

**PUBLIC HEALTH
RESEARCH CENTER -
INTERIOR
RENOVATIONS**

OSE # H27-1988

TAG	DESCRIPTION	DATE

Project: 11USC396
Drawn By: PAM
Checked By: BAC
Date: 5 MAR 2012
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**PLUMBING
LEGEND,
SYMBOLS AND
GENERAL NOTES**

PLUMBING LEGEND

PIPING SYMBOLS	
SYMBOL	DESCRIPTION
—————	DOMESTIC COLD WATER (POTABLE)
-----	DOMESTIC HOT WATER
-----	DOMESTIC HOT WATER RECIRCULATION
-----	SANITARY ABOVE FLOOR
-----	VENT

EQUIPMENT DESIGNATIONS	
DESIGNATION	DESCRIPTION
IWH-X	INSTANTANEOUS ELECTRIC WATER HEATER DESIGNATION
P-X	PLUMBING FIXTURE DESIGNATION

RISER DIAGRAM COMPONENTS AND SPECIALTIES

SYMBOL	DESCRIPTION
⌋	TRAP ARM
⌋CO	WALL/PIPE CLEANOUT

GENERAL SYMBOLS

PIPING SYMBOLS	
SYMBOL	DESCRIPTION
—○—	PIPE DROP
—○—○	PIPE RISE
— —	PIPE CAP
— —	BRANCH TAKE OFF
—○—	PIPE DROP TEE
—○—	PIPE RISE TEE
— —	SHUTOFF VALVE (REFER TO SPECIFICATIONS FOR TYPE)
—▶—	FLOW ARROW

LINETYPE SYMBOLS

DESIGNATION	DESCRIPTION
—————	EXISTING WORK
—————	NEW WORK

REFERENCE SYMBOLS

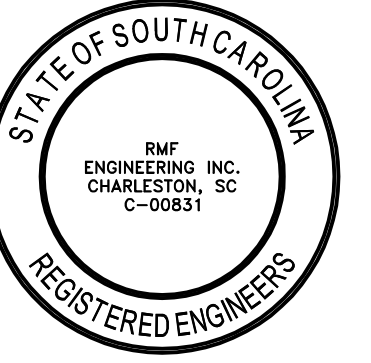
DESIGNATION	DESCRIPTION
↖	NORTH ARROW
⊙	POINT OF CONNECTION TO EXISTING

TEXT SYMBOLS

SYMBOL	DESCRIPTION
&	AND
@	AT
°F	DEGREE(S) FAHRENHEIT
°C	DEGREE(S) CELSIUS
∅	DIAMETER, PHASE
/	DIVIDE BY, PER
\$	DOLLAR
=	EQUALS, EQUAL TO
'	FEET, FOOT
>	GREATER THAN
≥	GREATER THAN OR EQUAL TO
"	INCH(ES)
<	LESS THAN
≤	LESS THAN OR EQUAL TO
-	MINUS
x	MULTIPLY BY, BY
#	NUMBER, POUND
%	PERCENT
+	PLUS
±	PLUS OR MINUS

GENERAL NOTES

- NOTIFY THE OWNER, IN WRITING, AT LEAST SEVEN (7) DAYS IN ADVANCE OF ALL REQUIRED SHUTDOWNS OF WATER, FIRE, SEWER, GAS, ELECTRICAL SERVICE, OR OTHER UTILITIES. UPON WRITTEN RECEIPT OF APPROVAL FROM OWNER, SHUTDOWN SHALL BE PERFORMED BETWEEN THE HOURS OF SIX (6) P.M. AND SIX (6) A.M. OR AS DIRECTED OTHERWISE BY THE OWNER AND SHALL BE ACCOMPLISHED AT NO ADDITIONAL CONTRACT COST. AT THE END OF EACH SHUTDOWN ALL SERVICES SHALL BE RESTORED SO THAT NORMAL USE OF THE UTILITIES CAN CONTINUE.
- WHEN WORKING IN AND AROUND THE EXISTING BUILDING, EXTREME CARE SHALL BE EXERCISED WITH REGARD TO PROTECTION OF THE EXISTING STRUCTURE AND MECHANICAL AND ELECTRICAL SERVICES WHICH WILL REMAIN. REPAIR, REPLACE, OR RESTORE TO THE SATISFACTION OF THE ARCHITECT, ENGINEER AND OWNER ALL EXISTING WORK DAMAGED IN THE PERFORMANCE OF DEMOLITION AND/OR NEW WORK.
- ALL EXISTING PIPING, EQUIPMENT, DUCTWORK, AND MATERIALS NOT REQUIRED FOR RE-USE OR RE-INSTALLATION (SHOWN OR OTHERWISE) SHALL BE REMOVED. ALL EXISTING MATERIALS AND EQUIPMENT WHICH ARE REMOVED AND ARE DESIRED BY THE OWNER, OR ARE INDICATED TO REMAIN THE PROPERTY OF THE OWNER, SHALL BE DELIVERED TO HIM ON THE PREMISES BY THE CONTRACTOR. ALL OTHER MATERIALS AND EQUIPMENT WHICH ARE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY THE CONTRACTOR FROM THE PREMISES.
- EXISTING CONDITIONS, I.E., PRESENCE AND LOCATION OF DUCTWORK, PIPING, EQUIPMENT AND MATERIALS, INDICATED ARE BASED ON INFORMATION OBTAINED FROM AVAILABLE RECORD DRAWINGS AND FIELD SURVEYS AND ARE NOT WARRANTED TO BE COMPLETE OR CORRECT. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL DUCTWORK, PIPING, EQUIPMENT AND MATERIALS IN THE FIELD PRIOR TO STARTING ALL WORK.
- EXISTING DUCT, PIPE, AND EQUIPMENT SIZES NOTED ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND ARE NOT WARRANTED TO BE CORRECT. CONTRACTOR SHALL VERIFY ALL SIZES IN THE FIELD IF THEY EFFECT HIS WORK.
- EXISTING PIPING NO LONGER REQUIRED TO REMAIN IN SERVICE (SHOWN OR OTHERWISE) SHALL BE DISCONNECTED AND REMOVED BACK TO SERVICE MAINS UNLESS OTHERWISE INDICATED OR NOTED ON THE PLANS. REMOVE EXISTING PIPE HANGERS, SUPPORTS, VALVES, ETC.. EXISTING PIPING INDICATED OR REQUIRED TO REMAIN IN SERVICE OR IN PLACE SHALL BE CAPPED, PLUGGED, OR OTHERWISE SEALED. NO EXISTING PIPING SHALL BE LEFT OPEN END.
- EXISTING DUCTWORK INDICATED TO BE DISCONNECTED AND REMOVED SHALL INCLUDE ALL RELATED AIR DEVICES, HANGERS, SUPPORTS, ETC., UNLESS OTHERWISE INDICATED OR NOTED ON THE PLANS. EXISTING DUCTWORK WHERE INDICATED TO BE CAPPED OR REQUIRED TO REMAIN IN SERVICE SHALL BE CAPPED WITH 18 GAUGE SHEET METAL. SECURE CAP WITH SHEET METAL SCREWS AND SEAL PERIMETER OF OPENING AIR TIGHT WITH DUCT SEALER. NO EXISTING DUCTWORK SHALL BE LEFT OPEN FOR ANY EXTENDED PERIOD OF TIME. CAP EXISTING DUCTWORK IMMEDIATELY AS REQUIRED OR DIRECTED BY THE ENGINEER. CONTRACTOR SHALL RETURN ALL AIR DEVICES TO OWNER.
- EXISTING MECHANICAL AND ELECTRICAL EQUIPMENT, PIPING, DUCTWORK, AND MATERIALS AFFECTED BY DEMOLITION OR NEW WORK INSTALLATION AND REQUIRED TO REMAIN IN SERVICE SHALL BE RE-INSTALLED OR SUPPORTED AS REQUIRED IN ACCORDANCE WITH NEW WORK SPECIFICATION. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE ENGINEER AND OWNER AND AT NO ADDITIONAL CONTRACT COST.
- PATCH ALL DISTURBED SURFACES, INCLUDING WALLS, CEILINGS, ROOF, AND FLOOR. PATCHING SHALL MATCH EXISTING ADJACENT SURFACES AS TO THICKNESS, TEXTURE, MATERIALS, AND COLOR. ALL PATCHING SHALL BE PERFORMED TO THE SATISFACTION OF THE ARCHITECT, ENGINEER AND OWNER AND AT NO ADDITIONAL CONTRACT COST.
- IN GENERAL ALL PIPING, EQUIPMENT, DUCTWORK, AND MATERIALS SHOWN "LIGHT" IS EXISTING TO REMAIN. ALL PIPING, CONDUITS, EQUIPMENT, DUCTWORK, AND MATERIALS SHOWN "HEAVY AND DASHED" IS EXISTING TO BE DEMOLISHED.
- ALL WORK SHALL BE PERFORMED IN A SEQUENCE AND DURING HOURS TO MINIMIZE DISRUPTION TO THE BUILDING WHICH WILL REMAIN OCCUPIED DURING CONSTRUCTION.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SOUTH CAROLINA CODES, CITY OF COLUMBIA, AND THE LOCAL FIRE MARSHALL'S REQUIREMENTS.
- THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL OTHER TRADES/ SUBCONTRACTORS INCLUDING BUT NOT LIMITED TO AUTOMATIC TEMPERATURE CONTROLS, ELECTRICAL, AND GENERAL TRADES.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL STAIRWELLS AND EGRESS CORRIDORS DURING CONSTRUCTION.
- CONCRETE CORING OR CUTTING MAY BE REQUIRED IN ORDER TO RUN MECHANICAL, ELECTRICAL, PLUMBING, CABLING OR OTHER SERVICES TO A SPECIFIC AREA. IT IS IMPERATIVE WHEN CONSIDERING EITHER CORING, CUTTING OR CHIPPING THAT REBAR, PLUMBING, ELECTRICAL SERVICES, ETC WITHIN THE CONCRETE SLAB, WALL OR FLOOR BE LOCATED PRIOR TO DISTURBING THE INTEGRITY OF THE EXISTING CONCRETE. OBTAIN STRUCTURAL DRAWINGS OF THE AREA IN QUESTION AND, USING THE BUILDING GRIDLINES, DETERMINE AND MARK THE EXACT LOCATIONS REQUIRED FOR NEW SERVICES.
- ALL PENETRATIONS MUST BE SEALED WITH FIRE STOP MATERIAL AFTER SERVICES ARE RUN THROUGH. ALL PENETRATIONS THROUGH EXTERIOR WALLS ABOVE AND BELOW GRADE OR SLAB ON GRADE MUST BE WATERPROOFED.
- FINAL CEILING HEIGHTS TO BE DETERMINED WITH ARCHITECT IN FIELD AFTER DEMOLITION OF EXISTING CEILINGS. NO FABRICATION OF DUCTWORK, HVAC PIPING OR PLUMBING PIPING SHALL BEGIN UNTIL AFTER THE CONTRACTOR HAS COMPLETED COORDINATION DRAWINGS AND COORDINATED THE CEILING HEIGHTS WITH THE ARCHITECT.
- AUTOMATIC TEMPERATURE CONTROL CONTRACTOR SHALL DESIGNATE AND NUMBER ALL EQUIPMENT IN ACCORDANCE WITH UNIVERSITY OF SOUTH CAROLINA STANDARDS. NO DUPLICATE DESIGNATION NUMBERS SHALL BE PROVIDED. ALL NUMBERS SHALL BE THE NEXT SEQUENTIAL NUMBER FOR THAT SPECIFIC PIECE OF EQUIPMENT.
- THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER PRIOR TO CLOSING ANY CEILINGS FOR A COMPLETE CHECKOUT OF THE HVAC SYSTEM. THE SYSTEM MUST BE COMPLETE AND OPERATIONAL INCLUDING CONTROLS, REGISTERS, INSULATION, AND BALANCING WITH REPORT. THE SYSTEM SHALL BE RUN THROUGH ITS COMPLETE HEATING AND COOLING CYCLES. THE CONTRACTOR AND ALL APPROVED SUBCONTRACTORS SHALL BE PRESENT AT THE ARCHITECT-ENGINEER CHECKOUT. THE TESTING AND BALANCE AGENCY SHALL CERTIFY THAT THESE CONDITIONS ARE MET.



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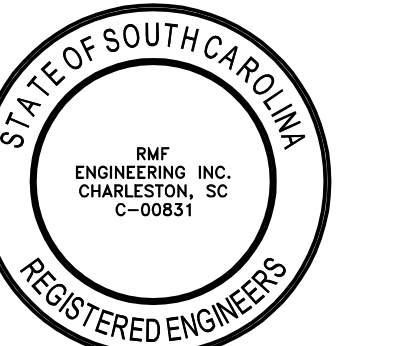
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**PLUMBING
 ABBREVIATIONS**

ABBREVIATIONS

NOTE: THIS IS A STANDARD ABBREVIATION LIST.
 SOME ABBREVIATIONS MAY NOT APPEAR ON THE
 ACCOMPANYING DRAWINGS.

A	COMPRESSED AIR	FOT	FUEL OIL TRANSFER	OED	OPEN ENDED DUCT
AAV	AUTOMATIC AIR VENT	FOV	FUEL OIL VENT	OS&Y	OUTSIDE STEM AND YOKE
ACV	AUTOMATIC CONTROL VALVE	FPM	FEET PER MINUTE		
AD	ACCESS DOOR, AREA DRAIN	FPS	FEET PER SECOND	P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
AF	ANTIFREEZE	FS	FLOW SWITCH	PA	PLANT AIR
AFF	ABOVE FINISHED FLOOR	FT	FOOT, FEET	PC	PUMPED CONDENSATE
AR	ARGON GAS	FWR	FEED WATER RETURN	PCR	PUMPED CONDENSATE RECIRCULATION
ATC	AUTOMATIC TEMPERATURE CONTROL	FWS	FEED WATER SUPPLY	PCHR	PRIMARY CHILLED WATER RETURN
				PCHS	PRIMARY CHILLED WATER SUPPLY
BAS	BUILDING AUTOMATION SYSTEM	G	NATURAL GAS	PCWR	PROCESS COOLING WATER RETURN
BBD	BOILER BLOWDOWN	GHR	GLYCOL HEATING RETURN	PCWS	PROCESS COOLING WATER SUPPLY
BCWR	BEARING COOLING WATER RETURN	GHS	GLYCOL HEATING SUPPLY	PD	PRESSURE DROP, PUMP DISCHARGE
BCWS	BEARING COOLING WATER SUPPLY	GPH	GALLONS PER HOUR	PGR	PROCESS GLYCOL WATER RETURN
BDD	BACKDRAFT DAMPER	GPM	GALLONS PER MINUTE	PGS	PROCESS GLYCOL WATER SUPPLY
BFP	BACKFLOW PREVENTER	GR	AUTOMOTIVE LUBRICATION PIPING	PH	PHASE
BHP	BRAKE HORSEPOWER	H	HIGH	PHR	PRIMARY HEATING RETURN
BMS	BUILDING MANAGEMENT SYSTEM	HB	HOSE BIBB	PHS	PRIMARY HEATING SUPPLY
BO	BLOW OFF	HED	HOSE END DRAIN VALVE	PIV	POST INDICATING VALVE
BTU	BRITISH THERMAL UNIT	HP	HORSEPOWER	PPH	POUNDS PER HOUR
BTUH	BRITISH THERMAL UNIT PER HOUR	HPR	HIGH PRESSURE STEAM RETURN	PRV	PRESSURE REDUCING VALVE, PRESSURE REGULATING VALVE
		HPS	HIGH PRESSURE STEAM SUPPLY	PSI	POUNDS PER SQUARE INCH
°C	DEGREE(S) CELSIUS	HR	HEATING WATER RETURN	PSIG	POUNDS PER SQUARE INCH GAUGE
CA	CONTROL AIR	HRR	HEAT RECOVERY RETURN		
CBD	CONTINUOUS BLOWDOWN	HRS	HEAT RECOVERY SUPPLY	RA	RETURN AIR, RELIEF AIR
CC	CAMPUS CONDENSATE	HS	HEATING WATER SUPPLY	RD	REFRIGERANT DISCHARGE
CCMS	CENTRAL CONTROL AND MONITORING SYSTEM	HT	HEIGHT	RH	RELATIVE HUMIDITY
CD	CONDENSATE DRAIN	HTHR	HIGH TEMPERATURE HEATING WATER RETURN	RHR	REHEAT WATER RETURN
CF	CHEMICAL FEED	HTHS	HIGH TEMPERATURE HEATING WATER SUPPLY	RHS	REHEAT WATER SUPPLY
CFM	CUBIC FEET PER MINUTE	HW	HOT WATER	RL	REFRIGERANT LIQUID
CHR	CHILLED WATER RETURN	HWR	HOT WATER RECIRCULATION	ROR	REVERSE OSMOSIS WATER RETURN
CHS	CHILLED WATER SUPPLY	HZ	HERTZ	ROS	REVERSE OSMOSIS WATER SUPPLY
CO	CLEANOUT	IA	INSTRUMENT AIR	RPM	REVOLUTIONS PER MINUTE
CO2	CARBON DIOXIDE	ICW	INDUSTRIAL COLD WATER	RS	REFRIGERANT SUCTION
CS	CLEAN STEAM	IHW	INDUSTRIAL HOT WATER	RV	RELIEF VENT, REFRIGERANT VENT
CW	COLD WATER, CITY WATER	IHR	INDUSTRIAL HOT WATER RECIRCULATION	RX	REMOVE EXISTING
CWR	CONDENSER WATER RETURN	IN	INCH, INCHES	SA	SUPPLY AIR
CWS	CONDENSER WATER SUPPLY	INV EL	INVERT ELEVATION	SAN	SANITARY, SOIL, WASTE
				SCHR	SECONDARY CHILLED WATER RETURN
D	DEEP, DRAIN WATER	KW	KILOWATTS	SCHS	SECONDARY CHILLED WATER SUPPLY
DB	DECIBEL, DRY BULB	L	LONG, LENGTH	SD	STORM DRAIN, SMOKE DETECTOR
DDC	DIRECT DIGITAL CONTROL	LA	LABORATORY AIR	SF	SQUARE FOOT
DHR	DISTRIBUTION HEATING WATER RETURN	LAT	LEAVING AIR TEMPERATURE	SHR	SECONDARY HEATING WATER RETURN
DHS	DISTRIBUTION HEATING WATER SUPPLY	LBS	POUNDS	SHS	SECONDARY HEATING WATER SUPPLY
DIR	DEIONIZED WATER RETURN	LBS/HR	POUNDS PER HOUR	SL	SOUND LINING
DI	DEIONIZED WATER SUPPLY	LN	LIQUID NITROGEN	SP	STATIC PRESSURE
DL	DOOR LOUVER	LP	LIQUID PROPANE	SPR	SPRINKLER LINE
DN	DOWN	LPG	LIQUID PETROLEUM GAS	SS	STAINLESS STEEL
DSP	DRY SPRINKLER PIPE	LPR	LOW PRESSURE STEAM RETURN	SQ FT	SQUARE FOOT
DTR	DUAL TEMPERATURE RETURN	LPS	LOW PRESSURE STEAM SUPPLY	SW	SOFT WATER
DTS	DUAL TEMPERATURE SUPPLY	LV	LABORATORY VENT, LABORATORY VACUUM		
DW	DISTILLED WATER	LW	LABORATORY WASTE	ΔT	TEMPERATURE DIFFERENCE
		LWT	LEAVING WATER TEMPERATURE	TS	TAMPER SWITCH
EA	EXHAUST AIR	MA	MEDICAL AIR	TSP	TOTAL STATIC PRESSURE
EAT	ENTERING AIR TEMPERATURE	MAV	MANUAL AIR VENT	TWR	TEMPERED WATER RETURN
EJ	EXPANSION JOINT	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR	TWS	TEMPERED WATER SUPPLY
EMS	ENERGY MANAGEMENT SYSTEM	MCC	MOTOR CONTROL CENTER	TW	TREATED WATER
ESP	EXTERNAL STATIC PRESSURE	MO	MOTOR OIL PIPING	TYP	TYPICAL
ETC	ETCETERA	MOD	MOTOR OPERATED DAMPER		
EVAC	GAS EVACUATION	MPR	MEDIUM PRESSURE STEAM RETURN	UCD	UNDERCUT DOOR
EWT	ENTERING WATER TEMPERATURE	MPS	MEDIUM PRESSURE STEAM SUPPLY	UL	UNDERWRITERS LABORATORIES
EX	EXISTING	MV	MEDICAL VACUUM		
		N	NITROGEN	V	VACUUM, VOLTS
°F	DEGREE(S) FAHRENHEIT	NA	NOT APPLICABLE	VD	VOLUME DAMPER
F	FIRE LINE	NC	NOISE CRITERIA, NORMALLY CLOSED	VFD	VARIABLE FREQUENCY DRIVE
FC	FLEXIBLE CONNECTION	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	VPD	VACUUM PUMP DISCHARGE
FD	FIRE DAMPER, FOUNDATION DRAIN	NO	NORMALLY OPEN, NITROUS OXIDE	VSD	VARIABLE SPEED DRIVE
FDV	FIRE DEPARTMENT VALVE	NPSH	NET POSITIVE SUCTION HEAD	VTR	VENT THROUGH ROOF
FF	FINISHED FLOOR				
FFE	FINISHED FLOOR ELEVATION				
FIN/FT	FINS PER FEET				
FIN/INCH	FINS PER INCH				
FM	FLOWMETER				
FMF	FLOWMETER FITTING				
FOF	FUEL OIL FILL				
FOO	FUEL OIL OVERFLOW				
FOR	FUEL OIL RETURN				
FOS	FUEL OIL SUPPLY				



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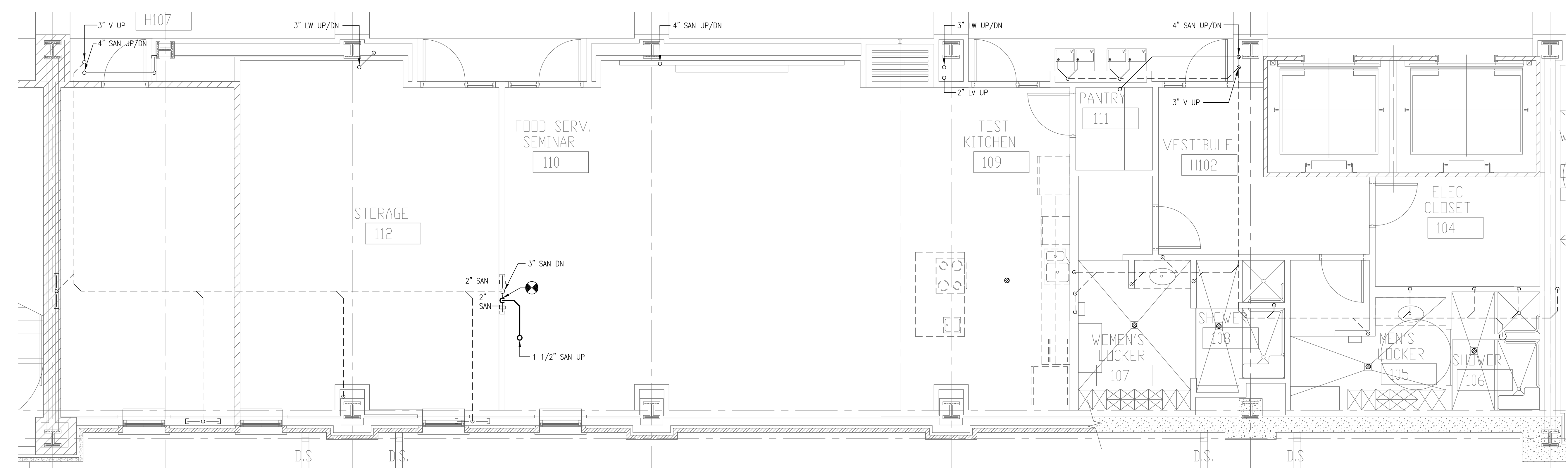
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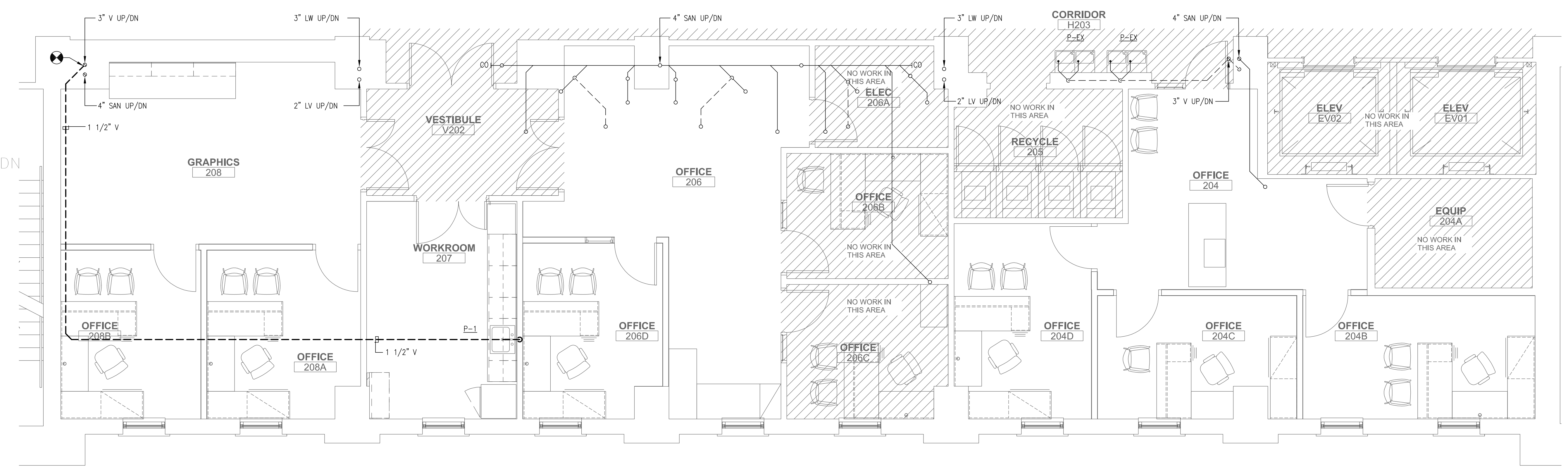
**FIRST AND
SECOND FLOOR
SANITARY AND
VENT PIPING PLAN**

GENERAL NOTES:

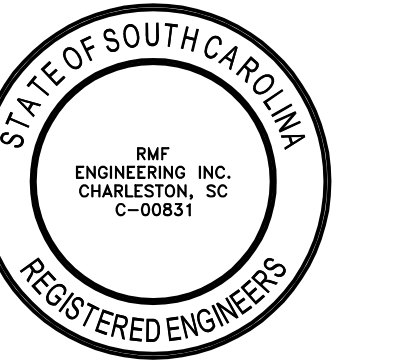
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- REFER TO RISER DIAGRAM FOR PIPE SIZES AND VALVE LOCATIONS.



FIRST FLOOR — SANITARY AND VENT PIPING
SCALE: 1/4"=1'-0"



SECOND FLOOR — SANITARY AND VENT PIPING
SCALE: 1/4"=1'-0"



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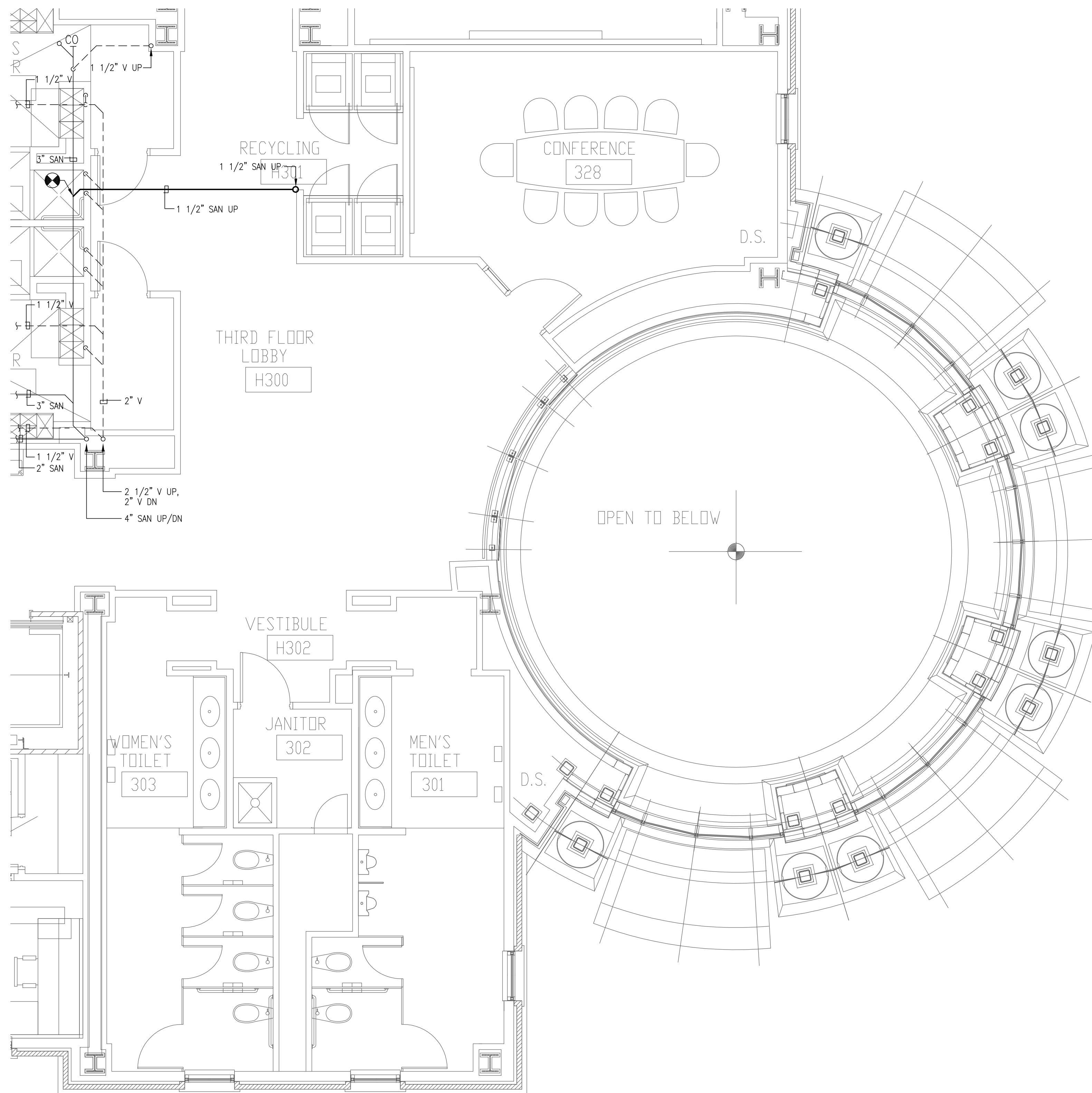
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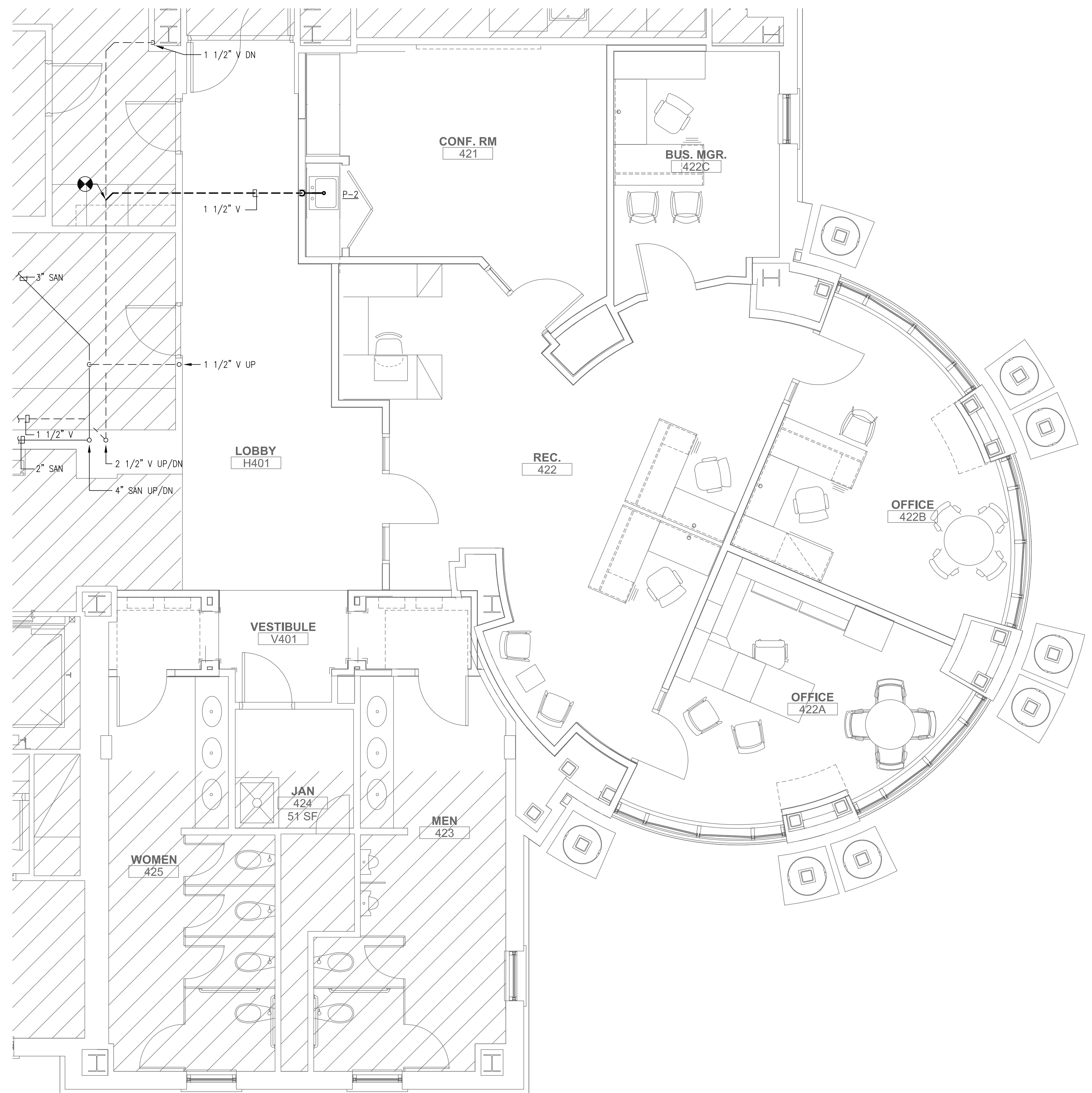
**THIRD AND
 FOURTH FLOOR
 SANITARY AND
 VENT PIPING PLAN**

GENERAL NOTES:

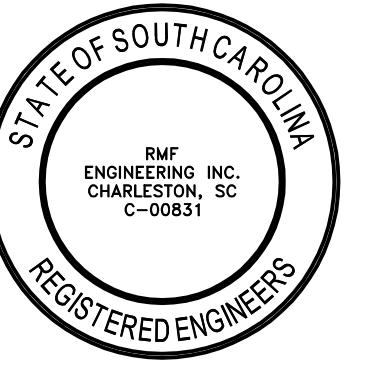
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2. REFER TO RISER DIAGRAM FOR PIPE SIZES AND VALVE LOCATIONS.



THIRD FLOOR — SANITARY AND VENT PIPING
 SCALE: 1/4"=1'-0"



FOURTH FLOOR — SANITARY AND VENT PIPING
 SCALE: 1/4"=1'-0"



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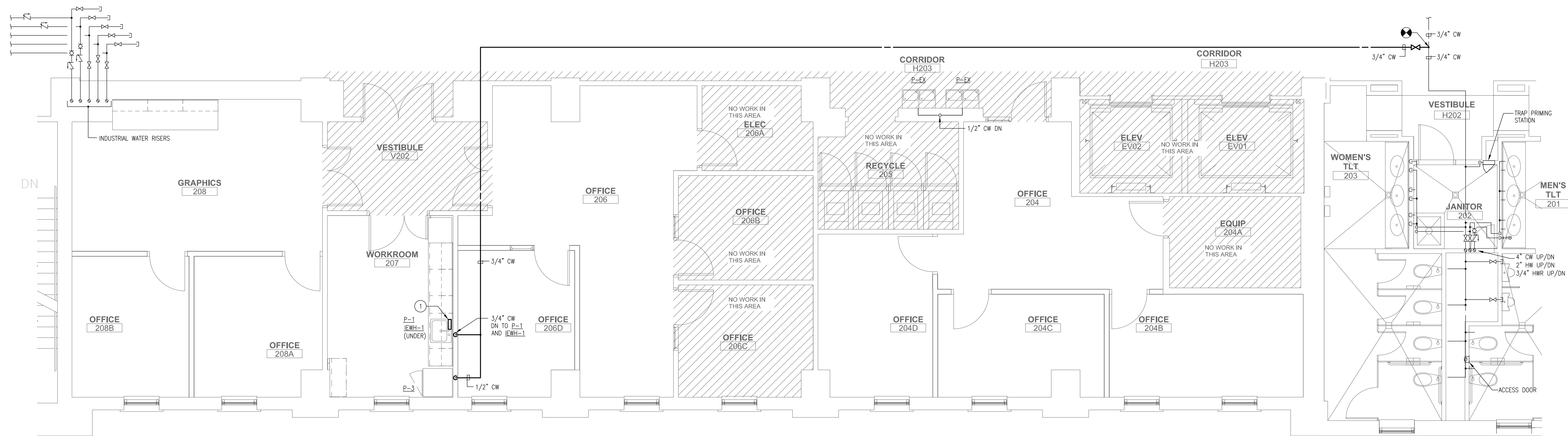
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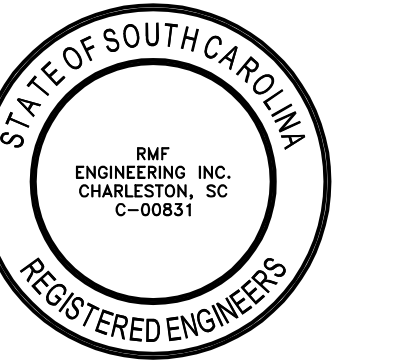
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**SECOND FLOOR
 DOMESTIC WATER
 PIPING PLAN**

- GENERAL NOTES:**
 1. REFER TO RISER DIAGRAM FOR PIPE SIZES AND VALVE LOCATIONS.
- DRAWING NOTES:**
 ① INSTANTANEOUS ELECTRIC WATER HEATER IEWH-1 LOCATED BELOW SINK, INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.



SECOND FLOOR – DOMESTIC WATER PIPING PLAN
 SCALE: 1/4"=1'-0"



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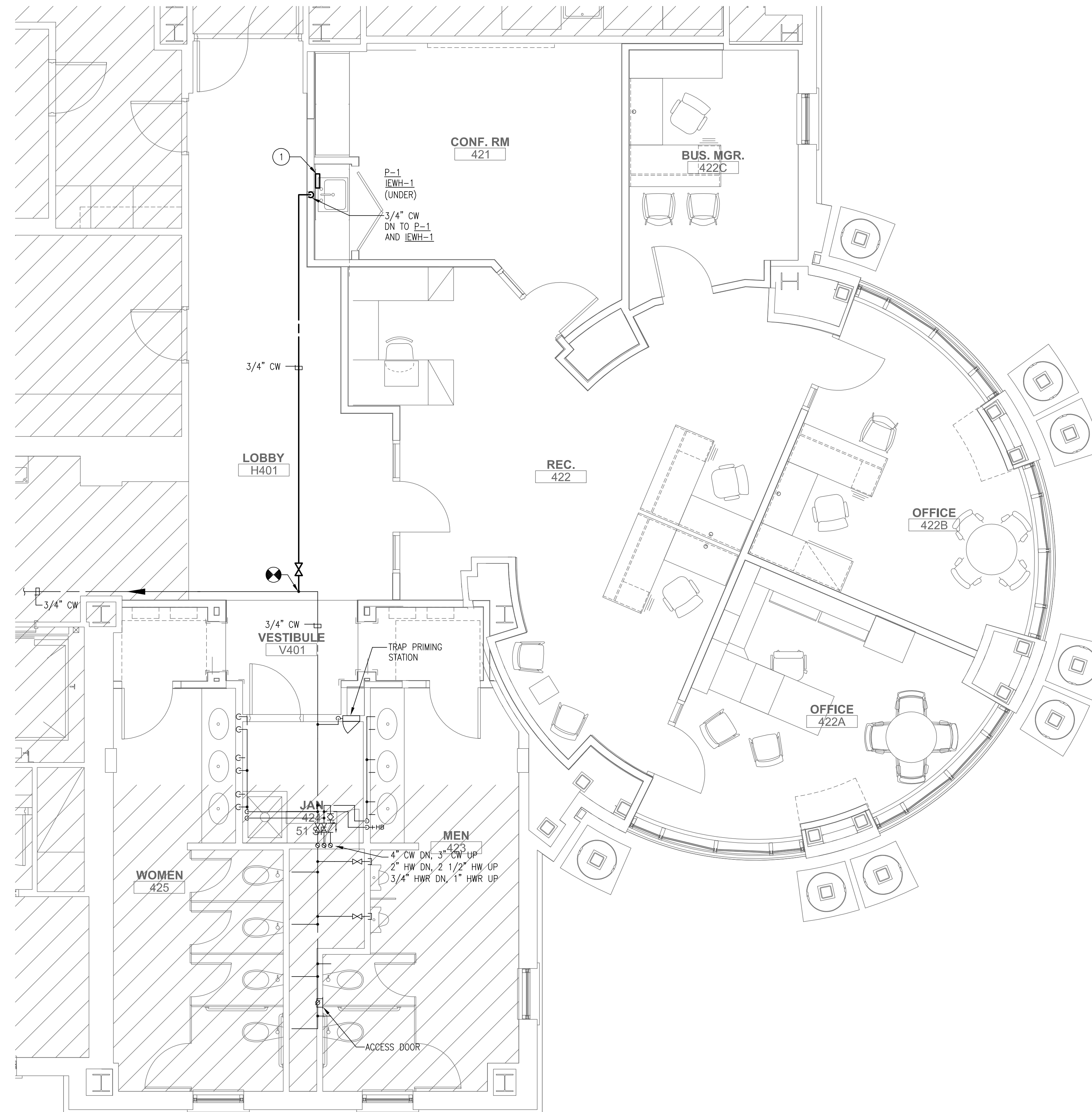
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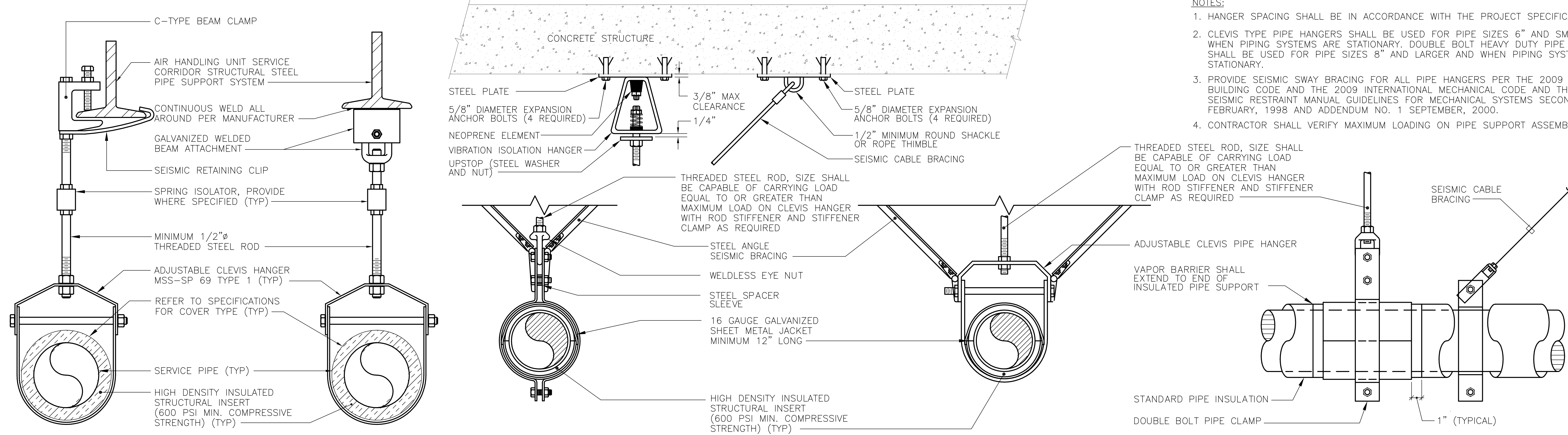
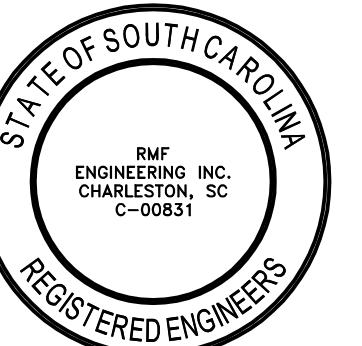
**FOURTH FLOOR
 DOMESTIC WATER
 PIPING PLAN**

GENERAL NOTES:
 1. REFER TO RISER DIAGRAM FOR PIPE SIZES AND VALVE LOCATIONS.

DRAWING NOTES:
 ① INSTANTANEOUS ELECTRIC WATER HEATER IEWH-1 LOCATED BELOW SINK. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.



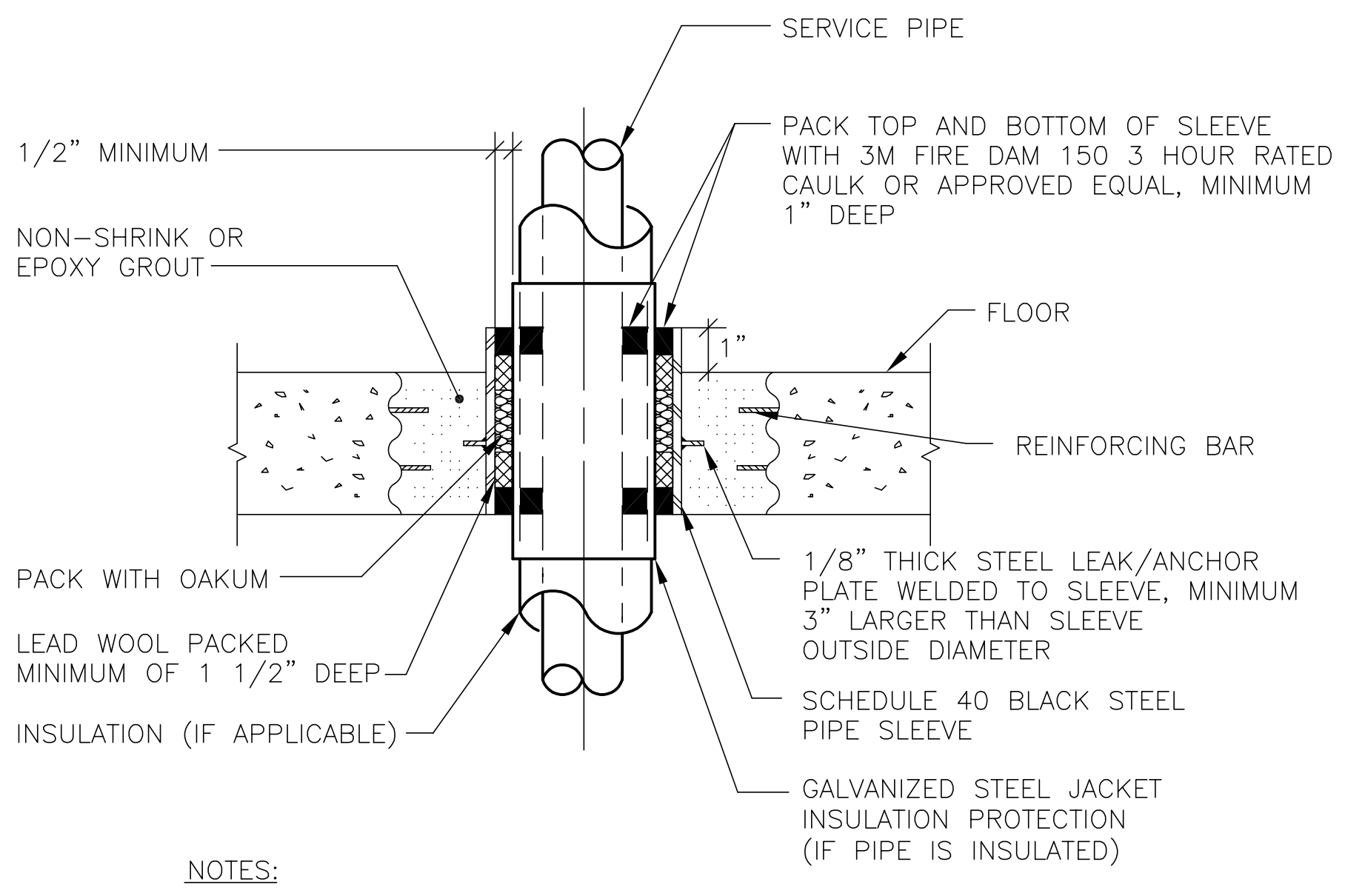
FOURTH FLOOR — DOMESTIC WATER PIPING
 SCALE: 1/4"=1'-0"



- NOTES:
- HANGER SPACING SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - CLEVIS TYPE PIPE HANGERS SHALL BE USED FOR PIPE SIZES 6" AND SMALLER AND WHEN PIPING SYSTEMS ARE STATIONARY. DOUBLE BOLT HEAVY DUTY PIPE CLAMP SHALL BE USED FOR PIPE SIZES 8" AND LARGER AND WHEN PIPING SYSTEMS ARE STATIONARY.
 - PROVIDE SEISMIC SWAY BRACING FOR ALL PIPE HANGERS PER THE 2009 INTERNATIONAL BUILDING CODE AND THE 2009 INTERNATIONAL MECHANICAL CODE AND THE SMACNA SEISMIC RESTRAINT MANUAL GUIDELINES FOR MECHANICAL SYSTEMS SECOND EDITION - FEBRUARY, 1998 AND ADDENDUM NO. 1 SEPTEMBER, 2000.
 - CONTRACTOR SHALL VERIFY MAXIMUM LOADING ON PIPE SUPPORT ASSEMBLIES.

DETAIL - PIPE HANGER

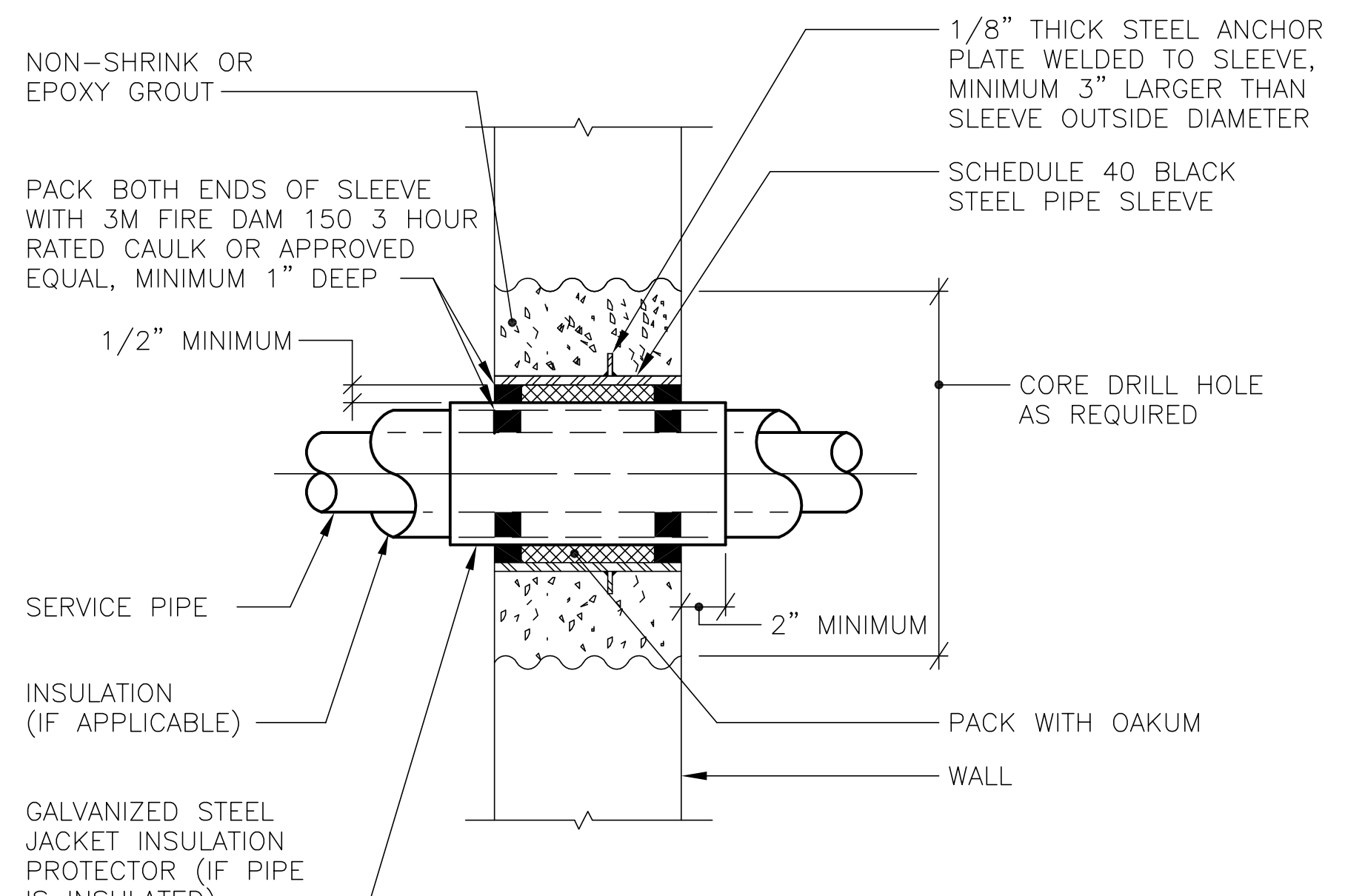
SCALE: NONE 1



- NOTES:
- PIPE SHALL BE SUPPORTED BY RISER CLAMPS OR ABOVE AND BELOW WITH PIPE HANGERS.

DETAIL - PIPE FLOOR PENETRATIONS

SCALE: NONE 2



- NOTES:
- FOR USE WITH DOMESTIC WATER SERVICE ALSO.

DETAIL - INTERIOR PIPE SLEEVE THROUGH WALL

SCALE: NONE 3

X

SCALE: NONE X



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PLUMBING
DETAILS

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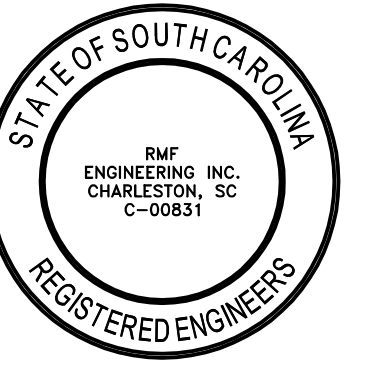
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SCALE: NONE X



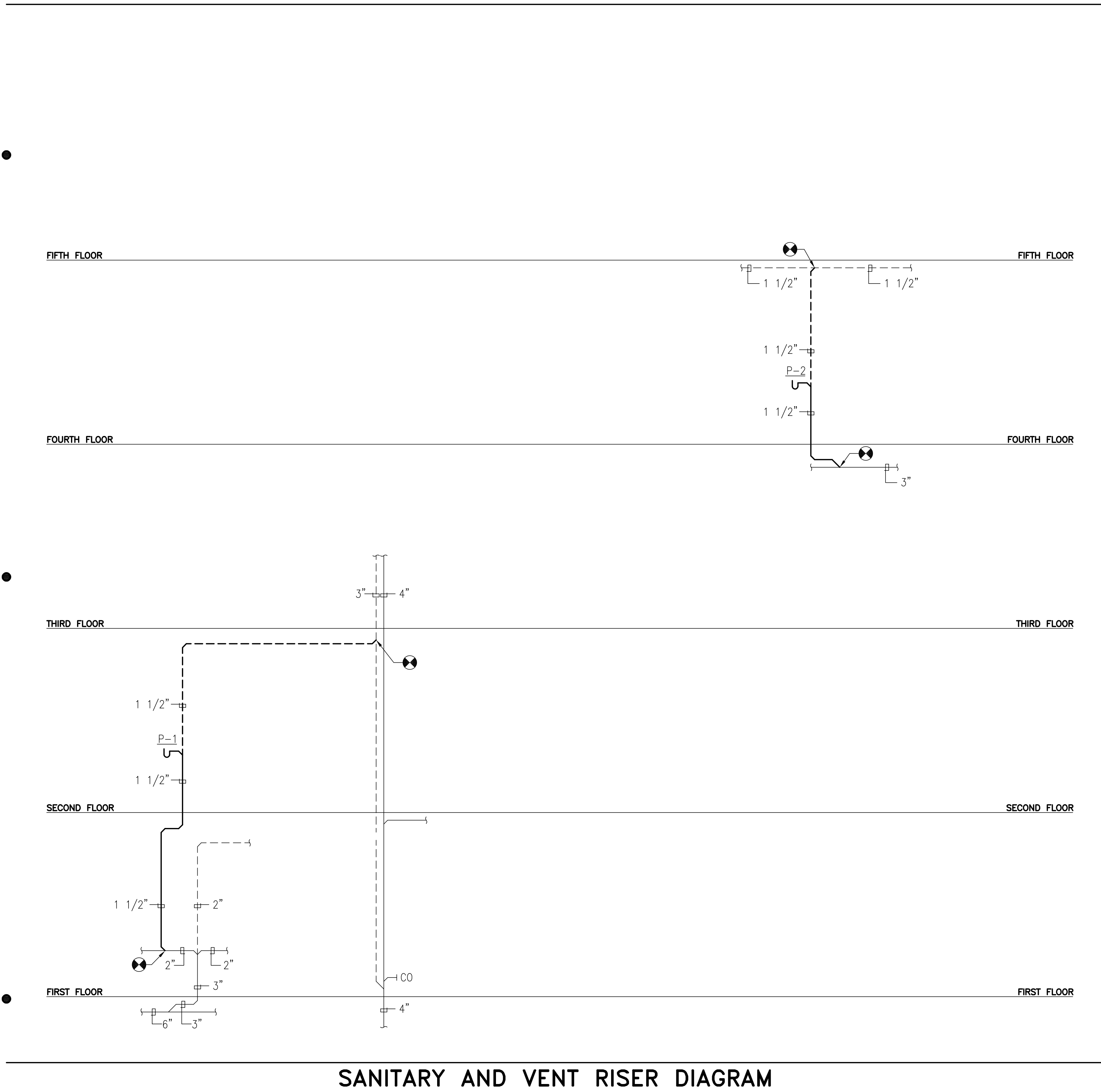
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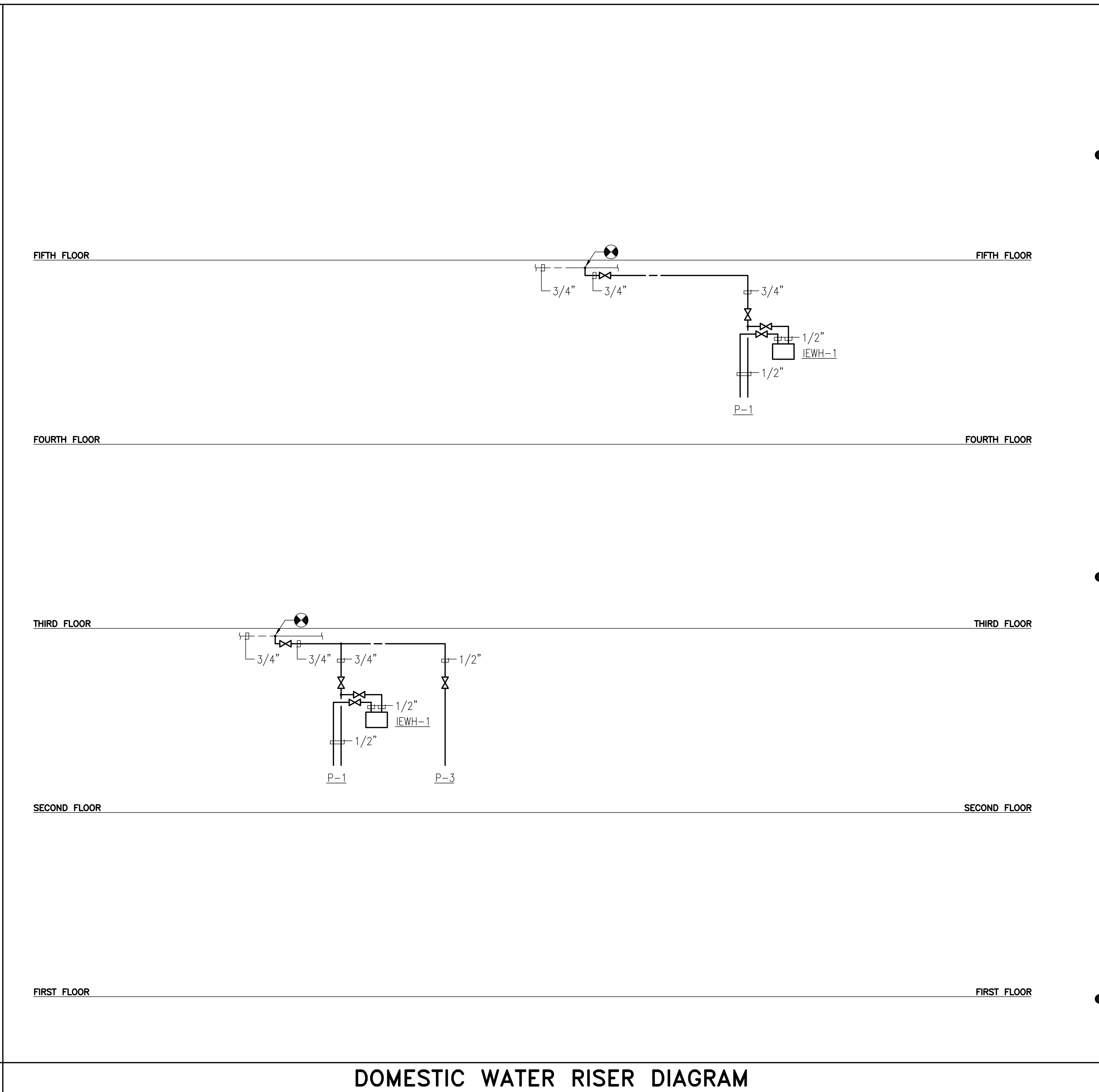
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Project: 11USC396
 Drawn By: CSL
 Checked By: CRB
 Date: 5 MAR 2012
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**PLUMBING RISER
 DIAGRAMS**

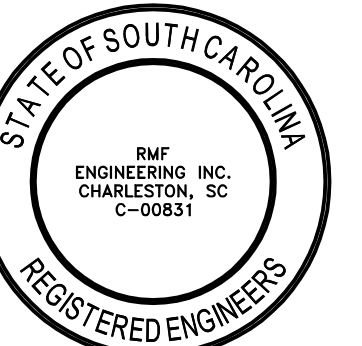


SANITARY AND VENT RISER DIAGRAM



DOMESTIC WATER RISER DIAGRAM

THROUGH PENETRATION FIRESTOP SCHEDULE



PUBLIC HEALTH RESEARCH CENTER - INTERIOR RENOVATIONS

OSE # H27-1988

TAG	DESCRIPTION	DATE

Project: 11USC396
Drawn By: PAM
Checked By: BAC
Date: 5 MAR 2012
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PLUMBING SCHEDULES

RATED BARRIER		PENETRANT TYPE									
TYPE	BASIS OF CONSTRUCTION	FIRESTOP ASSEMBLY REQUIREMENTS		NO PENETRANTS	METALLIC, UNINSULATED PIPE OR TUBING (EX. COPPER, IRON, STEEL) (NOTE 14)	NONMETALLIC, UNINSULATED PIPE OR TUBING (EX. PVC, PP, CPVC, GLASS, FRPP)	INSULATED PIPES (EX. COPPER, IRON PLASTIC, STEEL) IN SYSTEMS OPERATING BETWEEN 32°F AND 122°F (NOTE 1)	INSULATED PIPES (EX. COPPER, IRON PLASTIC, STEEL) IN SYSTEMS OPERATING BELOW 32°F OR ABOVE 122°F (NOTE 2)	METAL DUCT (NOTE 3)	RECESSED DEVICES (NOTE 4)	
WALL	WOOD STUDS & GYPSUM WALLBOARD (U300 SERIES)	UL CLASSIFIED SERIES	SINGLE PENETRANT	W-L-0000 SERIES OR NOTE 5	W-L-1000 SERIES	W-L-2000 SERIES	W-L-5000 SERIES	W-L-5000 SERIES	W-L-7000 SERIES	W-L-7000 SERIES NOTE 8	
			MULTIPLE PENETRANTS		W-L-8000 SERIES (NOTE 6)			W-L-8000 SERIES (NOTE 6)	W-L-8000 SERIES (NOTE 6)		N/A
		F RATING		EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING
		T RATING		NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10
EXCEPTIONS/ ADDED REQUIREMENTS		NONE		NOTE 13	NOTE 13	NONE	NOTE 7	NONE	NONE		
WALL	METAL STUDS & GYPSUM WALLBOARD (U400 SERIES)	UL CLASSIFIED SERIES	SINGLE PENETRANT	W-L-0000 SERIES OR NOTE 5	W-L-1000 SERIES	W-L-2000 SERIES	W-L-5000 SERIES	W-L-5000 SERIES	W-L-7000 SERIES	W-L-7000 SERIES NOTE 8	
			MULTIPLE PENETRANTS		W-L-8000 SERIES (NOTE 6)			W-L-8000 SERIES (NOTE 6)	W-L-8000 SERIES (NOTE 6)		N/A
		F RATING		EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	
		T RATING		NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	
EXCEPTIONS/ ADDED REQUIREMENTS		NONE		NOTE 13	NOTE 13	NONE	NOTE 7	NONE	NONE		
WALL	POURED CONCRETE, CONCRETE BLOCK OR MASONRY (BLOCK & U900 SERIES) (ANY THICKNESS)	UL CLASSIFIED SERIES	SINGLE PENETRANT	W-J-0000 SERIES OR NOTE 5	C-AJ-1000 OR W-J-1000 SERIES	C-AJ-2000 OR W-J-2000 SERIES	C-AJ-5000 OR W-J-5000 SERIES	C-AJ-5000 OR W-J-5000 SERIES	C-AJ-7000 OR W-J-7000 SERIES	NOTE 8	
			MULTIPLE PENETRANTS		C-AJ-8000 OR W-J-8000 SERIES (NOTE 6)			C-AJ-8000 OR W-J-8000 (NOTE 6)	C-AJ-8000 OR W-J-8000 (NOTE 6)		N/A
		F RATING		EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	EQUAL TO WALL RATING	
		T RATING		NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 10	
EXCEPTIONS/ ADDED REQUIREMENTS		NONE		NOTES 12 & 13	NOTE 13	NONE	NOTE 7	NONE	NONE		
FLOOR	POURED CONCRETE (ANY THICKNESS)	UL CLASSIFIED SERIES	SINGLE PENETRANT	C-AJ-0000 SERIES F-A-0000 SERIES OR NOTE 5	C-AJ-1000 OR F-A-1000 SERIES	C-AJ-2000 OR F-A-2000 SERIES	C-AJ-5000 OR F-A-5000 SERIES	C-AJ-5000 OR F-A-5000 SERIES	C-AJ-7000 OR F-A-7000 SERIES	NOTE 8	
			MULTIPLE PENETRANTS		C-AJ-8000 OR F-A-8000 SERIES (NOTE 6)			C-AJ-8000 OR F-A-8000 (NOTE 6)	C-AJ-8000 OR F-A-8000 (NOTE 6)		N/A
		F RATING		EQUAL TO FLOOR RATING, BUT NOT LESS THAN 1 HR	EQUAL TO FLOOR RATING, BUT NOT LESS THAN 1 HR	EQUAL TO FLOOR RATING, BUT NOT LESS THAN 1 HR	EQUAL TO FLOOR RATING, BUT NOT LESS THAN 1 HR	EQUAL TO FLOOR RATING, BUT NOT LESS THAN 1 HR	EQUAL TO FLOOR RATING, BUT NOT LESS THAN 1 HR	EQUAL TO FLOOR RATING, BUT NOT LESS THAN 1 HR	
		T RATING		NOTE 11	NOTE 11	NOTE 11	NOTE 11	NOTE 11	NOTE 11	NOTE 11	
EXCEPTIONS/ ADDED REQUIREMENTS		NONE		NOTE 12	NONE	NONE	NOTE 7	NONE	NONE		

NOTES

1. EXAMPLES OF SYSTEMS THAT OPERATE BETWEEN 32 DEGF AND 122 DEGF:
 CHILLED WATER SUPPLY & RETURN DOMESTIC HOT WATER LESS THAN 122 DEGF
 HEAT PUMP WATER SUPPLY & RETURN DOMESTIC HOT WATER RECIRCULATION LESS THAN 122 DEGF
 DOMESTIC COLD AND TEMPERED WATER
2. EXAMPLES OF SYSTEMS OPERATING BELOW 32 DEGF OR ABOVE 122 DEGF:
 STEAM SUPPLY & RETURN HEATING HOT WATER SUPPLY & RETURN
 STEAM VENT HOT-CHILLED WATER SUPPLY & RETURN
 CONDENSATE PUMP DISCHARGE GLYCOL HEATING HOT WATER SUPPLY & RETURN
 BOILER BLOWDOWN DOMESTIC HOT WATER SUPPLY 140 DEGF
 CRYOGENIC VENT DOMESTIC HOT WATER RECIRCULATION 140 DEGF
 ENGINE GENERATOR EXHAUST
3. THIS SCHEDULE'S DATA APPLY ONLY TO PENETRATIONS WITHOUT DAMPERS. FOR DAMPERED PENETRATIONS, REFER TO SPECIFICATIONS. AT DAMPERS, DO NOT APPLY MATERIAL THAT IS NOT INCLUDED IN THE DAMPER'S CLASSIFICATION.
4. EXAMPLES OF RECESSED DEVICES:
 MEDICAL GAS ZONE VALVES UNIT HEATERS
 MEDICAL GAS OUTLETS FIRE FIGHTERS' PHONE
 FIRE VALVE CABINETS FIRE EXTINGUISHER CABINET
 FIRE HOSE CABINETS CENTRAL VACUUM OUTLETS
5. SEAL OPENING USING BARRIER'S ORIGINAL CONSTRUCTION.
6. WHERE A SERIES 8000 CLASSIFIED SYSTEM IS NOT AVAILABLE, INSTALL PENETRANTS SINGLY, AND PROVIDE SINGLE-PENETRANT SYSTEMS.
7. FOR SYSTEMS THAT OPERATE BELOW 32°F OR ABOVE 122°F, COMPLY WITH THE FOLLOWING ADDITIONAL REQUIREMENTS:
 A. PROVIDE TPFS SYSTEM USING INTUMESCENT ELASTOMERIC WRAP STRIP AS ITS FILL, VOID, OR CAVITY MATERIAL.
 B. DO NOT USE SERIES 8000 PENETRATIONS. PROVIDE ONLY SINGLE PENETRATIONS.
8. WHERE UL CLASSIFIED SYSTEMS ARE NOT AVAILABLE FOR OTHER RECESSED DEVICES, MAINTAIN CONTINUITY OF RATED BARRIER CONSTRUCTION AROUND RECESS.
9. REQUIREMENTS FOR MEMBRANE PENETRATIONS AND THROUGH PENETRATIONS ARE IDENTICAL.
10. TEMPERATURE (T) RATINGS OF ASSEMBLIES IN WALLS MAY EQUAL ZERO.
11. TEMPERATURE (T) RATINGS OF ASSEMBLIES IN FLOORS SHALL EQUAL THE GREATER OF EITHER THE BARRIER RATING OR ONE HOUR EXCEPT AS FOLLOWS:
 A. AN ASSEMBLY'S T RATING MAY EQUAL ZERO WHEN THE PENETRANT ABOVE THE FLOOR PENETRATION IS CONTAINED AND LOCATED WITHIN THE CAVITY OF A WALL.
12. CLASSIFIED TPFS ASSEMBLY IS NOT REQUIRED WHEN ALL THE FOLLOWING CONDITIONS ARE MET:
 A. PENETRANT HAS A MAXIMUM NOMINAL DIAMETER OF 6-INCHES.
 B. PENETRATION HAS A MAXIMUM AREA OF 144 SQUARE INCHES.
 C. ANNULAR SPACE IS COMPLETELY FILLED WITH CONCRETE, GROUT, OR MORTAR THE FULL THICKNESS OF THE BARRIER.
13. OPENINGS ACCOMMODATING NONCOMBUSTIBLE CONDUITS, PIPES AND TUBES THROUGH SINGLE MEMBRANES WHICH ARE PART OF A FIRE RESISTANCE RATED WALL ASSEMBLY ARE PERMITTED WHEN:
 A. AGGREGATE AREA OF THE MEMBRANE OPENINGS DO NOT EXCEED 100 SQUARE INCHES FOR ANY 100 SQUARE FEET OF WALL AREA.
14. THIS COLUMN ALSO INCLUDES WIRES AND CABLES WITH STEEL JACKETS.

PLUMBING FIXTURE SCHEDULE									
DESIGNATION	FIXTURE	ROUGH-IN CONNECTION				FIXTURE UNITS			REMARKS
		CW	HW	SAN	VENT	CW	HW	SAN	
P-1	BREAKROOM SINK	1/2"	1/2"	1 1/2"	1 1/2"	1	1	2	COUNTERTOP MTD - SS, MANUAL GOOSENECK FAUCET, ADA
P-2	CONFERENCE ROOM SINK	1/2"	1/2"	1 1/2"	1 1/2"	1	1	2	COUNTERTOP MTD - SS, MANUAL GOOSENECK FAUCET, ADA
P-3	REFRIGERATOR/ICE MAKER CONNECTION	1/2"	-	-	-	0.25	-	-	WALL MTD - RECESSED

INSTANTANEOUS ELECTRIC WATER HEATER SCHEDULE									
DESIGNATION	TYPE	STORAGE CAPACITY GALLONS	EWT °F	LWT °F	RECOVERY RATE GPH	WATTS	INPUT KW	ELECTRICAL V/φ/Hz	REMARKS
IEWH-1	A	-	50	110	-	9000	-	277/1/60	MINIMUM FLOW RATE 1.0 GPM