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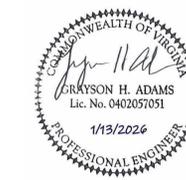
PROJECT # 225007.00

CARILION WESTLAKE FSER

35 MEDICAL CT, HARDY, VA 24101

CARILION ROANOKE MEMORIAL HOSPITAL  
1906 BELLEVIEW AVE SE, ROANOKE, VA 24014

CONSTRUCTION DOCUMENTS



01/12/2026

PLUMBING - LEGENDS & NOTES

P001

### PLUMBING ABBREVIATIONS

ABBREVIATION	DESCRIPTION
A	MEDICAL AIR LINE
ACC	ACCESSIBLE
AW	ACID WASTE
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AVTR	ACID VENT THROUGH ROOF
BPW	BED PAN WASHER
CLG	CEILING
CONT	CONTINUATION
COORD	COORDINATION
CO	CLEAN OUT
CW	COLD WATER LINE
DN	DOWN
DWG	DRAWING
EA	EACH
ECO	EXTERIOR CLEAN OUT
FM	FLOOR MOUNTED
FD	FIRE PROTECTION DRY PIPE
F	FIRE PROTECTION WET PIPE
FV	FLUSH VALVE
GN	GOOSENECK
GPM	GALLONS PER MINUTE
HW	HOT WATER LINE
HWR	HOT WATER RETURN
LAV	LAVATORY
LPA	LINE PRESSURE ALARM
MAP	MASTER ALARM PANEL
MECH	MECHANICAL
MTD	MOUNTED
O2	OXYGEN LINE
OFE	OWNER FURNISHED EQUIPMENT
PAT	PATIENT
PRV	PRESSURE REDUCING VALVE
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RWL	RAINWATER PIPING
SS	SANITARY SEWER PIPING
SD	UNDERGROUND STORM PIPING
SF	SQUARE FOOT
V	MEDICAL VACUUM PIPING
VTR	VENT THROUGH ROOF
WB	WRISTBLADE
WC	WATER CLOSET
WCO	WALL CLEAN OUT
WH	WALL HUNG
ZVB	ZONE VALVE BOX

### NOTES FOR SEISMIC ANCHORAGE AND BRACING

#### GENERAL

- Ducts, pipes, and conduits shall be braced in accordance with the 2018 International Building Code(IBC), Occupancy Category III, or IV. Refer to structural drawings for site class, short and long period acceleration parameters and seismic design category. Component importance factor shall be 1.5 for all systems. Bracing calculations and system design to be completed by a registered engineer within the state, refer to specification sections 220547 for additional requirements.
- Unless otherwise permitted by the Code or applicable bracing standards, in-line equipment shall be braced independently of the ducts or pipes and in conformance with applicable building codes.
- Pipe, duct, and conduit hangers shall be positively attached to the supporting structure above. The use of C-clamps or other friction-type anchors to hang pipe, duct, and conduit is prohibited. Friction-type anchors such as C-clamps with properly attached retaining straps may be used if approved by the Structural Engineer-of-Record.
- Refer to the Structural Drawings for acceptable expansion anchor types and test loads where required.
- Appropriate expansion/contraction capability shall be provided in ducts, conduits, pipes, etc. which cross building expansion direction on each side of the joint centerline. As a minimum, the total relative movement in any horizontal directions shall be equal to the size of the building expansion joint. For example, at a 3-inch building expansion joint, a pipe, duct, or conduit shall be permitted to move a minimum of three inches (1 1/2 inches in each of 2 opposite horizontal directions) on each side of the joint centerline.

#### REQUIREMENTS FOR BRACING OF PIPES

- Provide bracing details, schedules, and notes for all types of pipe, conduit and joints.
- Seismic support shall not be required for other piping systems where one of the following conditions are met:
  - Piping is supported by rod hangers, hangers in the pipe run are 12 in or less in length from the top of the pipe to the supporting structure, hangers are detailed to avoid bending of the hangers and their attachments, and provisions are made for piping to accommodate expected deflections.
  - High-deformability piping is used; provisions are made to avoid impact with larger piping or mechanical components or to protect the piping in the event of such impact; and the following size requirements are satisfied:
    - For Seismic Design Categories D, E, or F, the nominal pipe size shall be 1 in. or less.
    - For Seismic Design Category C, the nominal pipe size shall be 2 in or less.
    - Transverse bracing shall be at 40 feet maximum, except where a lesser spacing is indicated in the tables for bracing of pipes.
    - Longitudinal bracing shall be at 80 feet maximum, except where a lesser spacing is indicated in the tables. In pipes where thermal expansion is a consideration, an anchor point may be used as the specified longitudinal brace provided it has a capacity equal to or greater than a longitudinal brace. The longitudinal braces and connections must be capable of resisting the additional force induced by expansion and contraction.
    - Brace fuel-oil, medical gas, and natural gas piping, as required for flammable piping.
    - Provide flexibility in joints where pipes pass through building seismic joints or expansion joints or where rigidly supported pipes connect to equipment with vibration isolators.
    - Branch lines may not be used to brace main lines.
    - A rigid piping system shall not be braced to dissimilar parts of the building or to two dissimilar building systems that may respond differently during an earthquake.
    - Cast-iron pipe of all types, glass pipe, and any other pipe joined with a shield and clamp assembly, where the top of the pipe is 12 inches or more from the supporting structure, shall be braced on each side of a change in a direction of 90 degrees or more. Riser joints shall be braced or stabilized between floors.
    - Vertical risers shall be laterally supported with a riser clamp at each floor. For buildings greater than six stories high, risers shall be engineered individually.

#### EQUIPMENT

- Floor- or pad-mounted equipment without vibration isolators shall be bolted to the floor (slab) with 3/8-inch diameter expansion bolts (see Structural Drawings for acceptable bolt type and required embedment) unless noted or shown otherwise on the MPE Drawings. Provide expansion anchors at the four corners and at 4'-0" center-to-center maximum along each side unless noted otherwise.
- Vibration isolators, snubbers, isolation rails, etc. and the anchorage of these assemblies for floor- or roof-mounted or suspended equipment shall be designed for the appropriate seismic forces (Fp) as found in the Chapter 13 of ASCE 7-10 and as required by the IBC. The design seismic forces shall be determined considering the amplification effects of non-rigid or flexible supports. Refer to the specifications for additional information and submittal requirements.
- Contractor shall submit a letter from each equipment manufacturer stating that active mechanical and electrical equipment that must remain operable following the design level earthquake for the project site shall be certified as operable based on shake table testing as specified in Section 13.2.5 of ASCE 7-10, or experience and historical data as outlined in Section 13.2.6 of ASCE 7-10 while meeting the scheduled and detailed requirements of the project.

### PLUMBING SHEET INDEX

SHEET #	SHEET NAME
P001	PLUMBING - LEGENDS & NOTES
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P003	PLUMBING - DETAILS
P004	PLUMBING - DETAILS
P005	PLUMBING - DETAILS
P100	PLUMBING - UNDERGROUND PLAN
P101	PLUMBING - FIRST FLOOR PLAN
P201	SANITARY AND STORM - FIRST FLOOR PLAN
P202	SANITARY AND STORM - ROOF PLAN
P301	MED GAS - FIRST FLOOR PLAN
P401	DOMESTIC WATER RISER
P402	SANITARY RISER

### MECHANICAL/ELECTRICAL SYSTEM COORDINATION SCHEDULE

SYSTEM	FURNISHED UNDER	INSTALLED UNDER	POWER WIRING UNDER	CONTROL OR SUPERVISION WIRING UNDER
EMEGENCY GENERATOR	DIV 26	DIV 26	DIV 26	DIV 26
FUEL TANK	DIV 26	DIV 26	DIV 26	DIV 26
MUFFLER - OUTDOOR	DIV 26	DIV 26	---	---
REMOTE ANUNCIATOR	DIV 26	DIV 26	DIV 26	DIV 26
MAIN FUEL OIL SYSTEM	DIV 23	DIV 23	DIV 26	DIV 23
LIFE SAFETY SYSTEM	---	---	---	---
SMOKE DAMPER / ACTUATOR	DIV 23	DIV 23	DIV 26	DIV 28
FIRE/SMOKE DAMPER / ACTUATOR	DIV 23	DIV 23	DIV 26	DIV 28
DUCT SMOKE DETECTOR	DIV 26	DIV 23	---	DIV 28
FIRE SPRINKLER SYSTEM	DIV 21	DIV 21	DIV 26	DIV 28
WATER FLOW SWITCHES	DIV 21	DIV 21	---	DIV 28
TAMPER SWITCHES	DIV 21	DIV 21	---	DIV 28
MEDICAL GAS ALARM	DIV 22	DIV 22	DIV 26	DIV 22
CHEMICAL FEED SYSTEM	DIV 22 / 23	DIV 22 / 23	DIV 26	DIV 22 / 23
HEATING WATER BOILERS	DIV 23	DIV 23	DIV 26	DIV 23
DOMESTIC WATER BOILERS	DIV 22	DIV 22	DIV 26	DIV 23
MOTOR STARTERS (INTEGRAL TO EQUIP.)	DIV 22 / 23	---	DIV 26	DIV 23
MOTOR STARTERS (NON-INTEGRAL TO EQUIP.)	DIV 26	DIV 26	DIV 26	DIV 23
COMBI MOTOR STARTER/DISCONNECT (INTEGRAL TO EQUIP.)	DIV 22 / 23	---	DIV 26	DIV 23
COMBI MOTOR STARTER/DISCONNECT (NON-INTEGRAL TO EQUIP.)	DIV 26	DIV 26	DIV 26	DIV 23
VARIABLE FREQUENCY DRIVES (VFD'S)	DIV 22 / 23	DIV 23	DIV 26	DIV 23
DISCONNECT SWITCHES (NON-INTEGRAL TO EQUIP.)	DIV 26	DIV 26	DIV 26	---
HEAT TRACE	DIV 22 / 23	DIV 22 / 23	DIV 26	DIV 23

THIS TABLE IS PROVIDED AS A GUIDE TO THE DOCUMENT PREPARATION AND IN NO WAY INDICATES CONTRACTOR MEANS AND METHODS. ALL LISTED ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE GENERAL CONTRACTOR, UNDER THE DIVISIONS INDICATED ABOVE, UNLESS OTHERWISE NOTED.

### PLUMBING LEGEND

SYMBOL	DESCRIPTION
	REDUCED PRESSURE BACKFLOW PREVENTER
	P-TRAP
	BALL VALVE
	FLOOR DRAIN
	CONNECT TO EXISTING
	PLUMBING FIXTURE DESIGNATION
	END CAP
	FIRE EXTINGUISHER
	MEDICAL GAS ZONE VALVE BOX (ZVB)
	MEDICAL GAS ALARM PANEL
	MEDICAL GAS DESIGNATION
	COLD WATER SUPPLY
	HOT WATER SUPPLY
	HOT WATER RETURN
	SANITARY VENT
	SANITARY WASTE
	ACID VENT
	ACID WASTE
	RAINWATER LEADER
	OVERFLOW RAINWATER DRAIN
	STORM DRAIN
	OXYGEN PIPING
	MEDICAL AIR PIPING
	VACUUM PIPING

PROJECT #

CARILION WESTLAKE FSER

CONSTRUCTION DOCUMENTS



01/12/2026

PLUMBING - LEGENDS & NOTES

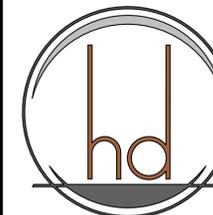
P001

TITLE

DATES OF ISSUANCE

SHEET

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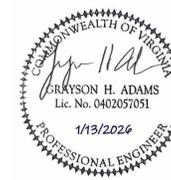
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CONSTRUCTION DOCUMENTS



01/12/2026

PLUMBING - SCHEDULES

P002

PLUMBING FIXTURE SCHEDULE								
TAG	EQUIPMENT	MANUFACTURER	MODEL NUMBER	DESCRIPTION	HW	CW	W	V
WC-1	WATER CLOSET (ADA) VALVE (1.28 GPF) SEAT	ZURN ZURN PROFLO	Z5665-BWL1 Z-6000 PFTSCOF2000	FLOOR MOUNT, 16-3/4" RIM HEIGHT, WHITE MANUAL FLUSH VALVE, 1.28 GPF ELONGATED OPEN FRONT SEAT LESS COVER	X	1-1/4"	4"	2"
WC-2	WATER CLOSET (ADA) VALVE (1.28 GPF)	WHITEHALL WHITEHALL	WH2142W-3-EGE10_10 WH2898	WALL AND FLOOR MOUNT, 15-3/8" RIM HEIGHT, WHITE, LIGATURE-RESISTANT HYDRAULIC FLUSH VALVE, 1.28 GPF, WITH COVER	X	1-1/4"	4"	2"
LV-1	LAVATORY FAUCET (1.5 GPM) P-TRAP SUPPLIES STOPS MIXING VALVE WALL CARRIER	ZURN ZURN PROFLO PROFLO PROFLO ZURN	Z5344 Z812A4 PFPTB400 PFX146324 PFXQAC32C ZW1070XL ZZ1231	WALL MOUNT, SQUARE, 20" X 18", WHITE GOOSENECK, WRIST BLADE HANDLE, PLAIN END SPOUT CHROME PLATED, CAST BRASS P-TRAP 20", STAINLESS STEEL 1/4 TURN ANGLE STOP THERMOSTATIC MIXING VALVE CONCEALED ARM LAVATORY CARRIER	1/2"	1/2"	1-1/2"	1-1/2"
LV-2	LAVATORY FAUCET (0.5 GPM) P-TRAP SUPPLIES STOPS MIXING VALVE WALL CARRIER	ZURN ZURN PROFLO PROFLO PROFLO ZURN	Z5344 Z812A4 PFPTB400 PFX146324 PFXQAC32C ZW1070XL ZZ1231	WALL MOUNT, SQUARE, 20" X 18", WHITE GOOSENECK, WRIST BLADE HANDLE, PLAIN END SPOUT CHROME PLATED, CAST BRASS P-TRAP 20", STAINLESS STEEL 1/4 TURN ANGLE STOP THERMOSTATIC MIXING VALVE CONCEALED ARM LAVATORY CARRIER	1/2"	1/2"	1-1/2"	1-1/2"
LV-3	LAVATORY FAUCET (1.5 GPM) P-TRAP SUPPLIES STOPS MIXING VALVE WALL CARRIER	ZURN ZURN PROFLO PROFLO PROFLO ZURN	Z5344 Z812A4 Z9ABT112 PFX146324 PFXQAC32C ZW1070XL ZZ1231	WALL MOUNT, SQUARE, 20" X 18", WHITE GOOSENECK, WRIST BLADE HANDLE, PLAIN END SPOUT 1-1/2" ACID WASTE BOTTLE TRAP 20", STAINLESS STEEL 1/4 TURN ANGLE STOP THERMOSTATIC MIXING VALVE CONCEALED ARM LAVATORY CARRIER	1/2"	1/2"	1-1/2"	1-1/2"
LV-4	LAVATORY (ADA) FAUCET (1.5 GPM) P-TRAP SUPPLIES STOPS MIXING VALVE WALL CARRIER	WILLOUGHBY ZURN PROFLO PROFLO PROFLO ZURN	BHS3123 Z812A4 PFPTB400 PFX146324 PFXQAC32C ZW1070XL ZZ1224	ADA BARIATRIC WALL MOUNT LAVATORY GOOSENECK, WRIST BLADE HANDLE, PLAIN END SPOUT CHROME PLATED, CAST BRASS P-TRAP 20", STAINLESS STEEL 1/4 TURN ANGLE STOP THERMOSTATIC MIXING VALVE PLATE TYPE SYSTEM LAVATORY WITH BACK	1/2"	1/2"	1-1/2"	1-1/2"
LV-5	LAVATORY (0.5 GPM) P-TRAP SUPPLIES STOPS	WHITEHALL PROFLO PROFLO PROFLO	WH3776L-WH3375-SO PFPTB400 PFX146324 PFXQAC32C	SINGLE STATION, INFRARED CONTROLS, THERMOSTATIC MIXING VALVE CHROME PLATED, CAST BRASS P-TRAP 20", STAINLESS STEEL 1/4 TURN ANGLE STOP	1/2"	1/2"	1-1/2"	1-1/2"
SK-1	SINK (SINGLE BOWL) FAUCET (1.5 GPM) BOTTLE TRAP SUPPLIES STOPS MIXING VALVE	ELKAY ZURN PROFLO PROFLO ZURN	DLR-1919 Z831B4 Z292BT PFX146324 PFXQAC32C ZW1070XL	DROP IN, SINGLE BOWL, 19-1/2" X 19" X 10-1/8", STAINLESS STEEL GOOSENECK, 4" WRIST BLADES, CAST BRASS CHEMICAL DRAINAGE BOTTLE TRAP 20" FLEX RISER 1/4 TURN ANGLE STOP THERMOSTATIC MIXING VALVE	1/2"	1/2"	1-1/2"	1-1/2"
CS-1	CLINICAL SINK FLUSH VALVE FAUCET BEDPAN WASHER	ZURN ZURN ZURN	Z5420 Z6017 Z843D4 Z85500	FLOOR MOUNTED, 27" X 20-1/2", WITH RIM GUARDS EXPOSED FLUSH VALVE, CHROME PLATED CHROME PLATED, CAST BRASS, WRIST BLADE HANDLES CHROME PLATED, BRASS, WALL MOUNTED	X	1-1/4"	1-1/2"	1-1/2"
SS-1	SCRUB SINK FAUCET (1.5 GPM) P-TRAP SUPPLIES STOPS MIXING VALVE	ZURN ZURN PROFLO PROFLO PROFLO ZURN	Z5468 Z6920 PFPTB403 PFX146324 PFXQAC32C ZW1070XL	WALL MOUNT, SINGLE BOWL, 28" X 22", SURGEON SINK GOOSENECK, SENSOR, CAST BRASS CHROME PLATED, CAST BRASS P-TRAP 20" FLEX RISER 1/4 TURN ANGLE STOP THERMOSTATIC MIXING VALVE	1/2"	1/2"	1-1/2"	1-1/2"
SB-1	SERVICE BASIN FAUCET (1.5 GPM)	STERN-WILLIAMS ZURN	SB-902 Z843M1	24" X 24" X 12", TWO TILING FLANGES ADJUSTABLE WALL MOUNT, LEVER HANDLES, CHROME PLATED, CAST BRASS	1/2"	1/2"	1-1/2"	1-1/2"
SH-1	DECONTAMINATION SHOWER	SYMMONS	125-VT-FSX	BUILT IN THERMOMETER, SINGLE HANDLE CONTROL	X	1-1/4"	1-1/4"	1-1/4"
SH-2	SHOWER (1.5 GPM, ADA) FLOOR DRAIN P-TRAP MIXING VALVE	SYMMONS JR SMITH JR SMITH ZURN	SYM9803 2050 7220 ZW1070XL	HANDSHOWER SYSTEM, SINGLE LEVER HANDLE 9-1/4" ROUND, NICKEL BRONZE STRAINER, 2" OUTLET DEEP SEAL P TRAP THERMOSTATIC MIXING VALVE	1/2"	1/2"	2"	1-1/2"
FD-1	FLOOR DRAIN	ZURN	ZN-415	NICKEL BRONZE TOP, TRAP PRIMER, SEDIMENT BUCKET	X	X	3"	1-1/2"
FD-2	FLOOR DRAIN (MECHANICAL)	ZURN	ZN-541-P	12" ROUND, NICKEL BRONZE TOP, TRAP PRIMER, SEDIMENT BUCKET	X	X	4"	2"
FD-3	FLOOR DRAIN (ACID)	ZURN	Z-550	TRAP PRIMER, SEDIMENT BUCKET, A.R.E. COATED	X	X	3"	1-1/2"
HB-1	WALL HYDRANT	ZURN	Z1310	EXPOSED, ANTI-SIPHON, NON-FREEZE, AUTOMATIC DRAINING	X	3/4"	X	X
HB-2	HOSE BIBB	ZURN	Z1341	INTERIOR, EXPOSED, ANTI-SIPHON, BRONZE	X	3/4"	X	X
HB-3	WALL HYDRANT	ZURN	Z1325	DUAL TEMP, NON-FREEZE, ENCASED WALL HYDRANT	X	3/4"	X	X
RD-1	ROOF DRAIN	ZURN	ZA-100-DR	ALUMINUM DOME, ADJUSTABLE DRAIN RISER EXTENSION ASSEMBLY	X	X	SEE PLANS	X
OD-1	ROOF DRAIN	ZURN	ZA-100-W2-DR	ALUMINUM DOME, INTERNAL 2" DAM	X	X	SEE PLANS	X
DN-1	DOWNSPOUT NOZZLE	ZURN	ZARB199	RAINWATER DOWNSPOUT, NO HUB OUTLET, NICKEL BRONZE FINISH	X	X	SEE PLANS	X
HB-1	WALL HYDRANT	ZURN	Z1310	EXPOSED, ANTI-SIPHON, NON-FREEZE, AUTOMATIC DRAINING	X	3/4"	X	X
RH-1	ROOF HYDRANT	FREEZEFLOW	2131RE	NON-FREEZE, NO DRAIN REQUIRED	X	3/4"	X	X
IM-1	ICE MACHINE CONNECTION	OATEY	39140	METAL ICE MAKER BOX, WITH VALVE AND WATER HAMMER ARRESTOR	X	1/4"	X	X
TP-1	TRAP PRIMER	PRECISION PRECISION PRECISION	PR-500 AG-500 DU-U	PROVIDE QUATER TURN SERVICE VALVE AT INLET SIDE AND UNION CONNECTION ON OUTLET SIDE FOR SERVICING AIR GAP FITTING WATER DISTRIBUTION SYSTEM	X	1/2"	X	X
EYE	EMERGENCY EYEWASH	BRADLEY BRADLEY	S19-4401ABC S19-2000	WALL MOUNT, REMOVABLE, STATIONARY OR HAND HELD, WALL BRACKET THERMOSTATIC MIXING VALVE	1/2"	1/2"	X	X

### WATER HEATER SCHEDULE

IDENT.	WH-12
MANUFACTURER	LOCHINVAR
MODEL NUMBER	LDT-80 XR
CAPACITY	80 GAL
GPH @ 100" RISE	49
POWER	6.1 KW
VOLTAGE/PHASE	480 / 3
DIMENSIONS	24" Ø X 59-3/8"
ACCESSORIES:	A. THERM-X-TROL THERMAL EXPANSION TANK MODEL ST-5 B. DRAIN PAN TO FLOOR DRAIN.
REMARKS:	INSTALL WATER HEATER ON HOUSEKEEPING PADS.

### HOT WATER CIRCULATING PUMP SCHEDULE

TAG	MFG	MODEL NUMBER	GPM	HP	ELECTRICAL	LOCATION
CP-1	GRUNDFOS	UP15-55SFC	2.4 GPM	FRACTIONAL	120/1/60	MECH ROOM

### MEDICAL VACUUM PUMP SCHEDULE

TAG	MFG	MODEL NUMBER	HP	ELECTRICAL	LOCATION
VP-1	BEACON MEADES	VHV02D-060H-D_V	2 HP, DUPLEX	480/3/60	VACUUM 120

NOTES:  
1. VACUUM PUMP TO BE CLAW - DUPLEX TYPE.  
2. TOTAL SYSTEM CAPACITY TO BE 16 SCFM EA.

### MEDICAL GAS SCHEDULE

TAG	TYPE	GASES	LOCATION
(A)	WALL OUTLETS	(2) O2, (1) A, (3) V, (3) SL	RESUSCITATION
(B)	WALL OUTLETS	(1) O2, (1) A, (1) V, (1) SL	EXAM
(C)	WALL OUTLETS	(1) O2, (1) A, (1) V, (1) SL	CT, RAD., AND DECON.
(D)	WALL OUTLETS	(1) O2, (1) V, (1) SL	TRIAGE
(E)	LINE PRESSURE ALARM	O2, A, V	NURSE'S STATION
(F)	MASTER ALARM PANEL	O2, A, V	NURSE'S STATION, 126 OFFICE

NOTE:  
REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATION OF MEDICAL GAS WALL OUTLETS. USE AMICO O-PB MED GAS KEY STYLE.

PROJECT #

CARILION WESTLAKE FSER

STATUS

CONSTRUCTION DOCUMENTS

TITLE

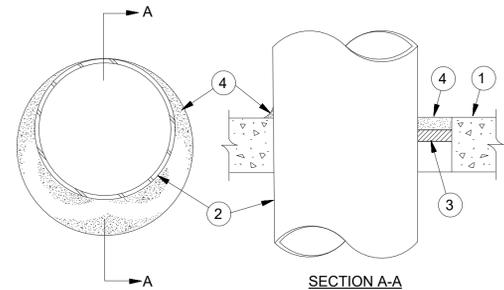
PLUMBING - SCHEDULES

SHEET

P002

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SYSTEM NO. C-AJ-1001  
MARCH 05, 2007  
F RATING - 3 HR  
T RATING - 0 HR  
W RATING - CLASS 1 (SEE ITEM 4)



1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. (114 MM) THICK LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600-2400 KG/M3) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX DIAM OF CIRCULAR THROUGH OPENING IS 32-1/2 IN. (826 MM). SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

1A. STEEL SLEEVE - (OPTIONAL, NOT SHOWN) - NOM 12 IN. (305 MM) DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE SLEEVE CAST INTO CONCRETE FLOOR OR WALL. SLEEVE TO BE FLUSH WITH OR PROJECT MAX 2 IN. (51 MM) FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL.

2. THROUGH - PENETRANT - ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN. (0 MM, POINT CONTACT) TO MAX 1-3/8 IN. (35 MM), PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

A. STEEL PIPE - NOM 30 IN. (762 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

A1. IRON PIPE - NOM 30 IN. (762 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.

B. CONDUIT - NOM 6 IN. (152 MM) DIAM (OR SMALLER) RIGID STEEL CONDUIT.

C. CONDUIT - NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.

3. PACKING MATERIAL - POLYETHYLENE BACKER ROD OR NOM 1 IN. (25 MM) THICKNESS OF TIGHTLY-PACKED CERAMIC (ALUMINA SILICA) FIBER BLANKET, MINERAL WOOL BATT OR GLASS FIBER INSULATION MATERIAL USED AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF SOLID CONCRETE OR CONCRETE BLOCK WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL (ITEM 4). AS AN ALTERNATE WHEN MAX PIPE SIZE IS 10 IN. (254 MM) DIAM AND WHEN MAX ANNULAR SPACE IS 1 IN. (25 MM), A MIN 1 IN. (25 MM) THICKNESS OF TIGHTLY-PACKED CERAMIC FIBER BLANKET OR MINERAL WOOL BATT PACKING MATERIAL MAY BE RECESSED MIN 1/2 IN. (13 MM) FROM BOTTOM SURFACE OF FLOOR OR FROM EITHER SIDE OF SOLID CONCRETE WALL.

4. FILL, VOID OR CAVITY MATERIALS\* - CAULK - APPLIED TO FILL THE ANNULAR SPACE TO THE MIN THICKNESS SHOWN IN THE FOLLOWING TABLE:

Maximum Pipe Diameter Inches	Maximum Annular Space Inches	Packing Material Type (a)	Minimum Caulk Thickness Inches
10 (254)	1 (25)	BR, CF, GF or MW	1/2 (13) (B)
10 (254)	1 (25)	CF or MW	1/2 (13) (C)
30 (762)	2 1/2 (64)	BR, CF, GF or MW	1 (25) (B)

(A) BR=POLYETHYLENE BACKER ROD.  
CF=CERAMIC FIBER BLANKET.  
GF=GLASS FIBER INSULATION.  
MW=MINERAL-WOOL BATT.  
(B) CAULK INSTALLED FLUSH WITH TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL  
(C) CAULK INSTALLED FLUSH WITH BOTTOM SURFACE OF FLOOR OR ONE SURFACE OF SOLID (NON-CONCRETE BLOCK) WALL

3M COMPANY - TYPE CP 25WB+ OR FB-3000 WT

(NOTE - W RATING APPLIES ONLY WHEN FB-3000 WT IS USED.)

\*BEARING THE UL CLASSIFICATION MARK LAST UPDATED ON 2007-03-05

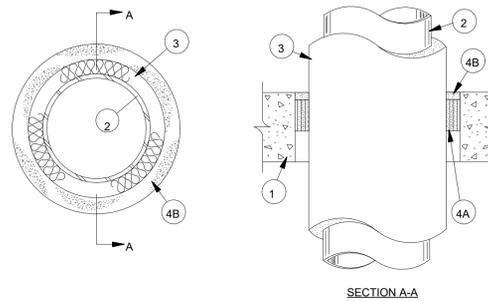
UL LISTED AND CLASSIFIED PRODUCTS UL RECOGNIZED COMPONENTS PRODUCTS CERTIFIED FOR CANADA

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SYSTEM NO. C-AJ-5002  
SEPTEMBER 03, 2004  
(FORMERLY SYSTEM NO. 91-B)  
F RATINGS - 2 AND 3 HR (SEE ITEMS 1A AND 4)  
T RATING AT AMBIENT - 2 CFM/SQ FT  
L RATING AT 400 F - LESS THAN 1 CFM/SQ FT



1. FLOOR OR WALL ASSEMBLY - MIN 2-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX DIAM OF OPENING IS 36 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

1A. STEEL SLEEVE - (OPTIONAL, NOT SHOWN) - NOM 36 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE SLEEVE CAST INTO MIN 4-1/2 IN. THICK CONCRETE FLOOR OR WALL. SLEEVE TO BE FLUSH WITH OR PROJECT MAX 2 IN. FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL. WHEN STEEL SLEEVE IS USED, F RATING IS 2 HR AND T RATING IS 0 HR.

2. PIPE - NOM 4 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER PIPE, NOM 15 IN. DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 30 IN. DIAM (OR SMALLER) CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE OR NOM 30 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE CENTERED IN THE OPENING AND RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR OR WALL ASSEMBLY.

3. PIPE COVERING\* - NOM 1, 2 OR 3 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN. 3.5 PCF) GLASS FIBER UNITS. JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT STRIP TAPE SUPPLIED WITH THE PRODUCT.

SEE PIPE AND EQUIPMENT COVERING - MATERIALS\* (BRGU) CATEGORY IN BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

4. FIRESTOP SYSTEM - THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:

A. FILL, VOID OR CAVITY MATERIALS\* - WRAP STRIP - NOM 1/4 IN. THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL. SUPPLIED IN 2 IN. WIDE BY 24 IN. LONG STRIPS. NOM 2 IN. WIDE STRIPS TIGHTLY-WRAPPED AROUND PIPE COVERING (FOIL SIDE EXPOSED) TO FILL ANNULAR SPACE. EACH LAYER OF WRAP STRIP IS TO BE INSTALLED WITH A BUTTED SEAM. WITH THE BUTTED SEAMS IN SUCCESSIVE LAYERS STAGGERED. WRAP STRIP LAYERS SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLIDE INTO ANNULAR SPACE SUCH THAT THE TOP EDGES ARE RECESSED MIN 1/2 IN. FROM TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, THE WRAP STRIP LAYERS SHALL BE INSTALLED IN THE SAME MANNER USED FOR FLOOR ASSEMBLIES BUT SHALL BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL. THE MIN NUMBER OF WRAP STRIP LAYERS REQUIRED IS DEPENDENT UPON THE MAX PIPE SIZE AND THE PIPE COVERING THICKNESS. AS SHOWN IN THE FOLLOWING TABLE:

Minimum Floor or Wall Thickness In.	Maximum Pipe Diameter Inches	Nominal Pipe Covering Thkns In.	Annular Space Inches	Min No. of Wrap Strip Layers	F Rating Hour	T Rating Hour
2-1/2	6	1	1/4 to 3/8	1	2	1
2-1/2	6	2	1/2 to 5/8	2	2	1
2-1/2	12	1	1/4 to 3/8	1	2	1/2
4-1/2	12	1	1/4 to 3/8	1	2	1
4-1/2	12	2	1/2 to 5/8	2	2	1
4-1/2	20	1	1/2 to 1	2	3	1
4-1/2	30	2	3/4 to 1 1/4	3	2	1
4-1/2	20	3	1 to 1 1/2	4	2	1

3M COMPANY - FS-195+

B. FILL, VOID OR CAVITY MATERIALS\* - CAULK OR SEALANT - APPLIED TO FILL THE ANNULAR SPACE (OVER EDGES OF WRAP STRIP LAYERS) TO A MIN DEPTH OF 1/2 IN., FLUSH WITH TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL.  
3M COMPANY - CP 25WB+ OR FB-3000 WT

\*BEARING THE UL CLASSIFICATION MARK LAST UPDATED ON 2004-09-03

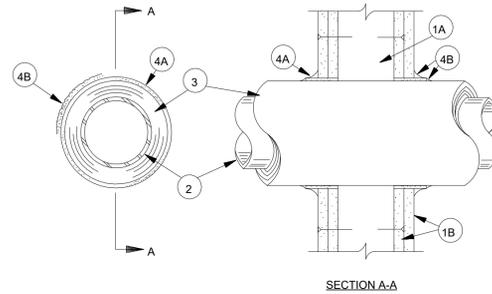
UL LISTED AND CLASSIFIED PRODUCTS UL RECOGNIZED COMPONENTS PRODUCTS CERTIFIED FOR CANADA

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SYSTEM NO. W-L-5001  
MAY 19, 2005  
F RATINGS - 1 AND 2 HR (SEE ITEM 1)  
T RATINGS - 3/4, 1 AND 1 1/2 HR (SEE ITEM 3)  
L RATING AT AMBIENT - 2 CFM/SQ FT  
L RATING AT 400 F - LESS THAN 1 CFM/SQ FT



1. WALL ASSEMBLY - THE 1 OR 2 HR FIRE-RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300, U400 OR V400 SERIES WALL OR PARTITION DESIGN IN THE UL 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. (51 BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC WITH NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3-5/8 IN. (92 MM) WIDE BY 1-3/8 IN. (35 MM) DEEP CHANNELS SPACED MAX 24 IN. (610 MM) OC.

B. GYPSUM BOARD\* - NOM 5/8 IN. (16 MM) THICK, 4 FT (122 CM) WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 14-1/2 (368MM) IN FOR WOOD STUD WALLS AND 18 IN. (457 MM) FOR STEEL STUD WALLS.

THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS 1 HR WHEN INSTALLED IN A 1 HR FIRE RATED WALL AND 2 HR WHEN INSTALLED IN A 2 HR FIRE RATED WALL.

2. THROUGH PENETRANTS - ONE METALLIC PIPE OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBING MAY BE USED:

A. STEEL PIPE - NOM 12 IN. (305 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

B. COPPER TUBING - NOM 6 IN. (152 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.

C. COPPER PIPE - NOM 6 IN. (152 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. PIPE COVERING\* - NOM 1 OR 2 IN. (25 OR 51 MM) THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF OR 56 KG/M3) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SEALED WITH METAL FASTENERS OR WITH BUTT STRIP TAPE SUPPLIED WITH THE PRODUCT. WHEN NOM 1 IN. (25 MM) THICK PIPE COVERING IS USED, THE ANNULAR SPACE BETWEEN THE PIPE COVERING AND THE CIRCULAR CUTOUT IN THE GYPSUM WALLBOARD LAYERS ON EACH SIDE OF THE WALL SHALL BE MIN 1/4 IN. (6 MM) TO MAX 3/8 IN. (10 MM) WHEN NOM 2 IN. (51 MM) THICK PIPE COVERING IS USED, THE ANNULAR SPACE BETWEEN THE PIPE COVERING AND THE CIRCULAR CUTOUT IN THE GYPSUM BOARD LAYERS ON EACH SIDE OF THE WALL SHALL BE MIN 1/2 IN. (13 MM) TO MAX 3/4 IN. (19 MM)

SEE PIPE AND EQUIPMENT COVERING MATERIALS (BRGU) CATEGORY IN BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS 3/4 HR WHEN NOM 1 IN. (25 MM) THICK PIPE COVERING IS USED. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS 1 HR AND 1-1/2 HR WHEN NOM 2 IN. (52 MM) THICK PIPE COVERING IS USED WITH 1 HR AND 2 HR FIRE RATED WALLS, RESPECTIVELY.

4. FIRESTOP SYSTEM - INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:

A. FILL, VOID OR CAVITY MATERIALS\* - WRAP STRIP - NOM 1/4 IN. (6 MM) THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL. SUPPLIED IN 2 IN. (51 MM) WIDE STRIPS. NOM 2 IN. (51 MM) WIDE STRIP TIGHTLY WRAPPED AROUND PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED. WRAP STRIP LAYER SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO ANNULAR SPACE APPROX 1-1/4 IN. (32 MM) SUCH THAT APPROX 3/4 IN. (19 MM) OF THE WRAP STRIP WIDTH PROTRUDES FROM THE WALL SURFACE. ONE LAYER OF WRAP STRIP IS REQUIRED WHEN NOM 1 IN. (25 MM) THICK PIPE COVERING IS USED. TWO LAYERS OF WRAP STRIP ARE REQUIRED WHEN NOM 2 IN. (51 MM) THICK PIPE COVERING IS USED.

3M COMPANY - FS-195+

B. FILL, VOID OR CAVITY MATERIALS\* - CAULK OR SEALANT 15/32 MIN 1/4 IN. (6 MM) DIAM CONTINUOUS BEAD APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED EDGE OF THE WRAP STRIP LAYER APPROX 3/4 IN. (19 MM) FROM THE WALL SURFACE.

3M COMPANY - CP 25WB+ IC 15WB+ FIRE DAM 150+ CAULK OR FB-3000 WT SEALANT

\*BEARING THE UL CLASSIFICATION MARK LAST UPDATED ON 2005-05-19

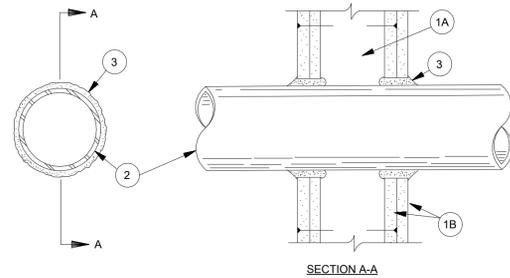
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SYSTEM NO. W-L-1001  
JUNE 15, 2005  
F RATINGS - 1, 2, 3 AND 4 HR (SEE ITEMS 2 AND 3)  
T RATINGS - 0, 1, 2, 3, AND 4 HR (SEE ITEM 3)  
L RATING AT AMBIENT - LESS THAN 1 CFM/SQ FT  
L RATING AT 400 F - LESS THAN 1 CFM/SQ FT



1. WALL ASSEMBLY - THE 1, 2, 3 OR 4 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAX 2 H FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC WITH NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3-5/8 IN. (92 MM) WIDE BY 1-3/8 IN. (35 MM) DEEP CHANNELS SPACED MAX 24 IN. (610 MM) OC.

B. GYPSUM BOARD\* - NOM 5/8 IN. (13 OR 16 MM) THICK, 4 FT (122 H 1/2) CM) WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 26 IN. (660 MM).

2. THROUGH-PENETRANT - ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN. (0 MM), (POINT CONTACT) TO MAX 2 IN. (51 MM) PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

A. STEEL PIPE - NOM 24 IN. (610 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

B. IRON PIPE - NOM 24 IN. (610 MM) DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN (305 MM) DIAM (OR SMALLER) OR CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE.

C. CONDUIT - NOM 6 IN. (152 MM) DIAM (OR SMALLER) STEEL CONDUIT OR NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING

D. COPPER TUBING - NOM 6 IN. (152 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING

E. COPPER PIPE - NOM 6 IN. (152 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

F. THROUGH PENETRATING PRODUCT\* - FLEXIBLE METAL PIPING THE FOLLOWING TYPES OF STEEL FLEXIBLE METAL GAS PIPING MAY BE USED:

1. NOM 2 IN. (51 MM) DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. OMEGA FLEX INC

2. NOM 1 IN. (25 MM) DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. GASTITE, DIV OF TITELIX

3. NOM 1 IN. (25 MM) DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. WARD MFG INC

3. FILL, VOID OR CAVITY MATERIAL\* - CAULK OR SEALANT - MIN 5/8, 1-1/4, 1-7/8 AND 2-1/2 IN. (16, 32, 48 AND 64 MM) THICKNESS OF CAULK FOR 1, 2, 3 AND 4 HR RATED ASSEMBLIES, RESPECTIVELY, APPLIED WITHIN ANNULUS. FLUSH 1/2 IN. (6 MM) DIAM BEAD OF CAULK APPLIED TO GYPSUM BOARD/PENETRANT INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

Maximum Pipe or Conduit Diameter Inches	F Rating Hours	F Rating Hours
1 (25)	1 or 2	0+, 1 or 2
1 (25)	3 or 4	3 or 4
4 (102)	1 or 2	0
6 (152)	3 or 4	0
12 (305)	1 or 2	0

+WHEN COPPER PIPE IS USED, T RATING IS 0

H.3M COMPANY - CP 25WB+ OR FB-3000 WT.

\*BEARING THE UL CLASSIFICATION MARK LAST UPDATED ON 2005-06-15

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**THROUGH-PENETRATION FIRESTOP SYSTEMS**

**1** W-L-1001  
No Scale

**THROUGH-PENETRATION FIRESTOP SYSTEMS**

**2** W-L-5001  
No Scale

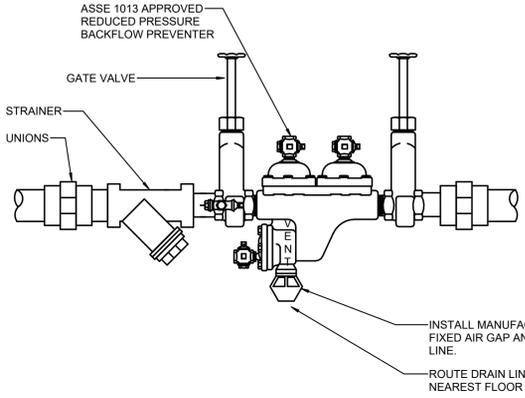
**THROUGH-PENETRATION FIRESTOP SYSTEMS**

**3** C-AJ-5002  
No Scale

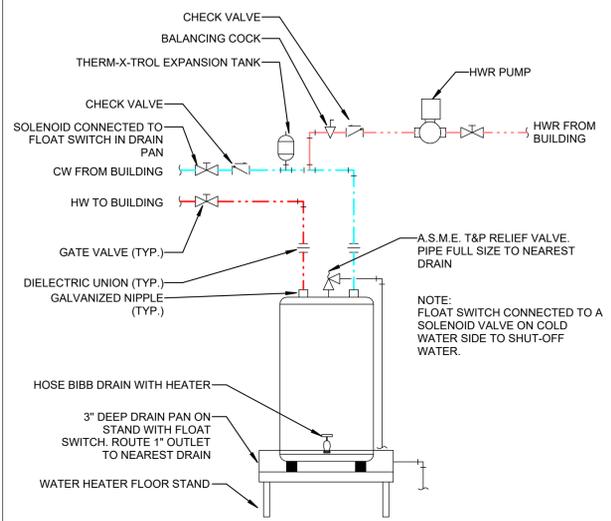
**THROUGH-PENETRATION FIRESTOP SYSTEMS**

**4** C-AJ-1001  
No Scale

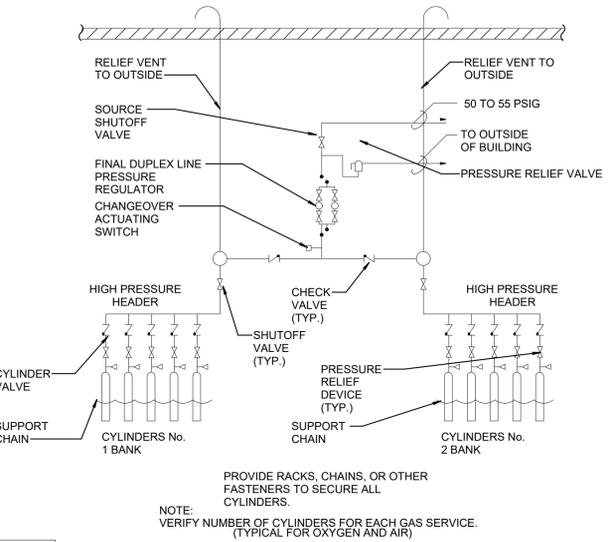
Autodesk Docs://25009 Carilion Westlake FSER25009 Carilion Westlake FSER\_CENTRAL-PLUMB\_R22.rvt 1/13/2026 7:23:41 PM THIS DRAWING IS THE PROPERTY OF HEREFORD DOOLEY ARCHITECTS. IT IS NOT TO BE REPRODUCED IN WHOLE OR IN PART. IT SHALL BE RETURNED UPON REQUEST. COPYRIGHT AS DATED HEREFORD DOOLEY ARCHITECTS. NOT VALID UNLESS SIGNED AND SEALED.



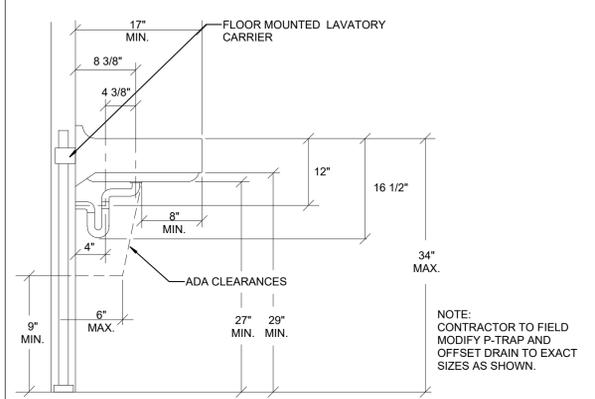
**1** 3/4" REDUCED PRESSURE BACKFLOW PREVENTER DETAIL (EQUIPMENT)  
No Scale



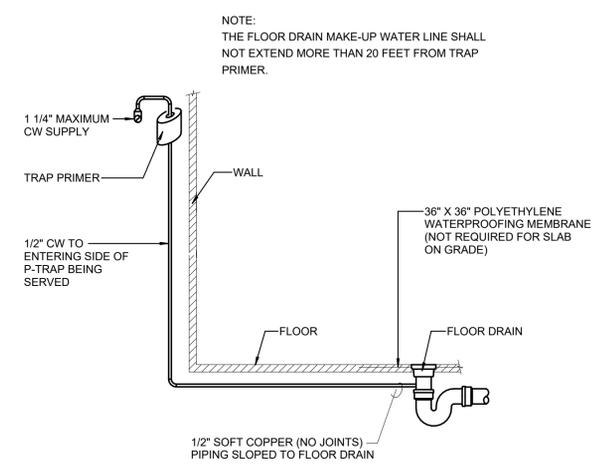
**2** WATER HEATER DIAGRAM  
No Scale



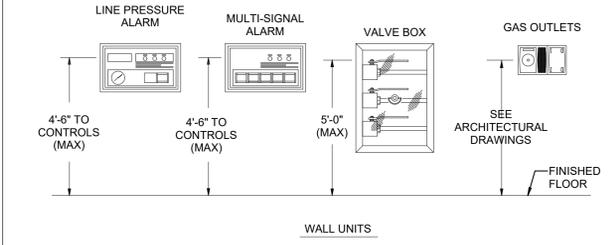
**3** TANK CYLINDER MANIFOLD PIPING SCHEMATIC  
No Scale



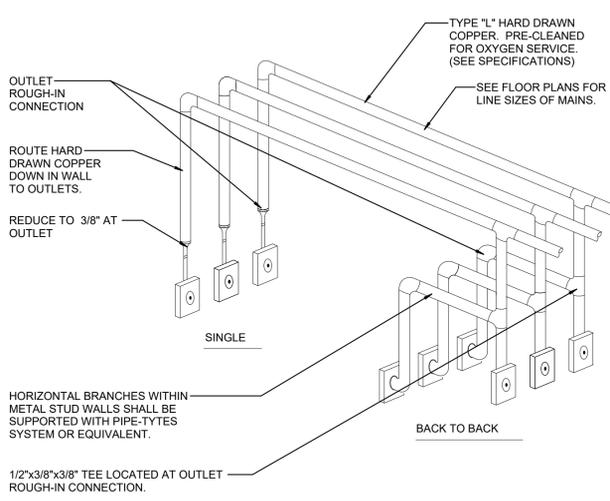
**4** HANDICAPPED LAVATORY INSTALLATION DETAIL W/ CARRIER  
No Scale



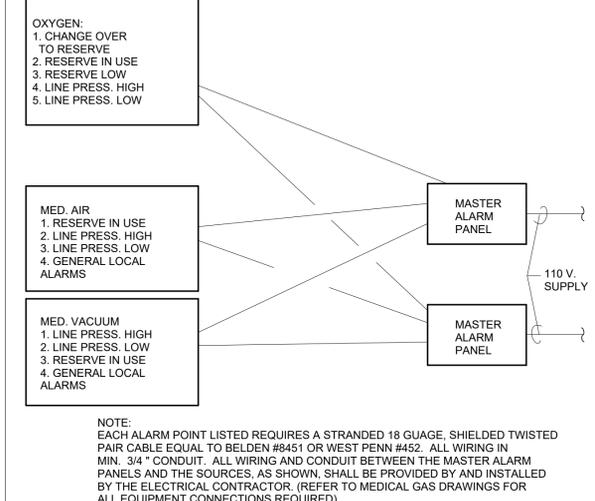
**5** FLOOR DRAIN TRAP PRIMER DETAIL  
No Scale



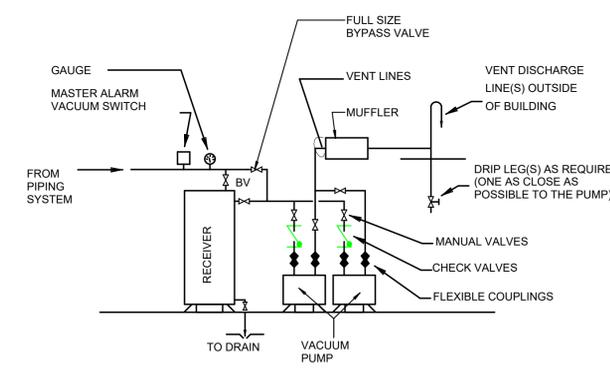
**6** MEDICAL GAS MOUNTING HEIGHT DETAIL  
No Scale



**7** MEDICAL GAS PIPING AT OUTLETS  
No Scale



**8** MEDICAL GAS MASTER ALARM PANEL WIRING SCHEMATIC  
No Scale



**9** VACUUM PUMP PIPING SCHEMATIC  
No Scale

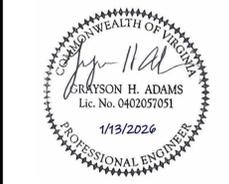


**HEREFORD · DOOLEY**  
ARCHITECTS  
1720 WEST END AVE · SUITE 300  
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PROJECT # 225007.00

CARILION WESTLAKE FSER  
35 MEDICAL CT., HARDY, VA 24101  
CARILION/ROANOKE MEMORIAL HOSPITAL  
1906 BELLEVIEW AVE SE, ROANOKE, VA 24014

CONSTRUCTION DOCUMENTS



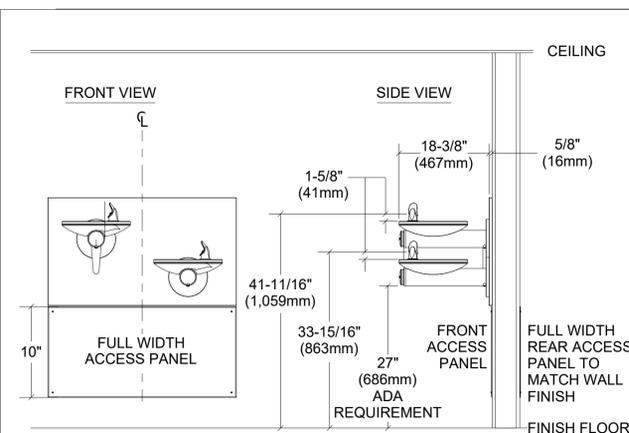
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SHEET TITLE DATES OF ISSUANCE

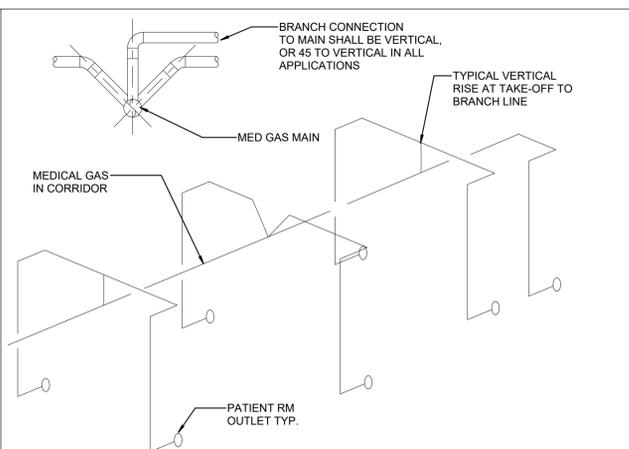
PLUMBING - DETAILS

P004

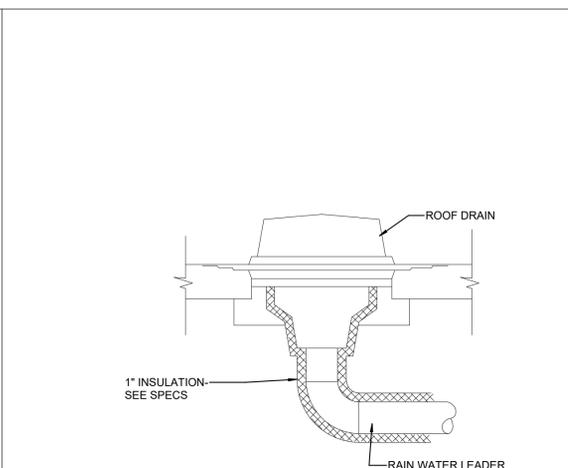


NOTES:  
WHERE REAR ACCES PANELS CANNOT BE INSTALLED. PROVIDE FULL WIDTH FRONT ACCESS.  
PANEL TO BE 18 GAUGE, 300 SERIES HIGH SHINE LUSTERIOUS FINISH TO MATCH WATER COOLER FINISH.  
PROVIDE CANE APRON ON HIGH DRINKING FOUNTAIN.

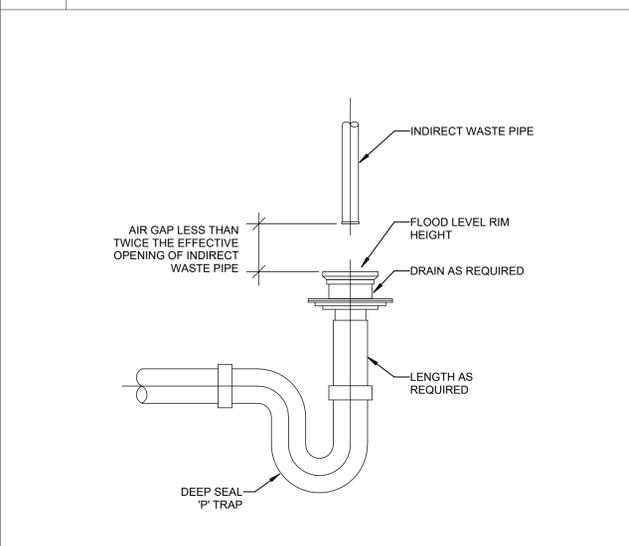
**1** REMOTE COOLER DETAIL  
No Scale



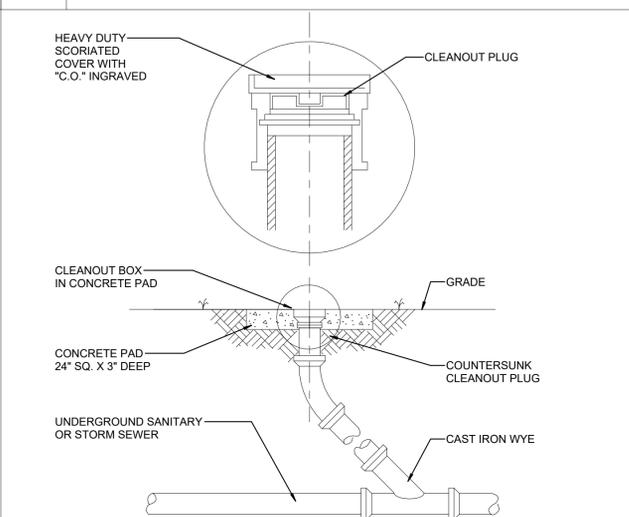
**2** PATIENT ROOM AND CORRIDOR MEDICAL GAS MAINS DETAIL  
No Scale



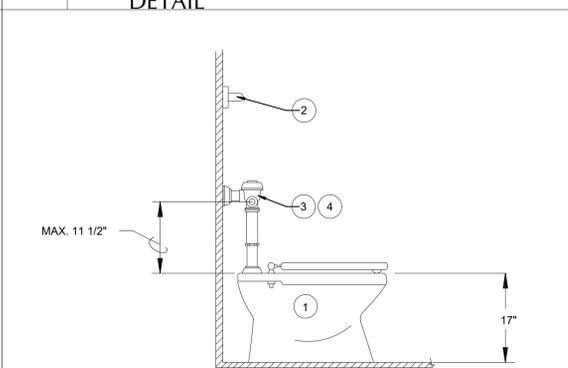
**3** ROOF DRAIN INSULATION DETAIL  
No Scale



**4** DRAIN WITH AIR GAP DETAIL  
No Scale



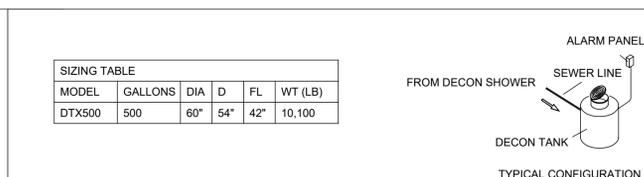
**5** EXTERIOR CLEANOUT DETAIL  
No Scale



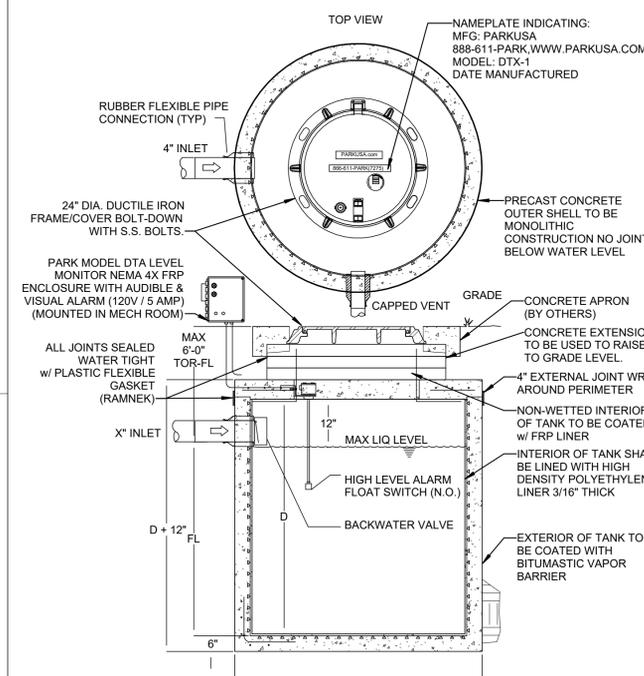
**CODED NOTES:**

- FLOOR MOUNTED WATER. TOP OF SEAT SHALL BE 17"-19" IN CONFORMANCE WITH A.D.A. GUIDELINES.
- HANDICAP GRAB BAR. MOUNT BETWEEN 33" AND 36" AFF. TO CONFORM TO A.D.A. GUIDELINES.
- FLUSH VALVE HANDLE. MOUNT @ A MAXIMUM OF 44" AFF.
- HANDLE OF FLUSH VALVE SHALL BE MOUNTED ON WIDE SIDE OF ROOM.

**6** FLOOR MOUNTED HANDICAPPED, WATER CLOSET DETAIL  
No Scale



SIZING TABLE					
MODEL	GALLONS	DIA	D	FL	WT (LB)
DTX500	500	60"	54"	42"	10,100



**SPECIFICATIONS CONCRETE:** CLASS III/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

**REINFORCEMENT:** GRADE 60 REINFORCED WITH STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

**ACCESS COVER:** THE ACCESS COVER BE MINIMUM 24" DIAMETER AND BE CONSTRUCTED OF DUCTILE IRON. THE COVER SHALL BE LOCKABLE AND BE HINGED WITH A SAFETY BLOCKING SYSTEM. THE COVER SHALL BE H20 TRAFFIC DUTY AND HAVE MARKINGS INDICATING "DECONTAMINATION HOLDING TANK".

**ENGINEERING DATA:** THE HOLDING TANK & RISERS ARE STRUCTURALLY AND HYDRAULICALLY ENGINEERED CONFORMING TO ASTM 478-C. REFER TO SIZING TABLE FOR CAPACITY. FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF INTERCEPTOR. USE DIMENSIONAL DATA AS SHOWN.

**7** DECONTAMINATION HOLDING TANK DETAIL  
No Scale

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**KEY NOTES**

1. COORDINATE LOCATION OF FLOOR DRAIN WITH EQUIPMENT PAD LAYOUT.
2. COORDINATE LOCATION OF DECONTAMINATION TANK WITH UTILITIES PRIOR TO COMMENCING WORK TO AVOID CONFLICTS. REFER TO CIVIL SITE UTILITY PLAN.
3. PIPE FROM DRAIN TO DECON TANK TO BE ORION CHEMICAL RESISTANT PVDF PIPE. ALL PIPING CONNECTED TO DECON TANK SHALL BE ACID WASTE.
4. REFER TO CIVIL SITE UTILITY PLAN FOR CONTINUATION.
5. 2" COLD WATER LINE INTO BUILDING.

**GENERAL NOTES**

1. CONTRACT DOCUMENT DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
2. COORDINATE CONSTRUCTION OF ALL PLUMBING WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, AND OTHER DISCIPLINES PRIOR TO CONSTRUCTION.
3. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
4. ALL SANITARY WASTE PIPING SHALL BE PROVIDED WITH CLEANOUTS NOT MORE THAN 100' APART.

**PARTITION FIRE RATING LEGEND**

PLAN NOTATION	PER NFPA 170 (table 6.3.3)	DEFINITION
	---	1-HR FIRE BARRIER (UL 465)
	---S---S---S---	1-HR FIRE/SMOKE BARRIER (UL 465)
	---	2-HR FIRE BARRIER (UL 465)
	---	NON-RATED INTERIOR PARTITION



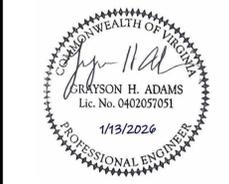
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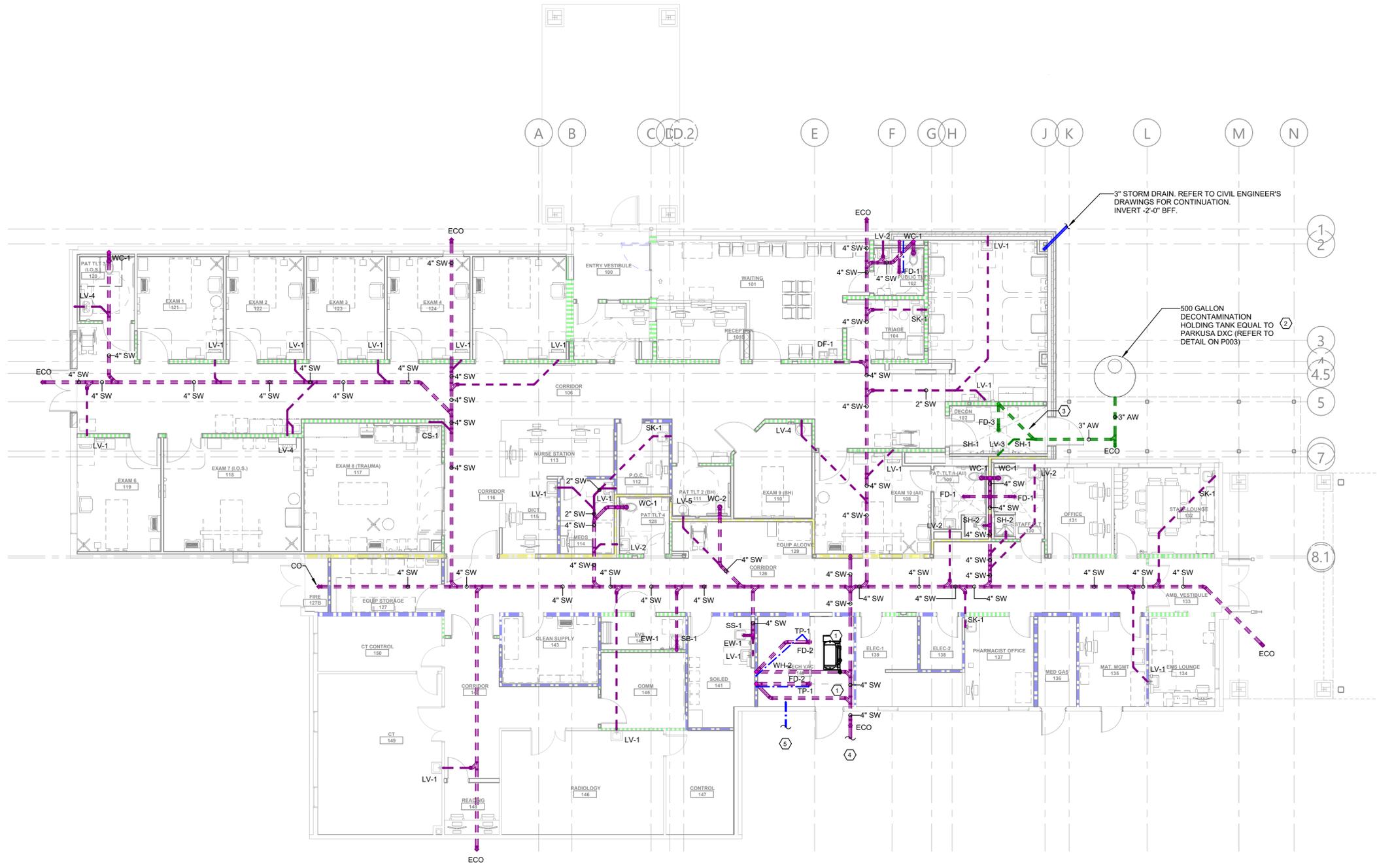


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TITLE  
DATES OF ISSUANCE

PLUMBING - UNDERGROUND PLAN

SHEET # P100



**1 PLUMBING - UNDERGROUND PLAN**  
1/8" = 1'-0"



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**KEY NOTES**

1. PROVIDE THERMOSTATIC TYPE BALANCING VALVE AT ALL RECIRC BRANCH CONNECTIONS TO HOT WATER LINES EQUAL TO THERMOMEGATECH CS-1/2-120.
2. 3/4" UP TO ROOF HYDRANT. PROVIDE SHUT-OFF VALVE IN VERTICAL. ROUTE DRAIN PORT PIPING TO NEAREST FLOOR DRAIN.
3. 3/4" UP TO ROOF HYDRANT. PROVIDE SHUT-OFF VALVE IN VERTICAL. ROUTE DRAIN PORT PIPING TO SERVICE BASIN.
4. PROVIDE TRUEBRO SHROUD, OR EQUAL, TO CONCEAL P-TRAP, SUPPLIES, AND STOPS.
5. DO NOT ROUTE ANY PIPING ABOVE THIS ROOM.
6. 2" CW FROM BELOW. PROVIDE PRESSURE REDUCING VALVE NOT TO EXCEED 80 PSI AND BUILDING SHUT-OFF VALVE IN VERTICAL RISE.
7. INSTALL DECON TANK ALARM PANEL IN THIS GENERAL LOCATION.
8. COORDINATE PLUMBING ROUTING OVER EVS ROOM TO AVOID LADDER AND ROOF ACCESS PANEL.
9. ROUTE 3/4" DOMESTIC COLD WATER LINE TO STEAM GENERATOR ON ROOF CONCEALED WITHIN HUMIDIFIER ROOF CURB.
10. TWO 2" BACKFLOW PREVENTERS, ZURN 975XL, OR EQUAL, ROUTED IN PARALLEL AT BUILDING WATER ENTRANCE. PROVIDE MINIMUM 12" SPACE FROM FLOOR AND 12" BETWEEN ASSEMBLIES.

**GENERAL NOTES**

1. CONTRACT DOCUMENT DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
2. COORDINATE CONSTRUCTION OF ALL PLUMBING WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, AND OTHER DISCIPLINES PRIOR TO CONSTRUCTION.
3. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
4. PROVIDE SHUT-OFF VALVES IN ALL DOMESTIC WATER PIPING SYSTEM BRANCHES IN WHICH BRANCH PIPING SERVES TWO OR MORE FIXTURES.
5. UNLESS OTHERWISE NOTED, ALL DOMESTIC COLD AND HOT WATER PIPING SHALL BE 1/2" SIZE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC COLD WATER PIPING TO FLUSH VALVE FIXTURES SHALL BE A MINIMUM OF 1" SIZE.

**PARTITION FIRE RATING LEGEND**

PLAN NOTATION	PER NFPA 170 (table 6.3.3)	DEFINITION
	1-HR FIRE BARRIER (UL 465)	1-HR FIRE BARRIER (UL 465)
	1-HR FIRE/SMOKE BARRIER (UL 465)	1-HR FIRE/SMOKE BARRIER (UL 465)
	2-HR FIRE BARRIER (UL 465)	2-HR FIRE BARRIER (UL 465)
	NON-RATED INTERIOR PARTITION	NON-RATED INTERIOR PARTITION

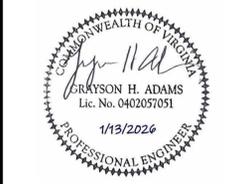


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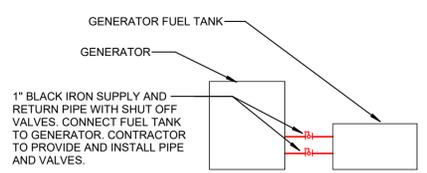
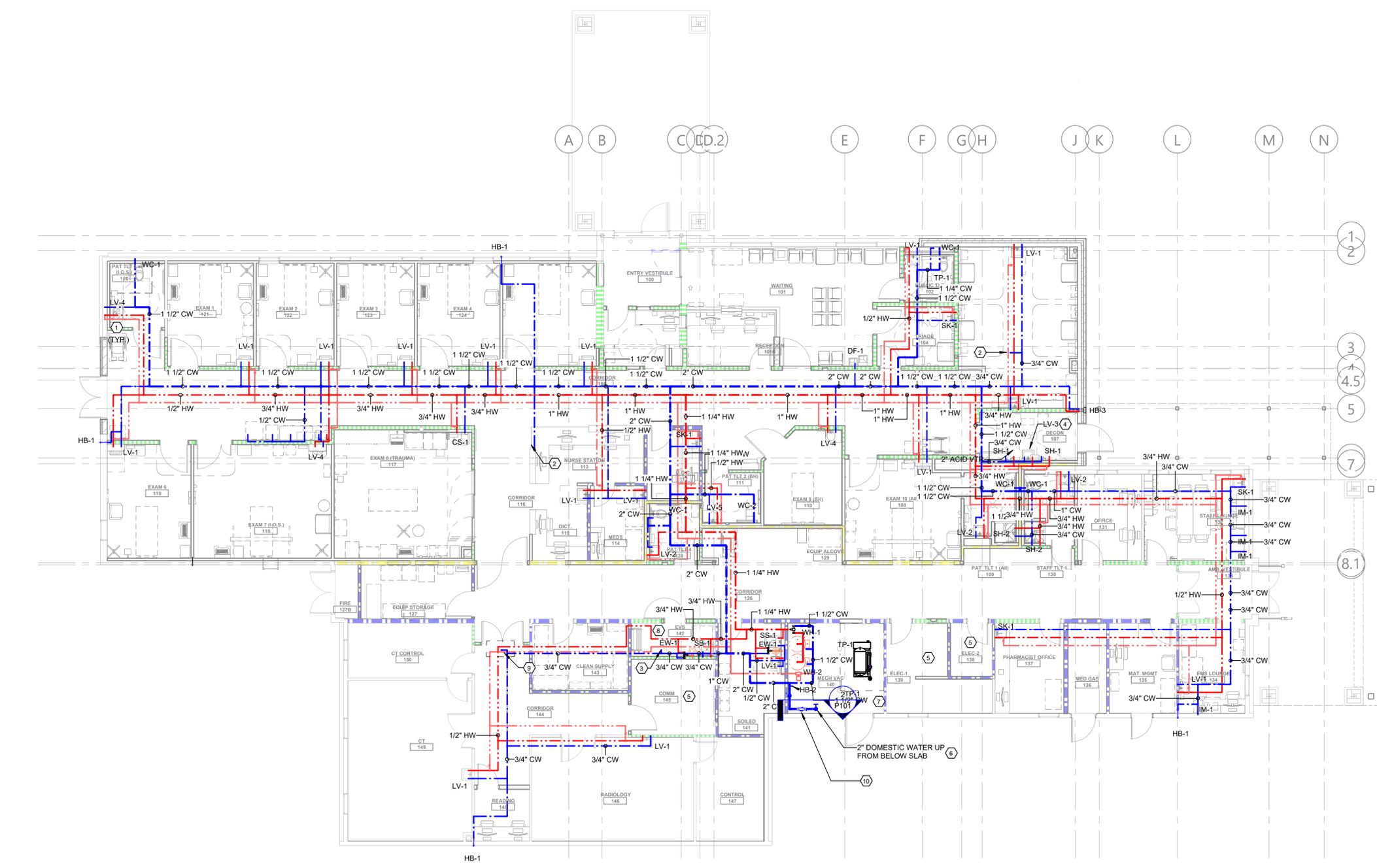


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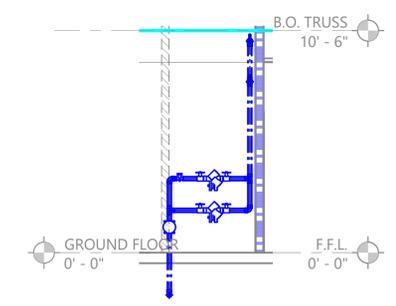
DATES OF ISSUANCE

TITLE  
PLUMBING - FIRST FLOOR PLAN

SHEET  
P101



3 ENLARGED GENERATOR ENCLOSURE  
1/8" = 1'-0"  
0 25' 50' 100'



2 DOMESTIC WATER ENTRY  
1/4" = 1'-0"  
0 25' 50' 100'

1 PLUMBING - FIRST FLOOR PLAN  
1/8" = 1'-0"  
0 4' 8' 16'

KEY NOTES

1. MAINTAIN A 25'-0" MINIMUM SEPARATION BETWEEN VENT OUTLETS AND OUTSIDE AIR INTAKES. COORDINATE LOCATIONS WITH MECHANICAL PRIOR TO COMMENCING WORK.
2. ROUTE ORION CHEMICAL RESISTANT PVDF PIPE FROM SINK TO ORION DT1 DRUM TRAP.
3. DO NOT ROUTE ANY PIPING ABOVE THIS ROOM.

GENERAL NOTES

1. CONTRACT DOCUMENT DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
2. COORDINATE CONSTRUCTION OF ALL PLUMBING WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, AND OTHER DISCIPLINES PRIOR TO CONSTRUCTION.
3. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
4. CONTRACTOR SHALL OFFSET ALL VENTS THRU ROOF AS REQUIRED TO MAINTAIN 25'-0" MIN. SEPARATION FROM ROOF TOP UNIT FRESH AIR INTAKE.

PARTITION FIRE RATING LEGEND

PLAN NOTATION	PER NFPA 170 (Table 6.3.3)	DEFINITION
	1-HR FIRE BARRIER (UL 465)	1-HR FIRE BARRIER (UL 465)
	1-HR FIRE/SMOKE BARRIER (UL 465)	1-HR FIRE/SMOKE BARRIER (UL 465)
	2-HR FIRE BARRIER (UL 465)	2-HR FIRE BARRIER (UL 465)
		NON-RATED INTERIOR PARTITION



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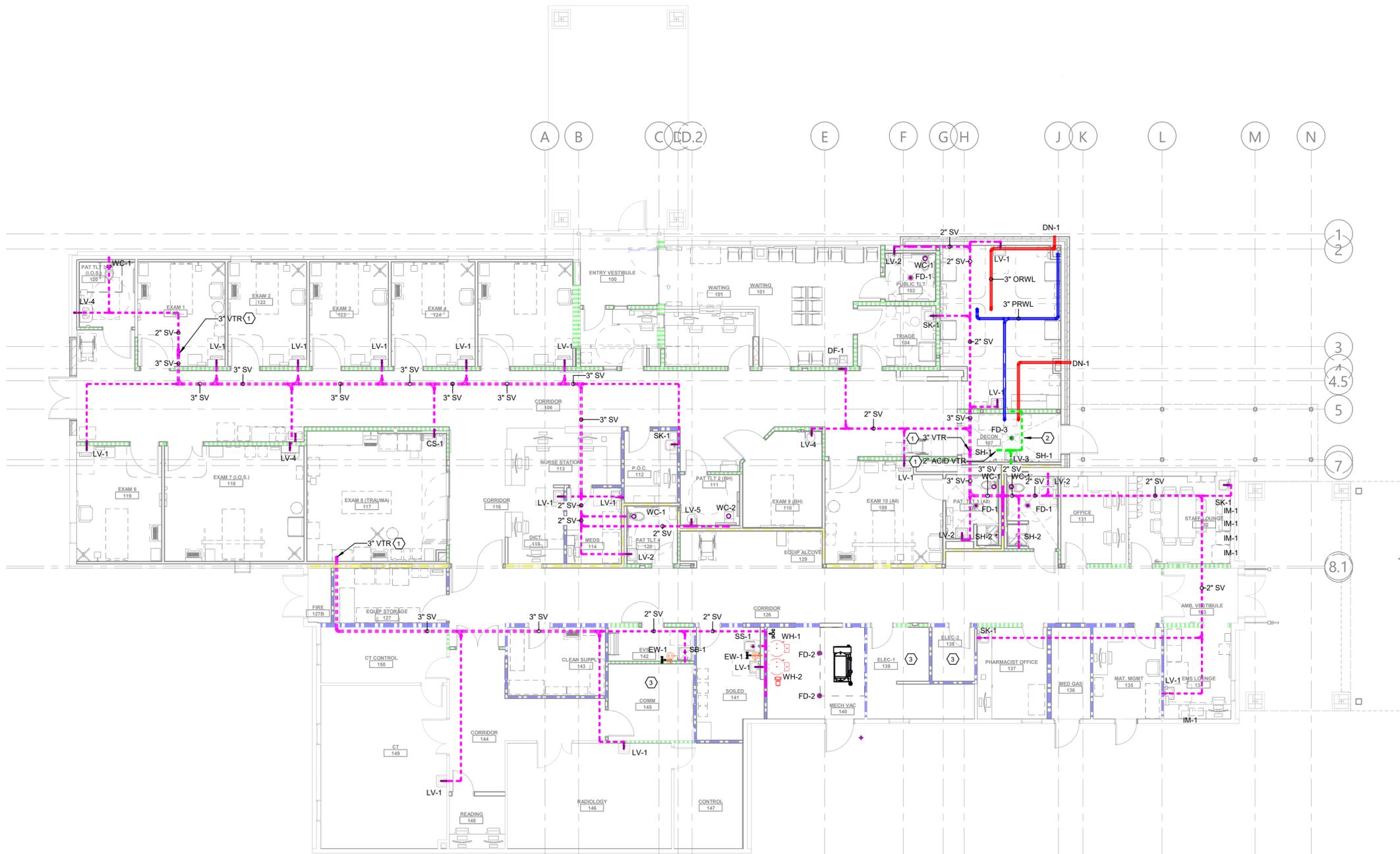


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DATES OF ISSUANCE

SANITARY AND  
STORM - FIRST  
FLOOR PLAN

SHEET TITLE P201



1 SANITARY - FIRST FLOOR PLAN  
1/8" = 1'-0"



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**KEY NOTES**

1. MAINTAIN A 25'-0" MINIMUM SEPARATION BETWEEN VENT OUTLETS AND OUTSIDE AIR INTAKES. COORDINATE LOCATIONS WITH MECHANICAL PRIOR TO COMMENCING WORK.
2. ROUTE 3/4" DOMESTIC COLD WATER LINE TO STEAM GENERATOR ON ROOF CONCEALED WITHIN HUMIDIFIER ROOF CURB.
3. EXISTING ROOF DRAIN TO REMAIN.

**GENERAL NOTES**

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4. PROVIDE SHUT-OFF VALVES IN ALL DOMESTIC WATER PIPING SYSTEM BRANCHES IN WHICH BRANCH PIPING SERVES TWO OR MORE FIXTURES.
5. UNLESS OTHERWISE NOTED, ALL DOMESTIC COLD AND HOT WATER PIPING SHALL BE 1/2" SIZE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC COLD WATER PIPING TO FLUSH VALVE FIXTURES SHALL BE A MINIMUM OF 1" SIZE.

**PARTITION FIRE RATING LEGEND**

PLAN NOTATION	PER NFPA 170 (table 6.3.3)	DEFINITION
	◆-◆-◆-◆-◆	1-HR FIRE BARRIER (UL 465)
	◆S-◆S-◆S-◆S-◆	1-HR FIRE/SMOKE BARRIER (UL 465)
	◆◆-◆◆-◆◆-◆◆-◆◆	2-HR FIRE BARRIER (UL 465)
		NON-RATED INTERIOR PARTITION



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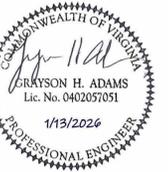
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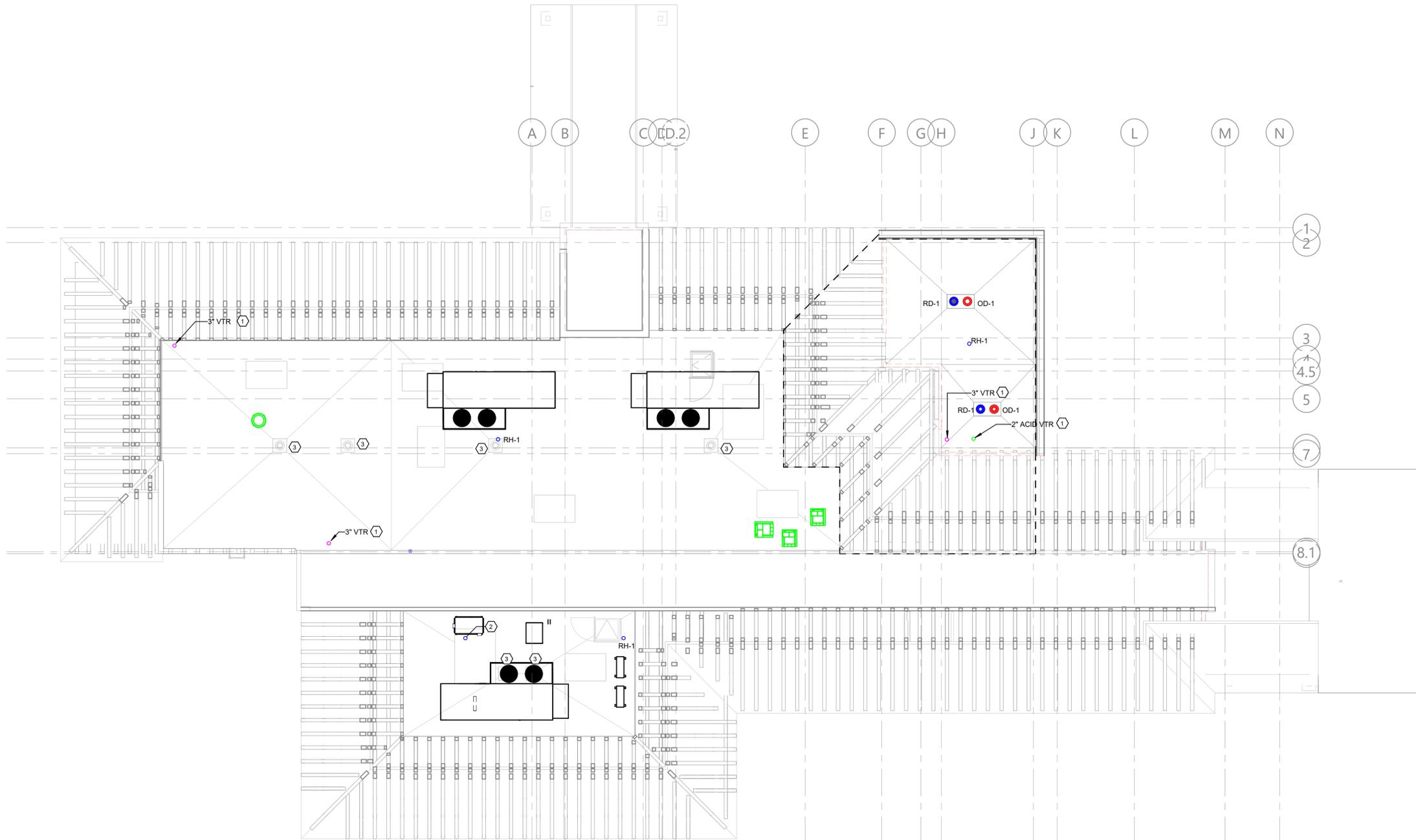


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SHEET TITLE DATES OF ISSUANCE

SANITARY AND STORM - ROOF PLAN

P202



**1 SANITARY - ROOF PLAN**  
1/8" = 1'-0"  
0 4' 8' 16'



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**KEY NOTES**

- COORDINATE LOCATION OF MASTER ALARM PANELS AND LOW PRESSURE ALARM PANELS WITH ARCHITECT.
- ROUTE WIRING FROM EACH SYSTEM (O2, V, A) TO LOW PRESSURE ALARM PANEL FOR ASSOCIATED ZONE. COORDINATE WITH DIV 26.
- ROUTE MANIFOLD VENT LINE SIZE UP THROUGH ROOF AND TERMINATE WITH SCREENED GOOSENECK. MAINTAIN 25'-0" FROM ANY FRESH AIR INTAKE.
- PROVIDE SERVICE SHUT-OFF VALVES IN ZONE CONTROL BOX.
- PROVIDE ANTI-LIGATURE CONSOLE SECURITY COVER FOR MED GAS CONNECTIONS. REFER TO ARCHITECTURAL DRAWINGS FOR HEADWALL LAYOUT AND SECURITY CONSOLE.
- PROVIDE WATER RESISTANT COVER FOR MED GAS OUTLETS. COORDINATE WITH ARCHITECTURAL PLANS.
- PROVIDE 4" HOUSEKEEPING PAD. COORDINATE WITH STRUCTURAL DRAWINGS.

**GENERAL NOTES**

- PER NFPA 99, SYSTEM SHALL BE CERTIFIED BY AN INDEPENDENT MEDICAL GAS TESTING AGENCY PRIOR TO USE OF THE SYSTEM.
- COORDINATE MED GAS KEY STYLE WITH PARENT FACILITY.

**PARTITION FIRE RATING LEGEND**

PLAN NOTATION	PER NFPA 170 (table 6.3.3)	DEFINITION
	◆-◆-◆-◆-◆	1-HR FIRE BARRIER (UL 465)
	◆-S-◆-S-◆-S-◆	1-HR FIRE/SMOKE BARRIER (UL 465)
	◆-◆-◆-◆-◆	2-HR FIRE BARRIER (UL 465)
		NON-RATED INTERIOR PARTITION



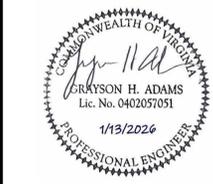
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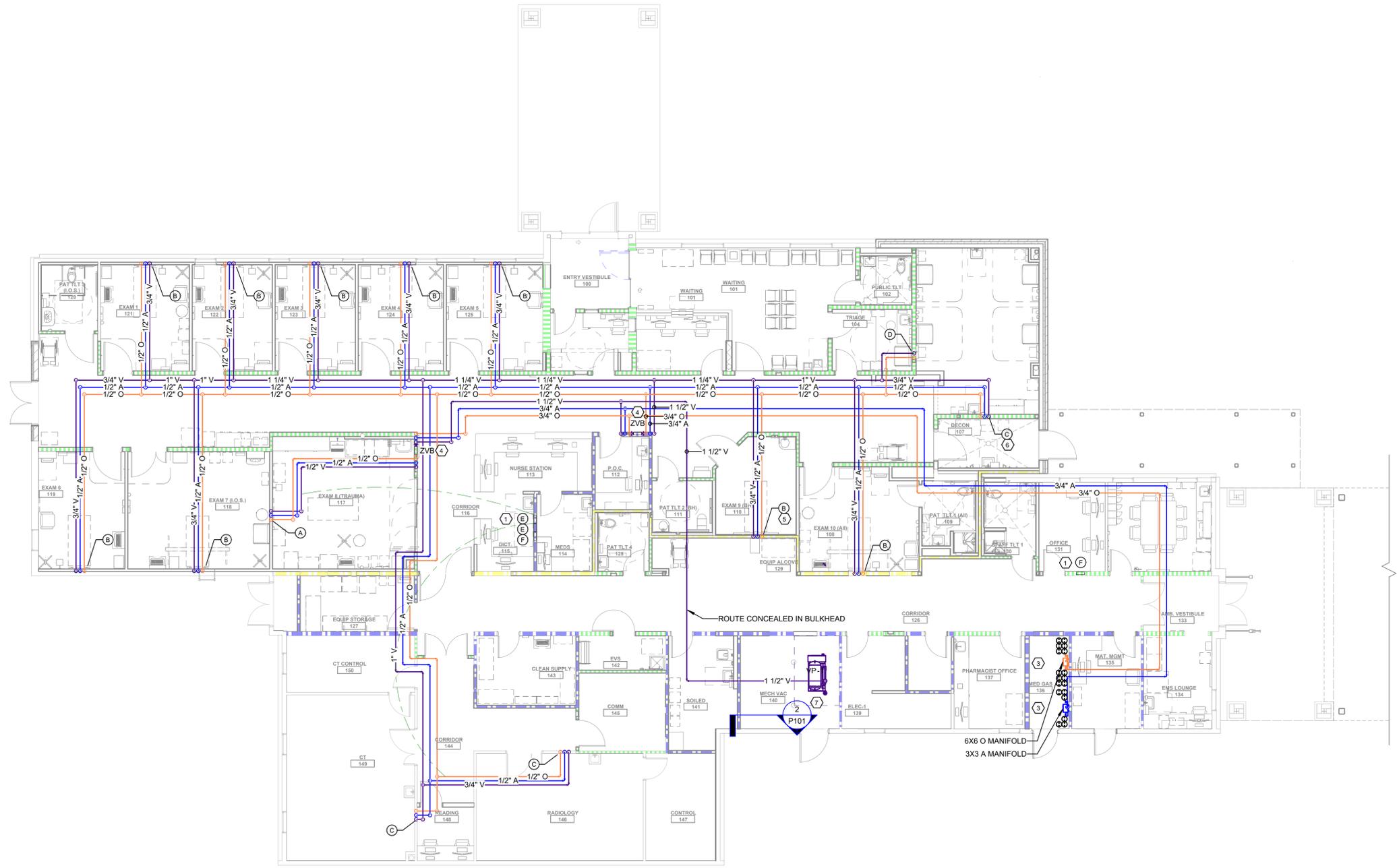
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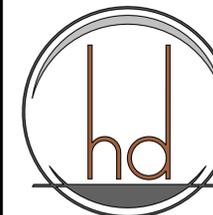
TITLE  
MED GAS - FIRST FLOOR PLAN

SHEET  
P301



**1 MED GAS - FIRST FLOOR PLAN**  
1/8" = 1'-0"  
0 4 8 16'





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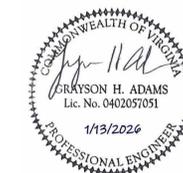
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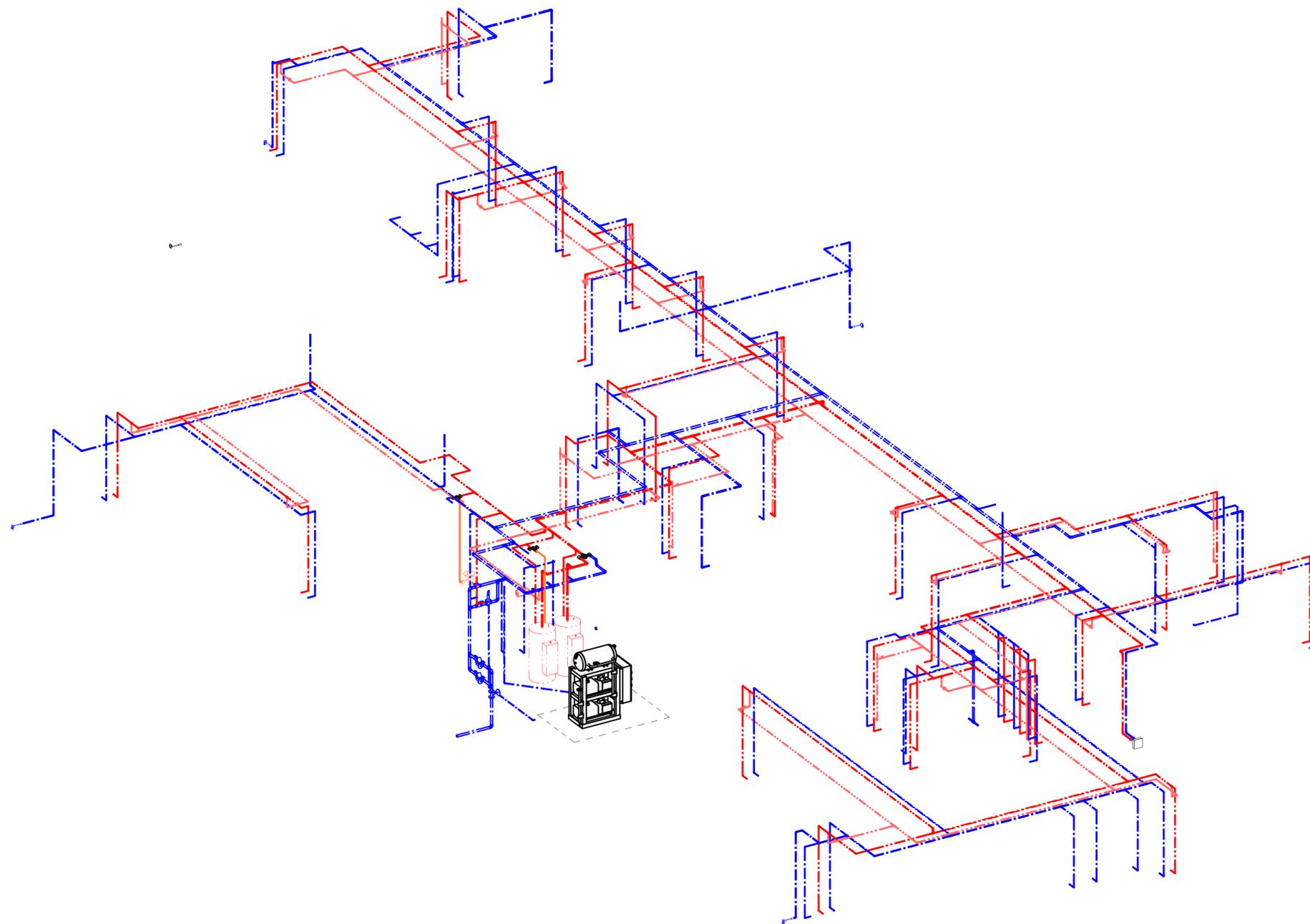
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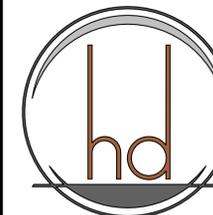
TITLE  
DOMESTIC WATER RISER

SHEET  
P401

1 DOMESTIC PLUMBING RISER



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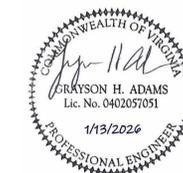
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NASHVILLE · TENNESSEE · 37203  
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CARILION WESTLAKE FSER  
35 MEDICAL CT, HARDY, VA 24101

CARILION ROANOKE MEMORIAL HOSPITAL  
1906 BELLEVIEW AVE SE, ROANOKE, VA 24014

STATUS  
CONSTRUCTION DOCUMENTS

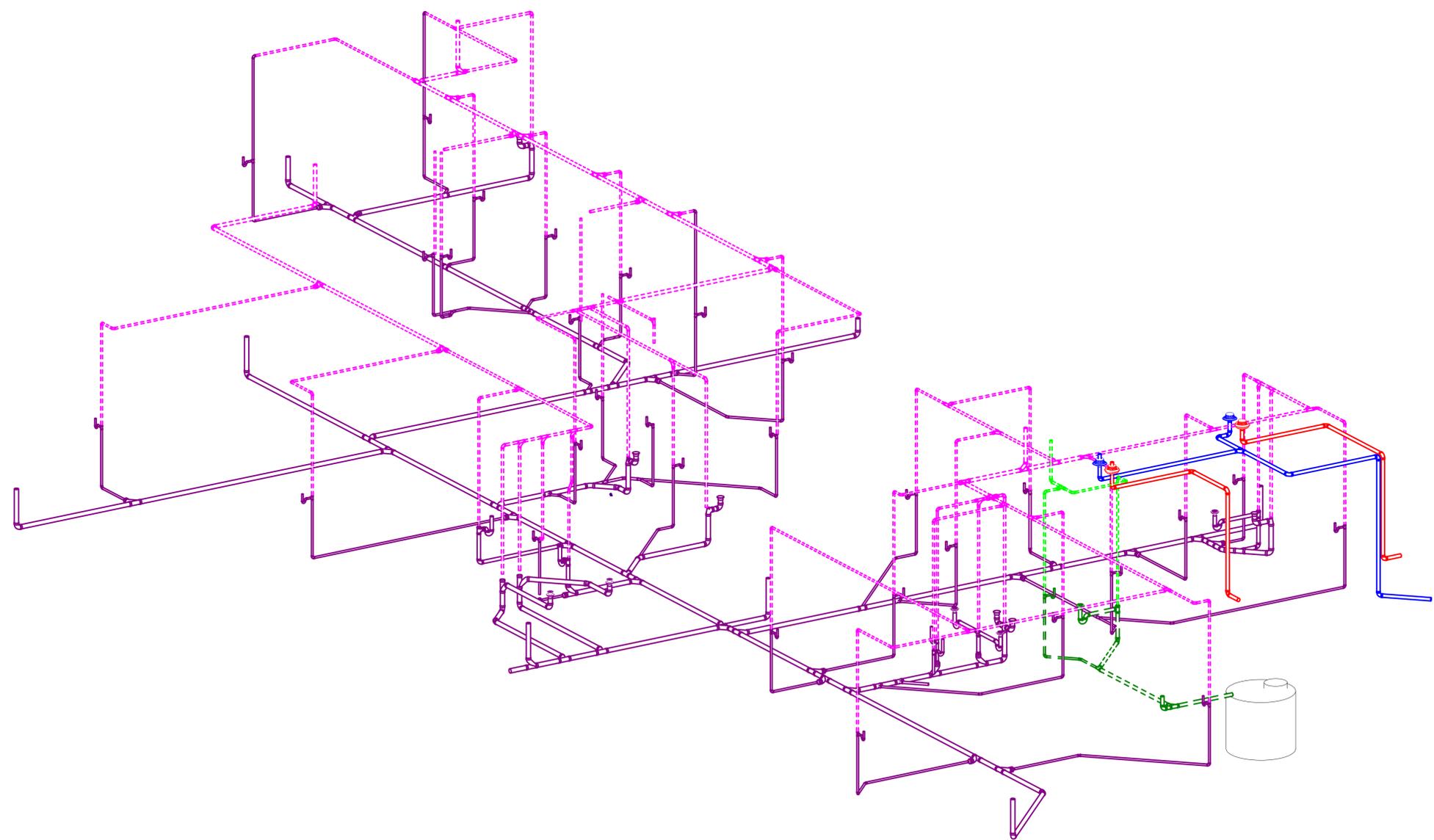


01/12/2026

△  
DATES OF ISSUANCE

TITLE  
SANITARY RISER

SHEET  
P402



1 SANITARY PLUMBING RISER  
0 25' 50' 100'

Autodesk Docs://25009 Carilion Westlake FSER/25009 Carilion Westlake FSER\_CENTRAL-PLUMB\_R322.rvt  
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