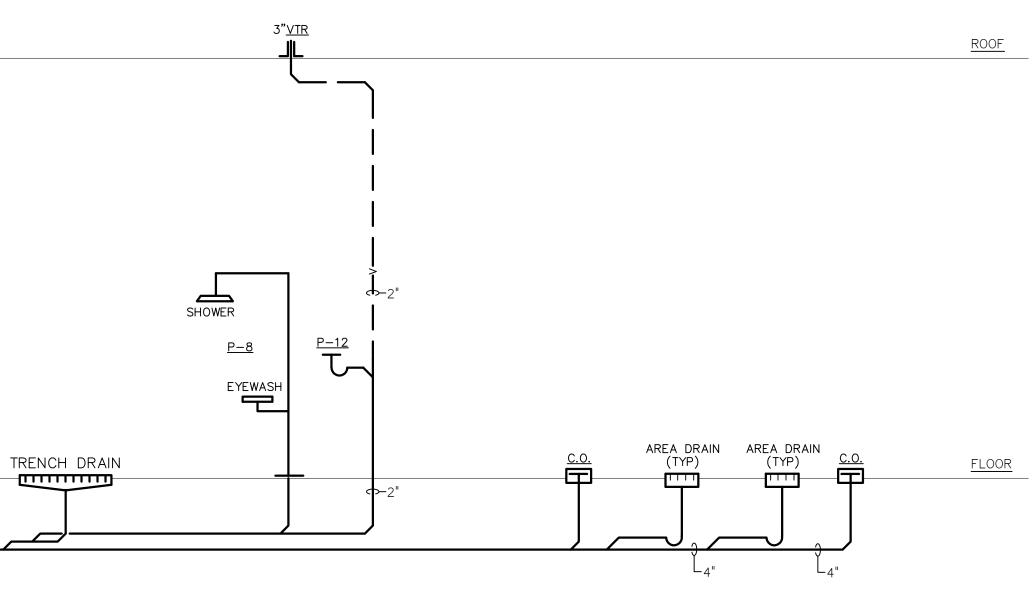


TOTAL ROOF AREA = 2,240 SQ.FT. / (2) ROOF DRAINS = 1,120 SQ.FT. EACH



STORM WATER RISER DIAGRAMS NO SCALE

NOTE: ALL MINIMUM VERTICAL AND HORIZONTAL PIPE SIZES ARE BASED ON THE INTERNATIONAL PLUMBING CODE, FIGURE 1106.1 (2.8" RAINFALL FOR VIRGINIA) AND TABLES 1106.2 AND 1106.3 FOR LEADER SIZING. ALL PIPING SHALL SLOPE AT MINIMUM 1/8" PER FOOT.



TOTAL ROOF AREA = 4,110 SQ.FT. / (3) ROOF DRAINS = 1,370 SQ.FT. EACH

8120 Wo S Bethesda, p.30 f.30	PENNEY DESIGN GROUP PLANNING INTERIORS odmont Avenue uite 750 Maryland 20814 1.979.7600 1.710.6384 eydesigngroup.com
	IN TEGRATED DESIGN CONSULTANTS 139 N. MAIN ST, SUITE 308 BEL AIR, MD 21014 443.787.4264 ELEOTRICAL
CMA HYUNDAI WINCHESTER RENOVATION	3951 VALLEY PIKE WINCHESTER VA, CMA008a
3985	CMA S VALLEY PIKE CHESTER, VA 22602
Professional Certification:	
100% Bid Set No. Issue / Revis Drawn By: Checked By:	2023.07.27 ion Date MRB GWB
P-	et Number 602 neet Title
Project Number IDC #23-010	File Name

1. SECTION 15010 - BASIC PIPING/PLUMBING REQUIREMENTS

- A. The work of each of the following sections includes furnishing and installing the material, equipment and systems complete as specified and/or indicated on the drawings. The installations, when finished, shall be complete and coordinated, ready for satisfactory service.
- B. All work under this contract shall be done in strict accordance with all applicable municipal, state, county, NFPA, International and local codes that govern each particular trade.
- C. The contractor shall make applications and pay all charges for all necessary permits, licenses and inspections as required under the above codes. Upon completion of the work, the customary certifications of approval shall be furnished. The contractor shall also coordinate and make all required submissions to the local utility companies (ie: load letters, water/gas demand forms, etc.).
- D. No materials or equipment shall be used in the work until approved. Before submission of the shop drawings, and not more than thirty (30) days after award of the contract, the contractor shall submit for approval, a complete list of all materials and equipment which he intends to furnish, giving manufacturer and catalog numbers. A complete list of proposed sub-contractors shall also be submitted.
- E. The contractor shall examine all drawings and specifications and shall visit the site and inspect the existing conditions in person. Certain areas may have been in-accessible at the time of the engineers survey and may only be visible during or after the demolition phase; therefore, those systems and coordination of those systems, shall become the responsibility of the contractors. Failure to comply with this requirement shall not relieve the contractors of their responsibilities for complying with the intent of the contract documents.
- F. The contractor shall snake/camera all existing below floor/grade sanitary systems serving the project area, as required, to verify sizes, inverts, direction of slope, etc. and ensure that the new sanitary system can connect to the existing system where indicated on the drawings.
- G. The drawings indicate the general arrangement of the plumbing installations. Details of proposed departures due to actual field conditions or other causes shall be submitted for approval prior to installation. Reworking of completed items due to improper field coordination shall be at the contractor's expense.
- H. Provide sufficient access and clearance for all items of equipment requiring servicing and maintenance, such as valves, drains, vents, filters, traps, etc. and major items of equipment.
- I. The contractor shall perform all necessary cutting and patching as required to complete the installation of the all plumbing work. Patching of walls, floors, ceilings, roof, etc. shall match the adjacent surfaces.
- J. The contractor shall prepare three (3) copies of a record and information booklet. The booklet shall be bound in a three ring loose-leaf binder. Provide the following data in the booklet:
- 1) Catalog data on each piece of equipment furnished 2) Approved shop drawings on each piece of equipment furnished
- 3) Maintenance, operation and lubrication instruction on each piece of equipment furnished 4) Manufacturer's and contractor's guarantees
- 5) Water balancing reports
- 6) Commissioning reports as required 7) Schedule/description of all service work/maintenance inspections required by the paragraphs of this section
- K. The entire new and existing piping/plumbing system shall be tested hydrostatically before insulation covering is applied and proved tight under the following gauge pressures:

Sanitary piping	as specified below
Domestic water piping	
Natural gas piping	mercury gauge
Refrigeration liquid and suction piping	225/400 psig
Fire protection piping	Per NFPA
Storm water piping	

Contractor shall also inspect and verify all existing piping located within the project area which listed to remain, for leaks, defects, etc. and repair as required.

L. All soil, waste and vent piping shall be tested by the contractor. The entire new drainage system and venting system shall have all necessary openings plugged and filled with water to the level of ten (10) feet above the main or branch being tested. The system shall hold this water for thirty (30) minutes without showing a drop greater than four (4) inches.

Note: If any code or authority requires testing which is different than the test listed above, the more stringent test shall be performed.

- M. Upon completion of the plumbing installations, the contractor shall provide a complete set of prints of the contract drawings which shall be legibly marked in red pencil to show all changes and departures of the installation as compared with the original design. They shall be suitable for use in preparation of as-built drawings.
- N. All piping and valve systems shall be identified with labels and tags. Materials shall be as manufactured by Seton name plate corporation.
- 0. All new installations, including all materials and labor shall be guaranteed for a period of one (1) year from date of owner acceptance. The above shall not in any way void or abrogate equipment manufacturer's guarantee or warranty. Certificates of guarantee shall be delivered to the owner.
- P. Contractor shall also provide one (1) year free service to keep the equipment in operating condition. This service shall be provided and rendered upon request when notified of any equipment malfunction.
- Q. In addition to the first year warranty period, the contractor shall provide, at no additional cost to the owner, a minimum of four (4) service calls and maintenance inspections. A complete outline of the required maintenance and the proposed schedule shall be included in a "record and information booklet", for review and acceptance by the owner/representative and engineer. The inspections are to be performed at three (3) month intervals for a total of four (4) service calls and inspections during the first year warranty period plus the original system start-up commissioning. Upon completion of each scheduled inspection, the contractor shall deliver to the building owner or owners representative, within (48) hours of completion, two (2) copies of the completed inspection report for record purposes.
- R. The service contractor shall, at the ninth month, advise the owner of the termination date of the above services. This contractor shall also provide the owner with a detailed proposal, reflecting annual escalation, for the continuation of the services and inspections described above.

PIPING/PLUMBING SPECIFICATIONS

2. SECTION 15050 - BASIC PIPING/PLUMBING MATERIAL & METHODS
A. Provide all labor and materials necessary to furnish and install all piping systems on this project, including interior storm, sanitary, sanitary vent, domestic water, condensate drainage, natural gas and refrigerant piping systems.
B. Piping and valves shall be as follows:
1) Storm and sanitary drains below floor slab/grade:
Piping: Schedule 40 PVC DWV pipe.
Fittings: Solvent weld joints.
2) Storm and sanitary drains and sanitary vents above floor inside building:
* Piping located in return air plenums
Piping: Cast iron no-hub soil pipe
Fittings: Cast iron no-hub soil pipe fittings
Joints: No-hub stainless steel gasketed fittings
* Piping located in open areas (ie: shop, parts) or non-return air plenums
Piping: Schedule 40 PVC DWV pipe.
Fittings: Solvent weld joints.
3) Domestic hot, cold and hot water recirc piping inside building:

- Piping: All water pipings shall be hard copper, type L above ground, type K below ground. Fittings: Lead free solder type wrought copper.
- Gate Valves: 2-1/2" or 3"= 150 psi, union bonnet, rising stem, solid wedge, bronze body, bonnet and stem. Nibco S-134.

Ball Valves: 2" or smaller= 150 psi, two piece body, full port, blowout-proof stem, chrome plated ball, bronze body and stem, reinforced TFE seat ring. Nibco S-585-70.

Unions: 125 psi., wrought copper, ground joint solder ends.

- 4) Water heater T&P relief piping
- Piping: type DWV seamless copper tubing
- Fittings: wrought copper solder drainage fittings
- 5.) Atmospheric condensate drainage piping:
- Piping: type DWV seamless copper tubing
- Fittings: copper solder drainage fittings
- 6) <u>Natural gas piping:</u>
- Piping: schedule 40 black steel
- Fittings: 2" or smaller, threaded. 2-1/2" or larger long radius welding.
- Gate Valves: 1", 1-1/2" or 2"= union bonnet, rising stem, solid wedge, bronze body, bonnet and stem, threaded ends. Nibco #T-174-A. 2-1/2" or larger= 300 psi, iron body, bolted bonnet, OS&Y, solid wedge, bronze mounted. Nibco #F-667-0.
- Ball Valves: 1/2" or 3/4"= forged brass alloy, aluminum tee handle, threaded ends. Nibco GB30 rated at 1/2 psi for indoor appliance connections.
- 7) <u>Refrigerant piping</u>:
- Piping: Type L hard copper refrigerant tube, dehydrated and sealed Fittings: Wrought copper solder type with silfos.
- 8) Fire protection:

specified.

- Piping and fittings as required by N.F.P.A. regulations and as hereinafter
- C. Copper pipe shall be revere, anaconda, or chase types "L" and "K" hard drawn, with approved solder fittings.
- D. Cast iron piping shall be service weight drainage piping and shall conform to the requirements of the C.I.S.P.I.. Each length of pipe and each fitting shall be clearly marked with the manufacturer's initials and pipe classifications.
- E. Steel piping shall be similar and equal to National Tube Company, Republic or Bethlehem black or zinc-coated (galvanized) steel as hereinbefore specified. Pipe shall be free from all defects which may affect the durability of the intended use. Each length of pipe shall be stamped with the manufacturer's name.
- F. All hangers for copper piping shall be copper clad, split ring swivel type, having rods with machine threads and threaded copper clad ceiling flange. Cast iron and steel piping supports shall be similar without copper clad and prime paint finish. Maximum horizontal distance between pipe hangers shall be as follows:
- Cast Iron Piping = 6'Copper Piping = 12'Copper Tubing ($\leq 1-1/4''$) = 6' Copper Tubing (>=1-1/2" = 10' PVC Piping = 4' Steel Piping = 12'
- G. Provide dielectric couplings where non-ferrous metal piping is joined to ferrous metal piping. The gasket material shall be capable of withstanding the temperatures and pressures within the piping system in which installed. Submit dielectric coupling and gasket material for approval.

- 3. SECTION 15250 PIPING INSULATION
- A. All storm water, roof drain sumps, domestic water, chilled water and heating water piping systems shall be insulated with fiberglass insulation. All insulation shall be noncombustible or shall have a flame spread index of not more then 25 and a smoke-developement index of not more then 50 when tested in accordance with ASTM
- B. Pipe insulation shall be premolded fiberglass insulation with an all service jacket, Owens Corning fiberglass SSL-II. Fittings shall be insulated and covered with PVC covers. All domestic hot water piping smaller then 1-1/2" shall have 1" of insulation and all domestic hot water piping between 1-1/2" and 4" shall have 1-1/2" of insulation. All domestic cold water and storm water piping shall have 1" of insulation.
- 4. SECTION 15300 FIRE PROTECTION (Performance Spec Only)
- A. All work, materials, equipment and accessories shall comply with the standards of the National Fire Protection Association and all state and local regulations.
- B. Modify the existing wet pipe sprinkler system to properly cover and protect the new project area. System shall generally be light hazard, except ordinary hazard in all storage rooms, electrical rooms, etc. The fire protection contractor shall determine final classifications of all spaces.
- C. The modifications shall include, but are not limited to valves, flow switches, sprinkler heads and escutcheons, piping, fittings, hangers, signs and other identification markings, as required.
- D. The sprinkler contractor shall carefully examine all documents during the bidding period and familiarize himself with project conditions such as building construction, pipe and ductwork locations and elevations.
- E. Existing sprinkler heads that are removed may not be reused. Provide new sprinkler heads as required to meet the new layout and classification. All new sprinkler heads must match the existing head types. Any sprinkler heads installed in finished ceilings shall be brushed chrome semi recessed type. All heads in open structure or bay areas with no ceiling shall be bronze upright type. Sprinkler coverage required underneath roof overhangs/canopy areas outside of the building envelope may be accomoplished using dry pendent or dry sidewall sprinklers.
- F. The sprinkler contractor shall arrange for approval of the revised sprinkler systems and conduct tests in accordance with NFPA 13.
- G. The sprinkler contractor shall provide a detailed shop drawing showing piping layout, head locations, elevations and coordination with all building structure, electrical and plumbing trades. The contractor shall submit detailed sprinkler shop drawings with actual heads for architect approval prior to any fabrication.
- H. The sprinkler contractor must submit one set of sprinkler shop drawings and hydraulic calculations to the local county fire marshall and/or fire department.
- 4. SECTION 15300 FIRE PROTECTION (Performance Spec Only) (new/shell) A. All work, materials, equipment, and accessories shall comply with the standards of the
- national fire protection association and all state and local regulations. System shall be in accordance with NFPA 13 for sprinkler design, NFPA 13 for general storage protection and NFPA 13 for rack storage.
- B. Under the new building design, the plumbing contractor shall coordinate the incoming combination fire/domestic cold water system and split inside the sprinkler room. The plumbing contractor shall then install the OS&Y valves and a double U.L. double check valve/backflow preventor in the fire protection system. The final rough in from the plumber for the sprinkler contractor shall be a flanged/capped connection in the sprinkler room. The plumber shall also install the required valves, fitting, devices, etc. in the domestic water system such as: main shut-off valve, pressure reducing valve, water meter, backflow preventor, etc.. Refer to the drawings for exact arrangement.
- C. The sprinkler contractor shall extend the wet pipe sprinkler system from stub, to properly cover/protect the new building. System shall generally be light hazard, except ordinary hazard in all service shops, storage rooms, electrical rooms, etc. Final density flow per square foot and classification of all spaces shall be determined by the fire protection contractor.
- D. The installation shall include, but are not limited to valves, flow switches, sprinkler heads and escutcheons, piping, fittings, hangers and signs and other identification markings, as required.
- E. The sprinkler contractor shall carefully examine all documents during the bidding period. He shall familiarize himself with project conditions such as building construction and pipe and ductwork locations and elevations.
- F. Sprinkler heads shall be installed to properly cover and protect the new building. Sprinkler heads shall be installed to protect the entire structure. Any sprinkler heads installed in finished ceilings shall be brushed chrome semi recessed type. All heads in open structure or bay areas with no ceiling shall be bronze upright type.
- Sprinkler coverage required underneath roof overhangs/canopy areas outside of the building envelope may be accomoplished using dry pendent or dry sidewall sprinklers.
- G. The sprinkler contractor shall arrange for approval of the sprinkler systems, and conduct tests in accordance with NFPA 13.
- H. The sprinkler contractor shall provide a detailed shop drawing showing piping layout, head locations, elevations and coordination with all building structure, electrical and plumbing trades. The contractor shall submit detailed sprinkler shop drawings with actual heads for architect approval prior to any fabrication.
- I. The sprinkler contractor must submit one set of sprinkler shop drawings and hydraulic calculations to the local county fire marshall and/or fire department.
- J. The sprinker contractor shall apply for and obtain a county permit for the work. The permit submittals usually include three copies of shop drawings, hydraulic calculations and catalog documentation of sprinklers and other system components.
- K. Sprinkler spacing should be limited to a maximum of 100 ft per head. The construction detail and locations of the smoke draft curtain boards and roof vents should be explicity called out to the sprinkler contractor, as they will affect the placement and coverage of the sprinklers.

5. SECTION 15400 - PLUMBING

A. The work covered by this section of the specifications consists of furnishing all labor, equipment and materials in connection with the rough-in, final setting and connections to all plumbing fixtures. The contractor shall carefully review the conditions at the site and all of the contract drawings to determine the extent of the new and renovation plumbing work required.

B. All plumbing fixtures shall be complete in every detail with all trimmings and connections. All fixtures shall be designed to prevent the backflow of polluted water or waste into the water supply system. Fixtures shall be as listed below or approved equal:

P-1 Flush Valve Water Closet: Toto #CT705EN, floor mounted, bottom outlet, elongated rim bowl, 15" high, 1.28 GPF with vitreous china construction, 1-7/8" trap diameter, 1-1/2" top spud, 12" rough-in, bolt caps, wall support and Toto #534 heavy duty white plastic seat with open front and check hinge. Provide Toto #TET1GA, 1.28 GPF EcoPower self-generating, sensor activated electronic flush valve with manual override button, chrome finish and vacuum breaker.

P-1A Flush Valve Water Closet (handicapped): Toto #CT705ELN, floor mounted, bottom outlet, elongated rim bowl, 17-1/2" high, 1.28 GPF with vitreous china construction, 1-7/8" trap diameter, 1-1/2" top spud, 12" rough-in, bolt caps, wall support and Toto #534 heavy duty white plastic seat with open front and check hinge. Provide Toto #TET1GA, 1.28 GPF EcoPower self-generating, sensor activated electronic flush valve with manual override button, chrome finish and vacuum breaker.

P-2 Customer Urinal (handicapped): Toto #UT104E, 0.5 GPF, vitreous china, wall hung, washout flush action with integral trap with 3/4" top inlet spud and J.R. Smith fig. 0635 urinal support. Provide Toto #TEU1LA hydropower self-generating, sensor activate electronic flush valve with manual override button, chrome finish and vacuum breaker. Mount at handicapped height. Coordinate with local authorities.

P-3A Customer Undermount Lavatory (handicapped): Kohler #K-2882 "Verticyl", vitreous china, overflow, 17-1/4"x13"x6" overall size, grid drain, chrome supplies, stops and escutcheons, chrome tailpiece, offset "P" trap and trap nipple. Provide Toto #TEL105, hydropower, self-generating sensor activate single faucet with max. 10 second cycle and Toto#TES1ADC-05 single spout sensor activated soap dispenser. All exposed waste piping and hot and cold water piping shall be insulated with Truebro Handi Lav-Guard model 103 insulation kit with white finish.

P-4 Tech Wall Hung Lavatory (handicapped): Toto #LT307 with vitreous china construction, faucet ledge, grid drain, tailpiece, cast brass "P" trap, tubing to wall with escutcheon, key operated supply valves with rigid supplies and chair carrier. Provide Sloan #EBF-650, 4" center set lavatory faucet, battery powered, sensor activated, chrome plated with 0.5 gpm spray head. All exposed waste piping and hot and cold water piping shall be insulated with Truebro Handi Lav-Guard model 103 insulation kit with white finish.

P-5 Break Room Sink (handicapped): Elkay #GECR2521 "Celebrity" single compartment sink with 20 gauge, type 304 nickle bearing stainless steel, drop-in, 25"x21-1/4"x5-3/8" overall size and ADA compliant. Provide Delta #9159-DST gooseneck faucet with ADA single lever handle, swing spout and 2-function pull down sprayer. Sink shall be complete with crumb cup strainer, rigid supplies with loose key stops, cast brass clean out, tubing to wall and escutcheons. All exposed waste piping and hot and cold water piping shall be insulated with Truebro Handi Lav-Guard model 102 insulation kit with white finish.

P-6 Undermount Cafe Sink (handicapped): Kohler #K-3391 "Poise" single compartment sink with 16 gauge, stainless steel, 18"x18"x9" overall size. Sink shall be fitted with Kohler #K-7507 "Purist" faucet with ADA single lever handle and swing spout. Sink shall be complete with crumb cup strainer, rigid supplies with loose key stops, cast brass clean out, tubing to wall and escutcheons. All exposed waste piping and hot and cold water piping shall be insulated with Truebro Handi Lav-Guard model 102 insulation kit with white finish.

P-7 Electric Water Cooler (handicapped): Elkay #LRPBGRNM28RAK air cooled, wall-hung, pi-level, barrier-free with 18 gauge, type 300 stainless steel, round bowls and wall cover, front push pad and one-piece bubbler. Unit shall deliver a minimum of 7.5 gph of 50 degree f. drinking water with 90 degree f. water inlet at room temperature. Compressor shall be 260 watts, 120V, using HFC-134A refrigerant.

P-8 Tech Electric Water Cooler w/bottle filler (ADA): Elkay #LZSTL8WSSK, air cooled, wall-hung, bi-level with stainless steel construction, hands-free, visual filter monitor, filtered, laminar flow, antimicrobial, flex-guard safety bubbler and front/side push pads. Unit shall have electronic bottle filler sensor and lead-free design. Unit shall deliver a minimum of 8.0 gph of 50 degree f. drinking water with 90 degree f. water inlet at room temperature. Compressor shall be 260 watts, 120V, using R-134A refrigerant.

P-9 Service Sink: Fiat #MSB2424, 24"x24"x10" overall size, with one-piece molded stone basin and stainless steel drain body, #MSG2424 wall guard and 3" outlet. Provide Fiat #830AA faucet with wall to spout end, 10-1/2" spout, hose end connection, integral vacuum breaker, spout brace, adjustable union couplings and stop shanks.

P-10 Shower Stall Unit (handicapped): Aquatic #1363BFS, 36"x36"x75" ADA compliant stall, one-piece acrylic construction, barrier-free design, chrome plated center outlet drain, acid-resisting white gelcoat finish and complete with grab bar and fold up seat. Shower shall be fitted with Symmons #1-117VT-FS safety mix Visu-Temp shower unit complete with #4-500VT pressure balancing mixing valve, #4-231 shower head, 300 arm head bracket and 4-458 divertor. Shower head flow shall be 2.0 gpm.

P-11 Emergency Eyewash: Bradley #S19-220-ADA, chrome plated brass with twin soft-flow eyewash heads and protective sprayhead covers. Push handle, 10" diameter yellow impact-resistant plastic bowl, stay open ball valve and in-line strainer. Unit shall comply with ANSI Z358.1 with minimum 3 gpm eyewash/face flow.

P-12 Shop Work Sink: American Standard #7695.008, enameled cast iron, 24"x20-1/2"x11-1/4" overall size with 8" faucet centers, hanger, rim guard and 3" outlet. Fixture shall be fitted with #830AA faucet with wall to spout end, 10-1/2" spout, hose end connection, integral vacuum breaker, spout brace, adjustable union couplings and stop shanks.

C. Sanitary vents thru roof shall be flashed with seamless lead flashing assemblies. Flashing shall have a conical steel reinforced boot and shall be complete with a top cast iron counter flashing.

D. Sanitary vents thru roof shall be one-piece PVC/rubber boot assembly with pipe clamp flashed and sealed into existing roofing system.

- E. The Electric Water Heater shall be State or an approved equal. Heater shall be rated at volts and phase as indicated on drawings and be listed by Underwriters' Laboratories. Tank shall be factory fired with glass lining with 150 psi working pressure and equipped with extruded high density magnesium anode at T&P relief valve. Electric heating element shall be medium watt density with zinc plated copper sheath. The controls shall include a thermostat with each element and a high temperature cutoff. The jacket shall provide full size control compartments for performance of service and maintenance thru front panel openings and enclose the tank with insulation. The drain valve shall be located in the front for ease of servicing. Outer jacket shall be baked enamel finish. Heater shall have a three (3) year limited warranty for commercial installation, as outlined in the written warranty. Fully illustrated instruction manual shall be included. Insulation must meet ashrae standard 90a-1980 for energy efficiencies.
- F. The "Tepid" water (for eyewash/shower) Electric Water Heater shall be Hubbell or an approved equal. Packaged heater shall be rated at volts and phase as indicated on drawings, factory fired with 150 psi working pressure and be listed by Underwriters' Laboratories and in accordance with ANSI Z358.1-2009. Packaged system shall consist of integrally mounted factory supplied, calibrated and preformance tested, triple redundant thermostatic pressure balanced mixing valve system. Carbon steel tank shall be lined with 1/2" thick Hydrastone cement and not required any anodic protection. Tank shall be covered with 3" thick polyurethane foam insulation. Outer protective jacket shall be dent resistant composite to resist rust and corrosion. Delevery water temperature shall be set at 85°F. The system shall be supplied complete with all electrical operating controls and safety devices. The drain valve shall be located in the front for ease of servicing. Heater shall have a standard (1) year workmanship and material warranty with a (5) year pressure vessel warranty. Fully illustrated instruction manual shall be included. Refer to drawings for size, capacity and voltage.
- I. Floor drains shall be Watts or approved equal. Drain shall be model FD-100, cast iron with anchor flange, reversible clamping collar, primary/ secondary weepholes and adjustabe round nickle-bronze strainer. Drain to be primed from nearest flush valve or where indicated on drawings.
- J. Service shop area drains shall be Watts or approved equal. Drain shall be 24"x24" model FD-530, steel body, epoxy coated with heavy-duty ductile iron grate and 4" outlet.
- K. Roof drains shall be J. R. Smith Series 1010 cast iron with extension sleeve, flashing clamp device, gravel stop, underdeck clamp, bolts, roof sump receiver and aluminum dome strainer.
- L. Overflow drains shall be J. R. Smith Series 1070 cast iron with flashing clamp device, gravel stop, polyethylene dome, PVC standpipe, underdeck clamp and bolts.
- M. Domestic water service lead free, double check valve assembly shall be Watts series LF007 or approved equal. Valve shall be ASSE1015 listed and AWWA C510 compliant with sizes 1/2"-3". Construction shall be bronze body and cover and a maximum working pressure of 175 psi.
- N. Undersink thermostatic mixing valve shall be Watts USG-B-M1 or approved equal with ASSE1070 listing. Valve shall have bronze body construction with tamper-proof locking cap, internal check valves, strainer and complete with 3/8" compression fittings. Temperature setting range shall be 80-120 degree F with a flow range of 0.5-2.5 gpm.
- 0. Potable water systems shall be disinfected prior to use. The method to be followed shall be that prescribed by the health authority and code requirements.

