



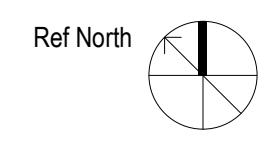
PLUMBING SPECIALTIES SCHEDULE

Table with columns: SYMBOL, DESCRIPTION, CONNECTION SIZE (W, V, CW, HW), SPECIFICATION, REMARKS. Includes items WB1-WB3, IMB1, CS-x, SA-x, HB1, HB2, HB3, WCO, FCO, YCO, HDCC, FD1, FD2, TD1, FS1.

SHOCK ARRESTOR TABLE with columns: DRAWING SYMBOL, FIXTURE UNITS, P.D.I. DESIGNATION, ARRESTOR SIZE, REMARKS. Includes a schematic diagram of a shock arrestor installation.

PLUMBING FIXTURE SCHEDULE

Table with columns: SYMBOL, DESCRIPTION, CONNECTION SIZE (W, V, CW, HW), SPECIFICATION, REMARKS. Includes items P1, P1A, P1B, P3A, P3B, P4, P4A, P5, P5A, P5B, P5C, P5D, P5E, P5F, P6A, P6B, P7A.



### GREASE INTERCEPTOR - GI1

SCHIER GREASE INTERCEPTOR GB-50 OR APPROVED EQUAL BY ZURN OR XERXES, 50 GPM FLOW, 60 GALLON GREASE CAPACITY, 3" INLET AND OUTLET, 2" VENTS, PROVIDE MANWAY TO MEET INVERT DEPTH AND STANDARD PEDESTRIAN-RATED MANHOLE COVER INSTALLED FLUSH WITH FINISHED FLOOR. REFER TO SCHEMATIC 5/P5.02.

### OIL INTERCEPTOR - OI1

STRIEM OIL TANKER MODEL OT-500-SS. MAX FLOW RATE: 314 GPM, 562 GALLON LIQUID CAPACITY, 285 GALLON OIL CAPACITY, 162 SOLIDS CAPACITY, HIGH DENSITY CONSTRUCTION, 4" INLETS AND OUTLETS AND 3" VENTS. PROVIDE MANWAY TO MEET INVERT DEPTH AND H-20 TRAFFIC RATED MANHOLE COVERS AND FRAMES INSTALLED FLUSH WITH FINISHED GRADE. PROVIDE REINFORCED CONCRETE RELIEVING SLAB WHEN INTERCEPTOR IS LOCATED IN AREAS WITH VEHICLE ACCESS. INSTALL PER THE MANUFACTURERS INSTRUCTIONS. COORDINATE EXACT LOCATION WITH SITE UTILITY CONTRACTOR. SEE MANUFACTURERS INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION. REFER TO SCHEMATIC 4/P5.02.

### LINT INTERCEPTOR - LI-1

STRIEM TUFF TROUGH MODEL TT-3, 21 GALLON CAPACITY, 3/4" POLYETHYLENE CONSTRUCTION, 3'(L)x18"(W) x12"(H) WITH INTERNALLY SLOPED FLOOR AT 1/8" PER FOOT. PREINSTALLED COVER WITH MAXIMUM 450 LBS. LOAD CAPACITY WITH REMOVABLE PRIMARY AND SECONDARY FILTER SCREENS WITH 0.500" PERFORATIONS. PROVIDE WITH PLAIN END OUTLET AND 4" FIELD INSTALLED INLET. REFER TO SCHEMATIC 11/5.01.

### GAS LOAD SUMMARY

LOAD	CONSUMPTION (CFH)
DOMESTIC WATER HEATER: WH1	200
DOMESTIC WATER HEATER: WH2	200
INFRARED HEATER: IH-1, IH-2 @ 60 CFH EACH	120
INFRARED HEATER: IH-3	20
OUTDOOR GRILL	100
RANGE	150
TOTAL	790

**NOTES:**  
 FARTHEST POINT OF DELIVERY FROM GAS METER (TO 2 PSI GAS PRESSURE REGULATOR AT FARTHEST GAS-FIRED FIXTURE) = ±250 FT.  
 FUEL GAS CODE TABLE FOR ABOVE GRADE 2 PSI PIPING: 2018 NCFGC - TABLE 402.4(5) SCHEDULE 40 METALLIC PIPE, 2 PSI INLET PRESSURE, 1 PSI PRESSURE DROP.  
 FUEL GAS CODE TABLE FOR ABOVE GRADE LOW PRESSURE PIPING: 2018 NCFGC - TABLE 402.4(4) SCHEDULE 40 METALLIC PIPE, 0.5 PSI INLET PRESSURE, 0.5" W.C. PRESSURE DROP.  
 \*-AVAILABLE AT PRESSURE REGULATOR

### PLUMBING EQUIPMENT SCHEDULE

SYM.	DESCRIPTION	CONN. SIZE		SPECIFICATION	REMARKS
		INLET	OUT		
WH1	WATER HEATER, COMMERCIAL, GAS-FIRED, 100 GALLONS, DIRECT-VENT	1-1/2"	1-1/2"	EQUIPMENT: A.O. SMITH BTH-199 GAS INPUT: 199,000 BTUH ELEC: 120V, 15A BREAKER RECOVERY: 235 GPH AT 100" RISE	SET OUTLET TEMP TO 140°F SEE NOTES 1 - 4 SEE 7/P5.02
WH2	WATER HEATER, COMMERCIAL, GAS-FIRED, 100 GALLONS, DIRECT-VENT	1-1/2"	1-1/2"	EQUIPMENT: A.O. SMITH BTH-199 GAS INPUT: 199,000 BTUH ELEC: 120V, 15A BREAKER RECOVERY: 235 GPH AT 100" RISE	SET OUTLET TEMP TO 140°F SEE NOTES 1 - 4 SEE 7/P5.02
ET1	THERMAL EXPANSION TANK 6.4 GALLON CAPACITY	3/4"	-	EQUIPMENT: AMTROL ST-12	SEE NOTE 5
ET2	THERMAL EXPANSION TANK 6.4 GALLON CAPACITY	3/4"	-	EQUIPMENT: AMTROL ST-12	SEE NOTE 5
RCP1	CIRCULATION PUMP, STAINLESS STEEL	3/4"	3/4"	PUMP: B&G NBF-25, 1/8 HP, 120V RATED FOR 6 GPM AT 8' HD	SEE NOTES 6 & 7
RCP2	CIRCULATION PUMP, STAINLESS STEEL	3/4"	3/4"	PUMP: B&G NBF-25, 1/8 HP, 120V RATED FOR 6 GPM AT 8' HD	SEE NOTES 6 & 7
MV1	THERMOSTATIC MIXING VALVE CONTROL STATION, BUILDING FIXTURES	1"	1"	TMV: LEONARD 3NB-LF MIN. GPM: 1.0 MAX GPM: 40 (AT 10 PSI LOSS) PRESSURE LOSS: 5 PSI (26 GPM) LEAVING TEMP: SEE NOTE 8	SEE NOTE 8 SEE 6/P5.02
MV2	THERMOSTATIC MIXING VALVE CONTROL STATION, BUILDING FIXTURES	1"	1"	TMV: LEONARD 3NB-LF MIN. GPM: 1.0 MAX GPM: 40 (AT 10 PSI LOSS) PRESSURE LOSS: 5 PSI (26 GPM) LEAVING TEMP: SEE NOTE 8	SEE NOTE 8 SEE 6/P5.02
MV3	THERMOSTATIC MIXING VALVE MECHANICAL, PUBLIC LAVATORIES	1"	1"	TMV: SYMMONS 7-225-CK SERIES MIN. GPM: 0.5 MAX GPM: 4.5 PRESSURE LOSS: 5 PSI LEAVING TEMP: 105 DEG. F	SEE NOTE 9
AC1	AIR COMPRESSOR, SIMPLEX, TWO-STAGE	1"	1"	EQUIP: QUINCY QTS-XTREME ELECTRICAL: 5 HP, 480V, 3P CFH: 17.4 @ 175 PSIG RECEIVER: 80 GAL.	SEE NOTES 10 - 13 SEE 8/P5.02
HR1	HOSE REEL, AIR OR WATER, SPRING RETRACTABLE, 35 FT HOSE, 300 PSI MAX.	1/2"	1/2"	REEL CRAFT 5635 OLP	SEE NOTE 14

**NOTES:**  
 1. WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF ASHRAE 90.1.  
 2. PROVIDE WATER HEATER WITH ACID NEUTRALIZATION KIT FOR CONDENSATE.  
 3. INSTALL DIRECT-VENT PIPING PER MANUFACTURER'S DIRECTION. CPVC OR STAINLESS STEEL SHALL BE USED FOR VENT PIPING MATERIAL. PVC IS NOT ACCEPTABLE.  
 4. PROVIDE CARBON MONOXIDE DETECTOR ADJACENT TO WATER HEATER. INTERLOCK CARBON MONOXIDE DETECTOR WITH BAS.  
 5. EXPANSION TANK SHALL BE CHARGED TO MEET FINAL OPERATING PRESSURE FOR DOMESTIC WATER SYSTEM. PUMP SHALL BE ALL BRONZE CONSTRUCTION.  
 7. INTERLOCK WITH FULLY ADJUSTABLE AQUASTAT AND 7-DAY, 24 HOUR TIMER OR PROVIDE 7-DAY, 24 HOUR ACCESS CONTROL VIA BAS.  
 8. PROVIDE TEMPERATURE MIXING VALVE FOR THE BUILDING HOT WATER SYSTEM TO TEMPER 140 DEGREE STORED HOT WATER TO 120 DEGREES TO THE BUILDING FIXTURES.  
 9. PROVIDE POINT-OF-USE TMV AT EACH PUBLIC ACCESSIBLE HAND-WASHING LAVATORY TO TEMPER HOT WATER TO A MAXIMUM OF 105 DEGREES. INSTALL BELOW SINK IN AN ACCESSIBLE LOCATION.  
 10. PROVIDE REFRIGERATED AIR DRYER EQUAL TO AURORA MODEL RDV-0030, 30 SCFM @ 100 PSIG, 1/4 HP, 115V, SINGLE PHASE, 60 HZ.  
 11. PROVIDE COMPRESSOR WITH LOW SOUND ATTENUATING ENCLOSURE (64 DBA).  
 12. PROVIDE AIR COMPRESSOR WITH BLOW DOWN MUFFLER.  
 13. VERIFY HOSE REEL INSTALLATION LOCATIONS WITH OWNER PRIOR TO PERFORMING ANY WORK.  
 \*\* MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS:	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	WH - GAS-FIRED EXPANSION TANKS PUMPS MIXING VALVES AIR COMPRESSOR AC DRYER	A.O. SMITH, BRADFORD WHITE, LOCHINVAR AMTROL, A.O. SMITH, WATTS, WESSLES B&G, TACO, ARMSTRONG ARMSTRONG, LAWLER, LEONARD, SYMMONS CHAMPION, CURTIS, QUINCY AURORA, PNEUMATECH, HANKINSON

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**1738**

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#	Description	Date
2	ADDENDUM #2	05/08/24

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05/08/24

CASTLE HAYNES FIRE DEPARTMENT  
 PLUMBING EQUIPMENT SCHEDULES

Sheet No.  
**P0.03**

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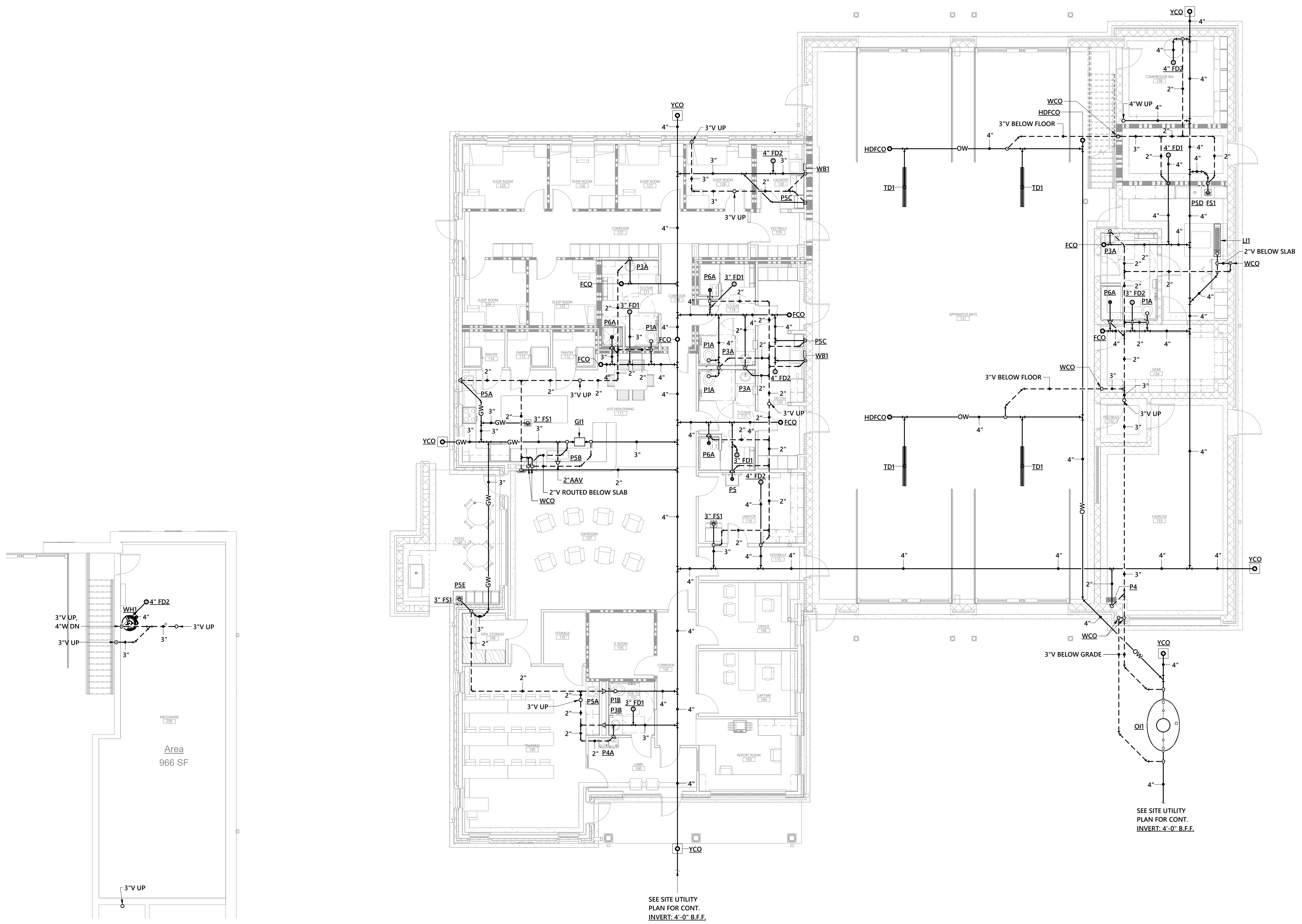
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CASTLE HAYNES FIRE DEPARTMENT  
DRAINAGE PIPING FLOOR PLANS

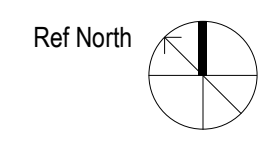
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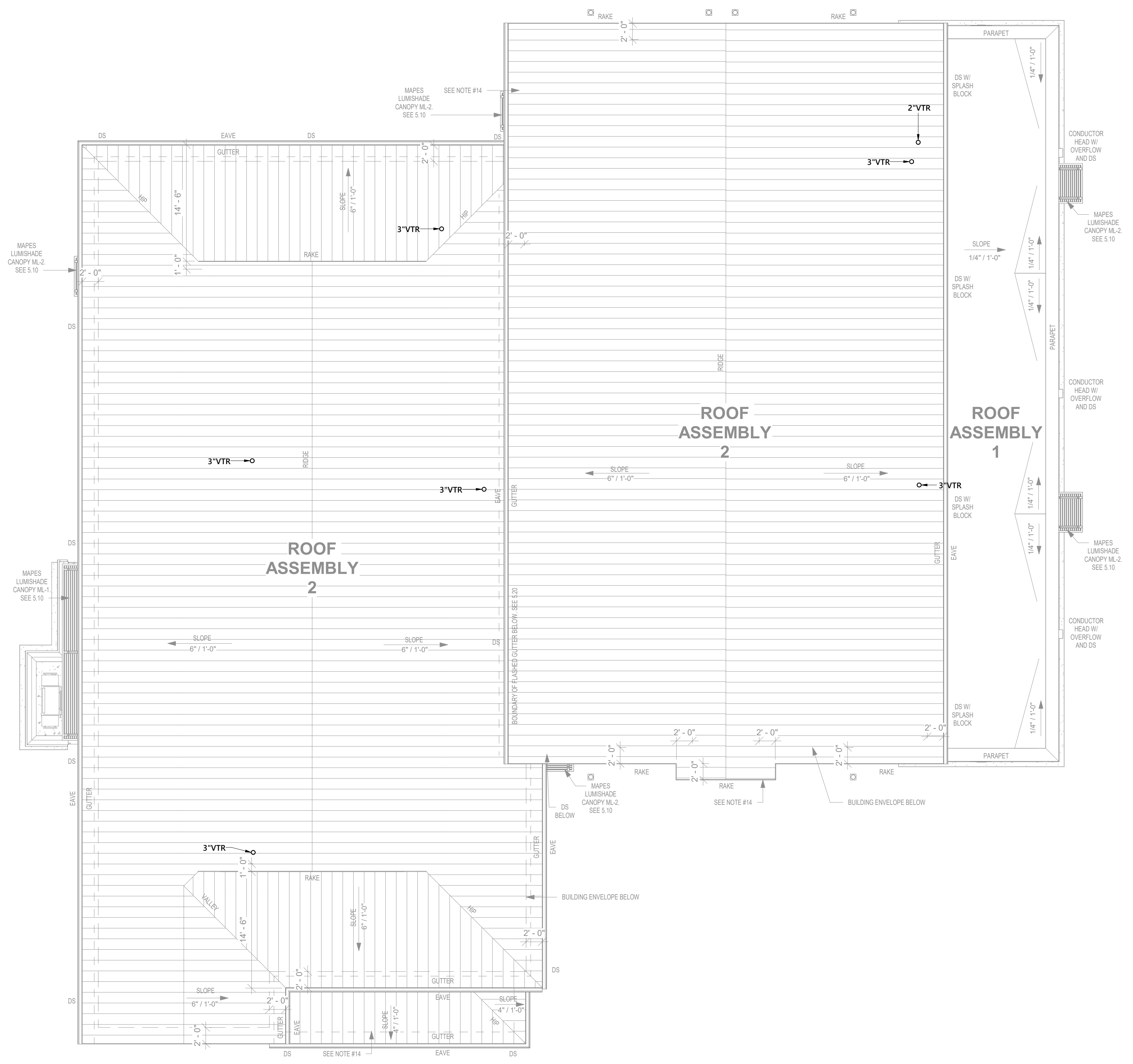
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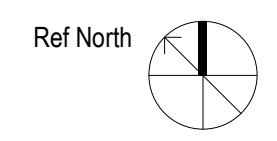
**2** DRAINAGE PIPING MEZZANINE FLOOR PLAN  
1/8" = 1'-0"

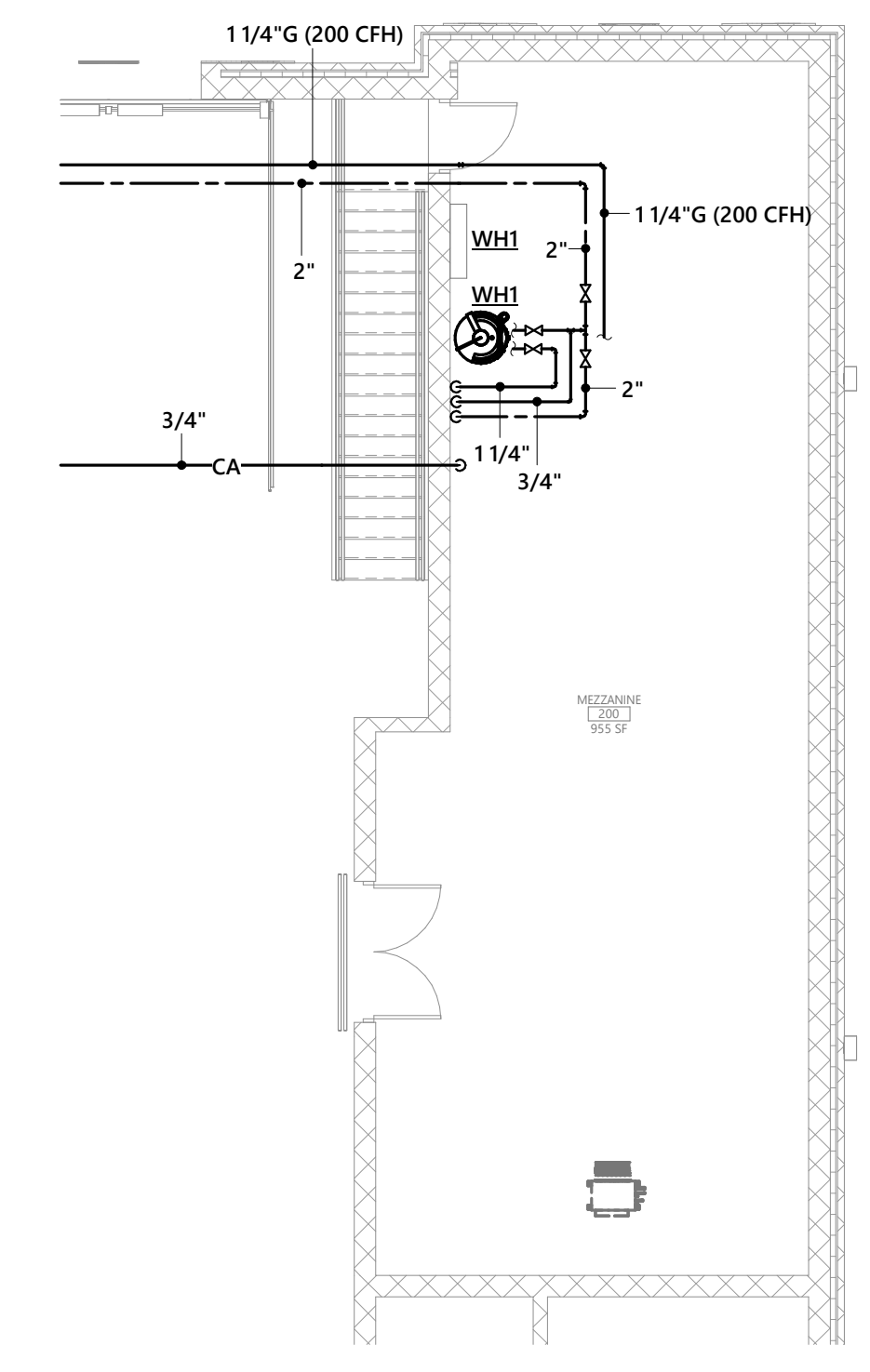
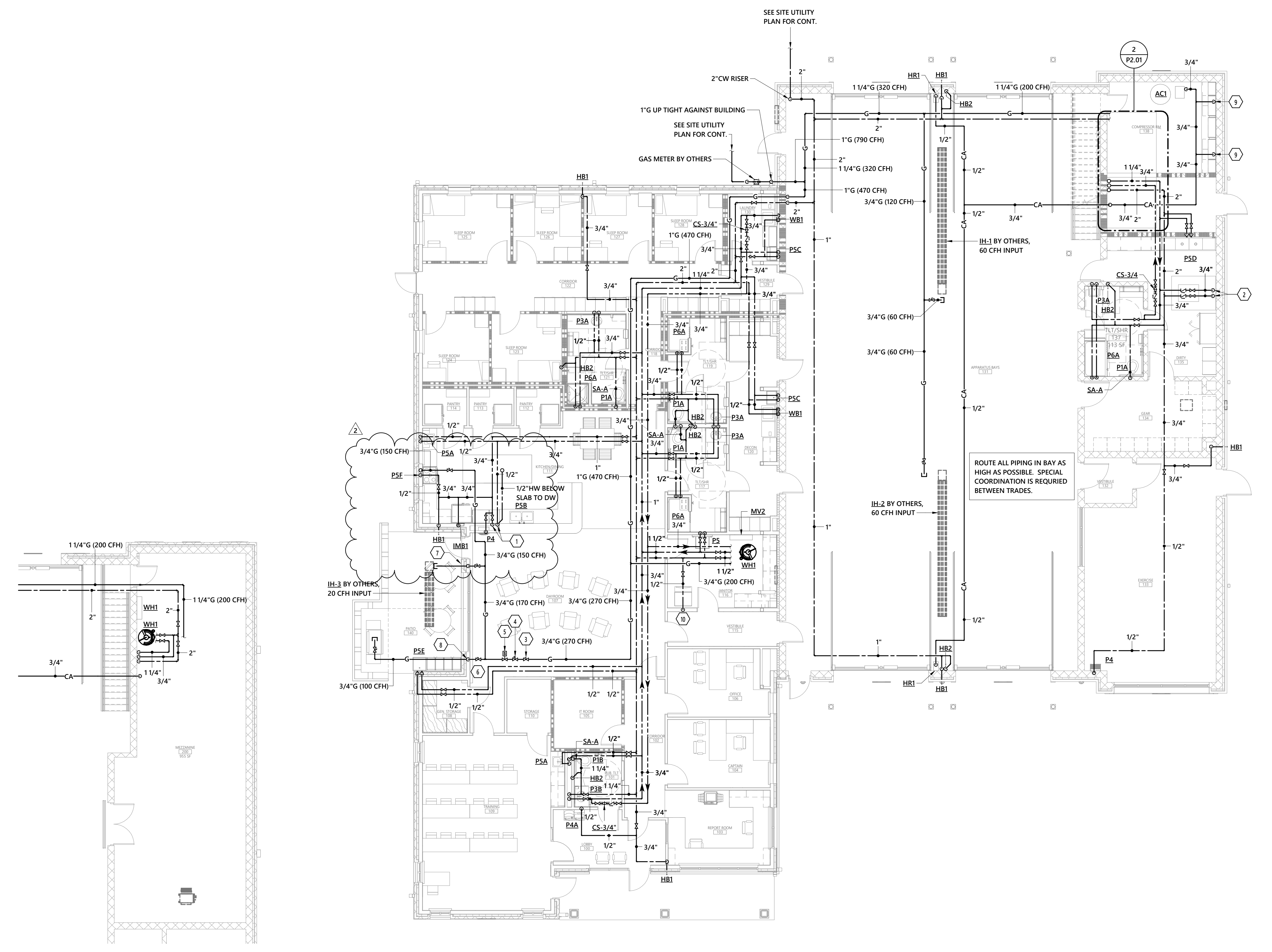
**1** DRAINAGE PIPING FLOOR PLAN  
1/8" = 1'-0"





**1** DRAINAGE PIPING ROOF PLAN  
1/8" = 1'-0"

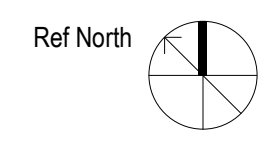


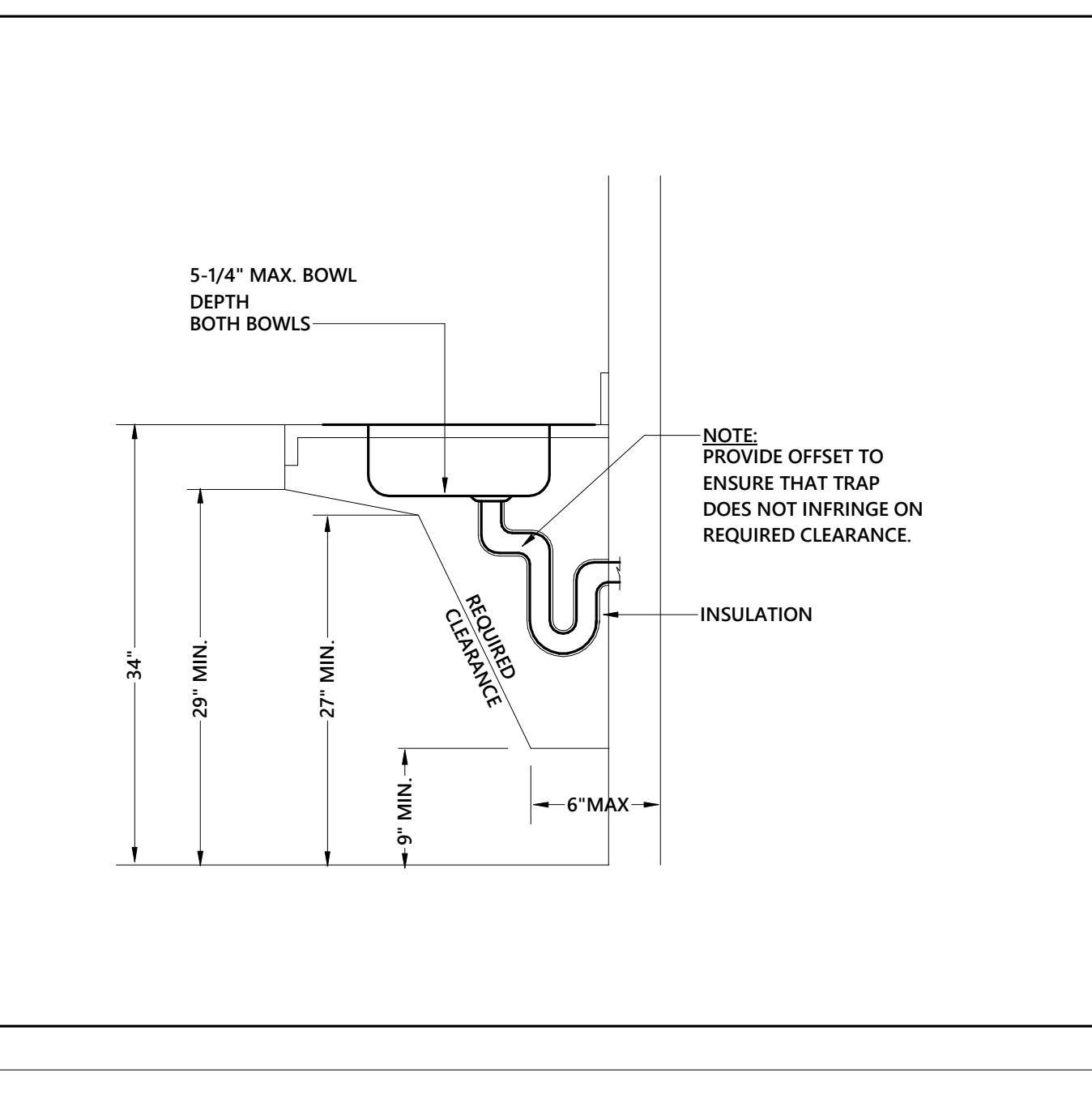
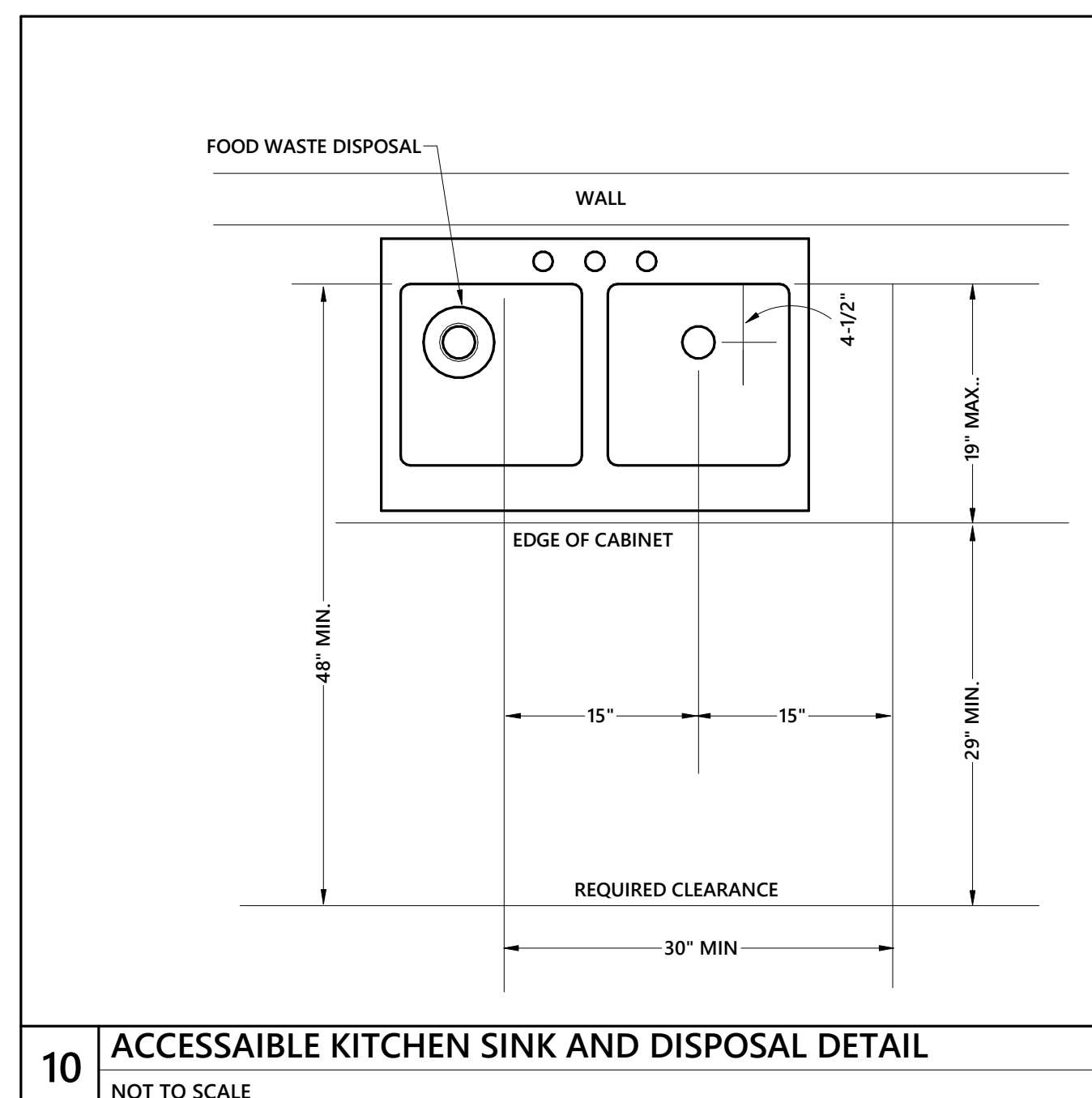
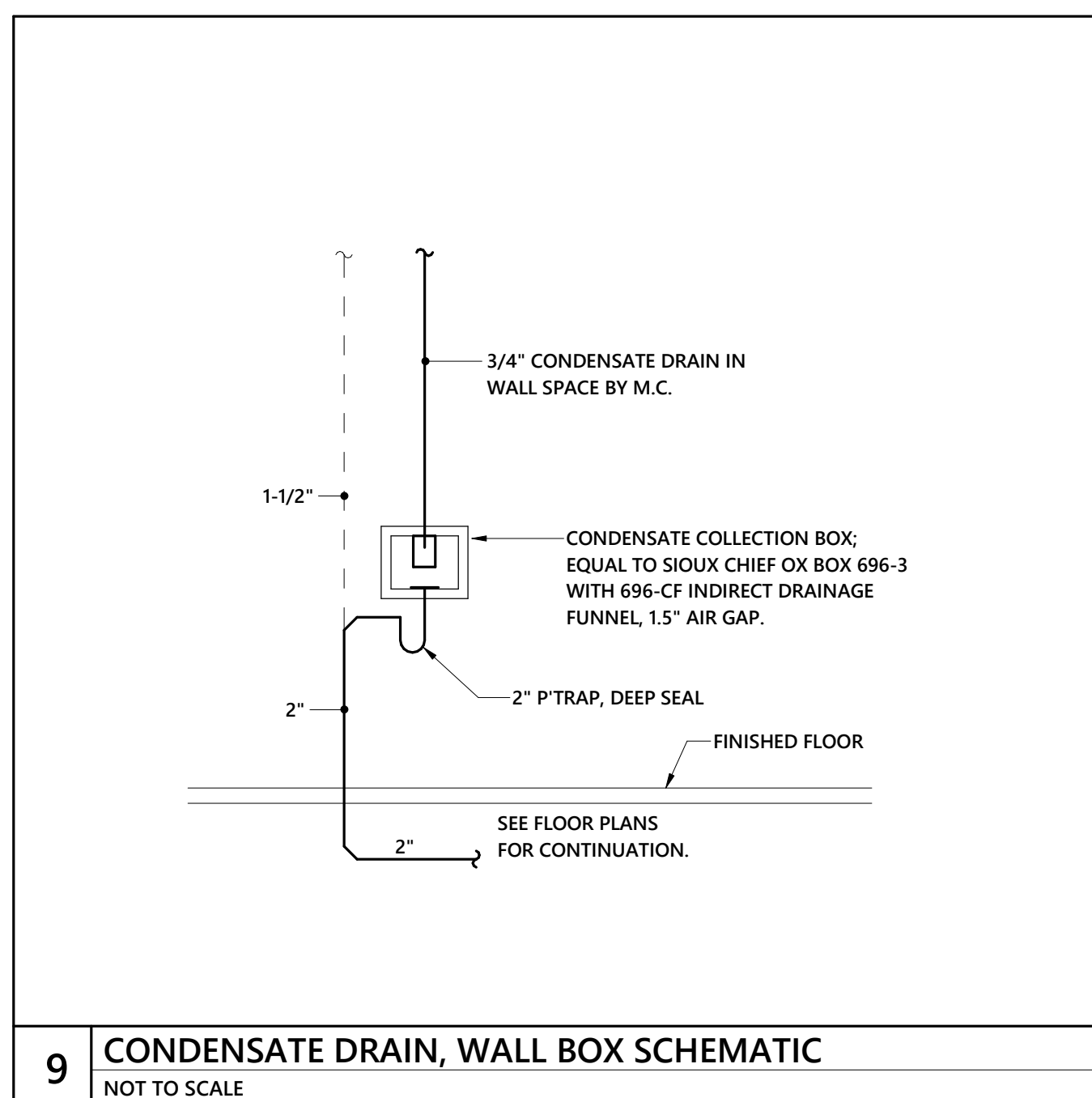
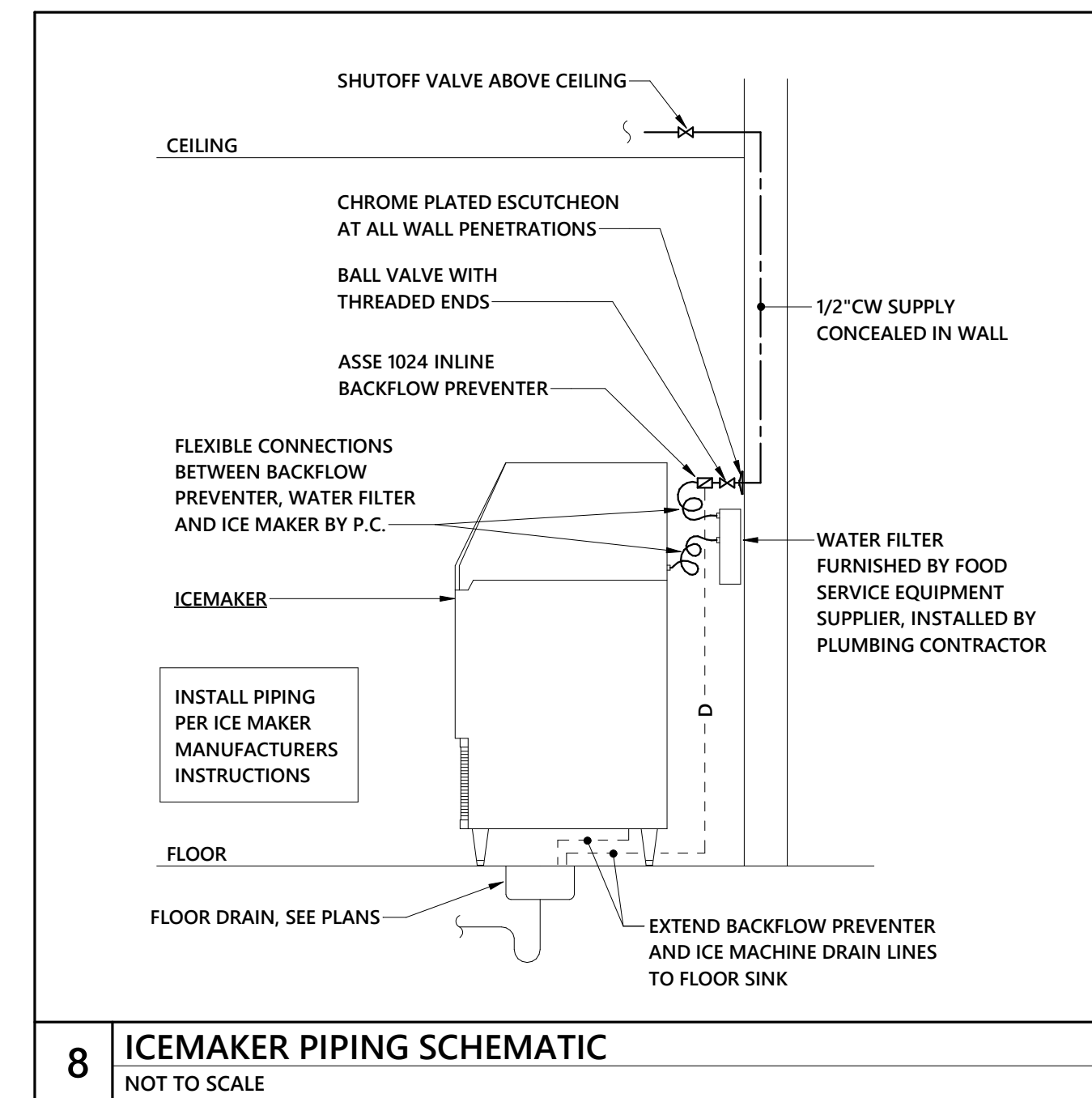
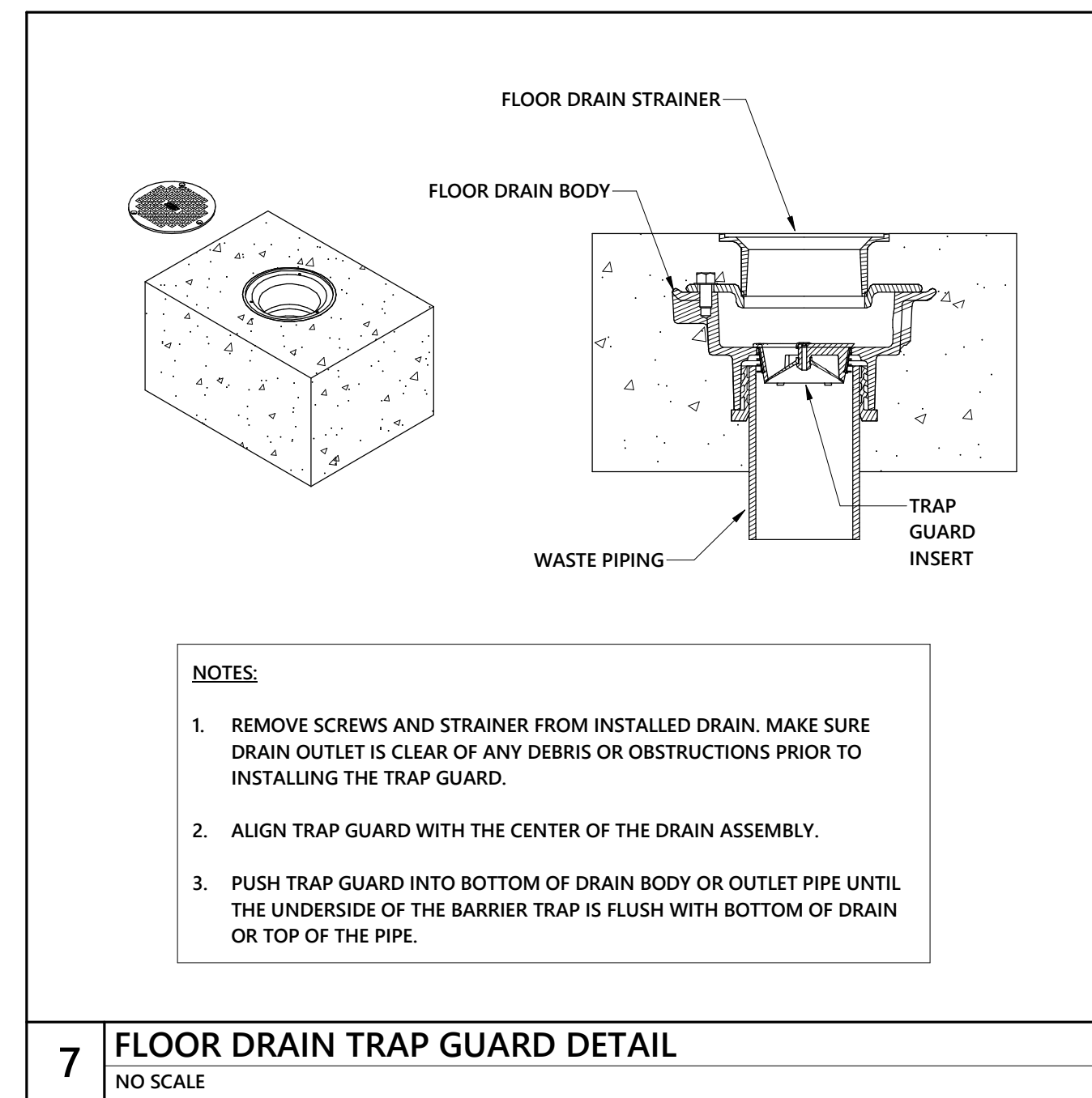
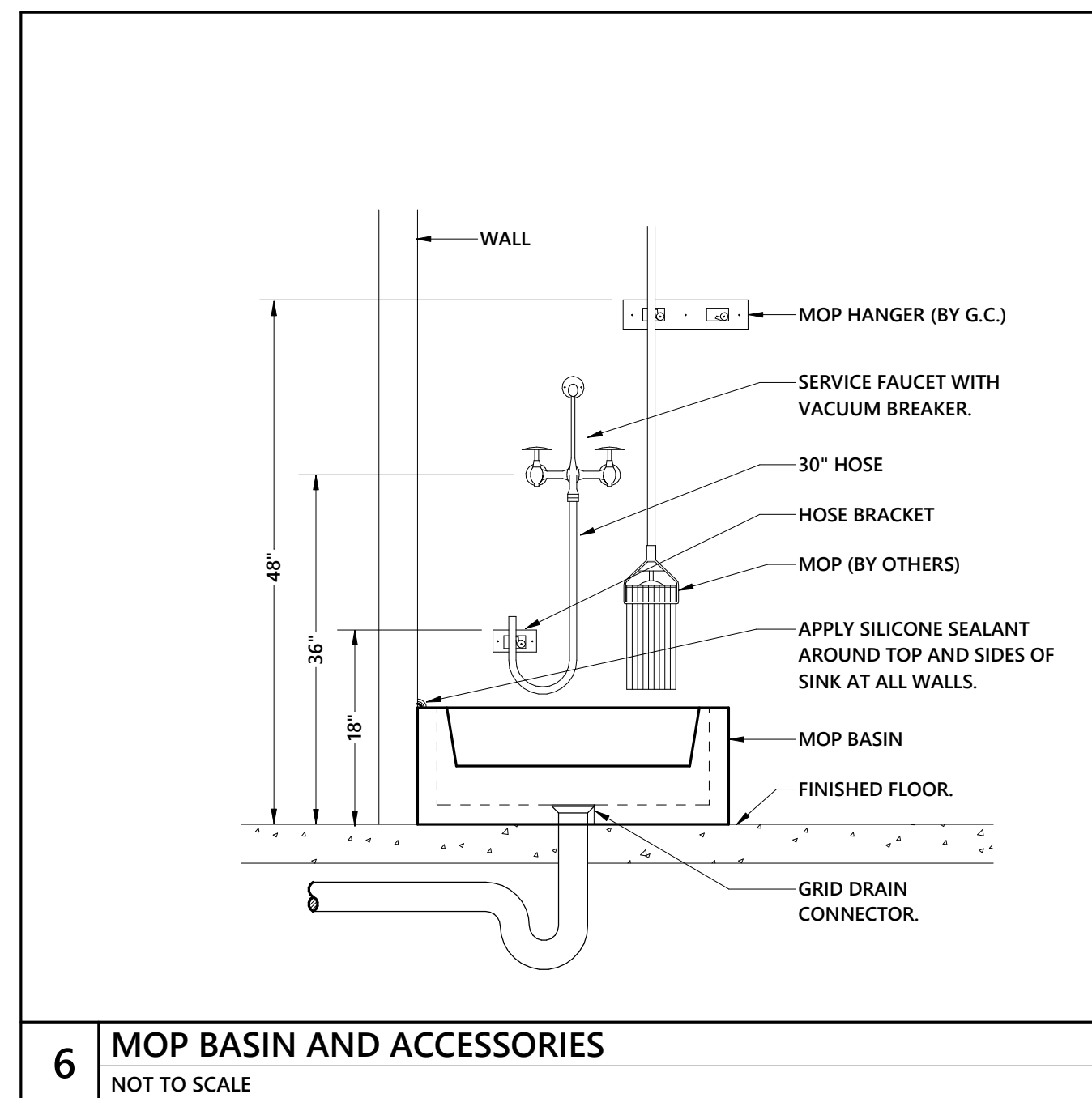
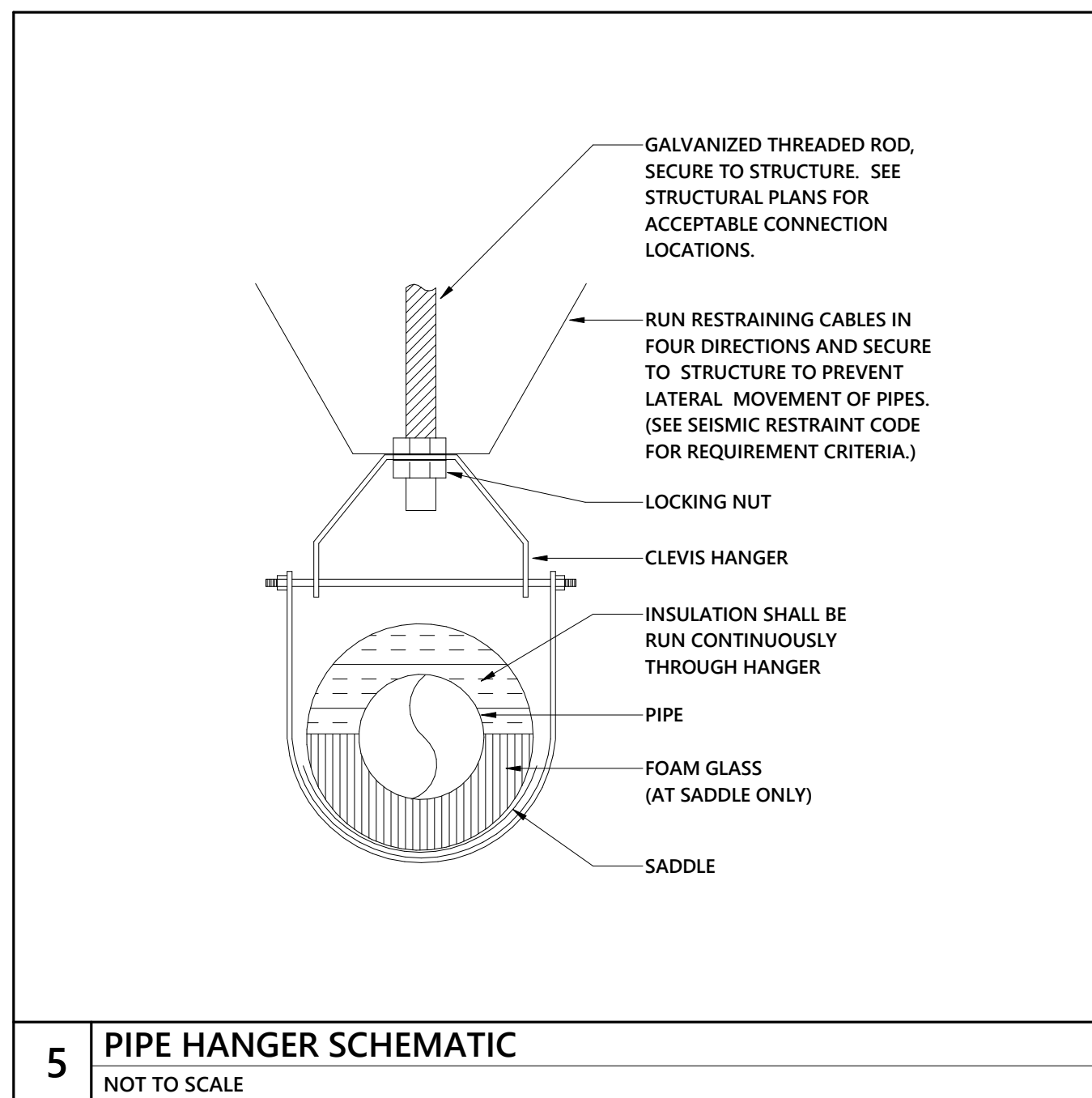
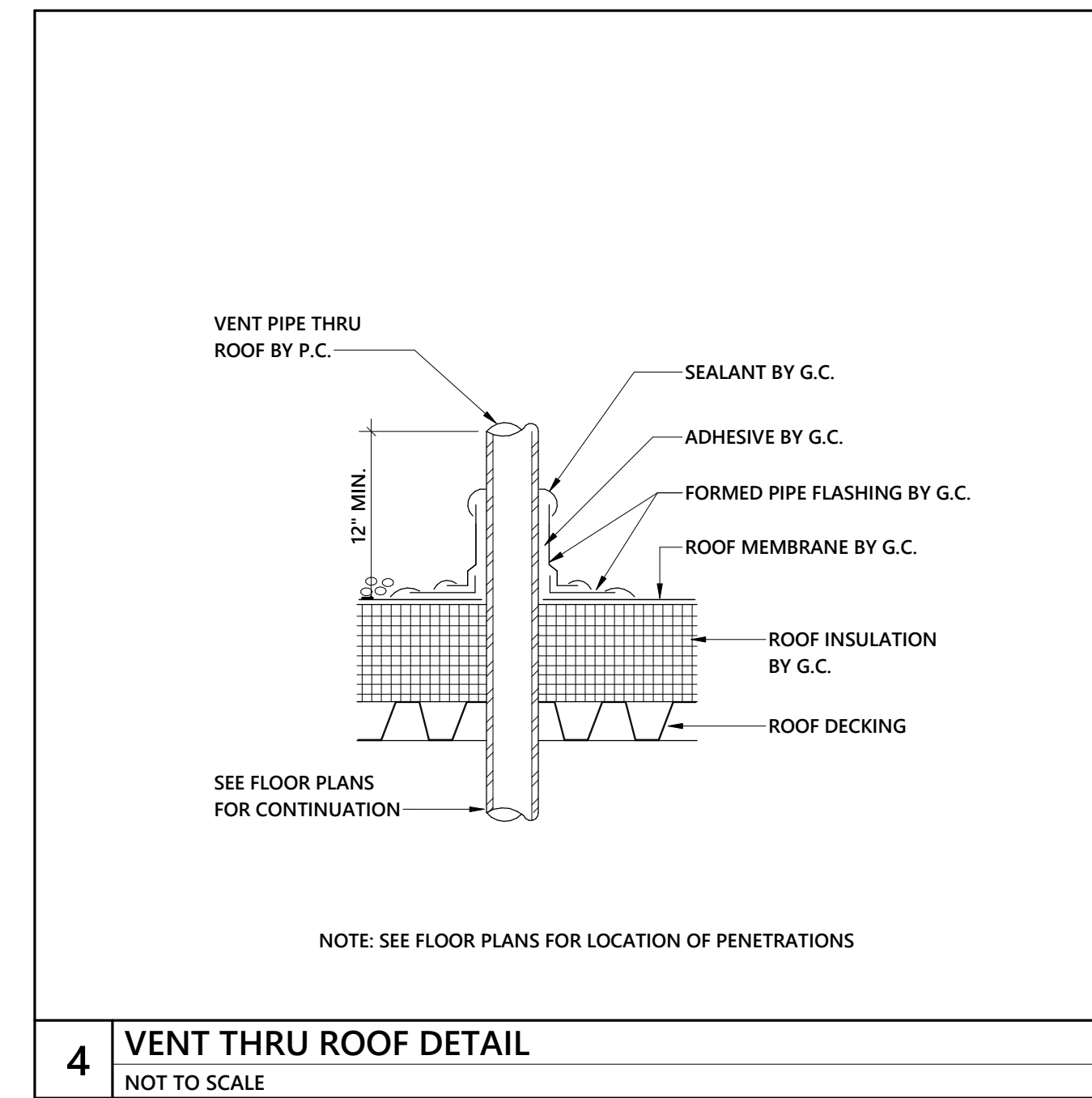
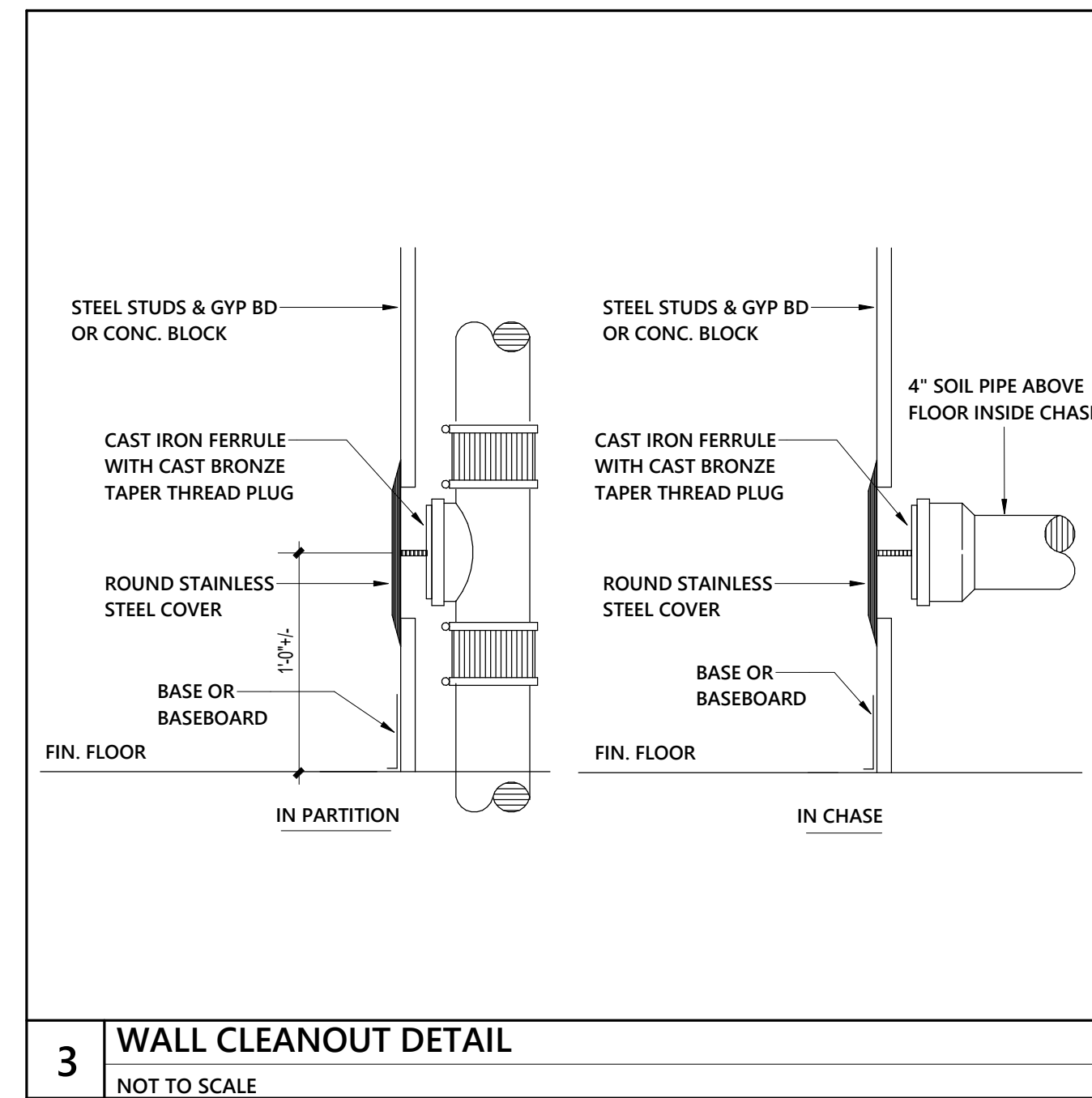
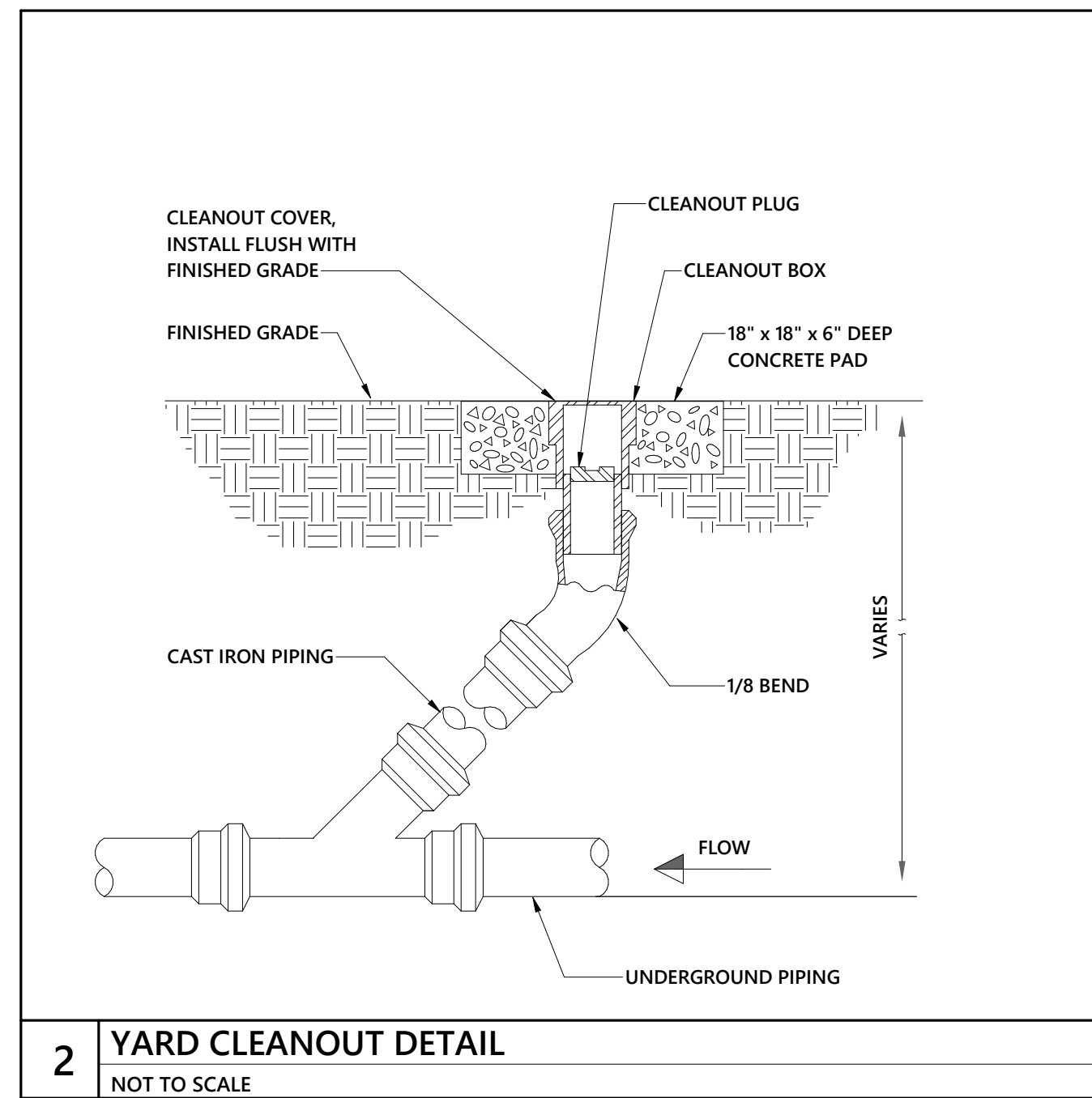
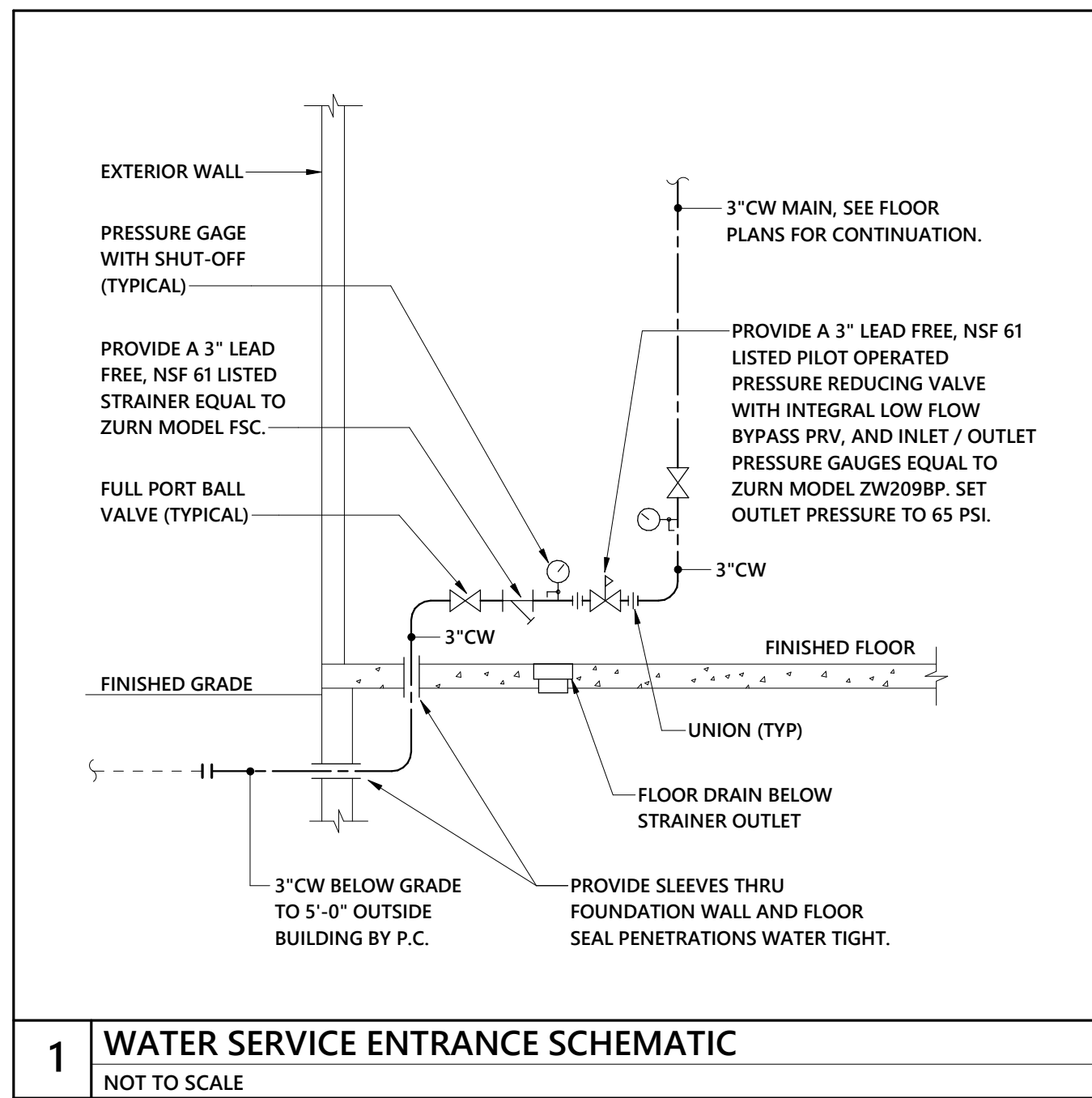


**2** MEZZANINE SUPPLY PIPING FLOOR PLAN  
1/8" = 1'-0"

**1** FIRST FLOOR SUPPLY PIPING FLOOR PLAN  
1/8" = 1'-0"

- KEYED NOTES THIS SHEET:**
- DROP 1/2" HW AND CW PIPING DOWN IN WALL TO BELOW CASEWORK. ROUTE 1/2" HW & CW PIPING BELOW CASE WORK TO FIXTURE PSB.
  - PROVIDE 3/4" CW & 3/4" HW SUPPLIES, SHUT-OFF VALVES, CHECK VALVES, TWO SA-A SHOCK ARRESTORS AND FULL SIZE FLEXIBLE CONNECTIONS TO WASHER PER MFG. INSTRUCTIONS.
  - MANUAL GAS SHUTOFF VALVE. PROVIDE LUBRICATED VALVE OR AGA LISTED BALL VALVE.
  - VENTLESS PRESSURE REDUCING VALVE, EQUAL TO MAXITROL 325 SERIES, WITH AN OUTPUT DELIVERY PRESSURE OF 7" W.C., 15 FEET DEVELOPED LENGTH.
  - PROVIDE EMERGENCY SHUTOFF VALVE AND INTERLOCK WITH FIRE ALARM CONTROL PANEL. SOLENOID VALVE SHALL BE FAIL-CLOSE TYPE.
  - ISIMET ELA SERIES FIRE HOUSE UTILITY CONTROLLER PANEL. REFER TO ELECTRICAL DRAWINGS.
  - ISIMET ELA-1 REMOTE OPERATOR FOR GAS SUPPLY TO GRILL, PATIO HEATER, AND RANGE. REFER TO ELECTRICAL DRAWINGS.
  - DROP 3/4" G PIPING BELOW GRADE. ROUTE 3/4" G PIPING TO GAS GRILL AND PROVIDE WITH SHUT-OFF VALVE 12" ABOVE GRADE.
  - PROVIDE COMPRESSED AIR DROP -REFER TO SCHEMATIC 9/5.02.
  - DROP 1/2" CW PIPING DOWN IN WALL TO ICE MACHINE. REFER TO SCHEMATIC 8/P5.01.





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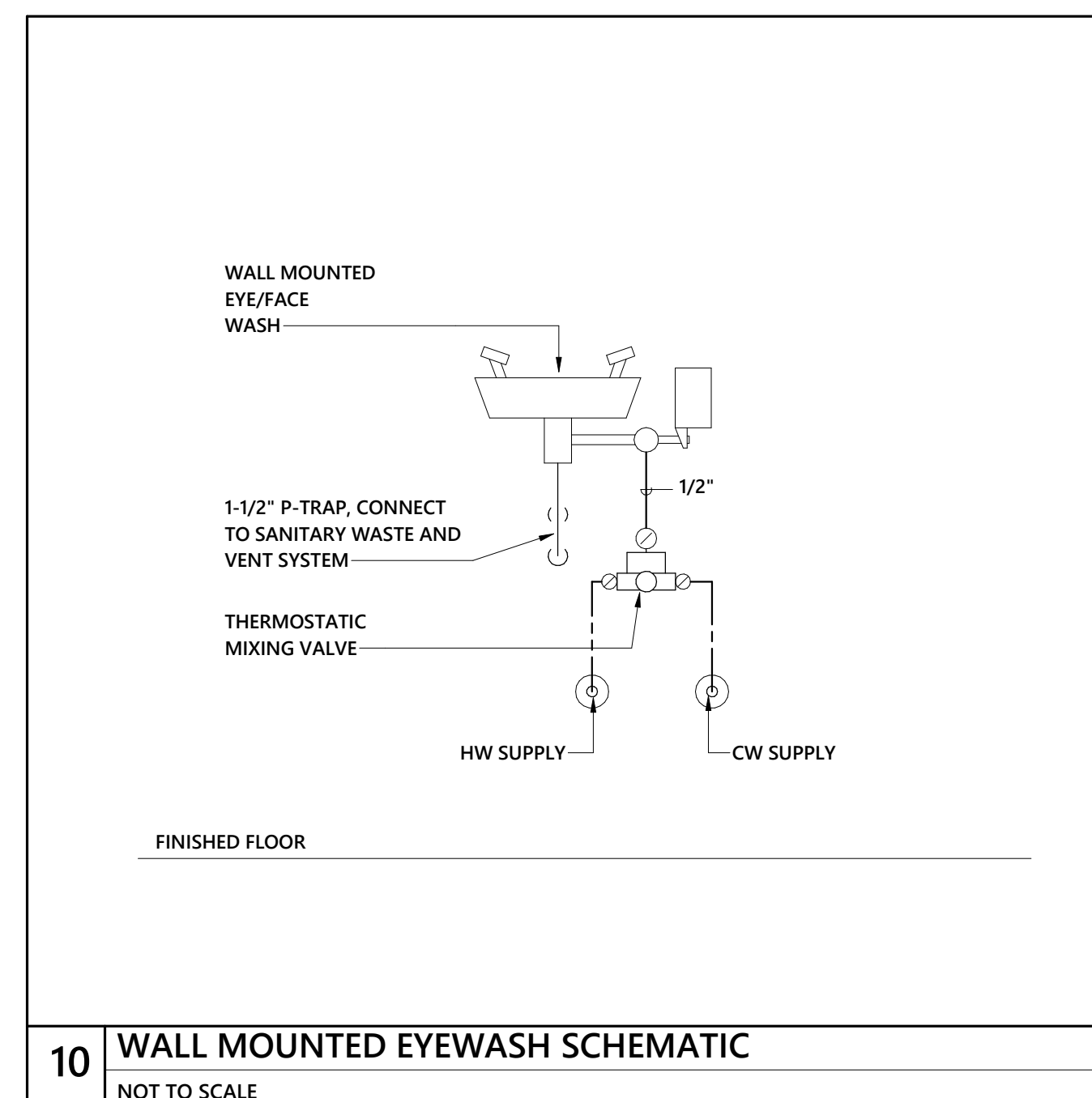
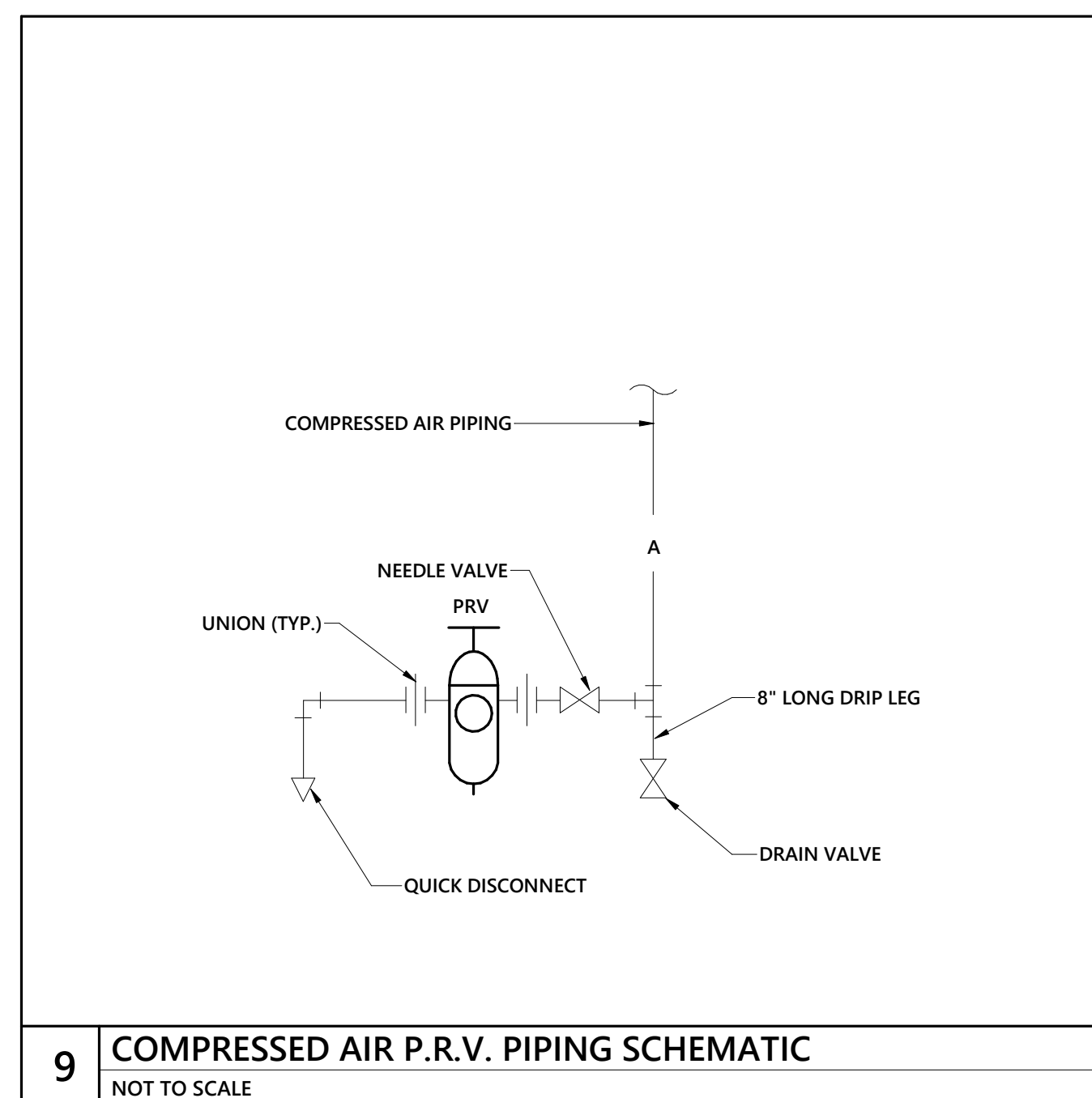
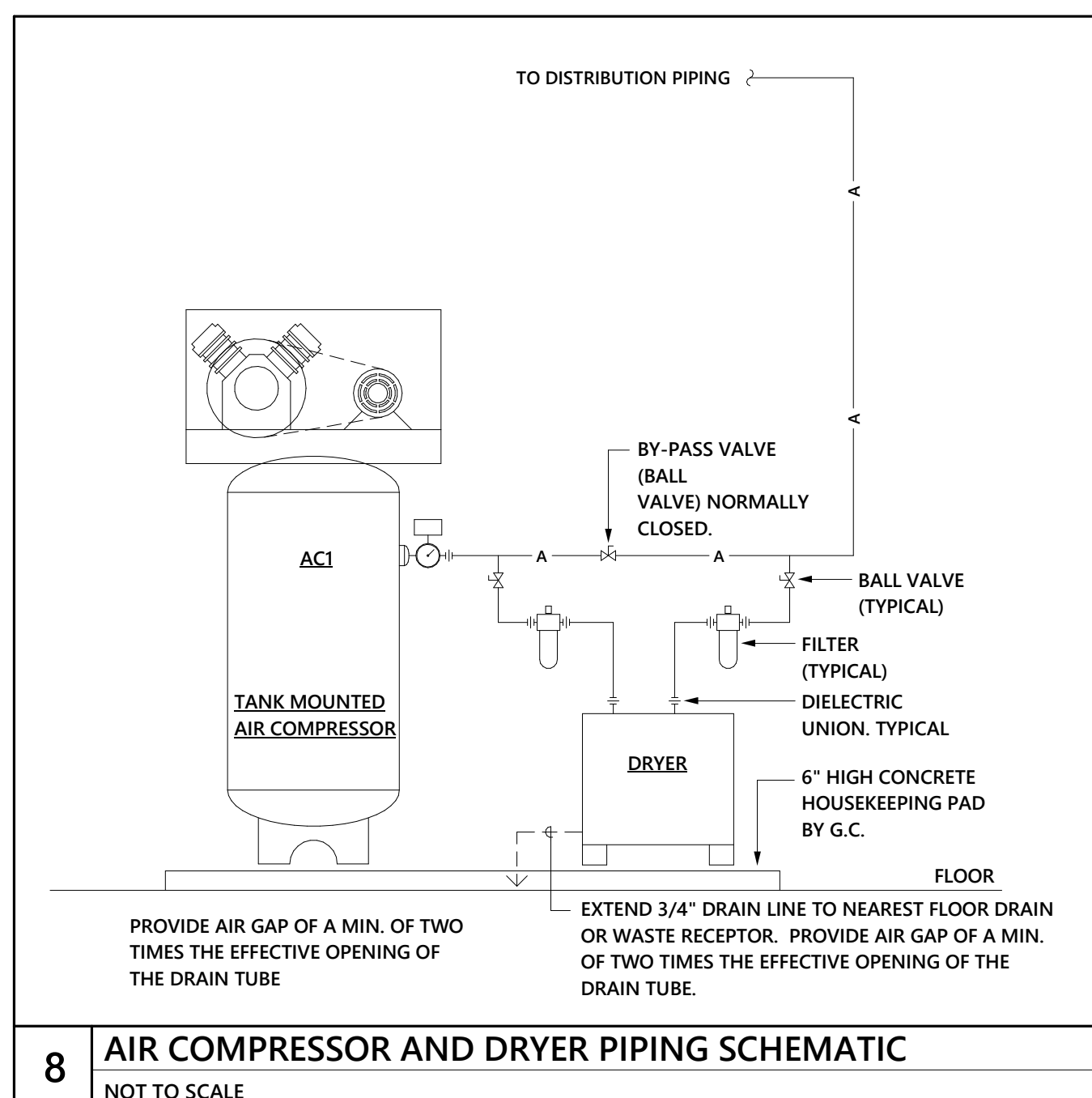
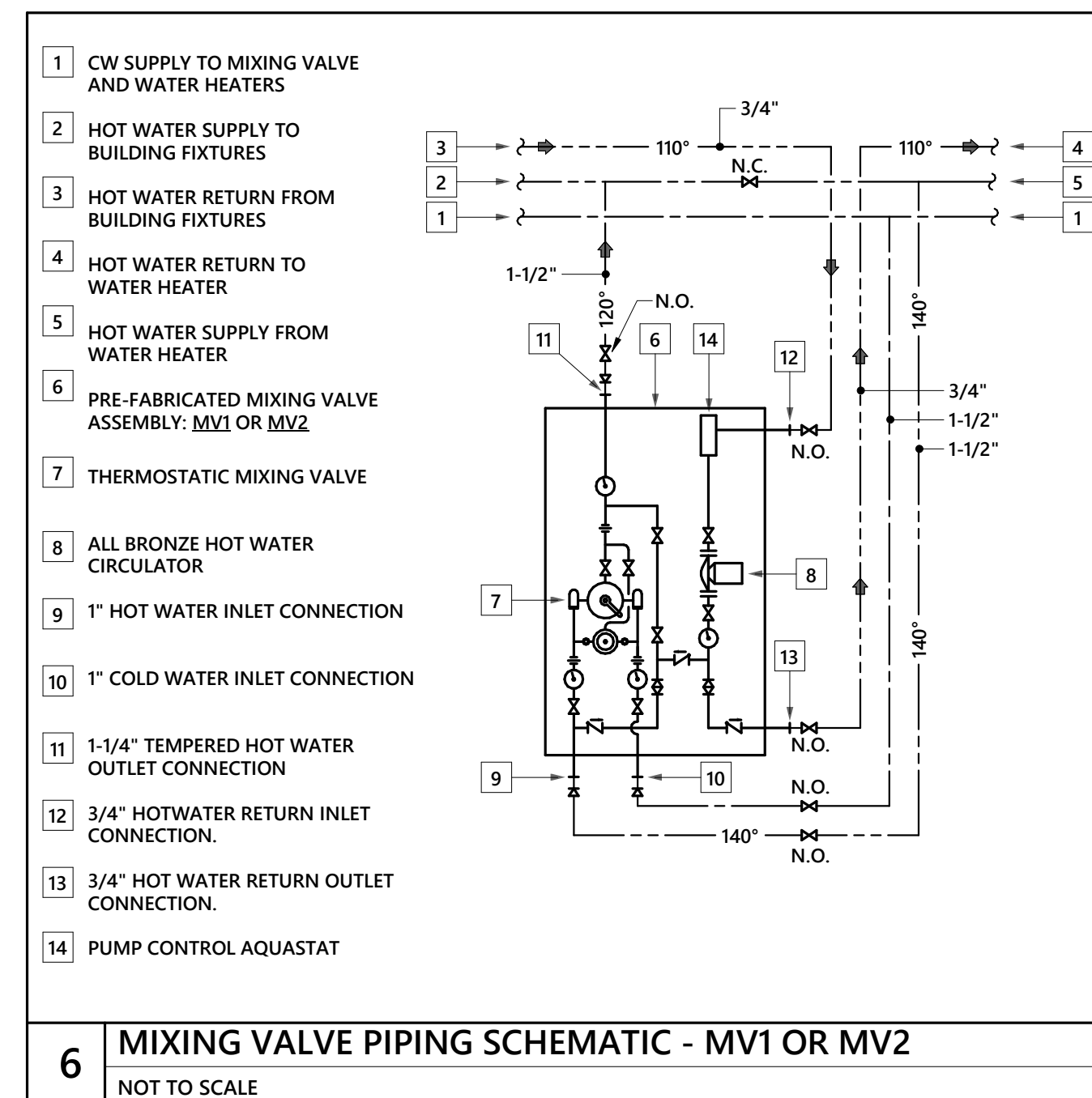
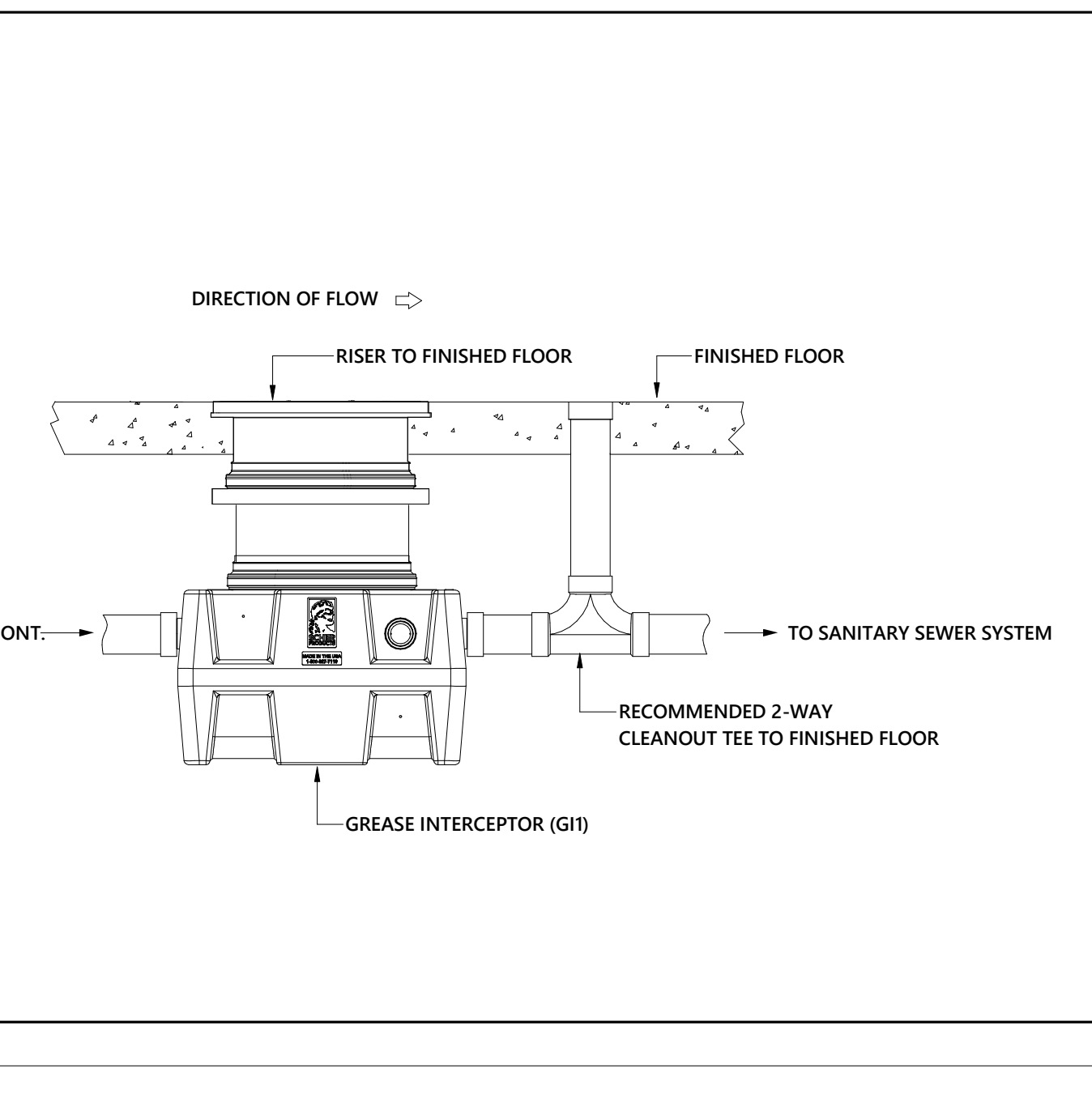
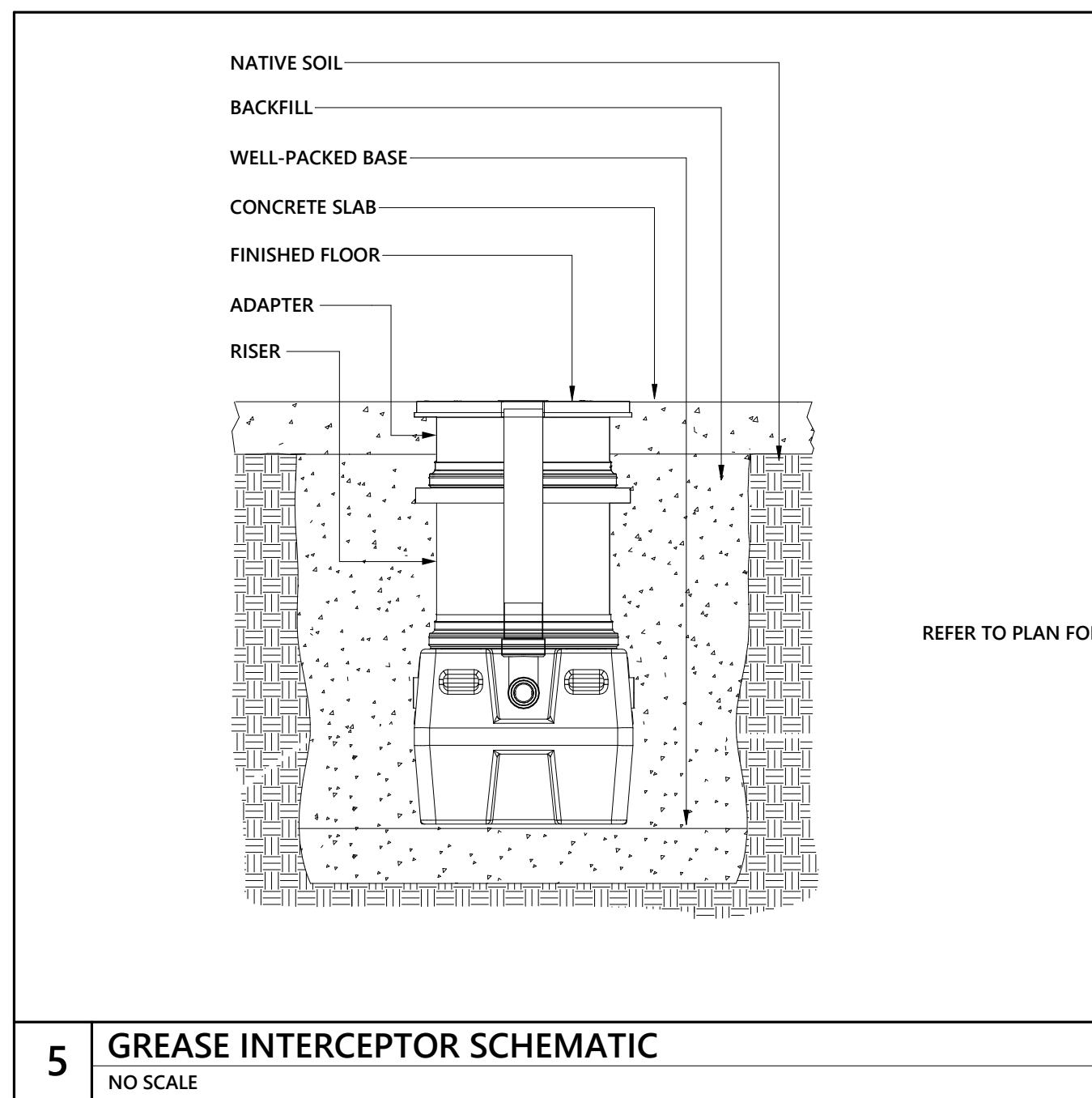
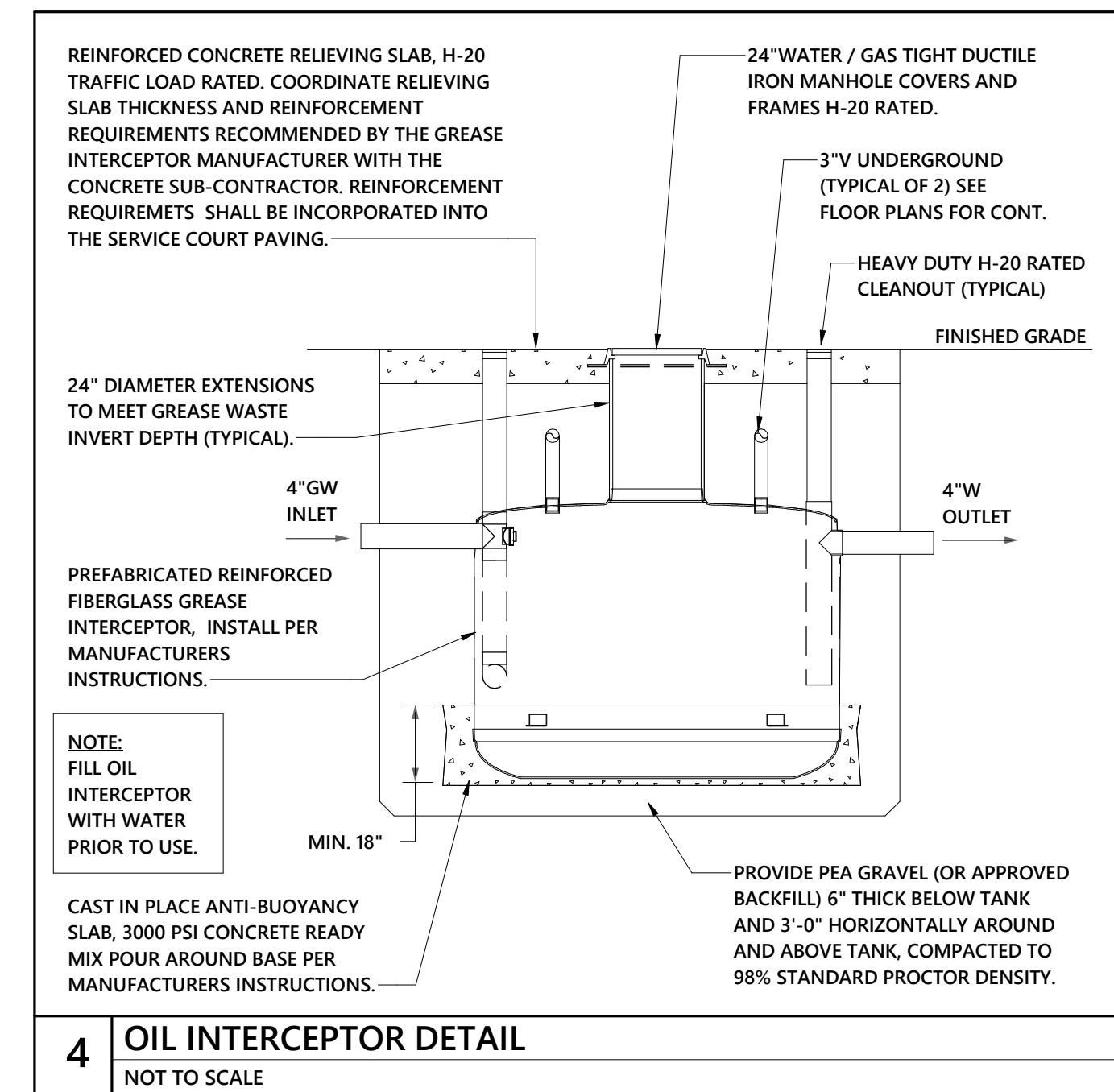
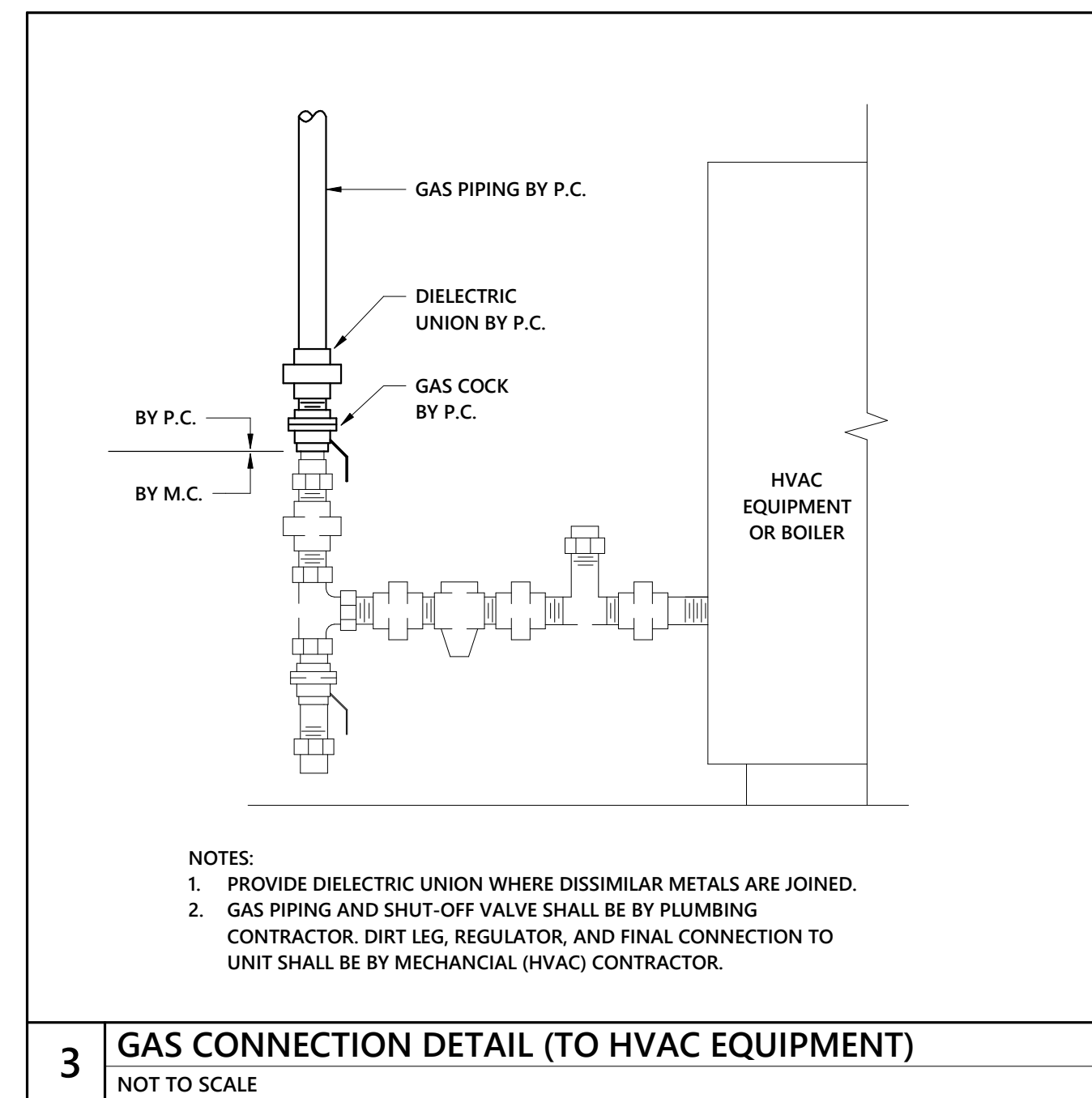
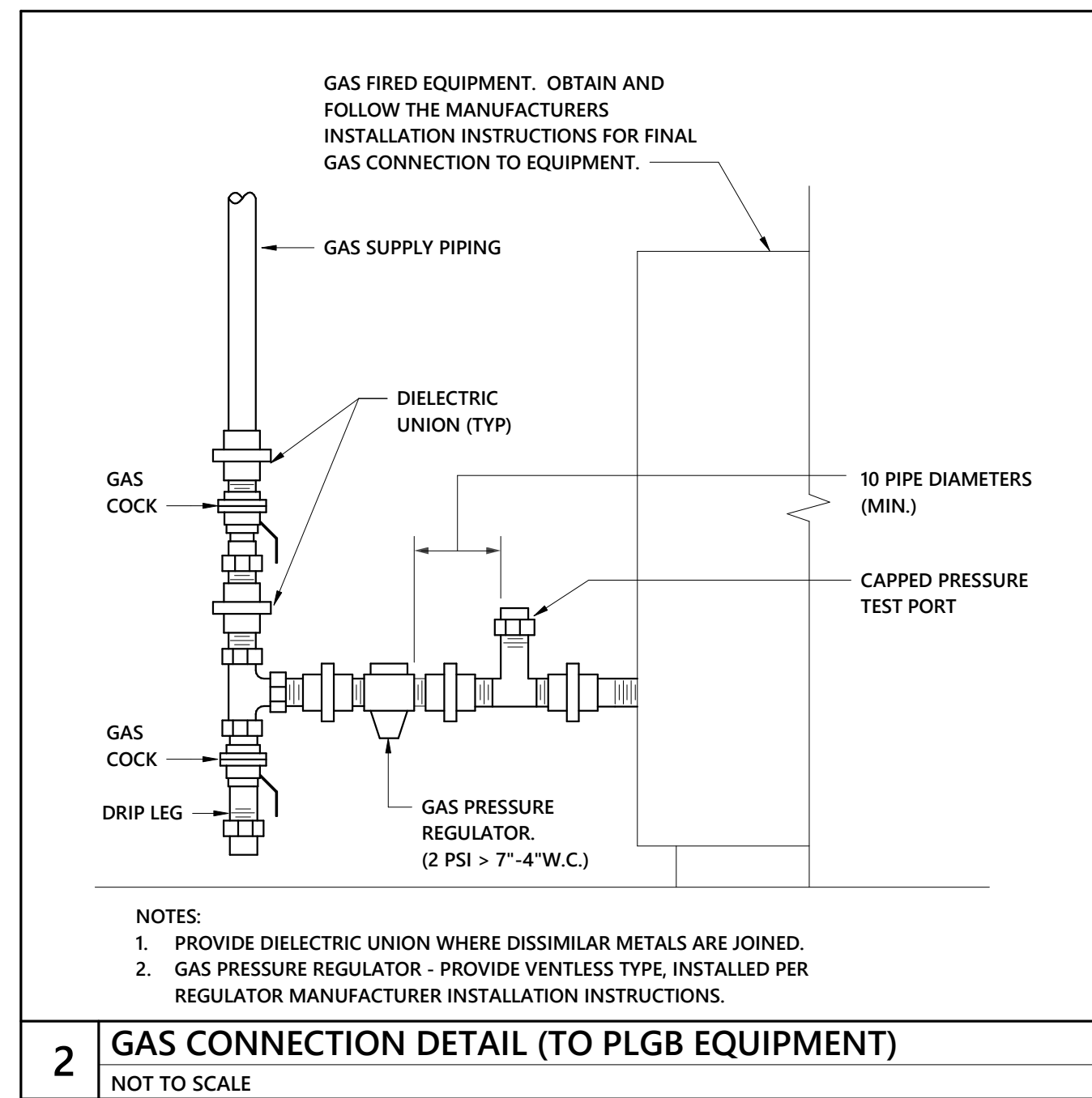
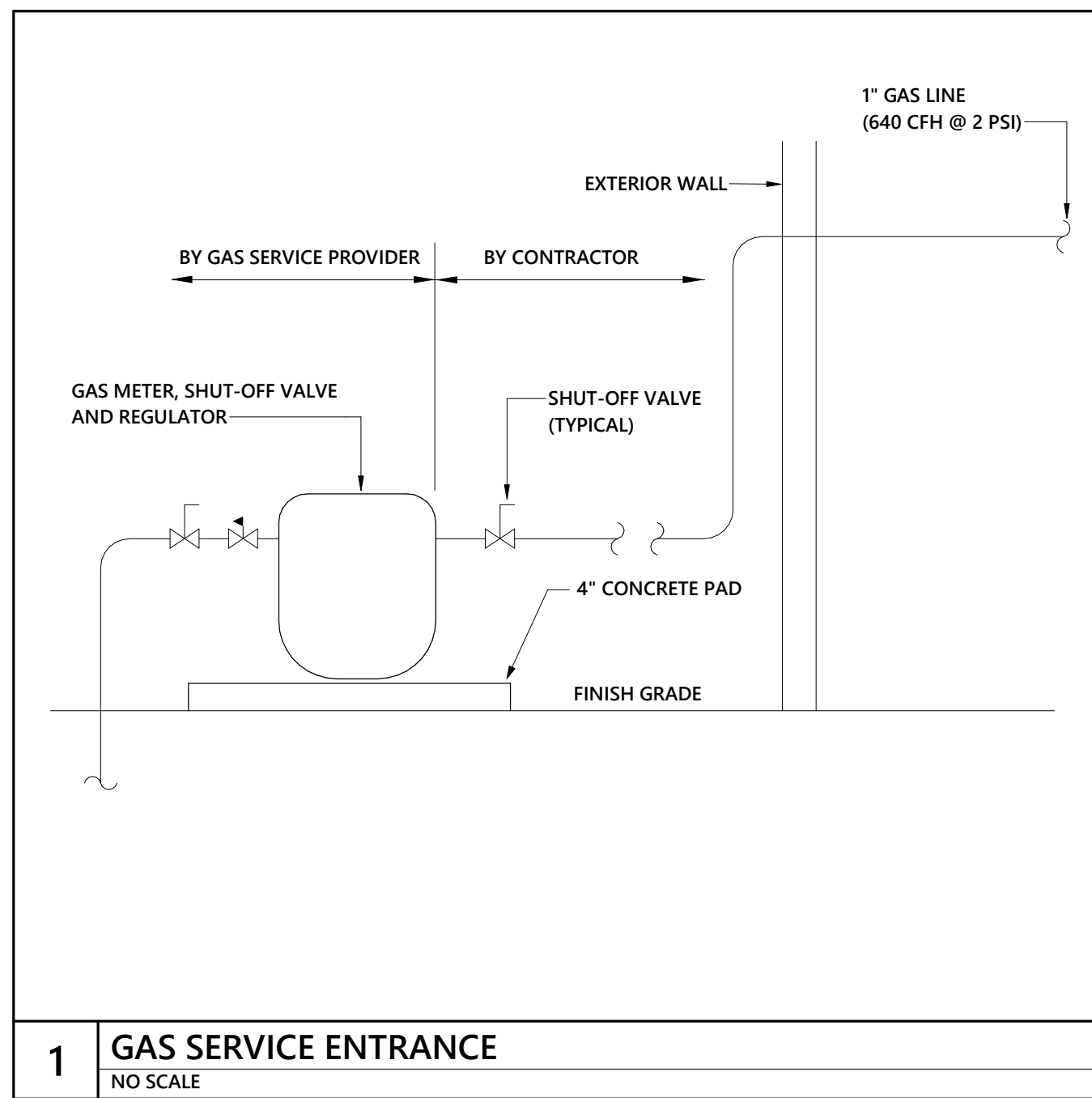
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CASTLE HAYNES FIRE DEPARTMENT  
PLUMBING DETAILS

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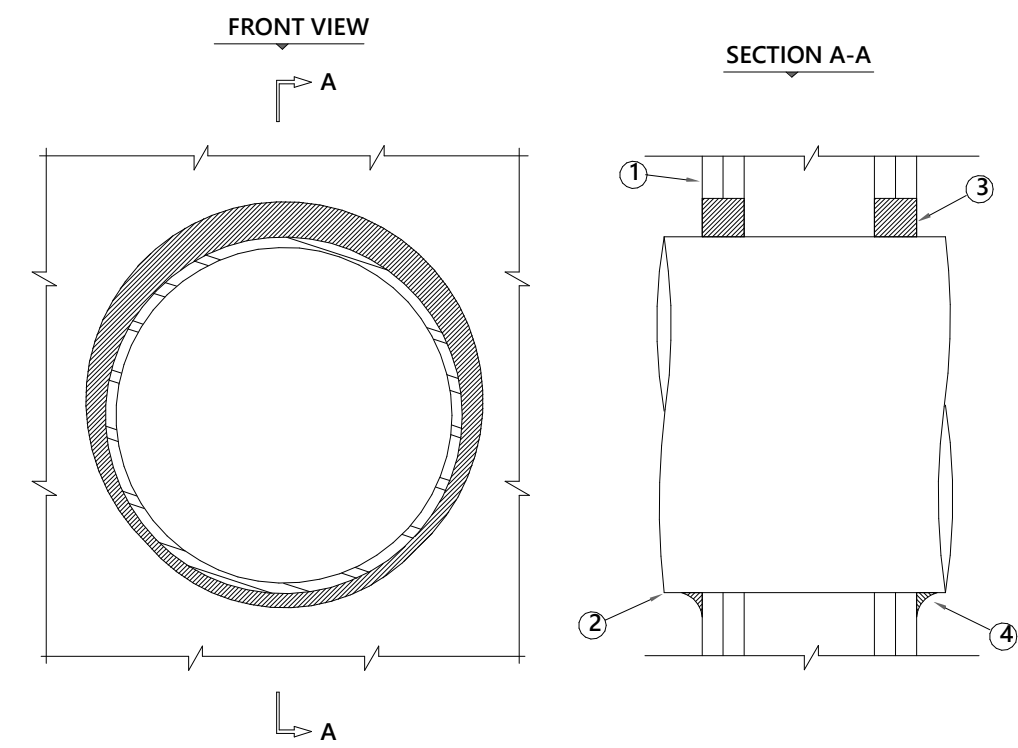
CASTLE HAYNES FIRE DEPARTMENT  
 PLUMBING DETAILS

Sheet No. **P5.02**

Opt # 22-0368



**U.L. SYSTEM NO. WL1054**  
**METAL PIPE THROUGH GYPSUM WALL ASSEMBLY**  
 F RATING = 1-HR OR 2-HR  
 T RATING = 0-HR  
 L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.  
 L RATING AT 400°F = 4 CFM/SQ. FT.



1. GYPSUM-WALL ASSEMBLY (1-HR. AND 2-HR. FIRE RATING)(2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
  - A. MAXIMUM 20" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
  - B. MAXIMUM 6" DIAMETER COPPER PIPE.
  - C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
  - D. MAXIMUM 4" DIAMETER STEEL EMT.
3. MINIMUM DEPTH
  - A. MINIMUM 5/8" DEPTH HILTI FS-ONE FIRESTOP SEALANT = 1-HR. FIRE-RATING.
  - B. MINIMUM 1-1/4" DEPTH HILTI FS-ONE FIRESTOP SEALANT = 2-HR. FIRE-RATING.
4. MINIMUM 1/2" BEAD HILTI FS-ONE FIRESTOP SEALANT FOR POINT OF CONTACT.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 22-1/4".  
 2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/4".

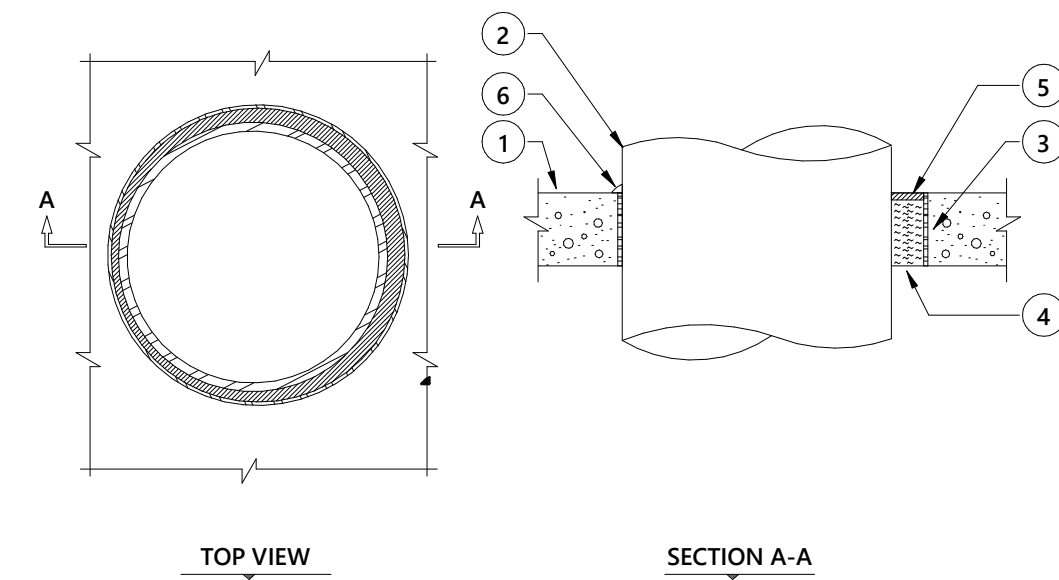
INSTALLATION INSTRUCTIONS FOR UL NO. WL1054

STEP 1 - PREPARATION: All surfaces must be clean, sound, dry and frost free prior to application of firestopping materials.

STEP 2 - FIRESTOP SEALANT: Apply a minimum 5/8" or 1-1/4" depth of FS-ONE in the annular space around the penetrating item. Tool excess sealant beyond perimeter of the opening 1/2" onto wall surface. Leave completed seal undisturbed for 48 hours.

**1 U.L. SYSTEM NO WL1054 DETAIL**  
 NOT TO SCALE

**U.L. SYSTEM NO. CAJ1155**  
**METAL PIPE THROUGH A SLEEVE IN CONCRETE WALL OR FLOOR**  
 F RATING = 3-HR.  
 T RATING = 0-HR.  
 L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.  
 L RATING AT 400°F = 4 CFM/SQ. FT.



1. FLOOR OR WALL ASSEMBLY: B. U.L. CLASSIFIED CONCRETE BLOCK WALL (MINIMUM 8" BLOCK). A. MINIMUM 4-1/2" THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR.
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
  - A. MAXIMUM 20" DIAMETER STEEL PIPE.
  - B. MAXIMUM 6" DIAMETER COPPER PIPE.
  - C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
  - D. MAXIMUM 4" DIAMETER STEEL EMT.
3. OPTIONAL: MAXIMUM 22" DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER).
4. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) RECESSED 1/2" FROM TOP OF SLEEVE.
5. MINIMUM 1/2" DEPTH HILTI FS-ONE FIRESTOP SEALANT.
6. A GENEROUS BEAD OF HILTI FS-ONE FIRESTOP SEALANT AROUND OUTER PERIMETER OF STEEL SLEEVE.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 22".  
 2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-1/2".

INSTALLATION INSTRUCTIONS FOR UL NO. CAJ1155

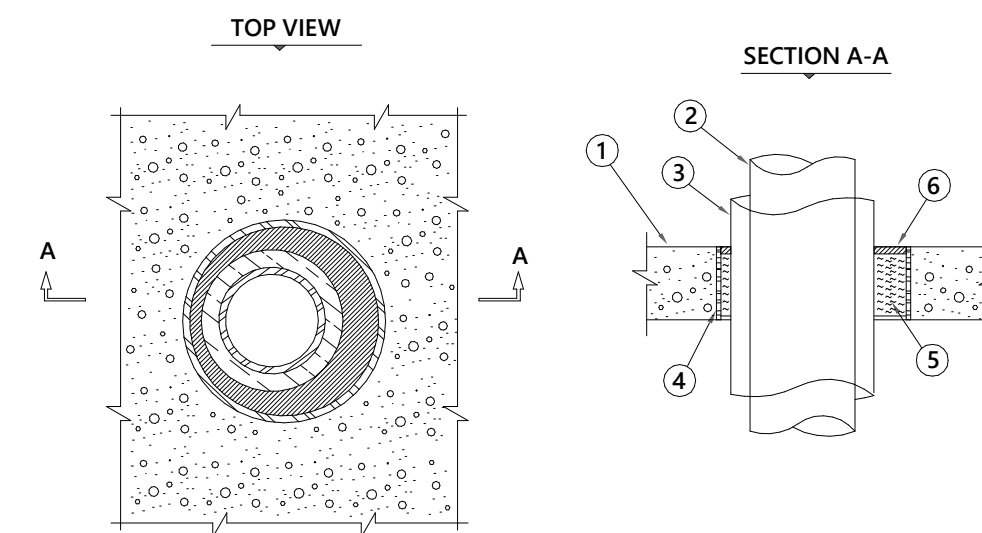
STEP 1 - PREPARATION: to application of firestopping materials. All surfaces must be clean, sound, dry and frost free prior

STEP 2 - BACKING MATERIAL: Firmly pack mineral wool around the penetrating item recessing it 1/2" below surface of the sleeve (or both ends of sleeve in wall)

STEP 3 - FIRESTOP SEALANT: Apply the Firestop Sealant over the backing material to a min. depth of 1/2" flush with the end(s) of the sleeve. Wall penetrations require Firestop Sealant installed on both sides. Leave completed seal undisturbed for 48 hours.

**2 U.L. SYSTEM NO CAJ-1155 DETAIL**  
 NOT TO SCALE

**U.L. SYSTEM NO. CAJ5090**  
**INSULATED METALLIC PIPE THROUGH CONCRETE WALL OR FLOOR**  
 F RATING = 3-HR.  
 T RATING = 0-HR.  
 L RATING AT AMBIENT = 4 CFM/SQ. FT.  
 L RATING AT 400°F = LESS THAN 1 CFM/SQ. FT.



1. CONCRETE FLOOR ASSEMBLY (MINIMUM 4-1/2" THICK)
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
  - A. MAXIMUM 4" DIAMETER STEEL PIPE.
  - B. MAXIMUM 4" DIAMETER COPPER PIPE.
  - C. MAXIMUM 4" DIAMETER STEEL CONDUIT.
  - D. MAXIMUM 4" DIAMETER EMT.
3. MAXIMUM 3/4" THICK AB/PVC PIPE INSULATION.
4. OPTIONAL: MAXIMUM 8" DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER).
5. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
6. MINIMUM 1/4" DEPTH HILTI FS-ONE FIRESTOP SEALANT.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 8-5/8".  
 2. ANNULAR SPACE = MINIMUM 1/2", MAXIMUM 1-1/2".

INSTALLATION INSTRUCTIONS FOR UL NO. CAJ5090

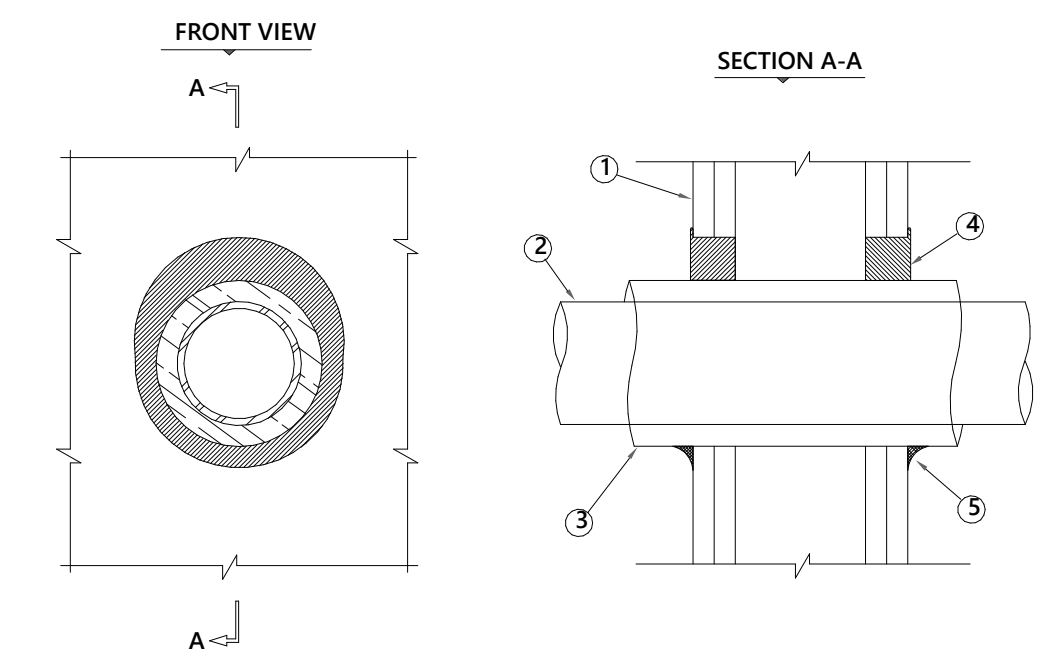
STEP 1 - PREPARATION: All surfaces must be clean, sound, dry and frost free prior to application of firestopping materials.

STEP 2 - BACKING MATERIAL: Pack mineral wool tightly around the penetrating item to the depth shown in the drawings, and recess it below the top surface of the floor (or both surfaces of a wall) to allow proper space for the firestop material.

STEP 3 - FIRESTOP SEALANT: Apply the Firestop Sealant over the backing material to the depth shown. Wall penetrations require Firestop Sealant on both sides. Leave completed seal undisturbed for 48 hours.

**3 U.L. SYSTEM NO CAJ5090 DETAIL**  
 NOT TO SCALE

**U.L. SYSTEM NO. WL5028**  
**INSULATED METAL PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY**  
 F RATING = 1-HR AND 2-HR  
 T RATING = 1/2-HR  
 L RATING AT AMBIENT = 4 CFM/SQ. FT.  
 L RATING AT 400°F = LESS THAN 1 CFM/SQ. FT.



1. GYPSUM-WALL ASSEMBLY (1-HR. OR 2-HR. FIRE RATING)(2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
  - A. MAXIMUM 4" DIAMETER STEEL PIPE.
  - B. MAXIMUM 2" DIAMETER COPPER PIPE.
  - C. MAXIMUM 4" DIAMETER EMT.
  - D. MAXIMUM 4" DIAMETER STEEL CONDUIT.
3. MAXIMUM 3/4" THICK (AB/PVC) FLEXIBLE FOAM TYPE PIPE INSULATION.
4. HILTI FS-ONE FIRESTOP SEALANTS:
  - A. MINIMUM 5/8" DEPTH, FOR A 1-HR. FIRE-RATING.
  - B. MINIMUM 1-1/4" DEPTH, FOR A 2-HR. FIRE-RATING.
5. MINIMUM 1/2" CROWN HILTI FS-ONE FIRESTOP SEALANT AT PIPE INSULATION/WALL ASSEMBLY INTERFACE.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 7-1/2".  
 2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-1/2".

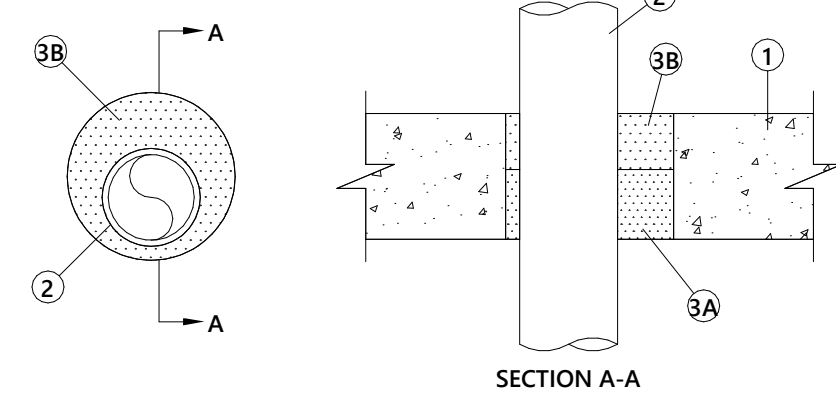
INSTALLATION INSTRUCTIONS FOR UL NO. WL5028  
 STEP 1 - PREPARATION: ALL SURFACES MUST BE CLEAN, SOUND, DRY AND FROST FREE PRIOR TO APPLICATION OF FIRESTOPPING MATERIALS.

STEP 2 - FIRESTOP SEALANT: APPLY A MINIMUM 5/8" OR 1-1/4" DEPTH OF FS-ONE IN THE ANNULAR SPACE BETWEEN THE PIPE AND WALL ON BOTH SIDES AND WITH A PUTTY KNIFE UNTIL FLUSH WITH SURFACE. TOOL EXCESS BEYOND THE PERIMETER OF THE OPENING 1/2" ONTO EACH WALL SURFACE. LEAVE COMPLETED SEAL UNDISTURBED FOR 48 HOURS.

TOOL IT BEYOND THE WALL SURFACE. LEAVE COMPLETED PERIMETER OF THE OPENING 1/2" ONTO EACH SEAL UNDISTURBED FOR 48 HOURS.

**4 U.L. SYSTEM NO WL5028 DETAIL**  
 NOT TO SCALE

**SYSTEM NO. C-AJ-2141**  
**PVC PIPE THROUGH CONCRETE WALL ASSEMBLY**  
 F RATING -- 3 HR  
 T RATING -- 2 HR  
 L RATING AT AMBIENT -- LESS THAN 1 CFM/SQ FT  
 L RATING AT 400 F -- 4 CFM/SQ FT

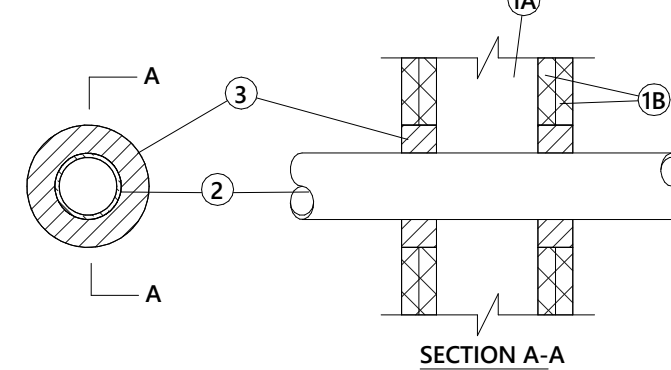


1. FLOOR OR WALL ASSEMBLY -- MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY U.L. CLASSIFIED CONCRETE BLOCKS\*. MAX DIAM OF OPENING IS 6 IN. SEE CONCRETE BLOCKS\* (CAZ) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. THROUGH PENETRANTS -- ONE NONMETALLIC PIPE OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN THE PIPE OR CONDUIT AND THE PERIPHERY OF THE OPENING SHALL BE A MIN 1/2 IN. TO A MAX 2 IN. THE PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL. THE FOLLOWING TYPES AND SIZES OF PIPES OR CONDUITS MAY BE USED:
  - A. POLYVINYL CHLORIDE (PVC) PIPE -- NOM 3 IN. DIAM (OR SMALLER) SCHEDULE 40 PVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
  - B. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE -- NOM 3 IN. DIAM (OR SMALLER) SDR 17 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
3. FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
  - A. FORMING MATERIAL\* -- MIN 2-1/2 IN. THICKNESS OF FORMING MATERIAL FOAMED INTO OPENING AS A PERMANENT FORM. FORMING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CF80, CF82 OR CF511 FOAM SEALANT
  - B. FILL, VOID OR CAVITY MATERIAL\* -- SEALANT -- MIN 2 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS FLUSH WITH TOP SURFACE OF FLOOR OR WITHIN BOTH SURFACES OF WALL. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE SEALANT

\*BEARING THE UL CLASSIFICATION MARK

**5 PVC PIPE THROUGH CONCRETE WALL ASSEMBLY**  
 NOT TO SCALE

**SYSTEM NO. W-L-2098**  
**PVC PIPE THROUGH GYPSUM WALL ASSEMBLY**  
 F RATINGS - 1 AND 2 HR (SEE ITEM 1)  
 T RATINGS - 1 AND 2 HR (SEE ITEM 1)  
 L RATING AT AMBIENT - LESS THAN 1 CFM/SQ FT  
 L RATING AT 400 F - 4 CFM/SQ FT



1. WALL ASSEMBLY -- THE FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE U.L. FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
  - A. STUDS -- WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.
  - B. GYPSUM BOARD\* -- 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPPED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IS 4-3/8 IN. THE HOURLY F AND T RATINGS OF THE FIRESTOP SYSTEM ARE EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY WHICH IT IS INSTALLED.
2. THROUGH PENETRANTS -- ONE NONMETALLIC PIPE INSTALLED WITHIN THE FIRESTOP SYSTEM. PIPE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE SPACE BETWEEN PIPE AND PERIPHERY OF OPENING SHALL BE MIN 3/4 IN. TO MAX 1-1/4 IN. PIPE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NONMETALLIC PIPES MAY BE USED:
  - A. POLYVINYL CHLORIDE (PVC) PIPE -- NOM 2 IN. DIAM (OR SMALLER) SCHEDULE 40 PVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEM.
  - B. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE -- NOM 2 IN. DIAM (OR SMALLER) SDR17 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
3. FILL, VOID OR CAVITY MATERIALS\* -- SEALANT -- INSTALLED TO COMPLETELY FILL THE ANNULAR SPACE BETWEEN THE PIPES AND GYPSUM WALLBOARD ON BOTH SIDES OF WALL.

\*BEARING THE UL CLASSIFICATION MARK

**6 PVC PIPE THROUGH GYPSUM WALL ASSEMBLY**  
 NOT TO SCALE