

# SECTION 22 07 19 - PLUMBING PIPING INSULATION

MANUFACTURERS 1.1. APPROVED MANUFACTURERS: ARMSTRONG, CERTAINTEED CORPORATION, KNAUF, JOHNS-MANVILLE CORPORATION, OWENS-CORNING FIBERGLASS CORPORATION.

- PRODUCTS 2.1. FIBERGLASS INSULATION : MINIMUM 1" THICK 4 PCF DENSITY, K FACTOR .23 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY APPLIED ASJ JACKET, SELF-SEALING LAP AND BUTT STRIP, FOR TEMPERATURES - 20 DEGREES F TO + 500 DEGREES F. 2.2. FLEXIBLE FOAM ELASTOMER : CLOSED CELL, 1/2" THICK MINIMUM NOMINAL 6 PCF DENSITY, K FACTOR .27 MAXIMUM AT 75 DEGREES F MEAN, 0.17 PERMEANCE, PROVIDE COATING FOR FLEXIBLE CLOSED CELL AS RECOMMENDED BY INSULATION MANUFACTURER. SHALL BE 25/50 RATED FOR FLAME/SMOKE SPREAD.
- 2.3. ALL SERVICE JACKET : LAMINATED: GLASS-FIBER-REINFORCED, FLAME-RETARDANT KRAFT PAPER AND ALUMINUM FOIL. 2.4. VAPOR BARRIER COATING : 20 X 20 WHITE GLASS OR NYLON CLOTH REINFORCING MEMBRANE TO DEVELOP 31-MIL DRY FILM THICKNESS. .05 MAXIMUM PERMEANCE
- 2.5. VINYL ACRYLIC BREATHER MASTIC : 10 X 10 WHITE GLASS OR NYLON CLOTH REINFORCING MEMBRANE TO DEVELOP 51-MIL DRY FILM THICKNESS
- INSTALLATION 3.1. APPLY INSULATION OVER FITTINGS AND SPECIALTIES, WITH CONTINUOUS THERMAL AND VAPOR-RETARDER INTEGRITY, UNLESS OTHERWISE INDICATED. 3.2. APPLY INSULATION AFTER PIPES HAVE BEEN INSPECTED, TESTED, AND RELEASED BY THE OWNER'S REPRESENTATIVE. CLEAN AND DRY PIPE SURFACES PRIOR TO INSULATION INSTALLATION.
- 3.3. INSULATION SHALL BE APPLIED WITH END AND LONGITUDINAL JOINTS STAGGERED WITH ALL JOINTS TIGHTLY BUTTED. 3.4. ALL INSULATION AND FINISH/VAPOR BARRIER SHALL BE CONTINUOUS THROUGH HANGERS, WALL AND ROOF OPENINGS AND SLEEVES. 3.5. ALL INSULATION INSTALLED IN MECHANICAL EQUIPMENT ROOMS SHALL BE FINISHED WITH GLASS CLOTH, CANVAS, OR NYLON CLOTH.
- 3.6. INSULATION IN PIPE TUNNELS, TRENCHES AND MANHOLES SHALL BE WEATHERPROOFED WITH ASPHALT SATURATED AND COATED FELT, DOUBLE COATED. 3.7. INSULATION COLOR/LABELING SHALL MEET BLUE RIDGE STANDARDS. THE SAME STANDARD SHALL BE USED FOR ALL BLUE RIDGE FACILITIES. COLOR/LABELING SHALL BE COORDINATED WITH OWNER. 3.8. PROVIDE PROTECTION OF ALL EXPOSED PIPING UNDER FIXTURES IN ACCORDANCE WITH ANSI AND ADA GUDELINES. WATER SUPPLY AND DRAIN PIPES
- UNDER LAVS AND SINKS SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES AND SINKS.

# PIPE SIZES

1. SEE FIXTURE SCHEDULE, FLOOR PLANS, SYMBOL LEGEND, FOR PIPE SIZING INFORMATION.

2. SEE FLOOR PLANS FOR BUILDING DRAIN AND MAIN WATER SERVICE SIZES; SEE FIXTURE SCHEDULE FOR FIXTURE WATER LINE, DRAIN AND TRAP SIZES. 3. ALL PIPING IS SIZED ACCORDING TO THE CHARACTERISTICS OF THE PREFERRED PIPING MATERIALS. IF ALTERNATE PIPING IS USED THEN THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT THE VELOCITIES ARE MAINTAINED TO THE ORIGINAL DESIGN INTENT. PROVIDE FOR ALLOWANCE FOR EXPANSION FOR HOT WATER CPVC.

PIPE HANGERS AND SUPPORTS

1. PLACE HANGERS WITHIN 12 INCHES OF EACH HORIZONTAL ELBOW. 2. USE HANGERS WITH 1-1/2 INCH MINIMUM VERTICAL ADJUSTMENT. DESIGN HANGERS FOR PIPE MOVEMENT WITHOUT DISENGAGEMENT OF SUPPORTED

PIPE. 3. SUPPORT VERTICAL PIPING AT EVERY FLOOR. SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING.

4. PROVIDE HANGERS ADJACENT TO EQUIPMENT SO THE EQUIPMENT DOES NOT SUPPORT ANY PIPING.

5. SUPPORT CAST IRON DRAINAGE PIPING AT EVERY JOINT.

PIPE MATERIAL ABS (ALL SIZES)	MAXIMUM HANGER SPACING FEET 4	HANGER ROD DIAMETER INCHES 3/8
ALUMINUM (ALL SIZES)	10	1/2
CAST IRON (ALL SIZES)	5	5/8
CAST IRON (ALL SIZES) WITH LENGTH OF PIPE 10 FOOT	10	5/8
CPVC, 1 INCH AND SMALLER	3	1/2
CPVC, 1- 1/4 INCHES AND LARGER	4	1/2
COPPER TUBE, 1 1/4 INCHES AND SMALLER	6	1/2
COPPER TUBE, 1- 1/2 I NCHESAND LARGER	10	1/2
FIBERGLASS	4	1/2
GLASS	8	1/2
POLYBUTYLENE	2.67	3/8
POLYPROPYLENE	4	3/8
PVC (ALL SIZES)	4	3/8
STEEL, 3 INCHES AND SMALLER	12	1/2
STEEL, 4 INCHES AND LARGER	12	5/8

MAINTAIN PROPER SLOPE FOR INTERIOR AND EXTERIOR PIPE

1. SLOPES AND INVERT ELEVATIONS OF EXTERIOR SEWERS, MANHOLES, ETC. SHALL BE ESTABLISHED AND VERIFIED, BY THE PLUMBING CONTRACTOR, BEFORE ANY PIPING IS INSTALLED SO THAT PROPER SLOPES WILL BE MAINTAINED AND NECESSARY INVERT ELEVATIONS OBTAINED.

2. SLOPES AND INVERT ELEVATIONS OF ALL INTERIOR PIPES SHALL BE ESTABLISHED BEFORE ANY PIPING IS INSTALLED. 3. ALL SANITARY SEWER AND STORM DRAINAGE PIPING 4-INCH AND LARGER SHALL BE INSTALLED WITH A SLOPE OF 1/8-INCH PER FOOT UNLESS NOTED OTHERWISE.

4. SANITARY SEWER AND STORM DRAINAGE PIPING LESS THAN 4-INCH SHALL BE INSTALLED WITH A MINIMUM SLOPE OF 1/4-INCH PER FOOT. 5. DOMESTIC HOT AND COLD WATER PIPING SHALL BE SLOPED FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS. ACCESS PANELS SHALL BE PROVIDED AT CONCEALED VALVES, WATER HAMMER ARRESTORS AND OTHER DEVICES.

PIPE LABELING AND PAINTING

1. ALL UTILITIES MUST BE LABELED ACCORDING TO ATRIUM HEALTH WAKE FOREST BAPTIST STANDARDS AND PAINTED AS REQUIRED.

			$\lambda L$				
		PLUMBING SHEET INDEX	Ya				
(	P001	PLUMBING DATA SHEET	Ϊ				
$\geq$	P101	PLUMBING - LEVEL 1 - PRESSURE PLAN	5				
	P102	PLUMBING - LEVEL 2 - PRESSURE PLAN	X				
$\mathbf{\mathbf{b}}$	P103	PLUMBING - LEVEL 3 - PRESSURE PLAN	)				
	P111	PLUMBING - LEVEL 1 - SANITARY PLAN	Γ				
$\land$	P112	PLUMBING - LEVEL 2 - SANITARY PLAN	$\mathbf{i}$				
	P113	PLUMBING - LEVEL 3 - SANITARY PLAN	K				
$\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{$	P114	PLUMBING - ROOF PLAN	)				
	P300	PLUMBING - DETAILS	Γ				
$\bigcap$	P301	PLUMBING - DETAILS					
			$\leq$				
7			. )				
$\succ$		CODES/STANDARDS	K				
(			2				
	NCBC, NCPC - 2018 EDITION						
(	"GUIDELINES FOR DESIGN AND CONSTRUCTION OF HEATHCARE						
$\geq$	FACILITIES" - 20 <sup>-</sup>	18 EDITION AND APPLICABLE NFPA SECTIONS	К				
(			K				
			$ \rangle$				
			1)				
			/				
	$\bigcirc$ $\bigcirc$						

# hr for each 500 cu ft of pipe volume.

outside, and be installed so it prevents the entrance of water and insects. PIPING IN FLOORS

1. Gas piping in solid floors such as concrete shall be laid in channels in the floor and covered to permit access to the piping with a minimum of damage to the building. ABOVEGROUND PIPING OUTSIDE.

1. Gas piping installed aboveground shall be securely supported and located where it will be protected from physical damage. Where passing through an outside wall, the piping shall also be protected against corrosion by coating or wrapping with an inert material approved for such applications. Where piping is encased in a protective pipe sleeve, the annular space between the gas piping and the sleeve shall be sealed at the wall to prevent the entry of water, insects, or rodents.

ITEM	DESCRIPTION	WASTE	VENT	CW	HW	DESC	RIPTION	1				MANUFACTURERS		
P-1	ADA COMPLIANT WATER CLOSET	3"	2"	1"	-	STANE FLUSH	FLOOR MOUNTED VITREOUS CHINA FLUSH VALVE TYPE. BOWL SHALL BE EQUAL TO AMERICAN STANDARD MADERA WITH TOP SPUD. PROVIDE WITH SLOAN 111 DFSM, HARD-WIRED ELECTRONIC, DUAL FLUSH, 1.28 GPF. FLUSH VALVE AND HEAVY DUTY OPEN FRONT SEAT. INSTALL ACCORDING TO ANSI AND ADA GUIDELINES. PROVIDE WITH 12" ROUGH IN.							
P-2	ADA COMPLIANT LAVATORY	2"	1-1/2"	1/2"	1/2"	OVERF CHROI	AMERICAN STANDARD LUCERNE MODEL 0356.421 ADA COMPLIANT, WALL HUNG, VITREOUS CHINA, FRONT OVERFLOW. PROVIDE WITH SLOAN ETF-80-4 BDT COUNTER MOUNTED HARD WIRED FAUCET. PROVIDE CHROME PLATED BRASS P-TRAP AND 1/4 TURN SHUT OFF SUPPLIES. PROVIDE PRO-WRAP TRAP AND SUPPLY KIT FOR ALL EXPOSED SINKS.							
P-3	MOPSINK	3"	2"	3/4"	3/4"	2' A.F.F	FLOOR MOUNTED, MOLDED STONE FIAT MSB2424 WITH FIAT SERVICE FAUCET 830-AA MOUNTED A MIN OF 2' A.F.F. PROVIDE WITH FIAT 1453-BB STRAINER, FIAT HOSE AND BRACKET ASSEMBLY 832-AA, E88AA24 STAINLESS STEEL BUMPER GUARDS AND MSG2424 WALL GUARDS.							
FPWH	FREEZE PROOF WALL HYDRANT	-	-	3/4"	-	WOOD	FREEZEPROOF, AUTOMATIC DRAINING, ANTI-SIPHON, ASSE 1019-B COMPLIANT WALL HYDRANT EQUAL TO WOODFORD MODEL B65. COORDINATE FINISH WITH ARCHITECT. PROVIDE WITH 3/4" TYPE C INLET. COORDINATE FINISH AND WALL THICKNESS WITH ARCHITECT.							
FD-1	FLOOR DRAIN W/ TRAP PRIMER CONNECTION	4"	2"	1/2"	-	INSTAL	LED ACC	ORDING TO I	MANUFACI	URERS RE	R DRAIN, ROUND. FIXTURE SHALL BE COMMENDATIONS. PROVIDE WITH DEEP SEAL SSIBLE CLEANOUT CAP AND 1/2" TRAP PRIMER CONNECTION	JAY R. SMITH, JOSAM, ZURN, WADE		
FCO	FLOOR CLEANOUT	4"	-	-	-	ZURN 2	ZURN ZN1454, ADJUSTABLE DURA-COATED CAST IRON FLOOR CLEANOUT .							
GCO	GRADE CLEANOUT	4"	-	-	-	-	ZURN MODEL ZS1400-BZ1, DURACOATED CAST IRON BODY WITH SMOOTH STAINLESS STEEL ACCESS COVER. TYPE B COVER .							
RD-1	ROOF DRAIN	8"	-	-	-		PROVIDE ZURN Z104 ROOF DRAIN WITH LOW SILHOUETTE DOMES. DURACOATED CAST IRON BODIES WITH COMBINATION MEMBRANE FLASHING CLAMP/GRAVEL GUARDS.							
RD-2	ROOF DRAIN	6"	-	-	-		PROVIDE ZURN Z104 ROOF DRAIN WITH LOW SILHOUETTE DOMES. DURACOATED CAST IRON BODIES WITH COMBINATION MEMBRANE FLASHING CLAMP/GRAVEL GUARDS.							
RD-3	ROOFDRAIN	_2	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				DE ZURI	N Z125 ROOI	F DRAIN V BRAME FL	VITH LOW	SILHOUETTE DOMES. DUBACOATED CAST IRON BODIES	ZURN, WADE		
WCO	WALL CLEANOUT	4"	-	-	-	ZURN	MODEL 2	Z1441 HEAV	Y DUTY, 3	316 SS		ZURN, WADE, JAY R. SMITH, JOSAM		
$\nearrow$		$\bigvee$		$\overline{\ }$		$\checkmark$	$\nearrow$		$\checkmark$	$\checkmark$				
				PUM	P SCH	IEDU	ILE							
MARK	DESCRIPTION		(	CAPACITY (GF	M) HEA	(FEET)	HP	VOLTAGE *	PHASE	AMPS	MANUFACTURER / MODEL			
SP-1	ELEVATOR SUMP PUMP			54		20	0.5	115	1	8.0	STANDCOR SE-50 PUMP			
SP-2	ELEVATOR SUMP PUMP			54		20	0.5	115	1	8.0	STANDCOR SE-50 PUMP			

NATURAL GAS SYSTEMS GAS DISTRIBUTION GENERAL NOTES

- psig.
- 2. A drip shall be provided at any point in the line of pipe where condensate could collect. Drips shall be
- protected from freezing conditions.
- 3. Line pressure regulators shall be marked by a metal tag or other permanent means, designating the
- regulator is such that a ruptured diaphragm will cause a hazard.
- 5. Each aboveground portion of a gas piping system upstream from the equipment shutoff valve shall circuits shall not utilize gas piping or components as conductors.
- 6. Gas equipment shall be installed so that burners and burner ignition devices are located not less than 18 in. above the floor.

- so that their operation will not create a hazard to persons or property.

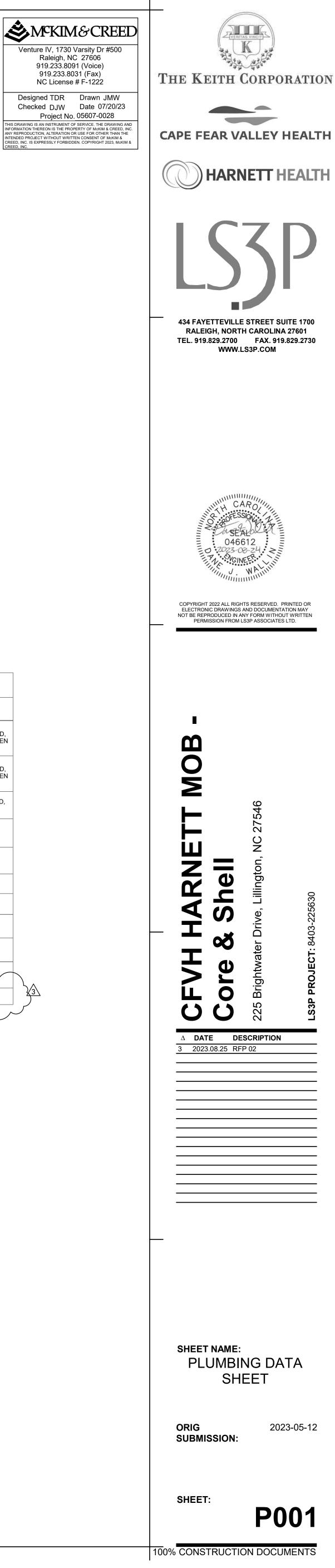
- shall be designed and inspected by individuals specifically qualified in structural restraint methods.

QUALITY ASSURANCE

- 1. Gas pipe or tubing and fittings shall be clear and free from cutting burrs and defects in structure or defective material shall be replaced.

GAS PIPING SPECIAL CONDITIONS

PIPING UNDERGROUND BENEATH BUILDINGS.



1. The maximum design operating pressure for piping systems located inside buildings shall not exceed 5

installed in areas that will be readily accessible for emptying and cleaning. Drips shall be adequately

building or the part of the building being supplied. An independent vent to the outside of the building, in accordance with the regulator manufacturer's instructions, shall be provided where the location of a

4. An accessible gas shutoff valve shall be provided upstream of each gas pressure regulator. Shutoff valves shall be listed and approved for the pressure, service and reliability of operation...

have a continuous electrical bond to a grounding electrode, as defined ANSI/NFPA 70. Electrical

7. All gas equipment shall be located so as to permit access to the equipment with sufficient clearance to permit cleaning, maintenance and replacement of heating surfaces, burners, pilots, controls, and vents. 8. Gas equipment and their vent connectors shall be installed with clearances from combustible material

9. The Contractor shall be responsible for providing sway bracing and restraints to resist the earthquake effects on the system in accordance with state and local codes and ordinances. Refer to the designer Building Code Summary of this project for the Seismic Performance Category and Seismic Design Parameters. Where seismic restraints are necessary then the restraints

# threading, and shall be thoroughly brushed, and chip and scale blown. Defects in pipe or tubing or fittings shall not be repaired. When defective pipe, tubing, or fittings are located in a system, the

All gas piping is to be pressure tested. The test pressure to be used shall be no less than 11/2 times the proposed maximum working pressure, but not less than 3 psig. Test duration shall be not less than 1/2

1. Gas piping should not be installed for extended lengths below the floor of the building. Where the installation of gas piping underground beneath the building is unavoidable, the piping shall be encased in an approved conduit designed to withstand the estimated loads above. Underground piping, where installed below grade through the outer foundation or basement wall of a building, shall be encased in a protective pipe. The space between the gas piping and the sleeve shall be sealed to prevent entry of gas or water. The conduit shall extend into a normally usable and accessible portion of the building and the space between the conduit and the gas piping shall be sealed to prevent the possible entrance of gas leakage where the conduit terminates. The conduit shall extend at least 4 in. outside the building, be vented above grade to the

GAS PIPE INSTALLATION AND MATERIALS METALLIC PIPE

Steel and wrought-iron pipe shall be at least of standard weight (Schedule 40) and shall comply with one of the following standards:

- Standard for Welded and Seamless Wrought-Steel Pipe, ANSI/ASME B36.10; 2. Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless,
- ASTM A 53: or 3. Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service, ASTM A 106.
- Ductile Iron pipe shall comply with one of the following standards: Note: Ductile Iron Pipe shall be not less than 3-in. size, shall not be welded, and shall be used only underground outside building foundation boundaries, or aboveground, provided that joints are properly restrained against movement and separation.
- 1. Standard for Ductile-Iron Pipe, Centrifugally Cast, in Metal Molds or Sand-Lined Molds, for Gas, ANSI A21.52: or
- 2. Specification for Ductile Iron Pressure Pipe, ASTM A 377.

Cast-iron, copper and brass pipe shall not be used. METALLIC TUBING

- Seamless copper, aluminum alloy, or steel tubing may be used with gases not corrosive to such material. 1. Steel tubing shall comply with Standard Specification for Electric Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines, ASTM A 539, or Standard Specification for Copper Brazed Steel Tubing, ASTM A 254.
- 2. Copper tubing shall comply with standard Type K or L of Specification for Seamless Copper Water Tube, ASTM B 88; or Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service, ASTM B 280. 3. Aluminum alloy tubing shall comply with Specification for Aluminum-Alloy Drawn Seamless Tubes, ASTM B 210, or Specification for Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube, ASTM B 241. Aluminum-alloy tubing shall be coated to protect against external corrosion where it is
- in contact with masonry, plaster, or insulation, or is subject to repeated wettings by such liquids as water, detergent, or sewage. Aluminum-alloy tubing shall not be used in exterior locations or underground. 4. Corrugated stainless steel tubing shall be tested and listed in compliance with the construction, installation, and performance requirements of Standard for Fuel Piping Systems Using Corrugated
- PIPE INSTALLATION

Stainless Steel Tubing, ANSI/AGA LC 1.

- 1. Pipe hangers and supports shall conform to the requirements of ANSI/MSS SP-58.
- 2. Spacing of supports in gas piping installations shall not be greater than is indicated in NFPA 54.

PIPE PROTECTION

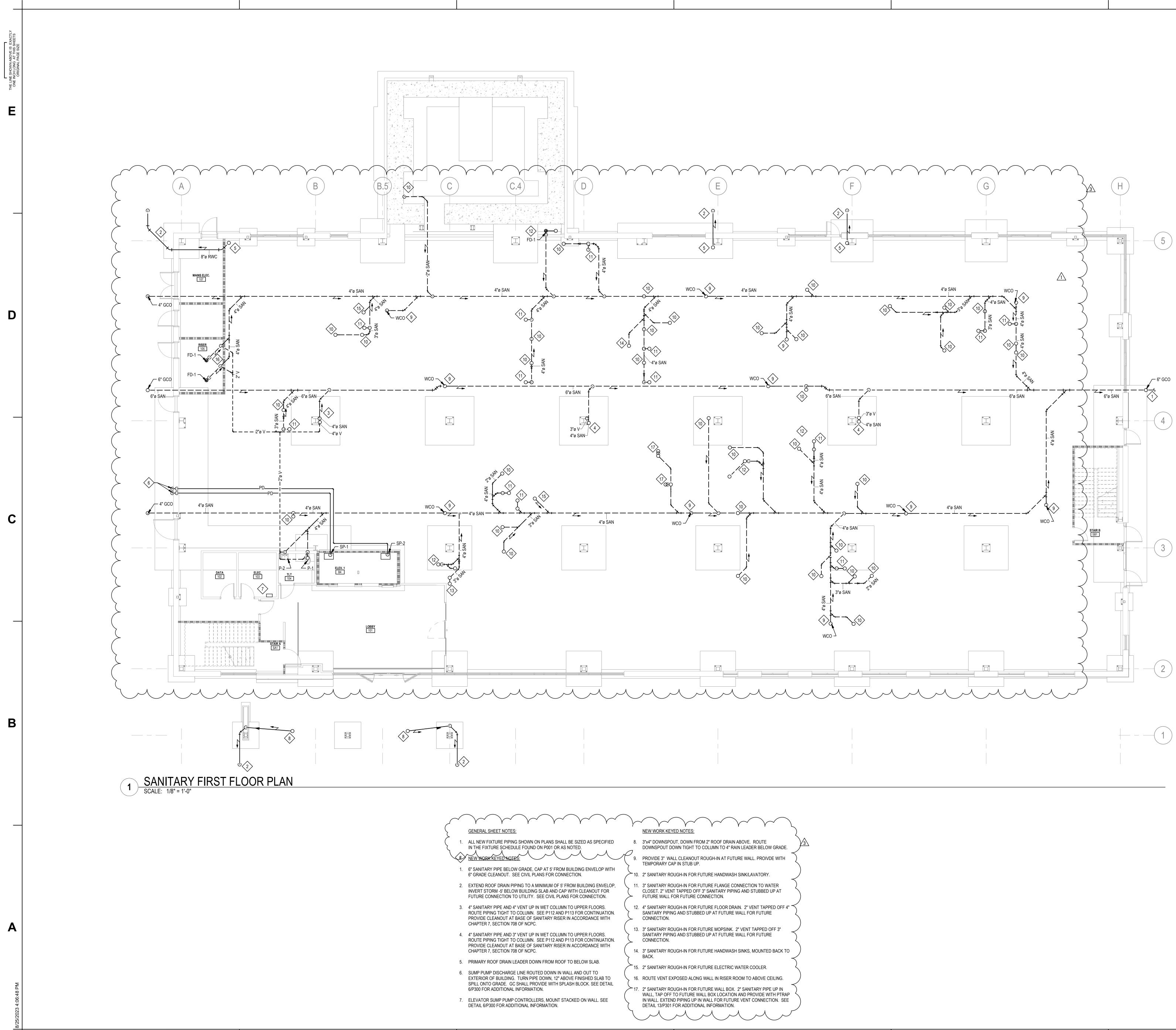
- 1. Piping systems shall have sufficient flexibility to prevent thermal expansion or contraction from causing excessive stresses in the piping material or undesirable forces at points of connections to equipment and at anchorage or guide points. Flexibility shall be provided by the use of bends, loops, offsets, or couplings of the slip type. Where reasonable doubt exists as to the adequate flexibility of the system, formal calculations should be provided to the engineer for review.
- 2. Underground piping systems shall be installed with at least 18 in. of cover. Piping shall be buried or covered in a manner so as to protect the piping from physical damage. Piping shall be protected against corrosion in an approved manner. When dissimilar metals are joined underground, an insulating coupling or fitting shall be used.

PIPE OUTLETS

- 1. The outlet fittings or piping shall be securely fastened in place and shall be located far enough from floors, walls, patios, slabs, and ceilings to permit the use of wrenches without straining, bending, or damaging the piping. Outlets shall not be located behind doors.
- 2. The unthreaded portion of gas piping outlets shall extend not less than 1 in. through finished ceilings or indoor or outdoor walls and the unthreaded portion of gas piping outlets shall extend not less than 2 in. above the surface of floors or outdoor patios or slabs. Exception: Devices shall be installed in accordance with the manufacturers' installation instructions.
- 3. Each outlet shall be closed gastight with a threaded cap immediately after installation and shall be left closed until the gas equipment connection replaces the cap.

NOTICE TO CONTRACTOR All construction must comply with current NO and is subject to field inspection and verifica	C Building Codes	
Reviewed for Code Compliance	Cetter	
09/12/2023	Frank	Harnett county North carolina

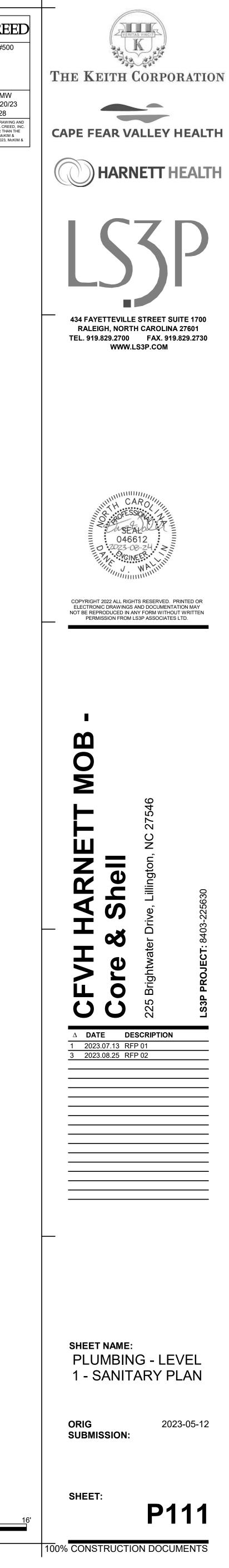
Secondary roof drainage (Scuppers) on original submitted plan. See A-531

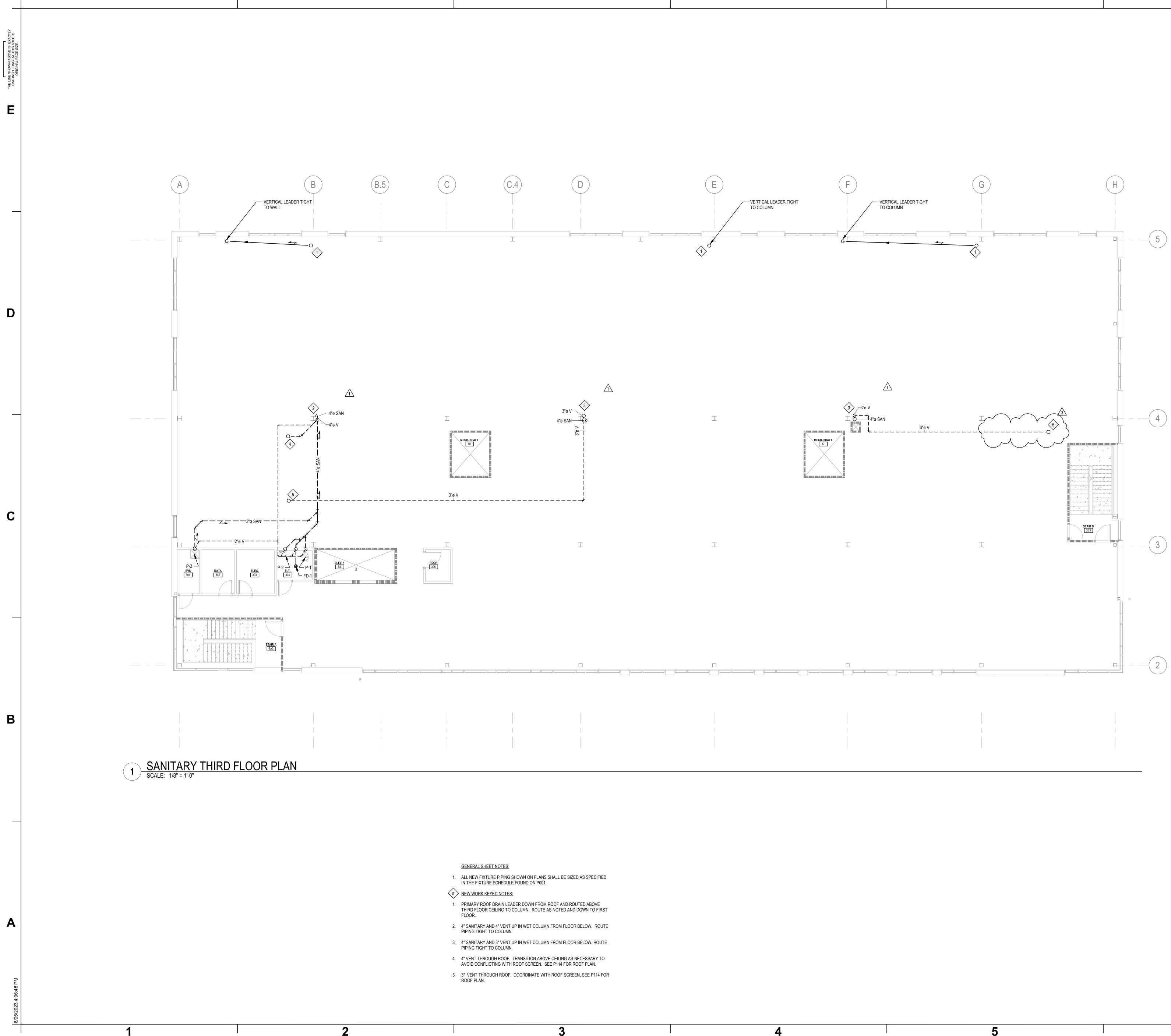




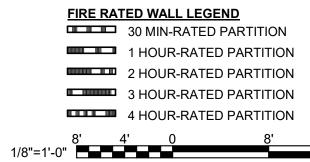
FIRE RATED WALL LEGEND 30 MIN-RATED PARTITION 1 HOUR-RATED PARTITION 2 HOUR-RATED PARTITION 3 HOUR-RATED PARTITION 4 HOUR-RATED PARTITION

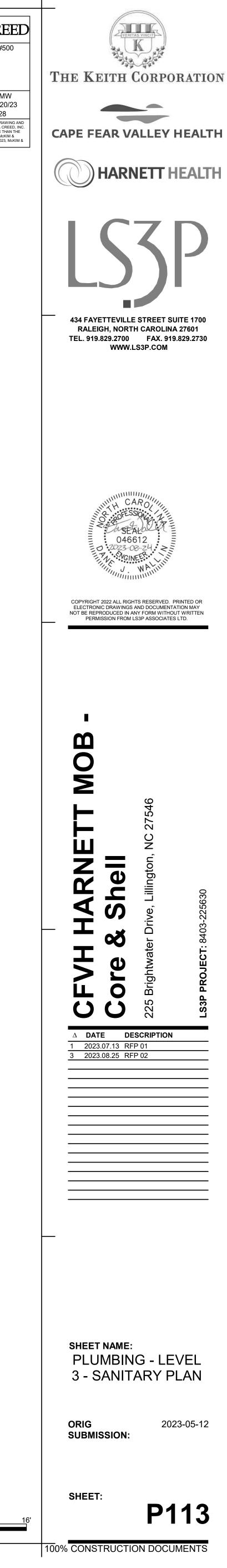
1/8"=1'-0"

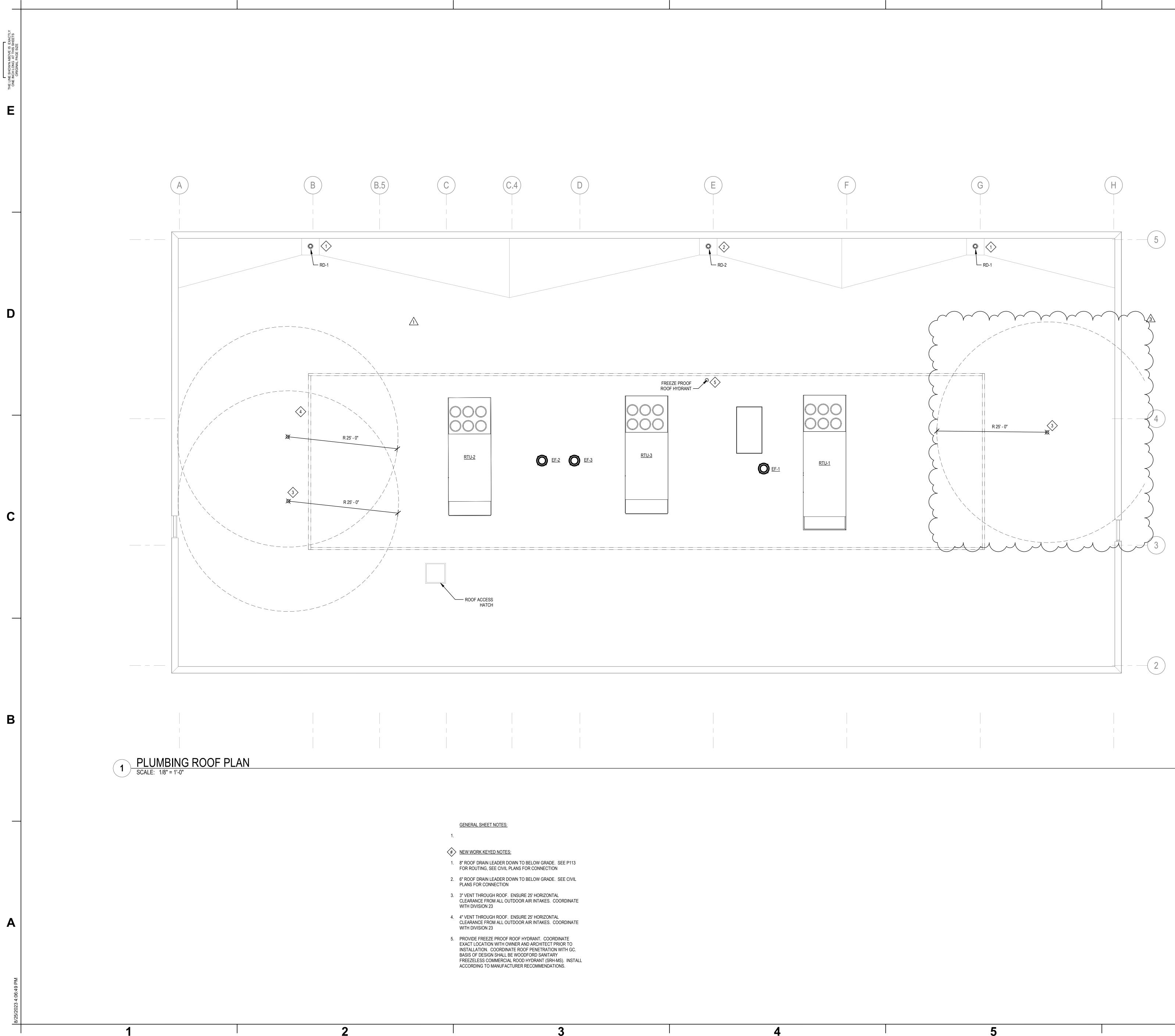












	GENERAL SHEET NOTES:
1.	
#>	NEW WORK KEYED NOTES:
1.	8" ROOF DRAIN LEADER DOWN TO BELOW GRADE. SEE P11 FOR ROUTING, SEE CIVIL PLANS FOR CONNECTION
0	



1/8"=1'-0" <sup>8</sup> 4' 0 8'

