

PLUMBING FIXTURE SCHEDULE						
FIXTURE TYPE	DESCRIPTION	MOUNTING HEIGHT	COLD WATER, IN.	HOT OR TEMPERED WATER, IN.	WASTE, IN.	VENT, IN.
L-1	20"x18" VITREOUS CHINA WALL MOUNTED LAVATORY WITH LEDGE AND CARRIER, CHROME PLATED BRASS, COMMERCIAL, TWO HANDLE MANUAL LEVER FAUCET, 4" CENTERS WITH GRID DRAIN, 0.5 GPM. ACCESSIBLE. BASIS OF DESIGN - DELTA COMMERCIAL.	34" FLOOR TO RIM	1/2"	1/2"	2"	1 1/2"
L-2	INTEGRAL SINK TO COUNTERTOP, CHROME PLATED BRASS, COMMERCIAL, MANUAL LEVER FAUCET, 8" CENTERS WITH GRID DRAIN, 0.5 GPM. ACCESSIBLE. BASIS OF DESIGN - DELTA COMMERCIAL.	COUNTERTOP, SEE ARCHITECTURAL DRAWINGS	1/2"	1/2"	2"	1 1/2"
L-3	UNDERMOUNT, 19" ROUND, VITREOUS CHINA LAVATORY, CHROME PLATED BRASS, COMMERCIAL, MANUAL LEVER FAUCET, 8" CENTERS WITH POP-UP DRAIN, 0.5 GPM. ACCESSIBLE. BASIS OF DESIGN - BRIZO.	COUNTERTOP, SEE ARCHITECTURAL DRAWINGS	1/2"	1/2"	2"	1 1/2"
LT-1	72"x12"x12" DEEP LINT TRAP, POLYPROYLENE WITH COVER AND LINT SCREEN, RECESSED IN FLOOR, H-M COMPANY	RECESSED IN FLOOR	---	---	3"	---
MS-1	24"x24"x10" DEEP, FLOOR MOUNTED MOP SINK, WALL FAUCET WITH INTEGRAL VACUUM BREAKER AND PAIL SUPPORT, HOSE, HOSE HOLDER, RIM GUARDS AND MOP HOLDER. BASIS OF DESIGN - FIAT.	FLOOR MOUNTED BASIN WITH FAUCET MOUNTED 4'-0" ABOVE FINISHED FLOOR	3/4"	3/4"	3"	---
SH-1	TILED SHOWER ENCLOSURE, SINGLE LEVER, PRESSURE BALANCED SHOWER VALVE WITH FIXED HEAD, 2.2 GPM. BASIS OF DESIGN - BRIZO.	VALVE CENTERLINE 48" ABOVE FINISHED FLOOR, FIXED HEAD 66" ABOVE FINISHED FLOOR	1/2"	1/2"	2"	1 1/2"
T-1	TILED SHOWER ENCLOSURE, SINGLE LEVER, PRESSURE BALANCED SHOWER VALVE WITH FIXED HEAD, SINGLE LEVER, PRESSURE BALANCED SHOWER VALVE WITH FIXED HEAD, 2.2 GPM. BASIS OF DESIGN - BRIZO	VALVE CENTERLINE 48" ABOVE FINISHED FLOOR, FIXED HEAD 66" ABOVE FINISHED FLOOR	1/2"	1/2"	2"	1 1/2"
T-2	TILED SHOWER ENCLOSURE, SINGLE LEVER, PRESSURE BALANCED SHOWER VALVE WITH FIXED HEAD, SINGLE LEVER, PRESSURE BALANCED SHOWER VALVE WITH FIXED HEAD, 2.2 GPM, TUB SPOUT, DIVERTER VALVE, 60" METAL HOSE, VACUUM BREAKER, WALL ELBOW, SLIDE ROD AND HANDHELD SHOWERHEAD. ACCESSIBLE. BASIS OF DESIGN - BRIZO	VALVE CENTERLINE 42" ABOVE FINISHED FLOOR	1/2"	1/2"	2"	1 1/2"
WC-1	ELONGATED, VITREOUS CHINA, FLOOR MOUNTED FLUSH TANK WATER CLOSET, 1.28 GPF, ELONGATED CHECK STOP, HEAVY DUTY SEAT, OPEN FRONT, WITHOUT LID. BASIS OF DESIGN - TOTO	15" FLOOR TO RIM	1/2"	---	4"	---
WC-2	ELONGATED, VITREOUS CHINA, FLOOR MOUNTED FLUSH TANK WATER CLOSET, 1.28 GPF, ELONGATED CHECK STOP, HEAVY DUTY SEAT, OPEN FRONT, WITHOUT LID. BASIS OF DESIGN - TOTO	17" FLOOR TO RIM	1/2"	---	4"	---
WC-3	ELONGATED, VITREOUS CHINA, WALL MOUNTED FLUSH TANK WATER CLOSET, 1.28 GPF, TANK BEHIND WALL IN STUD SPACE WITH WALL PUSH BUTTON, ELONGATED CHECK STOP, HEAVY DUTY SEAT, CLOSED FRONT, WITH LID. ACCESSIBLE. BASIS OF DESIGN - TOTO	17" FLOOR TO RIM	1"	---	4"	---
WH	FREEZEPROOF, FLUSH WALL MOUNT WALL HYDRANT, LOOSE KEY HANDLE	18" ABOVE FINISHED FLOOR	3/4"	---	---	---

GAS-FIRED DOMESTIC WATER HEATERS															
MARK	LOCATION	BASIS OF DESIGN	TANK STORAGE CAPACITY, GAL.	ASME CONSTR. (Y/N)	TEMPERATURE SETTING, °F	RECOVERY AT 100°F RISE (GPH)	WATER CONNECTION	GAS CONNECTION	INTAKE & EXHAUST CONNECTION	FUEL DATA				ELECTRICAL DATA	
										TYPE	INPUT, MBH	OUTPUT, MBH	GAS PRESSURE, in W.C.	VOLTAGE, V	PHASE
GWH-1	109 - MECH.	A.O. SMITH BTH-400	400	N	140	460	1 1/2"	1 1/2"	4"	NATURAL	399.9	379.9	5 TO 14	120 V	1Φ
GWH-2	109 - MECH.	A.O. SMITH BTH-400	400	N	140	460	1 1/2"	1 1/2"	4"	NATURAL	399.9	379.9	5 TO 14	120 V	1Φ

HOT WATER CIRCULATING PUMPS						
MARK	LOCATION	SYSTEM	CAPACITY, GPM	PUMP HEAD, FT H2O	MOTOR HP	VOLTAGE, V
HWCP-1	109 - MECH	120" DOMESTIC HW	5	12	1/12	115
HWCP-2	109 - MECH	140" DOMESTIC HW	20	2	1/6	115

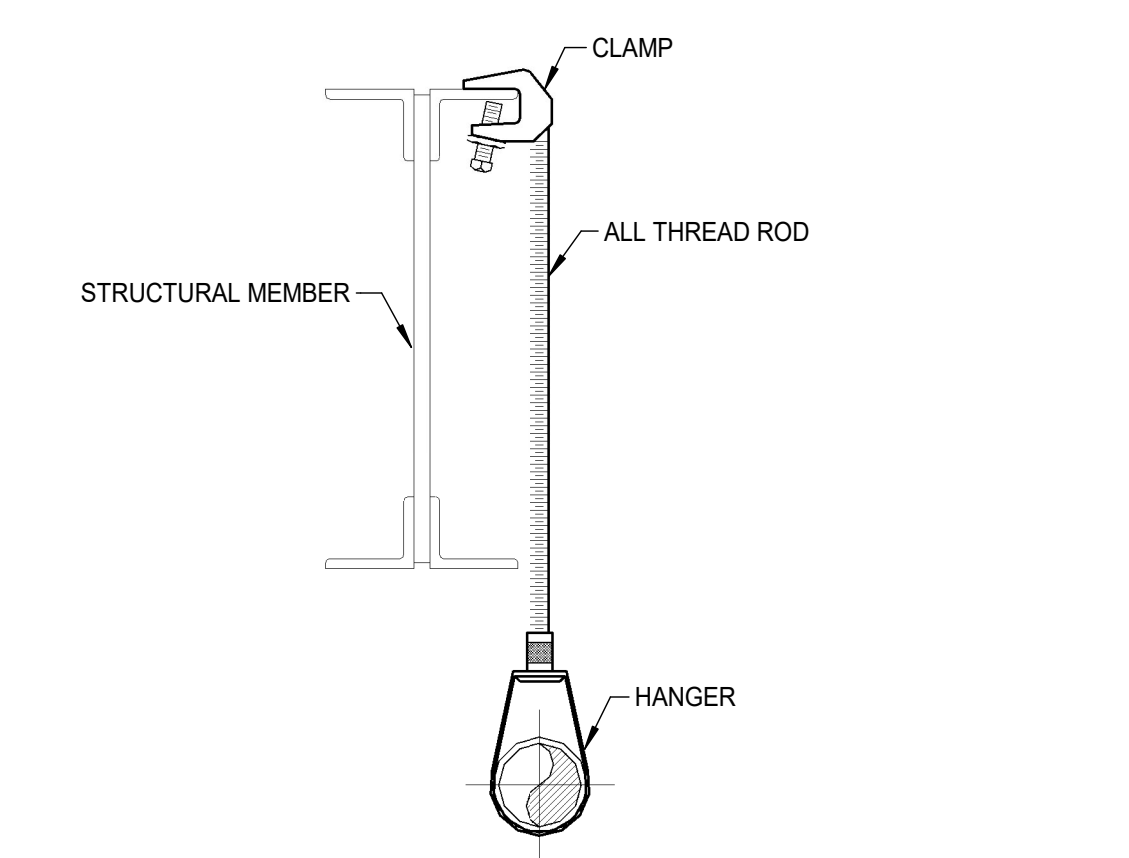
TEMPERING VALVE SCHEDULE										
MARK	DESCRIPTION	BASIS OF DESIGN	ASSE NO.	INLET CONNECTION	OUTLET CONNECTION	RETURN TO HEATER	MAX PRESSURE DROP, PSI	AT FLOW RATE, GPM	MINIMUM FLOW RATE	TEMPERATURE SETTING, °F
TVM-1	THERMOSTATIC VALVE MANIFOLD	LEONARD	1017	1 1/4"	1 1/2"	3/4"	10	65	3.7	120
TV-1	THERMOSTATIC WATER MIXING	POWERS LLFLM-495	1070	3/8"	3/8"	N/A	5	4	0.2	109

DOMESTIC WATER THERMAL EXPANSION TANKS									
MARK	AREA SERVED	MODEL	TANK TYPE	TANK VOLUME, GAL.	MAX ACCEPTANCE, GAL.	SYSTEM CONNECTION	PRECHARGED CAPACITY	STANDARD WORKING PRESSURE, PSIG	STANDARD OPERATING TEMPERATURE, °F
TET-1	DOMESTIC HW SYSTEM	AMTROL ST-42V	DIAPHRAGM	20	11.4	1"	50	150	200

GREASE INTERCEPTOR						
MARK	LOCATION	BASIS OF DESIGN	TANK MATERIAL	INLET CONNECTION	OUTLET CONNECTION	CAPACITY, GAL.
GI-1	EXTERIOR UNDERGROUND	CLEARFLOW GT-1000	CONCRETE	4"	4"	1000

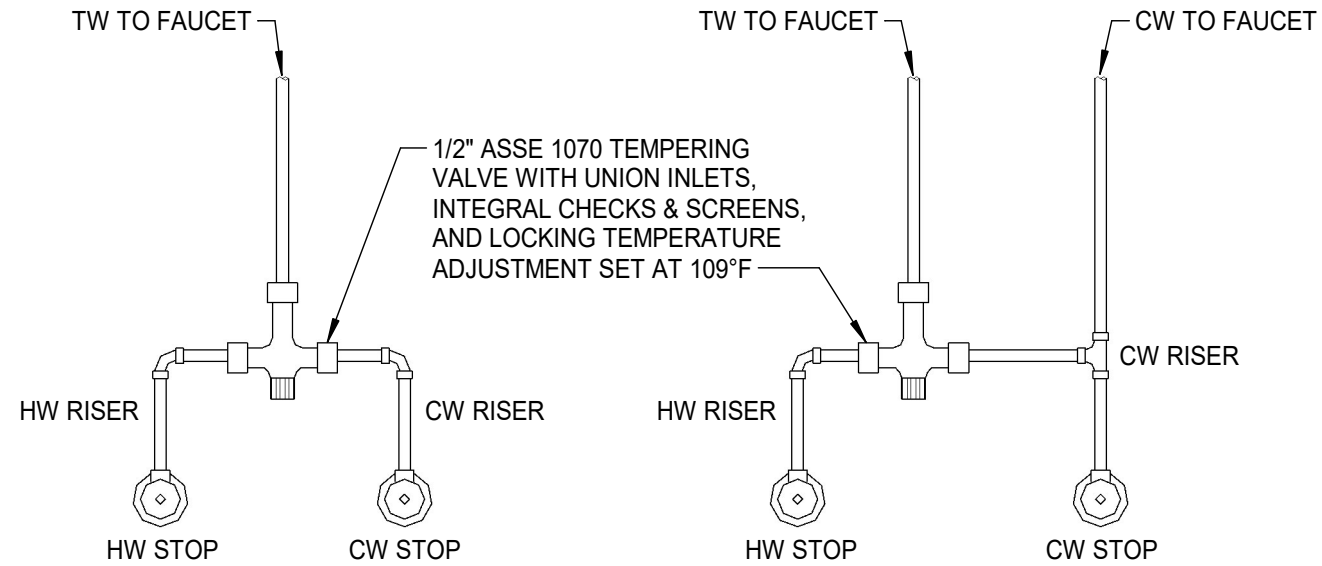
SUMP PUMP									
MARK	SYSTEM	BASIS OF DESIGN	TYPE	CAPACITY, GPM	PUMP HEAD, FT H2O	CONNECTION SIZE	MOTOR DATA		
							HP	VOLTAGE, V	PHASE
SP-1	ELEVATOR PIT	ZOLLER 912	EFFLUENT	50	17	1 1/2"	1/2	120	1

DRAIN SCHEDULE							
TYPE	DRAIN TYPE	MANUFACTURER	MODEL	BODY TYPE	GRATE SIZE	GRATE FINISH / TYPE	CONNECTION SIZE
DSB	DOWNSPOUT BOOT	JAY R. SMITH	1786	CAST IRON	N/A	N/A	4"
FD-A	EQUIPMENT FLOOR DRAIN	JOSAM	32100-TG	CAST IRON	9" DIA.	C.I./TRACTOR	4"
FS-A	KITCHEN FLOOR SINK	JOSAM	49300-3-43	CAST IRON	8" SQ.	SUPER-FLO	3"
RD-A	COMBINATION ROOF DRAIN	JAY R. SMITH	1800	CAST IRON	15" DIA.	C.I. LOCKING DOME	3"
SDN	SECONDARY DISCHARGE NOZZLE	JOSAM	1770	ROUGH BRONZE W/WALL FLANGE	PIPE SIZE	STAINLESS STEEL MESH	3"
TD-A	SHOWER TRENCH DRAIN	SCHLUTER	KERDI-DRAIN	STAINLESS STEEL	SELECTED BY ARCH	SELECTED BY ARCH	2"
TD-B	GENERAL TRENCH DRAIN	ABT, INC.	POLYDRAIN	POLYMER CONCRETE	6"	CLASS A - STAINLESS STEEL PERFORATED HEEL-SAFE	4"



TYPICAL PIPE HANGER DETAIL

NO SCALE

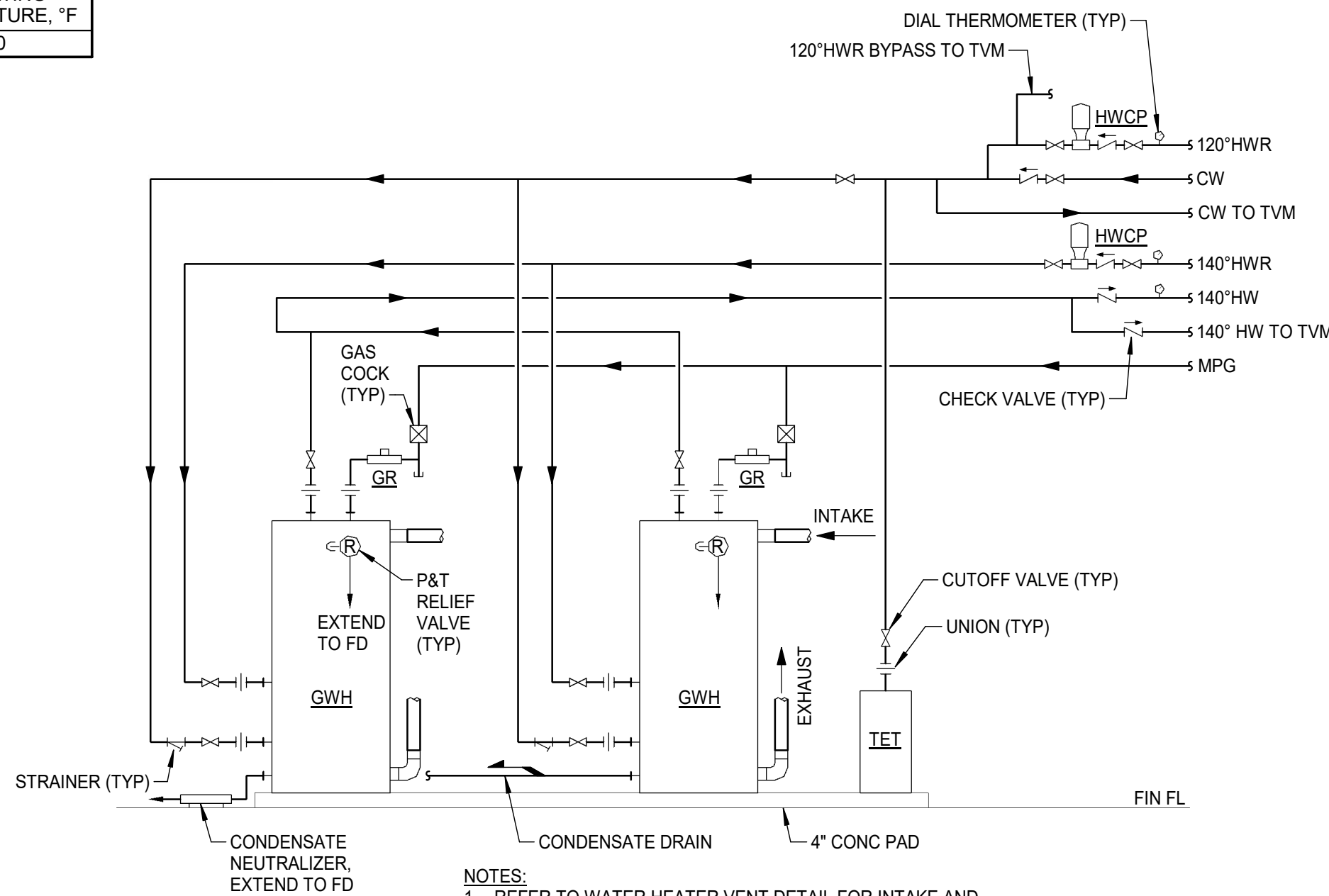
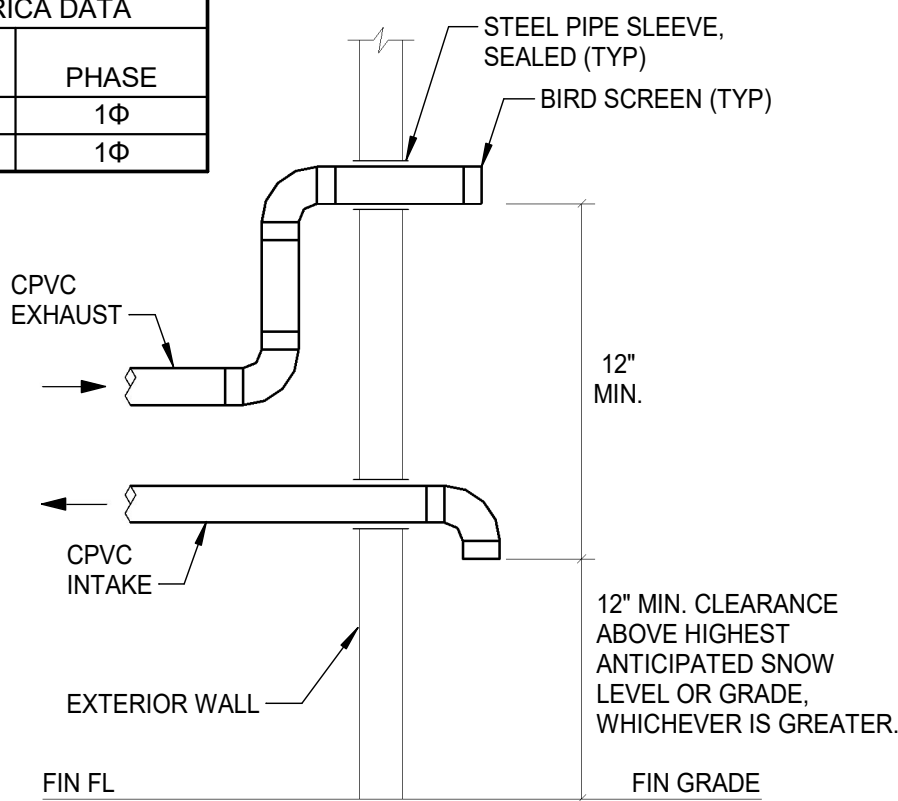


FIXTURE TEMPERING VALVE DETAIL

NO SCALE

GENERAL PLUMBING NOTES

- REFER TO CIVIL DRAWINGS FOR THE EXTENT OF ALL PIPING ENTERING AND EXITING BUILDING.
- UNDERGROUND SANITARY AND STORM SEWER PIPING EXITING THE BUILDING SHALL BE CAST IRON OR SCHEDULE 40 PVC TO AT LEAST 5'-0" OUTSIDE THE BUILDING WALL UNLESS INDICATED OTHERWISE.
- MAKE PROPER H & CW, HW, W, V, G, ETC., PIPING CONNECTIONS TO ALL FIXTURES AND EQUIPMENT EVEN THOUGH ALL BRANCH MAINS, ELBOWS AND CONNECTIONS ARE NOT SHOWN.
- COORDINATE WITH ARCHITECTURAL WORKING DRAWINGS BEFORE ROUGHING-IN PLUMBING FIXTURES TO VERIFY EXACT LOCATION AND MOUNTING HEIGHTS.
- SLOPES AND INVERT ELEVATIONS OF SEWERS, MANHOLES, GREASE INTERCEPTORS, ETC., SHALL BE ESTABLISHED AND VERIFIED BY PLUMBING CONTRACTOR BEFORE ANY PIPING IS INSTALLED IN ORDER THAT PROPER SLOPES WILL BE MAINTAINED AND NECESSARY INVERT ELEVATIONS OBTAINED.
- COORDINATE THE LOCATION OF ALL PIPING WITH LIGHTING FIXTURES, DUCT, GRILLES, HEATING, PIPING, ETC..
- PROVIDE 1/2"CW CONNECTIONS TO FLUSH TANK WC'S, 1/2"TW & CW TO LAVS & SINKS, 1/2"CW TO EWC'S AND 3/4"H&CW TO MOP SINKS.
- PROVIDE 1/8"x 4"x 20" STEEL PLATES FOR HOLDING SUPPORTING BOLTS FOR WALL HANGERS ON LAVATORIES. PLATE TO BE INSTALLED IN WALL CONSTRUCTION BEHIND FIXTURES.
- ALL FLOOR DRAINS SHALL HAVE STANDARD 3" SEAL, CAST IRON, P-TRAPS IN ACCORDANCE WITH THE PLUMBING CODE. FLOOR DRAIN TRAP SEALS SUBJECT TO LOSS BY EVAPORATION SHALL BE EQUIPPED WITH TRAP PRIMERS.
- ALL FLOOR DRAINS SHALL BE PIPED WITH A TRAP PRIMER.
- ALL CUTOFF VALVES, SHOCK ABSORBERS, ETC. SHALL BE ACCESSIBLE THROUGH AN ACCESS DOOR OR THROUGH LAY-IN CEILING. PROVIDE ACCESS DOOR WHERE REQUIRED.
- CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL EXISTING PIPING, MANHOLES, ETC. BEFORE ANY NEW PIPING IS INSTALLED.
- ALL VENT TERMINALS ABOVE ROOF SHALL BE A MINIMUM OF 25'-0" AWAY FROM HVAC UNITS, AIR INTAKE, FRESH AIR INTAKE LOUVERS, OUTSIDE EQUIPMENT SCREENS.
- PROVIDE WALL CLEANOUTS AT THE BASE OF ALL RAIN CONDUCTORS, SOIL STACKS AND WASTE STACKS.
- FLUSH ACTUATORS FOR WC-2 AND WC-3 WATER CLOSETS SHALL BE INSTALLED ON THE OPEN SIDE OF THE TOILET COMPARTMENT IN ACCORDANCE WITH ICC/ANSI A117.1, SECTION 604.6 AND 2010 STANDARDS FOR ACCESSIBLE DESIGN.
- ALL FLOOR DRAINS AND OPEN SIGHT DRAINS SHALL BE COORDINATED WITH MECHANICAL EQUIPMENT PADS IN MECHANICAL ROOMS.
- NO BACKFLOW PREVENTERS SHALL BE INSTALLED IN CEILING. INSTALL BETWEEN 3 AND 5 FEET ABOVE FINISHED FLOOR.
- WATER SUPPLIES TO ALL MOP BASINS SHALL BE EQUIPPED WITH A CHECK VALVE.
- CONTRACTOR SHALL COORDINATE ALL FOOTING AND FOUNDATION ELEVATIONS WITH PIPING PRIOR TO UNDERGROUND PIPING LAYOUT.

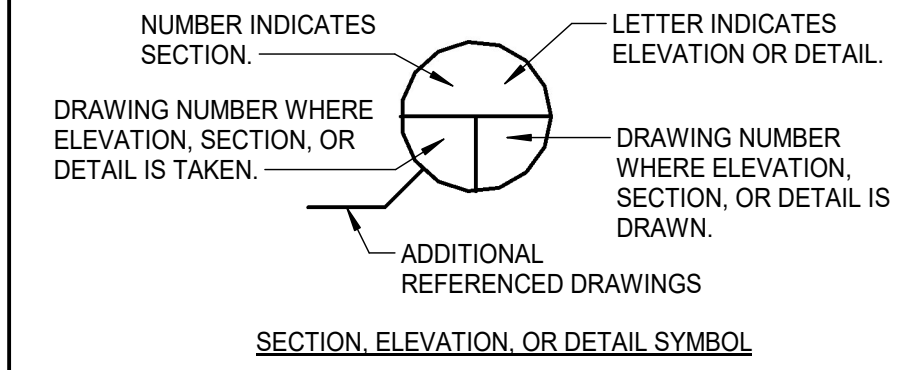


PLUMBING LEGEND  
SYMBOLS AND ABBREVIATIONS

TYPICAL PIPING	BRANCH FROM RISER	TEE OR ELBOW FROM TOP OF MAIN	
		TOP OF MAIN	
		BOTTOM OF MAIN	
		SIDE OF MAIN	
		IN PLAN	
		DIAGRAMMATIC	
		COLD WATER	_____DCW_____
		HOT WATER	_____DHW_____
		HOT WATER RETURN	_____DHWR_____
		TEMPERED WATER	_____DTW_____
		SANITARY SOIL & WASTE	_____SAN_____
		SANITARY VENT	-----V-----
		STORM SEWER	_____SD_____
		SECONDARY STORM SEWER	_____SSD_____
		LOW PRESSURE NATURAL GAS	_____LPG_____
		DIRECTION OF SLOPE DOWN	
		DIRECTION OF FLOW	
		CUTOFF VALVE (IN PLAN)	
		CUTOFF VALVE (IN VERTICAL)	
		GLOBE VALVE	
		CHECK VALVE	
		BALANCING COCK	
		GAS COCK	
		BACKFLOW PREVENTER	
		TEMPERING VALVE	
		CLEAN-OUT	
		SHOCK ABSORBER	
		STRAINER	

ABV	- ABOVE	HWCP	- HOT WATER
AD	- ACCESS DOOR		CIRCULATION PUMP
BEL	- BELOW	HWR	- HOT WATER RETURN
BFF	- BELOW FINISHED FLOOR	IMB	- ICE MAKER BOX
		INV	- INVERT
BFG	- BELOW FINISHED GRADE	L	- LAVATORY
		LO	- LAUNDRY OUTLET
BFP	- BACKFLOW PREVENTER	LPG	- LOW PRESSURE GAS
CI	- CAST IRON	MS	- MOP SINK
CLG	- CEILING	OSD	- OPEN SITE DRAIN
CO	- CLEAN-OUT	PVC	- POLYVINYL CHLORIDE
CONC	- CONCRETE	P&T	- PRESSURE & TEMPERATURE RELIEF VALVE
CV	- CUTOFF VALVE	SA	- SHOCK ABSORBER
CW	- COLD WATER	SAN	- SANITARY
DFU	- DRAINAGE FIXTURE UNIT	SD	- STORM SEWER
DI	- DUCTILE IRON	SF	- SQUARE FEET
DISP	- DISPOSER	SH	- SHOWER
DN	- DOWN	SP	- SUMP PUMP
ELEV	- ELEVATION	TET	- THERMAL EXPANSION TANK
EWC	- ELECTRIC WATER COOLER	TP	- TRAP PRIMER
FD	- FLOOR DRAIN	TV	- TEMPERING VALVE
FL	- FLOOR	TW	- TEMPERED WATER
FS	- FLOOR SINK	UNO	- UNNOTED OTHERWISE
G	- GAS	V	- VENT
GI	- GREASE INTERCEPTOR	VB	- VACUUM BREAKER
GM	- GAS METER	VTR	- VENT-THRU-ROOF
GR	- GAS REGULATOR	W	- WASTE
GW	- GREASE WASTE	WC	- WATER CLOSET
GWH	- GAS WATER HEATER	WCO	- WALL CLEAN-OUT
HB	- HOSE BIBB	WH	- WALL HYDRANT
HW	- HOT WATER		

IDENTIFICATION KEY



NOTE:

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING CODES: VEC 2018, VUSBC 2018, NEC 2017, AND IBC 2018.

**ASCENT**  
ENGINEERING GROUP

5228 VALLEYPONTE PKWY, SUITE 4  
ROANOKE, VIRGINIA 24019  
(840) 265-4444

D:RWD 22580 C:RWD

**BRW** ARCHITECTS

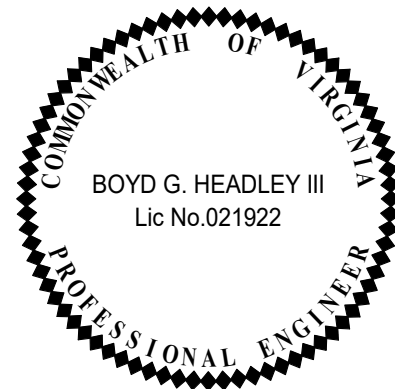
112 fourth street ne  
charlottesville virginia 22902  
434.971.7160  
brw-architects.com

THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR

VAN THIEL



JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION SET

REVISIONS	
09.13.2023	Permit Comments

P0.1

PLUMBING LEGEND,  
SCHEDULES AND  
DETAILS AND NOTES

FIRE PROTECTION SPECIFICATIONS

GENERAL REQUIREMENTS:

- 1.01 FIRE PROTECTION GENERAL SPECIFICATIONS:
- A. CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATING SYSTEM, INCLUDING ALL REQUIRED ACCESSORIES. ALL SYSTEMS SHALL BE FULLY CLEANED, TESTED AND READY FOR OWNER OCCUPANCY, WITH COMPLETE CERTIFIED TESTING REPORT. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL, FOR ALL PIPING AND HEAD LAYOUTS AND ALL NEW EQUIPMENT. CONTRACTOR SHALL PROVIDE OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND AS-BUILT DRAWINGS, BOUND IN A SINGLE BINDER, COMPLETE WITH INDEX, TO THE ENGINEER FOR REVIEW AND TRANSMITTAL TO THE OWNER.
- B. THE COMPLETED FIRE PROTECTION INSTALLATION AND ALL MATERIALS AND EQUIPMENT SHALL CONFORM TO ANY COMMENTS BY THE AHJ AND ALL LOCAL ORDINANCES, CODES, AND OTHER REGULATIONS AND STANDARDS THAT ARE APPLICABLE, INCLUDING NFPA-13, 14 AND 20. THESE ARE INTENDED AS A MINIMUM AND SHALL BE EXCEEDED IF REQUIRED BY THE SPECIFICATIONS OR THE DRAWINGS. IN THE EVENT OF CONFLICT BETWEEN THE CODES, STANDARDS, OR REGULATIONS AND INFORMATION CONTAINED IN THE CONTRACT DOCUMENTS, THE APPLICABLE CODE, STANDARDS, OR REGULATION SHALL TAKE PRECEDENCE.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER RELATION OF THE FIRE PROTECTION WORK TO THE WORK OF OTHER TRADES AND TO ACTUAL BUILDING CONDITIONS. NO ADDITIONAL COMPENSATION NOR EXTENSION OF COMPLETION TIME WILL BE GRANTED FOR EXTRA WORK CAUSED BY THE LACK OF COORDINATION. CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING BIDS OR SHOP DRAWINGS TO VERIFY ALL CONDITIONS.
- D. ALL CUTTING AND PATCHING FOR THE INSTALLATION OF NEW WORK IN THE EXISTING BUILDING SHALL BE DONE BY THE CONTRACTOR INSTALLING THE WORK. PATCHING SHALL BE DONE BY SKILLED TRADESMEN AND FINISH SHALL MATCH ADJACENT AREAS.
- E. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS TO CONFORM WITH THE DETAILS AND APPLICATION INDICATED.
- F. PROVIDE NECESSARY SUPPORTS FOR ALL EQUIPMENT, PIPING AND APPURTENANCES AS REQUIRED.
- G. IDENTIFICATION FOR FIRE SUPPRESSION:
- PIPE LABELS SHALL BE SELF-ADHESIVE MULTI-COLOR FLEXIBLE VINYL WITH PERMANENT ACRYLIC PRESSURE SENSITIVE ADHESIVE. LOCATE LABELS NEAR POINTS WHERE PIPES ENTER INTO CONCEALED SPACES AND AT MAXIMUM INTERVALS OF 50 FEET IN EACH SPACE WHERE PIPES ARE EXPOSED OR CONCEALED BY REMOVABLE CEILING SYSTEM.

PRODUCTS:

- 2.01 DUCTILE-IRON PIPE AND FITTINGS:
- A. MECHANICAL-JOINT, DUCTILE-IRON PIPE: AWWA C151, WITH MECHANICAL-JOINT BELL AND PLAIN SPIGOT END.
- B. PUSH-ON-JOINT, DUCTILE-IRON PIPE: AWWA C151, WITH PUSH-ON-JOINT BELL AND PLAIN SPIGOT END.
- C. MECHANICAL-JOINT, DUCTILE-IRON FITTINGS: AWWA C110, DUCTILE-OR GRAY-IRON STANDARD PATTERN OR AWWA C153, DUCTILE-IRON COMPACT PATTERN.
- D. PUSH-ON-JOINT, DUCTILE-IRON FITTINGS: AWWA C153, DUCTILE-IRON COMPACT PATTERN.
- E. GASKETS: AWWA C111, RUBBER.
- F. FLANGES: ASME B16.1, CLASS 125, CAST IRON.
- 2.02 STEEL PIPE AND FITTINGS:
- A. STANDARD WEIGHT, GALVANIZED- AND BLACK-STEEL PIPE: ASTM A 53, TYPE E, GRADE B. PIPE ENDS MAY BE FACTORY OR FIELD FORMED TO MATCH JOINING METHOD.
- B. SCHEDULE 40, GALVANIZED- AND BLACK-STEEL PIPE: ASTM A 135 OR ASTM A 795. PIPE ENDS MAY BE FACTORY OR FIELD FORMED TO MATCH JOINING METHOD.
- C. GALVANIZED- AND BLACK-STEEL PIPE NIPPLES: ASTM A 733, MADE OF ASTM A 53, STANDARD-WEIGHT, SEAMLESS STEEL PIPE WITH THREADED ENDS.
- D. GALVANIZED AND UNCOATED, STEEL COUPLINGS: ASTM A 865, THREADED.
- E. GALVANIZED AND UNCOATED, GRAY-IRON THREADED FITTINGS: ASME B16.4, CLASS 125, STANDARD PATTERN.
- F. MALLEABLE- OR DUCTILE-IRON UNIONS: UL 860.
- G. CAST-IRON FLANGES: ASME 16.1, CLASS 125.
- H. STEEL FLANGES AND FLANGED FITTINGS: ASME B16.5, CLASS 150.
- I. STEEL WELDING FITTINGS: ASTM A 234 AND ASME B16.9.
- J. GROOVED-JOINT, STEEL-PIPE APPURTENANCES:
- PRESSURE RATING: 175 PSIG MINIMUM.
  - GALVANIZED AND UNCOATED, GROOVED-END FITTINGS FOR STEEL PIPING: ASTM A 47, MALLEABLE-IRON CASTING OR ASTM A 536, DUCTILE-IRON CASTING, WITH DIMENSIONS MATCHING STEEL PIPE.
  - GROOVED-END-PIPE COUPLINGS FOR STEEL PIPING: AWWA C806 AND UL 213, RIGID PATTERN, UNLESS OTHERWISE INDICATED, FOR STEEL-PIPE DIMENSIONS. INCLUDE FERROUS HOUSING SECTIONS, EPDM-RUBBER GASKET, AND BOLTS AND NUTS.

- 2.03 PIPING JOINING MATERIALS:
- A. PIPE-FLANGE GASKET MATERIALS: AWWA C110, RUBBER, FLAT FACE, 1/8 INCH THICK OR ASME B16.21, NONMETALLIC AND ASBESTOS FREE.
- B. METAL PIPE-FLANGE BOLTS AND NUTS: ASME B18.2.1, CARBON STEEL UNLESS OTHERWISE INDICATED.
- C. WELDING FILLER METALS: COMPLY WITH AWS D10.12M FOR WELDING MATERIALS APPROPRIATE FOR WALL THICKNESS AND CHEMICAL ANALYSIS OF STEEL PIPE BEING WELDED.

- 2.04 FIRE-PROTECTION VALVES:
- A. GENERAL REQUIREMENTS: ALL FIRE-PROTECTION VALVES SHALL BE UL LISTED OR FM APPROVED.
- MINIMUM PRESSURE RATING FOR STANDARD-PRESSURE PIPING: 175 PSIG.
- B. WET-PIPE SPRINKLER SYSTEM ALARM VALVES: UL 193, FOR HORIZONTAL OR VERTICAL INSTALLATION. INCLUDE TRIM SETS FOR BYPASS, DRAIN, ELECTRICAL SPRINKLER ALARM SWITCH, PRESSURE GAGES, AND FILL-LINE ATTACHEMENT WITH STRAINER.
- DRIP CUP ASSEMBLY: PIPE DRAIN WITH CHECK VALVE TO MAIN DRAIN PIPING.

- 2.05 SPRINKLER SPECIALTY PIPE FITTINGS:
- A. GENERAL REQUIREMENTS FOR DRY-PIPE SYSTEM FITTINGS: UL LISTED FOR DRY-PIPE SERVICE.
- B. BRANCH OUTLET FITTINGS: UL 213, MECHANICAL-T AND -CROSS FITTINGS. DUCTILE-IRON HOUSING WITH EPDM SEALS AND BOLTS AND NUTS.
- C. FLEXIBLE, SPRINKLER HOSE FITTINGS: UL 1474, BRAIDED FLEXIBLE HOSE FOR CONNECTION TO SPRINKLER, AND WITH BRACKET FOR CONNECTION TO CEILING GRID.
- PRESSURE RATING: 175 PSIG MINIMUM.

- 2.06 SPRINKLERS:
- A. GENERAL REQUIREMENTS:
- STANDARD: UL'S "FIRE PROTECTION EQUIPMENT DIRECTORY" LISTING OR "APPROVAL GUIDE," PUBLISHED BY FM GLOBAL, LISTING.
  - PRESSURE RATING FOR AUTOMATIC SPRINKLERS: 175 PSIG MINIMUM.
- B. AUTOMATIC SPRINKLERS WITH HEAT-RESPONSIVE ELEMENT: UL 199, NOMINAL 1/2-INCH ORIFICE WITH DISCHARGE COEFFICIENT K OF 5.6, AND FOR "ORDINARY" TEMPERATURE CLASSIFICATION RATING UNLESS OTHERWISE INDICATED OR REQUIRED BY APPLICATION.

- 2.07 ALARM DEVICES:
- A. ALARM-DEVICE TYPES SHALL MATCH PIPING AND EQUIPMENT CONNECTIONS.
- B. ELECTRICALLY OPERATED ALARM BELL: COMPLY WITH REQUIREMENTS FOR ALARM BELLS SPECIFIED IN DIVISION 28.
- C. WATER-FLOW INDICATORS: UL 346, FOR HORIZONTAL OR VERTICAL INSTALLATION, PADDLE OPERATED, ELECTRICALLY SUPERVISED.
- D. PRESSURE SWITCHES: UL 346, ELECTRICALLY SUPERVISED WATER-FLOW SWITCH WITH RETARD FEATURE, RISING PRESSURE SIGNALS WATER FLOW.
- E. SUPERVISORY SWITCHES: UL 346, ELECTRICALLY SUPERVISED, SIGNAL CONTROLLED VALVE IS IN OTHER THAN FULLY OPEN POSITION.

- 2.08 PRESSURE GAGES:
- A. GENERAL REQUIREMENTS: UL 393, 3-1/2" TO 4-1/2-INCH DIAMETER, 0 TO 250 PSIG MINIMUM.
- WATER SYSTEM PIPING GAGE: INCLUDE "WATER" OR "AIR/WATER" LABEL ON DIAL FACE.
  - AIR SYSTEM PIPING GAGE: INCLUDE "AIR" OR "AIR/WATER" LABEL ON DIAL FACE.

EXECUTION:

- 3.01 PREPARATION:
- A. PERFORM FIRE-HYDRANT FLOW TEST ACCORDING TO NFPA 13 AND NFPA 291. USE RESULTS FOR REQUIRED SYSTEM DESIGN CALCULATIONS. REPORT TEST RESULTS PROMPTLY AND IN WRITING.
- 3.02 PIPING INSTALLATION:
- A. LOCATIONS AND ARRANGEMENTS: DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGMENT OF PIPING. INSTALL PIPING AS INDICATED, AS FAR AS PRACTICAL. DEVIATIONS FROM APPROVED WORKING PLANS FOR PIPING REQUIRE WRITTEN APPROVAL FROM AUTHORITIES HAVING JURISDICTION. FILE WRITTEN APPROVAL WITH ARCHITECT BEFORE DEVIATING FROM APPROVED WORKING PLANS.
- B. PIPING STANDARD: COMPLY WITH REQUIREMENTS FOR INSTALLATION OF SPRINKLER PIPING IN NFPA 13.
- C. INSTALL UNIONS ADJACENT TO EACH VALVE IN PIPES NPS 2 AND SMALLER, INSTALL FLANGES, FLANGE ADAPTERS, OR COUPLINGS FOR GROOVED-END PIPING ON VALVES, APPARATUS, AND EQUIPMENT HAVING NPS 2-1/2 AND LARGER END CONNECTIONS.
- D. INSTALL "INSPECTORS TEST CONNECTIONS" IN SPRINKLER SYSTEM PIPING, COMPLETE WITH SHUTOFF VALVE, AND SIZED AND LOCATED ACCORDING TO NFPA 13.
- E. INSTALL SPRINKLER PIPING WITH DRAINS FOR COMPLETE SYSTEM DRAINAGE.
- F. INSTALL AUTOMATIC (BALL DRIP) DRAIN VALVE AT EACH CHECK VALVE FOR FIRE-DEPARTMENT CONNECTION, TO DRAIN PIPING BETWEEN FIRE-DEPARTMENT CONNECTION AND CHECK VALVE. INSTALL DRAIN PIPING TO AND SPILL OVER FLOOR DRAIN OR TO OUTSIDE BUILDING.
- G. INSTALL ALARM DEVICES IN PIPING SYSTEMS.
- H. INSTALL HANGERS AND SUPPORTS FOR SPRINKLER SYSTEM PIPING ACCORDING TO NFPA 13. COMPLY WITH REQUIREMENTS FOR HANGER MATERIALS IN NFPA 13.
- I. INSTALL PRESSURE GAGES ON RISER OR FEED MAIN, AT EACH SPRINKLER TEST CONNECTION, AND AT TOP OF EACH STANDPIPE. INCLUDE PRESSURE GAGES WITH CONNECTION NOT LESS THAN NPS 1/4 AND WITH SOFT METAL SEATED GLOBE VALVE, ARRANGED FOR DRAINING PIPE BETWEEN GAGE AND VALVE. INSTALL GAGES TO PERMIT REMOVAL, AND INSTALL WHERE THEY WILL NOT BE SUBJECT TO FREEZING.
- J. FILL WET-PIPE SPRINKLER SYSTEM PIPING WITH WATER.
- K. INSTALL SEVERES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS. PENETRATIONS OF NON-RATED CONSTRUCTION SHALL BE STANDARD WEIGHT STEEL PIPE AND OF SUFFICIENT DIAMETER TO CLEAR BARE OR COVERED PIPES BY 1/4" ALL AROUND. SLEEVE SHALL BE SEALED TO PREVENT TRANSMISSION OF NOISE OR HEAT BETWEEN SPACES. PENETRATIONS OF FIRE (AND SMOKE) RATED PARTITIONS, WALLS, AND FLOORS SHALL BE SEALED IN ACCORDANCE WITH THE TERMS OF U.L. LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS XHEZ AS PUBLISHED IN THE U.L. FIRE RESISTANCE DIRECTORY.
- SLEEVES SHALL PROJECT TWO (2) INCHES ON EITHER SIDE OF WALL, CEILING OR FLOOR PENETRATIONS. IN EQUIPMENT ROOMS, FLOOR PENETRATIONS SHALL PROJECT FOUR (4) INCHES ABOVE THE FINISHED FLOOR.
  - SLEEVES IN FLOORS WITH WATERPROOF MEMBRANE SHALL BE PROVIDED WITH FLANGES OR FLASHING RINGS AND SHALL BE CLAMPED OR FLASHED INTO MEMBRANE.
  - PIPES THROUGH EXTERIOR WALLS BELOW GRADE AND ABOVE FOOTINGS SHALL BE INSTALLED IN SLEEVES HAVING A MINIMUM SIZE OF TWO LARGER PIPE DIAMETERS AND SEALED WATERTIGHT WITH FLEXIBLE SYNTHETIC RUBBER SEALS. SLEEVE SHALL HAVE ANCHOR AND WATER STOP PLATE.
- L. INSTALL ESCUTCHEONS FOR EXPOSED PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS IN FINISHED LOCATIONS WITH CHROME PLATED ESCUTCHEONS OF SUITABLE PATTERN TO EFFECTIVELY COVER THE ROUGH OPENING.

- 3.03 JOINT CONSTRUCTION:
- A. INSTALL COUPLINGS, FLANGES, FLANGED FITTINGS, UNIONS, NIPPLES, AND TRANSITION AND SPECIAL FITTINGS THAT HAVE FINISH AND PRESSURE RATINGS SAME AS OR HIGHER THAN SYSTEM'S PRESSURE RATING FOR ABOVEGROUND APPLICATIONS UNLESS OTHERWISE INDICATED.
- B. REAM ENDS OF PIPES AND TUBES AND REMOVE BURRS. BEVEL PLAIN ENDS OF STEEL PIPE.
- C. REMOVE SCALE, SLAG, DIRT, AND DEBRIS FROM INSIDE AND OUTSIDE OF PIPES, TUBES, AND FITTINGS BEFORE ASSEMBLY.
- D. THREADED JOINTS: THREAD PIPE WITH TAPERED PIPE THREADS ACCORDING TO ASME B1.20.1. CUT THREADS FULL AND CLEAN USING SHARP DIES. COMPLETE WITH INDEX FOR REVIEW AND TRANSMITTAL TO THE OWNER.
- APPLY APPROPRIATE TAPE OR THREAD COMPOUND TO EXTERNAL PIPE THREADS.
  - DAMAGED THREADS: DO NOT USE PIPE OR PIPE FITTINGS WITH THREADS THAT ARE CORRODED OR DAMAGED.
- E. WELDED JOINTS: CONSTRUCT JOINTS ACCORDING TO AWS D10.12M, USING QUALIFIED PROCESSES AND WELDING OPERATORS.
- SHOPWELD PIPE JOINTS WHERE WELDED PIPING IS INDICATED. DO NOT USE WELDED JOINTS FOR GALVANIZED-STEEL PIPE.
- F. STEEL-PIPING, ROLL-GROOVED JOINTS: ROLL ROUNDED-EDGE GROOVE IN END OF PIPE ACCORDING TO AWWA C806. ASSEMBLE COUPLING WITH HOUSING, GASKET, LUBRICANT, AND BOLTS. JOIN STEEL PIPE AND GROOVED-END FITTINGS ACCORDING TO AWWA C806 FOR STEEL-PIPE GROOVED JOINTS.

- 3.04 VALVE AND SPECIALTIES INSTALLATION:
- A. INSTALL LISTED FIRE-PROTECTION VALVES, TRIM AND DRAIN VALVES, SPECIALTY VALVES AND TRIM, CONTROLS, AND SPECIALTIES ACCORDING TO NFPA 13 AND AUTHORITIES HAVING JURISDICTION.
- B. INSTALL LISTED FIRE-PROTECTION SHUTOFF VALVES SUPERVISED OPEN. LOCATED TO CONTROL SOURCES OF WATER SUPPLY EXCEPT FROM FIRE-DEPARTMENT CONNECTIONS. INSTALL PERMANENT IDENTIFICATION SIGNS INDICATING PORTION OF SYSTEM CONTROLLED BY EACH VALVE.
- C. SPECIALTY VALVES: INSTALL IN VERTICAL POSITION FOR PROPER DIRECTION OF FLOW, IN MAIN SUPPLY TO SYSTEM.
- ALARM VALVES: INCLUDE BYPASS CHECK VALVE AND RETARDING CHAMBER DRAIN-LINE CONNECTION.

- 3.05 SPRINKLER INSTALLATION:
- A. INSTALL SPRINKLERS IN SUSPENDED CEILINGS IN CENTER BOTH WAYS, OF ACOUSTICAL CEILING PANELS.
- B. INSTALL SPRINKLERS INTO FLEXIBLE, SPRINKLER HOSE FITTINGS AND INSTALL HOSE INTO BRACKET ON CEILING GRID.

- 3.06 FIELD QUALITY CONTROL:
- A. CLEAN DIRT AND DEBRIS FROM SPRINKLERS. REMOVE AND REPLACE SPRINKLERS WITH PAINT OTHER THAN FACTORY FINISH.
- B. PERFORM TESTS AND INSPECTIONS:
- LEAK TEST: AFTER INSTALLATION, CHARGE SYSTEMS AND TEST FOR LEAKS. REPAIR LEAKS AND RETEST UNTIL NO LEAKS EXIST.
  - TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.
  - FLUSH, TEST, AND INSPECT SPRINKLER SYSTEMS ACCORDING TO NFPA 13, "SYSTEMS ACCEPTANCE" CHAPTER.
  - ENERGIZE CIRCUITS TO ELECTRICAL EQUIPMENT AND DEVICES.
  - START AND RUN AIR COMPRESSORS.
  - COORDINATE WITH FIRE-ALARM TESTS. OPERATE AS REQUIRED.
  - VERIFY THAT EQUIPMENT HOSE THREADS ARE SAME AS LOCAL FIRE-DEPARTMENT EQUIPMENT.
- C. SPRINKLER PIPING SYSTEM WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.
- D. PREPARE TEST AND INSPECTION REPORT.

- 3.07 PIPE SCHEDULE:
- A. PIPING BETWEEN FIRE-DEPARTMENT CONNECTIONS AND CHECK VALVES: GALVANIZED, STANDARD-WEIGHT STEEL PIPE WITH THREADED ENDS, CAST-IRON THREADED FITTINGS; AND THREADED JOINTS.
- B. DUCTILE-IRON PIPE SHALL BE ONE OF THE FOLLOWING:
- MECHANICAL-JOINT, DUCTILE-IRON PIPE; MECHANICAL-JOINT, DUCTILE- OR GRAY-IRON, STANDARD-PATTERN FITTINGS; GLANDS, GASKETS, AND BOLTS; AND GASKETED JOINTS.
  - PUSH-ON-JOINT, DUCTILE-IRON PIPE; PUSH-ON-JOINT, DUCTILE-IRON COMPACT-PATTERN FITTINGS; AND GASKETED JOINTS.
  - STANDARD-IRON FLANGES, WET-PIPE SPRINKLER SYSTEM, SHALL BE STANDARD-WEIGHT, BLACK-STEEL PIPE WITH THREADED ENDS; UNCOATED, GRAY-IRON THREADED FITTINGS; AND THREADED JOINTS.
  - NPS 2-1/2 AND LARGER, CAN BE SCHEDULE 10, BLACK-STEEL PIPE WITH ROLL-GROOVED ENDS; GROOVED-END FITTINGS FOR STEEL PIPING; GROOVED-END-PIPE COUPLINGS FOR STEEL PIPING; AND GROOVED JOINTS.

PLUMBING SPECIFICATIONS

GENERAL REQUIREMENTS:

- 1.01 DEFINITIONS
- A. AHJ: AUTHORITY HAVING JURISDICTION.
- B. BOD: BASIS OF DESIGN.
- C. CODE: THE CURRENTLY ADOPTED STATE CONSTRUCTION CODE OF THE LOCALITY, THE REFERENCED STANDARDS WITHIN, AND LOCAL ORDINANCES AND AHJ REQUIREMENTS.
- D. CONSTRUCTION DOCUMENTS: THE PROJECT MANUAL (SPECIFICATIONS), DRAWINGS, ADDENDA, RFI RESPONSES, DOCUMENT REVISIONS, CHANGE ORDERS AND WRITTEN COMMUNICATIONS FROM THE ARCHITECT AND/OR ENGINEER.
- E. DWV: DRAIN WASTE AND VENT.
- F. IPC: INTERNATIONAL PLUMBING CODE.
- G. PROVIDE: TO PRESENT, PRODUCE, PURCHASE, SHIP, STORE, INSTALL, TEST, ADJUST, COMPLETE, INSPECT, CLEAN, AND PUT INTO SERVICE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- H. PVC: POLYVINYL CHLORIDE.
- I. RFI: REQUEST FOR INFORMATION.
- J. VPC: VIRGINIA PLUMBING CODE.
- K. THE WORK: THE COMPLETE SCOPE OF CONSTRUCTION INDICATED IN THE CONTRACT DOCUMENTS.

- 1.02 SPECIFICATIONS:
- A. PROVIDE PLUMBING SYSTEMS AS INDICATED IN THE CONSTRUCTION DOCUMENTS, INCLUDING FIXTURES, EQUIPMENT, PIPING, SPECIALTIES AND ACCESSORIES REQUIRED OR IMPLIED FOR COMPLETE, OPERATIONAL SYSTEMS PER INTENT OF THE CONSTRUCTION DOCUMENTS. THE SCOPE OF WORK INCLUDES TESTING AND BALANCING OF PIPING SYSTEMS AND EQUIPMENT; BALANCING REPORTS, REQUIRED INSPECTIONS, AND CLEANING FOR FINAL PRESENTATION TO THE OWNER.
- B. PROVIDE SHOP DRAWINGS FOR EQUIPMENT AND OTHER ITEMS AS INDICATED IN THE CONSTRUCTION DOCUMENTS AND/OR REQUIRED BY THE ENGINEER FOR ENGINEER REVIEW. CORRECT SHOP DRAWING DEFICIENCIES NOTED IN ENGINEER'S REVIEW AND RESUBMIT.
- C. PROVIDE OPERATIONAL AND MAINTENANCE MANUALS FOR EQUIPMENT AND CONTROLS, BOUND IN A SINGLE BINDER WITH INDEX FOR ENGINEER'S REVIEW.
- D. PROVIDE THE WORK IN COMPLIANCE WITH THE CODE. WHERE THE CONSTRUCTION DOCUMENT REQUIREMENTS COMPLY AND EXCEED THE CODE MINIMUM STANDARD, PROVIDE THE WORK AS INDICATED BY THE CONSTRUCTION DOCUMENTS.
- E. COORDINATE THE PLUMBING WORK WITH THE WORK OF OTHER DISCIPLINES. VERIFY ALL EXISTING SITE CONDITIONS, AND PROVIDE THE WORK AS REQUIRED TO ACCOMMODATE SITE CONDITIONS.
- F. INSTALL THE WORK IN ACCORDANCE WITH THE RELATIVE MANUFACTURER'S WRITTEN DOCUMENTATION.
- G. PROVIDE PROPERLY SELECTED CARRIERS / SUPPORTS FOR FIXTURES AND EQUIPMENT ACCORDING TO CONSTRUCTION DOCUMENTS AND CONDITION OF USE.

PRODUCTS:

- 2.01 ACCESS DOORS:
- A. PROVIDE ACCESS DOORS WHERE INDICATED AND / OR REQUIRED FOR THE OPERATION AND / OR MAINTENANCE OF VALVES, WATER HAMMER ARRESTORS, AND OTHER DEVICES AND EQUIPMENT.
- 2.02 SANITARY DWV SYSTEM:
- A. GRAVITY DWV PIPING SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE NOTED:
- BELOW FLOOR DWV: ASTM D 2665 SCHEDULE 40 PVC E PLASTIC PIPE AND ASTM D 2665 SOLVENT JOINT DWV FITTINGS. PROVIDE ASTM A 74 SERVICE WEIGHT CAST IRON BELL AND SPIGOT PIPE AND ASTM A 74 CAST IRON BELL AND SPIGOT FITTINGS WITH ASTM C 364 SHOEPRENE GASKETS FOR ALL KITCHEN WASTE.
  - ABOVE FLOOR DWV: ASTM D 2665 SCHEDULE 40 PVC E PLASTIC PIPE AND ASTM D 2665 SOLVENT JOINT DWV FITTINGS. PVC IS NOT ALLOWED IN PLENUMS.
- B. FLOOR DRAINS AND FLOOR SINKS SHALL CONFORM TO THE BASIS OF DESIGN AND COORDINATED WITH ALL FLOOR FINISHES AND ELEVATIONS.
- C. TRENCH DRAINS SYSTEMS SHALL CONFORM TO THE BASIS OF DESIGN AND COORDINATED WITH ALL FLOOR FINISHES AND ELEVATIONS.
- 2.03 STORM DRAIN SYSTEM:
- A. GRAVITY STORM PIPING SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE NOTED:
- BELOW FLOOR: ASTM D 2665 SCHEDULE 40 PVC E PLASTIC PIPE AND ASTM D 2665 SOLVENT JOINT DWV FITTINGS.
  - ABOVE FLOOR: ASTM D 2665 SCHEDULE 40 PVC E PLASTIC PIPE AND ASTM D 2665 SOLVENT JOINT DWV FITTINGS. PVC IS NOT ALLOWED IN PLENUMS.
- B. ROOF DRAINS:
- CAST IRON COMBINATION PRIMARY/SECONDARY DRAIN CONFIGURATION FOR FLAT ROOF AND RUBBER MEMBRANE INSTALLATION. SHALL BE COMPLETE WITH FLASHING AND UNDERDECK CLAMPS, CAST IRON DOMES AND INTERNAL WATER DAM FOR THE SECONDARY DRAIN. PROVIDE BRASS "LAMBS TONGUE" WITH STAINLESS STEEL SCREEN FOR SECONDARY DISCHARGE.
- C. DOWNSPOUT BOOTS:
- PVC ADAPTOR BOOT FOR DOWNSPOUT PROVIDED. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR CLEAN TRANSITION.

- 2.04 CLEANOUTS
- A. SLAB ON GRADE FLOOR CLEANOUTS AND CLEANOUTS TO GRADE: CAST IRON ADJUSTABLE FLOOR CLEANOUT WITH NICKEL BRONZE TOP. INVERTED HUB AND NEOPRENE PUSH JOINT GASKET CONNECTION.
- B. FLOOR CLEANOUTS: CAST IRON ADJUSTABLE FLOOR CLEANOUT WITH NICKEL BRONZE TOP AND NO HUB CONNECTION. ALL CLEANOUTS SHALL BE FLUSH WITH FINISHED FLOORS AND MATED TO THE FLOOR FINISH PROPERLY, AS DETERMINED BY THE A/E.
- C. PROVIDE ALTERNATE RECESSED INLAY TOPS MANUFACTURED FOR FLOOR CLEANOUTS LOCATED IN FLOORS WITH ELEVATED FLOOR COVERINGS SUCH AS TERRAZZO AND SIMILAR TILE. ADJUST FLUSH WITH FINISHED FLOOR COVERING ELEVATION.
- D. PROVIDE ALTERNATE CARPET MARKER TOPS FOR FLOOR CLEANOUTS LOCATED IN CARPETED FLOORS.
- E. WALL CLEANOUTS: PROVIDE ROUND SMOOTH STAINLESS STEEL ACCESS COVER WITH CENTER TAPPED BRASS RECESSED HEAD PLUG AND ANCHOR SCREW. SELECT PROPER LENGTH ANCHOR SCREW AND PLUG SIZE FOR CONDITIONS OF USE.
- F. PROVIDE CLEANOUTS AT LOCATIONS INDICATED AND ACCORDING TO SPACING AND LOCATIONS REQUIREMENTS OF THE CODE.

- 2.05 GAS PIPING SYSTEM:
- A. PIPING: THREADED, ASTM A 53, BLACK STEEL, SCHEDULE 40, TYPE E, GRADE B, WITH MALLEABLE-IRON THREADED FITTINGS, ASME B16.3, CLASS 150, STANDARD PATTERN PIPING, FOR UNDERGROUND PIPING, PROVIDE POLYETHYLENE AS APPROVED BY THE LOCAL GAS COMPANY.
- B. VALVES SHALL BE 125 PSIG RATED, THREADED ENDS COMPLYING WITH ASME B1.20.1 FOR ALL VALVES 2" AND SMALLER. ALL LARGER VALVES SHALL BE FLANGED ENDS COMPLYING WITH ASME B16.5, ALL LISTED FOR GAS SERVICE.
- C. FIREPLACE VALVE: PROVIDE RECESSED, LOOSE KEY, VALVE AT THE GAS-FIRED FIREPLACE FOR OWNER'S OPERATION. CONFIRM FINISH PLATE COLOR WITH THE ARCHITECT.
- D. PROVIDE ALL PROPER LINE SIZE AND APPLIANCE REGULATORS FOR COMPLETE INSTALLATION. VENT RELIEF FROM EACH REGULATOR TO EXTERIOR LOCATION, APPROVED BY THE A/E AND FINISHED WITH A WEATHERPROOF CAP.
- E. ROOFTOP SUPPORTS: UV RESISTANT, RUBBER WITH GALVANIZED STEEL STRUT CLAMPS.

- 2.06 DOMESTIC WATER SYSTEM
- A. BELOW GROUND PIPING 1 1/2" AND SMALLER: ASTM B 88 COMPLIANT TYPE "K" SOFT COPPER TUBING. JOINTS BELOW GRADE ARE PROHIBITED. WRAP BELOW GROUND COPPER TUBING WITH CHASE "APEACOAT TR GREEN" PIPE WRAP OR APPROVED EQUAL TO POINTS THREE INCHES (3") ABOVE FINISHED FLOOR ELEVATION.
- B. BELOW GROUND PIPING 1 1/2" AND LARGER: ASTM B 88 COMPLIANT TYPE "K" HARD COPPER TUBING WITH ASME B16.18 OR ASME B16.22 COMPLIANT CAST OR WROUGHT COPPER SOLDER FITTINGS. TEST BELOW GROUND PIPING AND JOINTS WITH AN AIR TEST, MINIMUM 80 PSI FOR A MINIMUM DURATION OF 15 MINUTES. WRAP BELOW GROUND COPPER TUBING WITH CHASE "APEACOAT TR GREEN" PIPE WRAP OR APPROVED EQUAL TO POINTS THREE INCHES (3") ABOVE FINISHED FLOOR ELEVATION.
- C. ABOVE GROUND PIPING: TYPE "L" HARD COPPER TUBING CONFORMING TO ASTM B88. CAST OR WROUGHT COPPER SOLDER OR MECHANICAL MADE FITTINGS CONFORMING TO ASME B16.18 OR ASME B16.22.
- D. VALVES FOR USE WITH COPPER PIPE:
- CUTOFF VALVES: BRONZE BODY BALL VALVE, CHROMIUM PLATED BALL, THREADED OR SOLDER ENDS, LEVER HANDLE, RATED FOR 600 PSI WOG, APOLLO 70-100/200, MILWAUKEE BA100/BA150, NIBCO T-S-585-70 OR ACCEPTED EQUAL.
  - CUTOFF AND DRAIN VALVES: BRONZE BODY BALL VALVE, CHROMIUM PLATED BALL, THREADED ENDS, DRAIN WITH CAP, RATED FOR 400 PSI WOG, APOLLO 95-100, HAMMOND 8701, WATTS B-6300, SERIES OR ACCEPTED EQUAL. CUTOFF VALVES AS LISTED ABOVE USED WITH A SEPARATE 3/8" VALVE INSTALLED IN LINE AS THE DRAIN VALVE MAY BE USED IN LIEU OF THE VALVE WITH DRAIN PLUG.
  - GLOBE VALVES: FOR USE IN BY-PASS OR WHERE VALVE IS NORMALLY CLOSED BRONZE, THREADED OR SOLDER ENDS, COMPOSITION DISC, NON-ASBESTOS PACKING RATED FOR 300 PSI WOG, NIBCO S-235, STOCKHAM B24T, GRINNELL 32405J OR ANGLE VALVE, NIBCO T-311, STOCKHAM B-222T, GRINNELL 3220, OR ACCEPTED EQUAL.
  - CHECK VALVES: BRONZE, "Y" PATTERN SWING CHECK, BRONZE DISC AND SEAT, THREADED OR SOLDER ENDS, RATED FOR 200 PSI WOG, NIBCO 413, STOCKHAM B-321, MILWAUKEE 507, OR ACCEPTED EQUAL.
  - BALANCING VALVES: BELL & GOSSETT "CIRCUIT SETTER PLUS" MODEL CB, OR ACCEPTED EQUAL, BRONZE BODY BALL VALVE, TWO READOUT TAPS WITH CAPS, MEMORY STOP, SWEAT OR NPT ENDS, MINIMUM 200 PSI WORKING PRESSURE WOG.
  - BACKFLOW PREVENTERS: REDUCED PRESSURE ZONE, ASSE 1013 LISTED. PROVIDE AIR GAP CONNECTION AND EXTEND VENT TO FLOOR DRAIN.
  - HOSE BIBBS: POLISHED CHROME, BRASS INTERIOR WITH LEVER HANDLE AND CHROME VACUUM BREAKER IN FINISHED AREAS. ROUGH BRASS FOR UNFINISHED AREAS.
  - WALL HYDRANT: LOOSE KEY, CHROME FACE, FREEZE-PROOF, WITH INTEGRAL VACUUM BREAKER, FLUSH WITH WALL.

- 2.07 FIXTURES AND EQUIPMENT[S](JOIM):
- A. GENERAL: PROVIDE AND INSTALL ALL FIXTURES AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED WITH ALL SUPPLIES, WASTE AND VENT CONNECTIONS, ALL FITTINGS, ALL NECESSARY SUPPORTS, FAUCETS, VALVES AND TRAPS. FURNISH INDIVIDUAL STOPS ON SUPPLY PIPES OF ALL FIXTURES EXCEPT FOR SUPPLY PIPES TO FLUSH VALVES WITH INTEGRAL STOPS.
- B. WATER CLOSETS: SEE ARCHITECTURAL PLANS FOR WATER CLOSET SPECIFICATIONS. SHALL BE COMPLETE INSTALLATION WITH ALL APPURTENANCES SUCH AS CHROME PLATED BRASS ANGLE STOP AND CHROME, RIGID, SUPPLY RISER. FLUSH LEVER SHALL BE ON THE WIDE SIDE OF THE TOILET COMPARTMENT IN ACCESSIBLE STALLS.
- C. LAVATORIES: SEE ARCHITECTURAL PLANS FOR LAVATORY SPECIFICATIONS. SHALL BE COMPLETE INSTALLATION WITH ALL APPURTENANCES SUCH AS CHROME PLATED BRASS ANGLE STOP, CHROME, RIGID, SUPPLY RISER, GRID DRAIN AND CHROME PLATED, BRASS, P-TRAP ASSEMBLY.
- D. SHOWERS/TUBS: SEE ARCHITECTURAL PLANS FOR SHOWER SPECIFICATIONS. SHALL BE COMPLETE INSTALLATION WITH ALL APPURTENANCES SUCH AS CHROME PLATED BRASS SHOWER ARM.
- E. MOP BASINS: FLOOR MOUNTED WITH WALL MOUNTED BUCKET FAUCET, HOSE, HOSE HOLDER AND MOP HANGERS. PROVIDE CHECK VALVES ON SUPPLY PIPING TO ALL MOP SINKS.
- F. GAS-FIRED WATER HEATER: SHALL BE COMPLETE WITH T&P RELIEF VALVE, EXPANSION TANK AND CIRCULATING PUMP. CONTROL SHALL BE BY HONEYWELL L8068, OR EQUAL, AQUASTAT.
- G. FIXTURES PROVIDED BY OTHERS: PLUMBING CONTRACTOR IS RESPONSIBLE FOR COORDINATION AND INTALLATION OF ALL ROUGH-IN AND FINAL INSTALLATION AND TRIM-OUT OF EQUIPMENT AND FIXTURES FOR A COMPLETE INSTALLATION. PROVIDE CHROME PLATED APPURTENANCES FOR WATER AND WASTE CONNECTIONS AS REQUIRED.

- 2.08 STERILIZATION, FLUSHING AND TESTING:
- A. TESTING OF PIPING SYSTEMS SHALL BE IN ACCORDANCE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE AND THE INTERNATIONAL PLUMBING CODE SECTION 610.
- B. NEW PIPING SHALL BE STERILIZED, FLUSHED AND TESTED PRIOR TO CONNECTING TO EXISTING PIPING.
- C. DOMESTIC WATER PIPING: STERILIZE WITH CHLORINE, 50 PARTS PER MILLION, FOR A 24-HOUR PERIOD. AFTER WHICH THE SYSTEM SHALL BE FLUSHED BEFORE BEING PUT INTO SERVICE.
- D. FLUSHING OF PIPING, FLUSH ALL PIPING TO REMOVE SEDIMENT, PIPE SCALE, ETC., FROM WATER LINES.
- E. GAS PIPING SHALL BE TESTED PER IFGC.

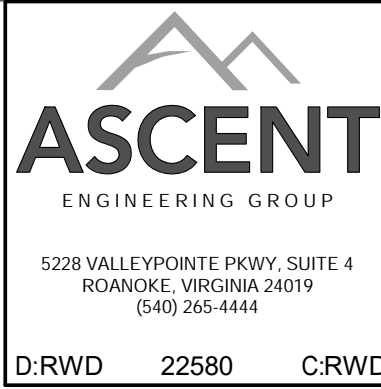
- 2.09 IDENTIFICATION:
- A. ALL PIPING AND EQUIPMENT SHALL BE IDENTIFIED WITH 1" HIGH STENCILED LETTERS. PIPING SHALL HAVE FLOW DIRECTION ARROWS.
- B. ALL EXTERIOR GAS PIPING SHALL BE PAINTED WITH TWO COATS, FLAT CIRCUMFERENCE, YELLOW ENAMEL PAINT AND STENCILED WITH IDENTIFICATION AND PRESSURE.

- 2.10 PIPE INSULATION:
- A. ALL INTERIOR STORM DRAIN AND WATER PIPE SHALL BE INSULATED WITH FINE HEAVY DENSITY FIBROUS GLASS INSULATION WITH FOIL-SCRM-WHITE KRAFT PAPER VAPOR BARRIER JACKET MOLDED TO CONFORM TO PIPING OR DRAIN, 0.25 BTU/IN SQ. FT./R-1R MAXIMUM "K" VALUE AT 75F. ALL INSULATING MATERIALS SHALL HAVE A COMPOSITE FLAME SPREAD RATING NOT EXCEEDING 25, AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50 AS TESTED UNDER PROCEDURE ASTM D-64-75, NFPA 255 AND UL 723. ALL INSULATION SHALL BE 1" THICK. INSULATION EXPOSED TO WEATHER SHALL HAVE MINIMUM 0.032 ALUMINUM JACKET WITH ALL JOINTS SEALED WATERTIGHT.

EXECUTION:

- 3.01 PIPING WORK IN GENERAL:
- A. CUT PIPE ACCORDING TO THE MEASUREMENT ESTABLISHED AT PROJECT. PROVIDE PLUGS AND CAPS AS INDICATED AND WHERE NECESSARY. PROVIDE PROPERLY FOR EXPANSION, CONTRACTION AND DRAINAGE IN ALL PIPING. INSTALL ALL OUTSIDE PIPING BELOW FROST LINE UNLESS OTHERWISE INDICATED.
- 3.02 PIPE JOINTS AND CONNECTIONS:
- A. SCREW JOINTS: REAM PIPES AFTER CUTTING AND THREADED, FREE FROM FINIS AND BURRS. JOINTS SHALL BE MADE WITH COMPOUND OR TEFLON TAPE. PROVIDE MALLEABLE THREADS ONLY, AND ALL EXPOSED THREADS ON PIPES MOPPED WITH COMPOUND OR COVERED WITH TAPE TO PREVENT RUST. FILL CUT THREADS, NOT MORE THAN 3 EXPOSED THREADS AFTER JOINT MADE UPTIGHT.
- B. COPPER PIPE JOINTS: ALL SWEAT COPPER FITTINGS FOR WATER, SANITARY, WASTE AND VENT PIPING SHALL BE MADE UP WITH LEAD FREE SOLDER. SOLDER SHALL BE 95.5 TIN, ANTIMONY OR 95.4-5.5 TIN-ANTIMONY-SILVER. ALL JOINTS FOR MECHANICALLY FORMED TEE FITTINGS SHALL BE BRAZED IN ACCORDANCE WITH THE COPPER DEVELOPMENT ASSOCIATION COPPER TUBE HANDBOOK USING BCUP SERIES FILLER MATERIAL. REFER HEREINAFTER TO SPECIAL PIPING SYSTEMS FOR SPECIFIC SOLDER REQUIREMENTS.
- C. UNIONS: IN SCREWED PIPE, 2" AND SMALLER, TO BE GROUND JOINT WITH BRASS SEAT; FLANGED UNIONS FOR PIPES LARGER THAN 2".
- 3.03 HANGERS AND SUPPORTS:
- A. HORIZONTAL PIPING: SUPPORT ALL PIPING WITHOUT STRAIN OR SAGGING. HANGERS SHALL BE PIPE RING, SPLIT PIPE RING, EXTENSION SPLIT PIPE CLAMP, OR CLEVIS TYPE, WITH MEANS FOR ADJUSTING LENGTH OF HANGER ROD. HANGERS SHALL BE SUPPORTED FROM BEAM CLAMPS, INSERTS OR APPROVED SOCKETS INSERTED IN SLAB CONSTRUCTION. PIPE HANGER RODS SHALL BE ATTACHED TO THE TOP CHORD ONLY ON STEEL JOISTS AND BEAMS BY JOIST OR BEAM CLAMPS. WELDING OF SUPPORT RODS WILL NOT BE PERMITTED WITHOUT WRITTEN APPROVAL OF THE ARCHITECT. ENGINEER, WIRE, THIN STRAP, AND PERFORATED STRAP HANGERS WILL NOT BE ACCEPTABLE.
- B. VERTICAL PIPING: SUPPORT ALL RISERS AND STACKS AT EACH FLOOR WITH RISER CLAMPS. SUPPORT PIPING ON WALLS WITH RING OR SPLIT RING HANGERS WITH WALL FLANGE.
- C. COPPER PIPING: HANGERS AND SUPPORTS SHALL BE COPPER, BRASS, OR COPPER PLATED STEEL, OR COPPER PLATED MALLEABLE IRON.
- D. INSULATED PIPING: PROVIDE FACTORY FABRICATED SADDLES OR SHIELDS UNDER ALL HANGERS AND SUPPORTS PROVIDED FOR INSULATED WATER PIPING. SIZE SADDLES AND SHIELDS FOR EXACT FIT TO MATE WITH PIPE INSULATION. ALL OTHER INSULATED PIPES SHALL BE SUPPORTED DIRECTLY BY THE HANGER; NO SADDLE OR SHIELD REQUIRED.
- E. HANGER SPACING FOR CAST IRON SOIL PIPES: SPACE NOT OVER 5 FT. APART FOR 5 FT. LENGTHS OR 10 FT. APART FOR 10 FT. LENGTHS, LOCATED NEAR A HUB, AND AT EACH FITTING WHERE "NO-HUB" PIPE CONNECTIONS ARE MADE.
- F. HANGER SPACING FOR COPPER AND STEEL PIPES: SPACE NOT OVER 6 FT. APART FOR 1-1/4" OR SMALLER PIPE, AND NOT OVER 10 FT. APART FOR PIPES 1-1/2" OR LARGER. LOCATE HANGERS AT POINTS WHERE PIPES CHANGE DIRECTION. INTERMEDIATE SUPPORTS SHALL BE PROVIDED ON EXPOSED VERTICAL PIPING TO PREVENT SWAYING OF PIPING.

- 3.04 INSTALLATION:
- A. GRADING OF DOMESTIC WATER PIPING: PIPING SHALL BE SO GRADED TO PERMIT DRAINAGE OF ALL PIPING AT COLD WATER SERVICE VALVES, AT FIXTURES OR OTHER DRAIN VALVES. DRAINAGE OF LOW POINTS SHALL BE ACCOMPLISHED BY EXTENDING 1/4" BRANCHES TO DRAIN VALVES WHERE INDICATED ON DRAWINGS OR WHERE REQUIRED ON THE JOB FOR COMPLETE DRAINAGE OF THE SYSTEMS.
- B. GRADE OF SANITARY PIPING: MINIMUM GRADE SHALL BE 1/4" PER FOOT EXCEPT A MINIMUM GRADE OF 1/8" PER FOOT WILL BE PERMITTED FOR 3" AND LARGER PIPE WHERE REQUIRED TO MEET ESTABLISHED INVERT ELEVATIONS.
- C. CHANGES IN DIRECTION OF SANITARY PIPING: LONG SWEEP 1/4 BENDS, 1/6, 1/8, OR 1/16 BENDS, OR 45 DEGREE OR 1/2 "Y" FITTINGS, EXCEPT SANITARY "TEES" OR SHORT 1/4 BENDS MAY BE USED FOR CHANGES IN DIRECTION OF FLOW FROM THE HORIZONTAL TO THE VERTICAL.
- D. DIELECTRIC FITTINGS: AT ALL LOCATIONS WHERE DISSIMILAR METALS ARE JOINED, PROVIDE DIELECTRIC INSULATING CONNECTIONS ESPECIALLY BUILT TO PREVENT ELECTROLYSIS SUCH AS SPECIAL COUPLINGS, FITTINGS OR UNIONS.
- E. WALLS CONCEALING GAS PIPING SHALL BE OPEN AT THE TOP AND ALL UNDERFLOOR PIPING SHALL BE IN A VENTILATED STEEL SLEEVE. ALL PIPING PENETRATING MASONRY WALLS SHALL BE THRU A STEEL SLEEVE. PROVIDE DRIPS AND SEDIMENT TRAPS AT ALL LOW POINTS AS REQUIRED PER CODE.



THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR

VAN THIEL



JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	@ brwarchitects, p.c.

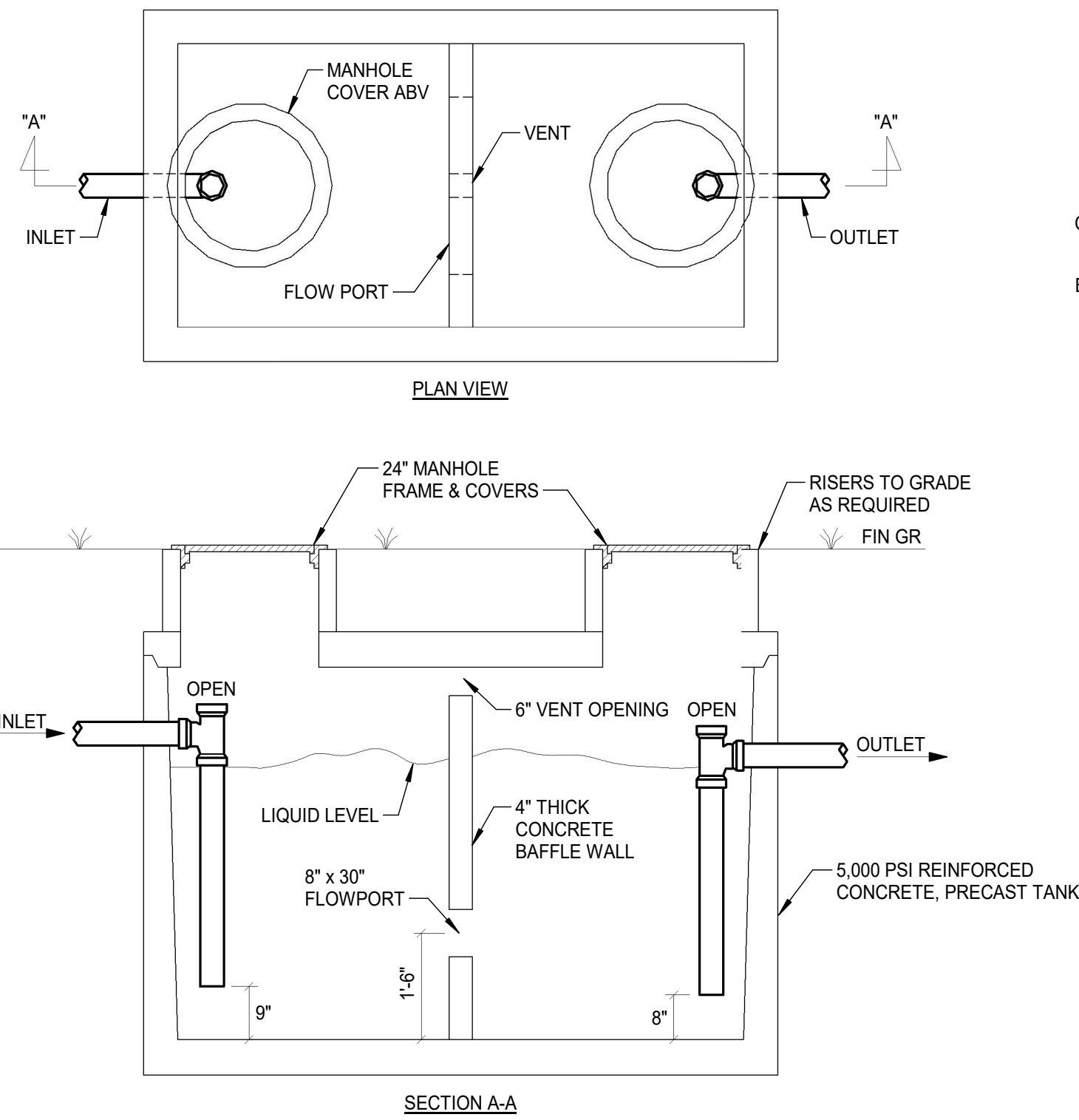
CONSTRUCTION SET

REVISIONS	

P0.2

PLUMBING AND FIRE SUPPRESSION SPECIFICATIONS

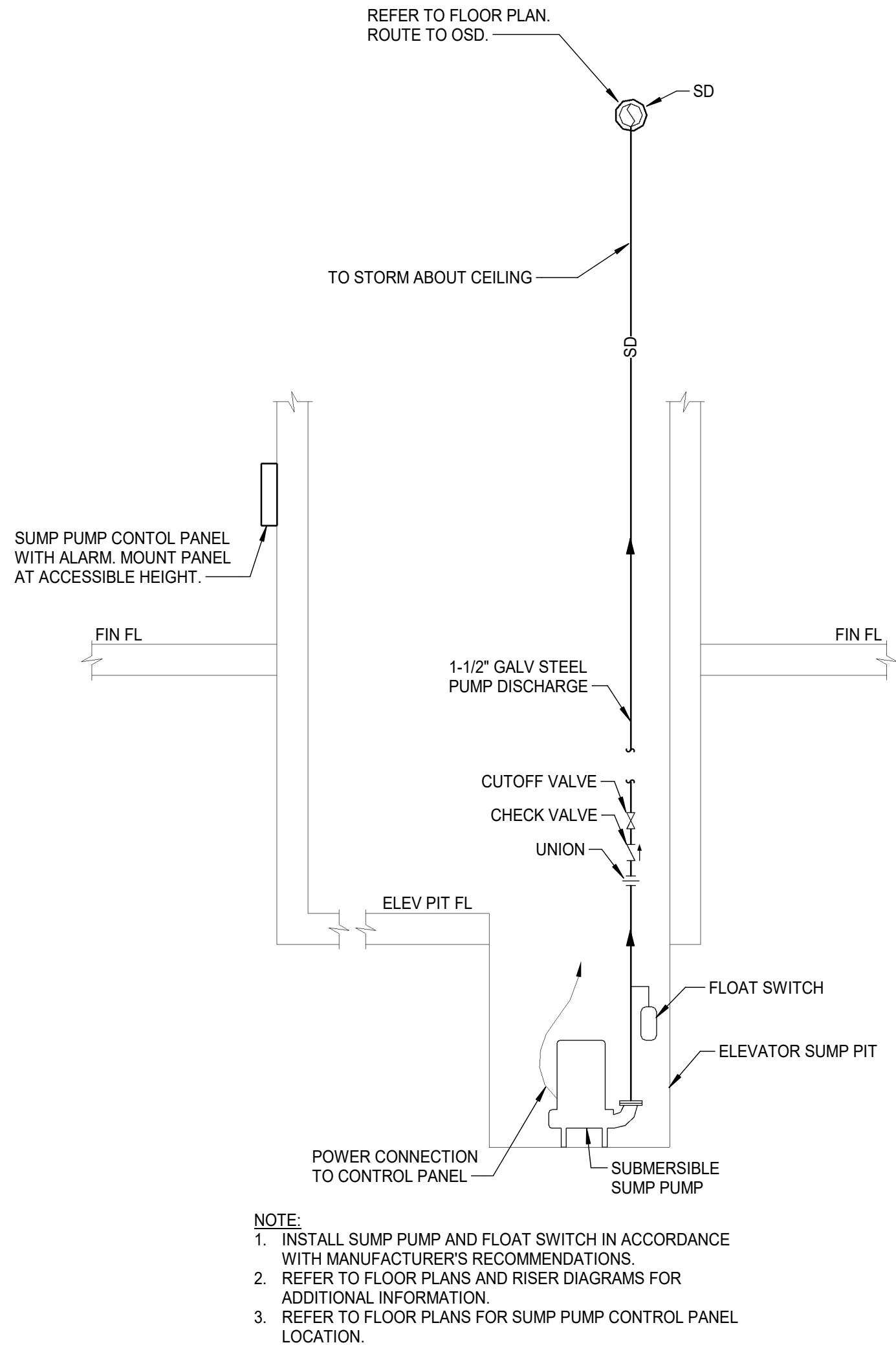




- NOTES:
1. ALL PIPE & FITTINGS WITHIN TANK SHALL BE SAME MATERIAL AS PIPING INTO AND OUT OF GREASE INTERCEPTOR. REFER TO FOUNDATION PLANS AND SPECIFICATIONS FOR MATERIAL.
  2. TEES SHALL BE TIGHTLY GROUTED INTO INLET AND OUTLET KNOCKOUT HOLES OF TANK
  3. REFER TO FOUNDATION PLANS FOR INLET AND OUTLET INVERT ELEVATIONS.

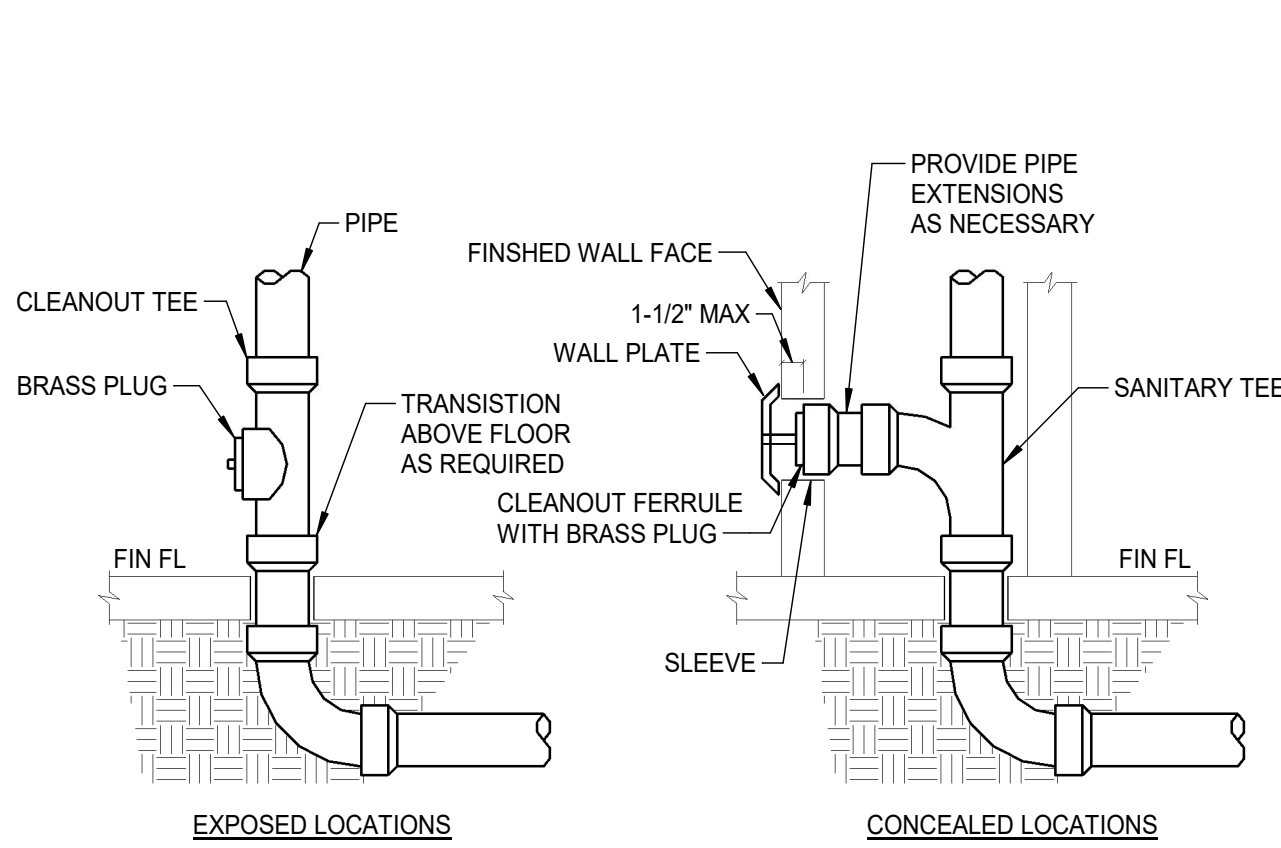
### GREASE INTERCEPTOR DETAIL

NO SCALE



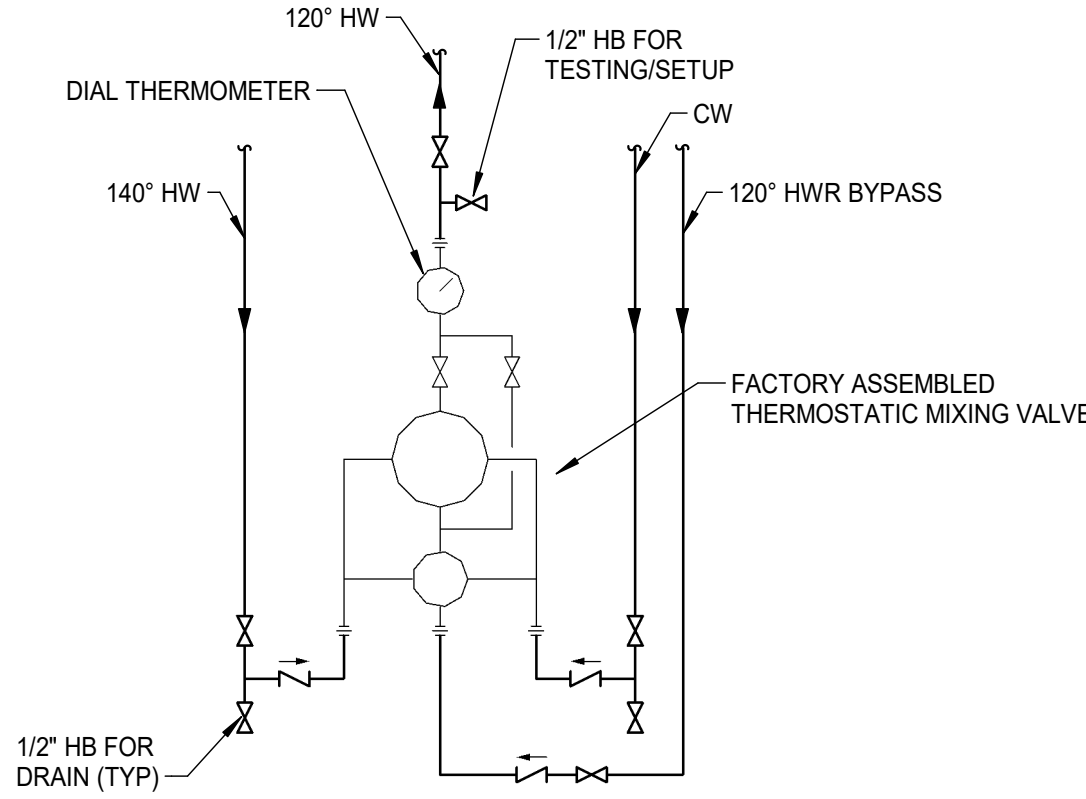
### ELEVATOR SUMP PUMP DETAIL

SCHEMATIC



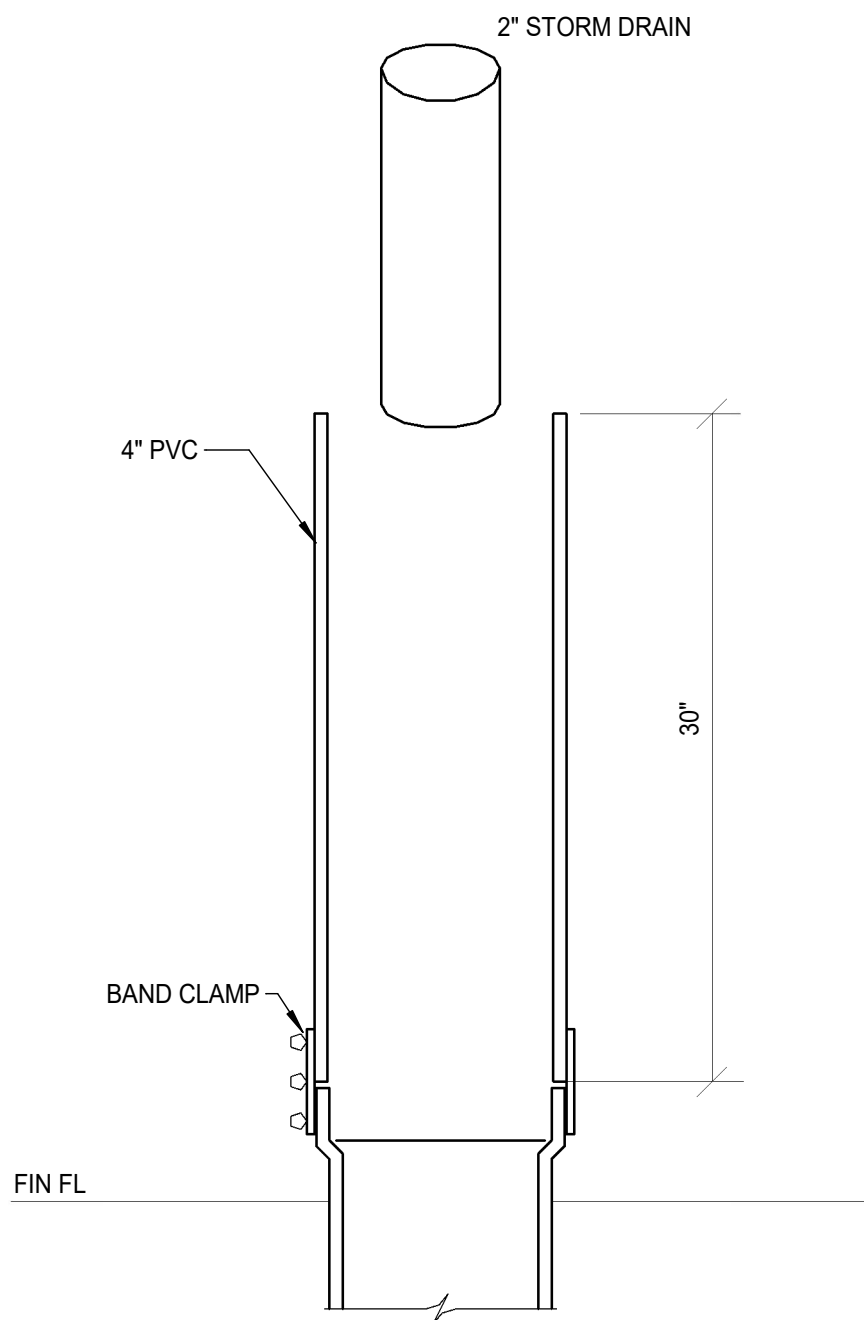
### CLEANOUT NEAR BASE OF STACKS AND RAIN CONDUCTORS

NO SCALE



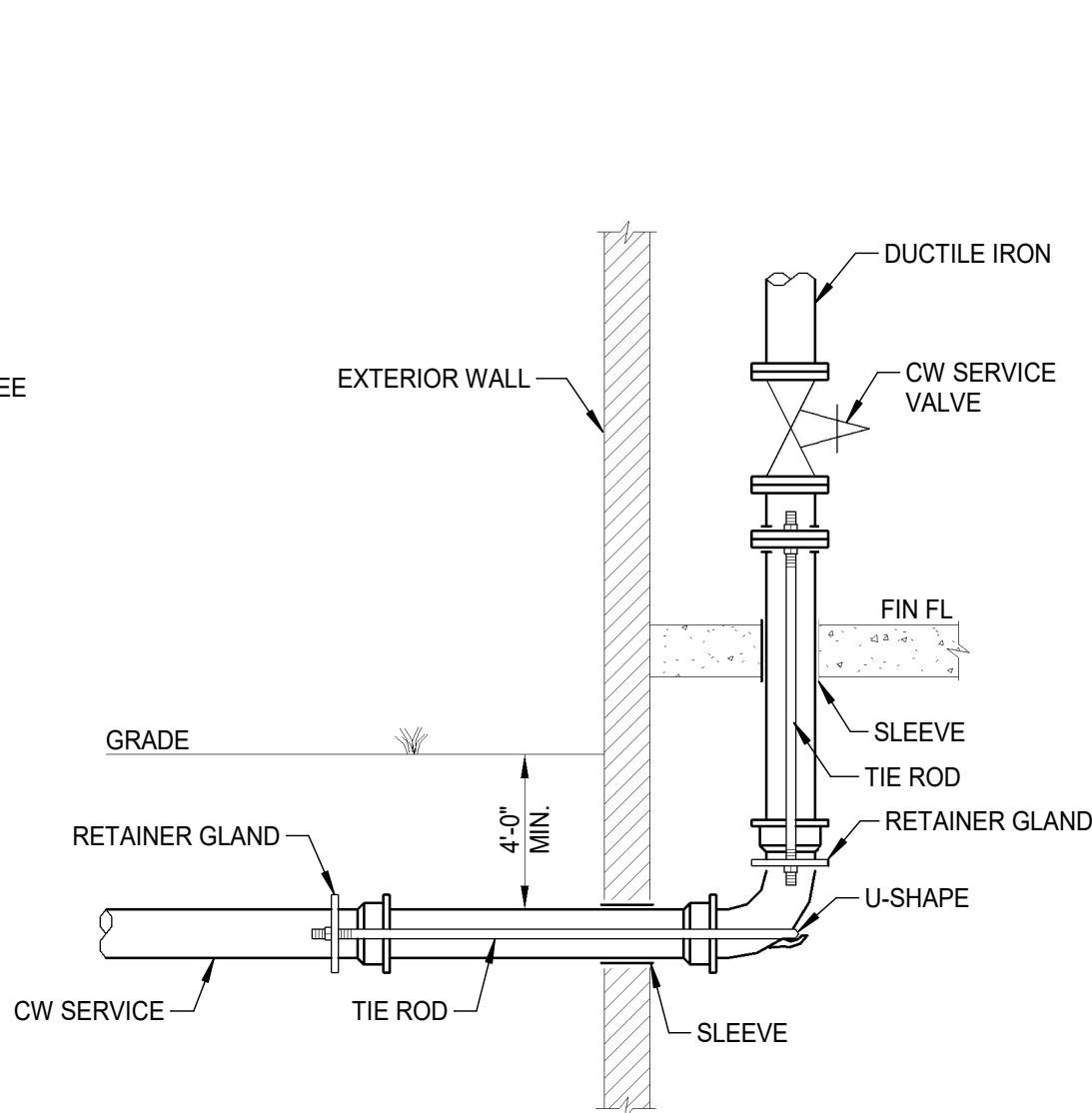
### TEMPERING VALVE MANIFOLD DETAIL

SCHEMATIC



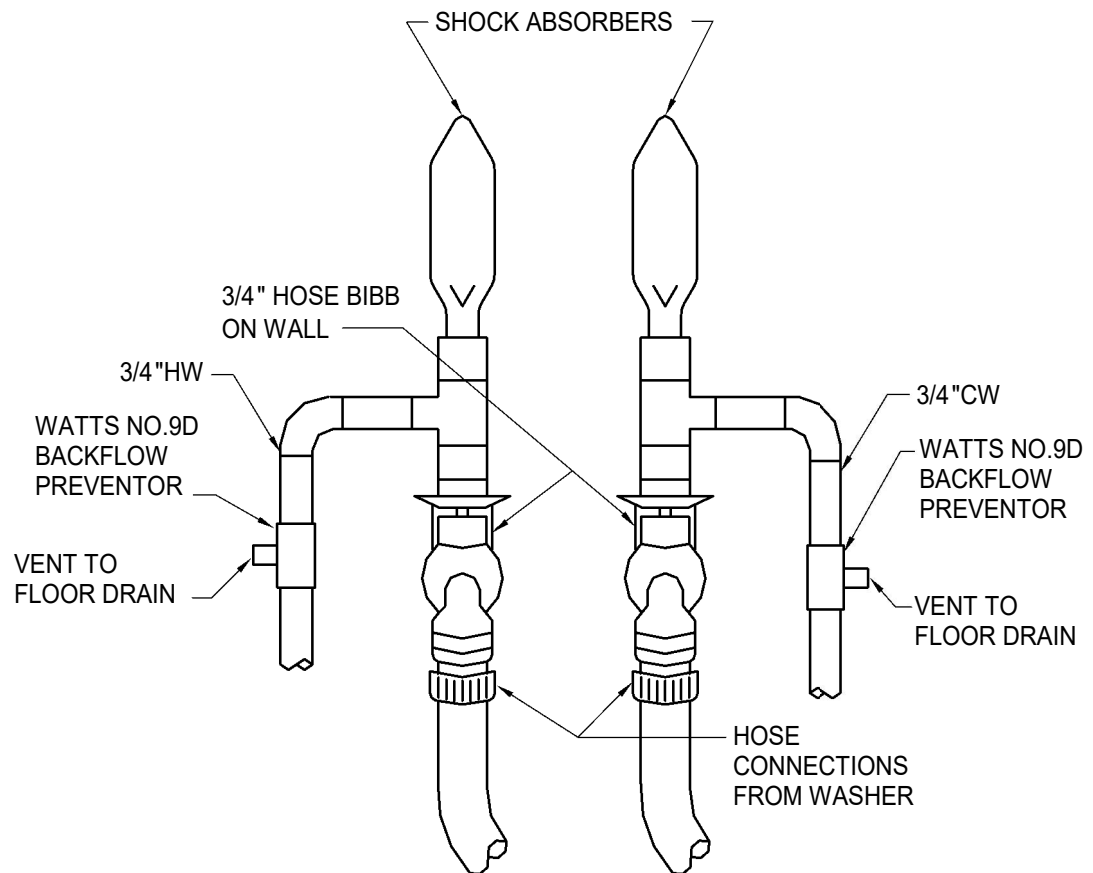
### DETAIL OF OPEN SITE DRAIN FOR SUMP PUMP

NO SCALE



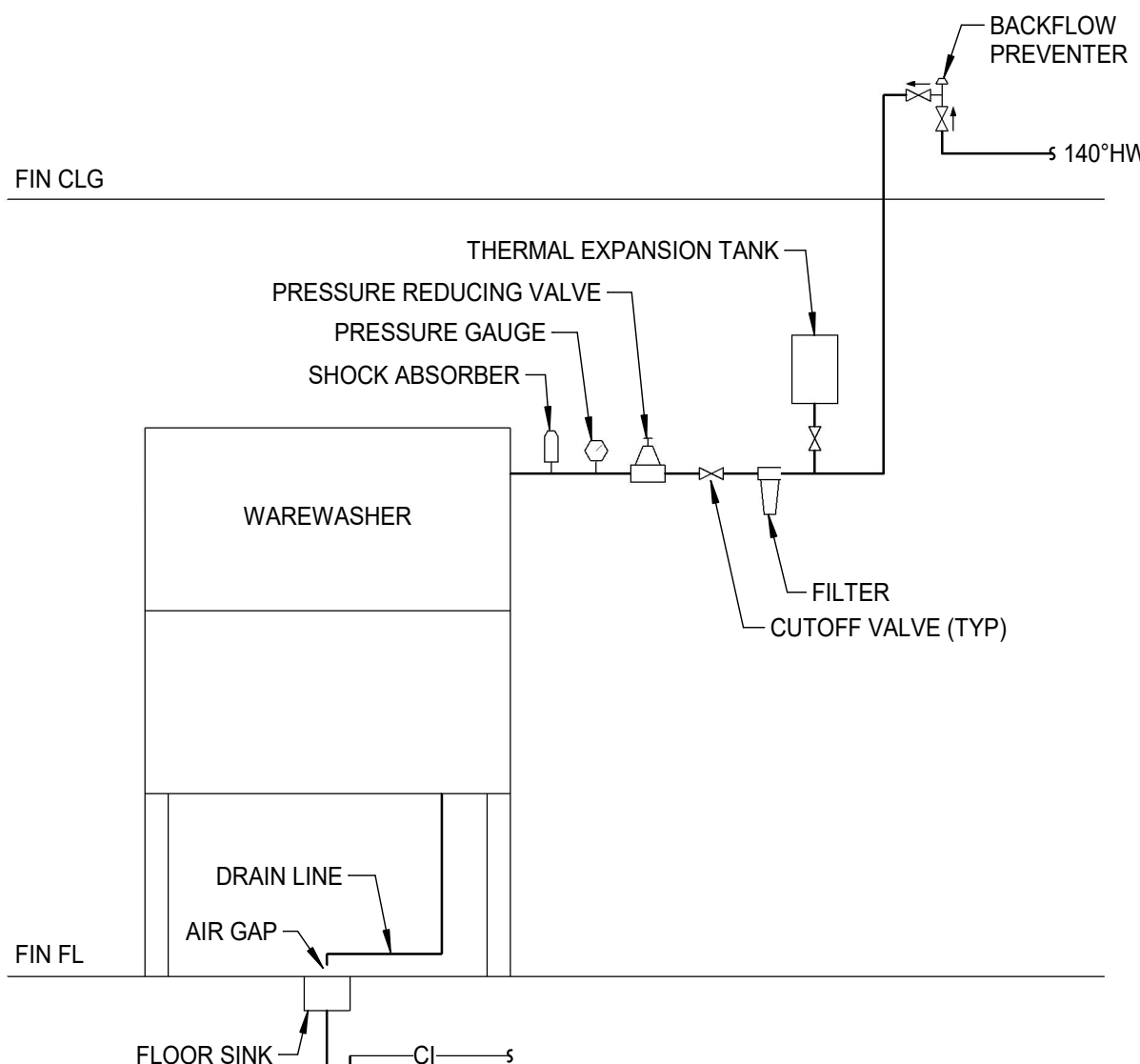
### DOMESTIC SERVICE TIE ROD DETAIL

NO SCALE



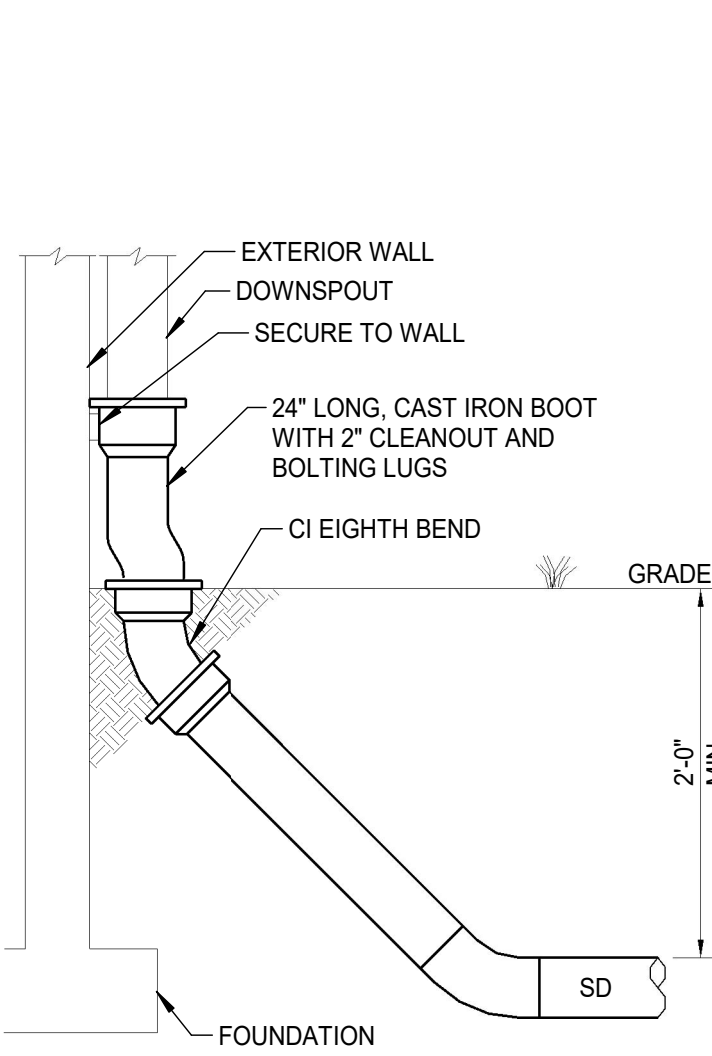
### LAUNDRY HOSE BIBB SHUT-OFF VALVE DETAIL LO-1

NO SCALE



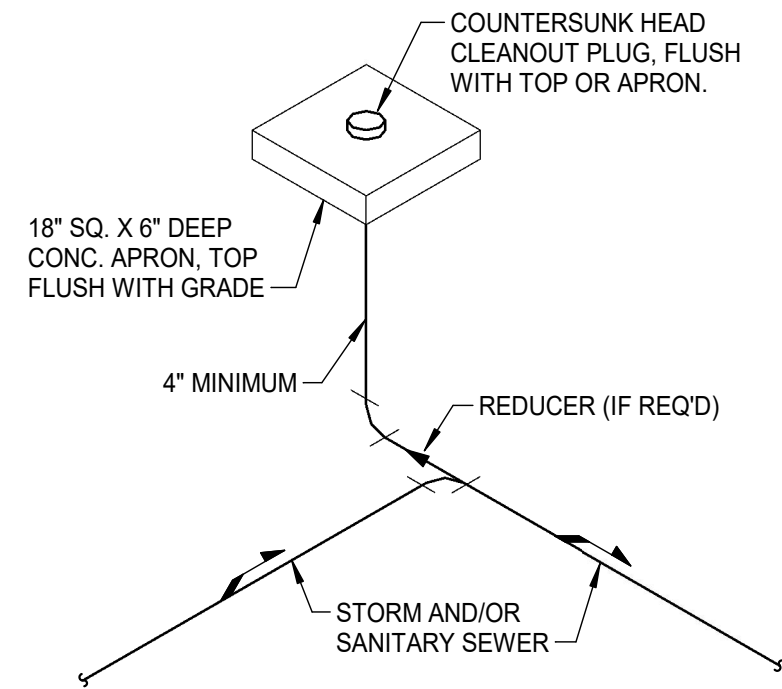
### CONNECTION TO WAREWASHER

SCHEMATIC



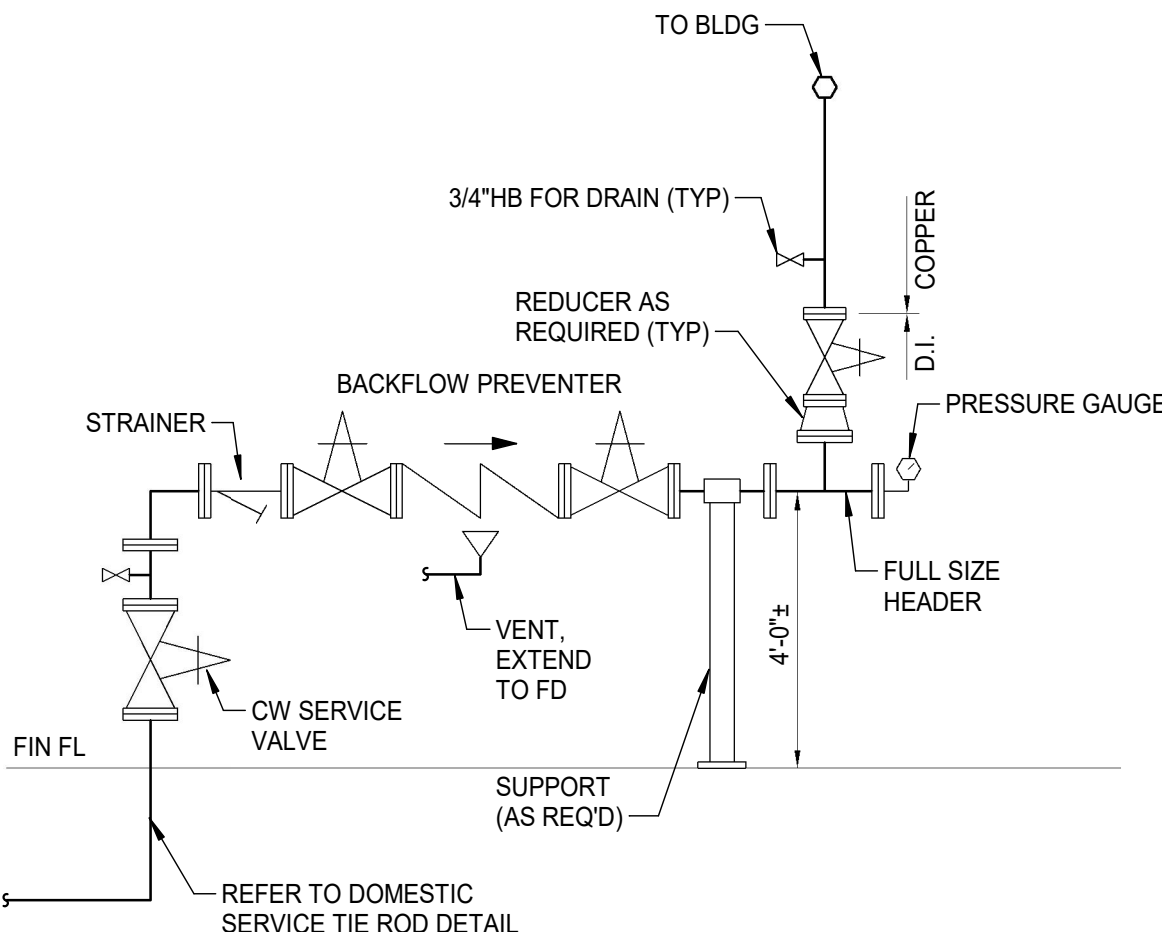
### DOWNSPOUT BOOT DETAIL

NO SCALE



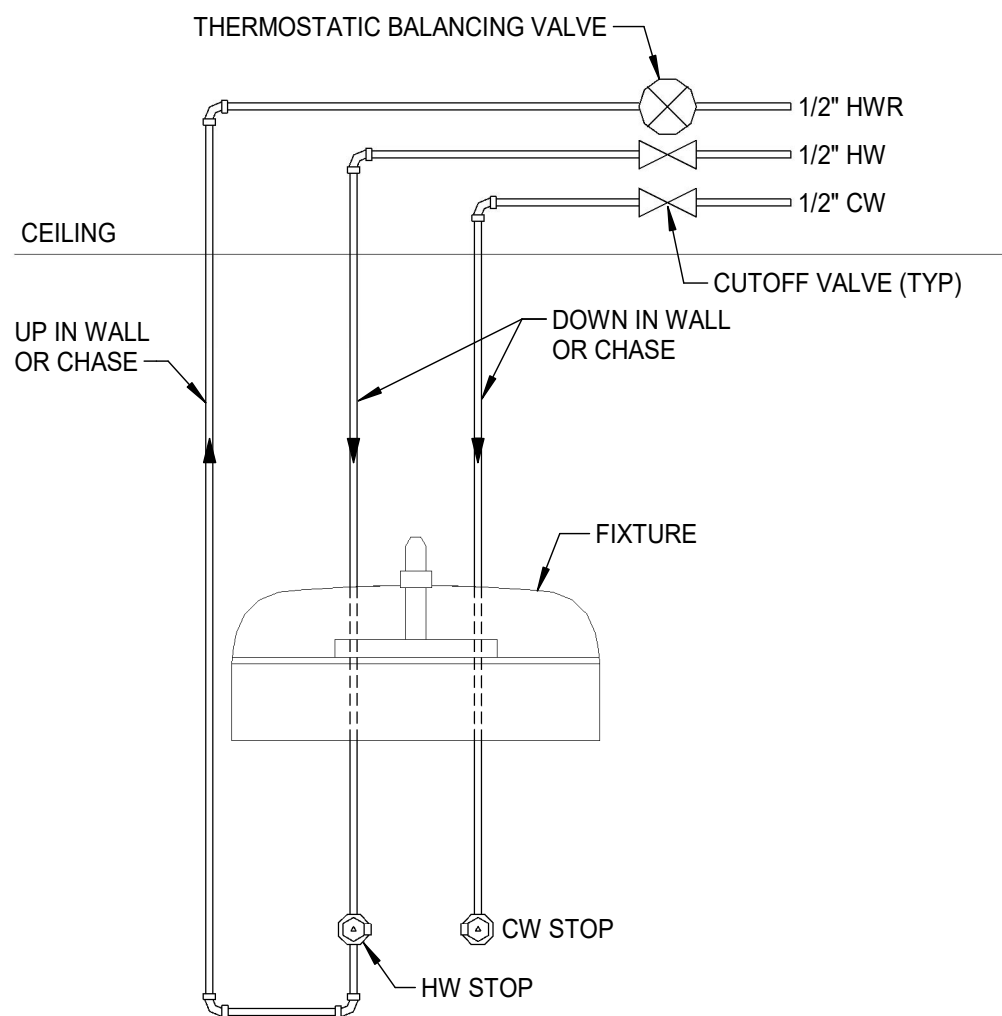
### DETAIL OF CLEANOUT IN OUTSIDE STORM AND SANITARY SEWER

SCHEMATIC



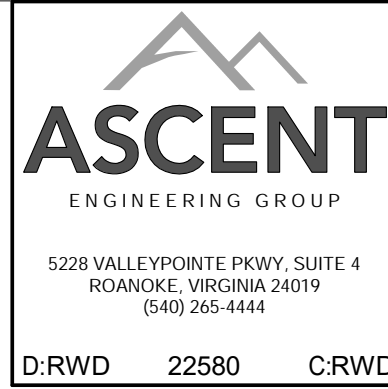
### DOMESTIC WATER HEADER AND RISER

SCHEMATIC



### HOT WATER RECIRCULATION LOOP FOR INDIVIDUAL FIXTURE

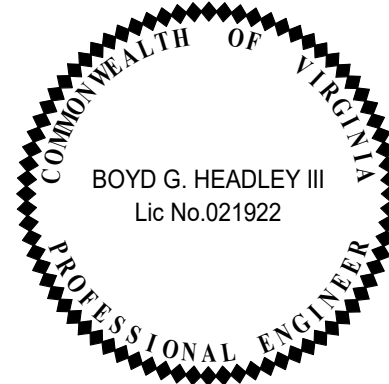
NO SCALE



## THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



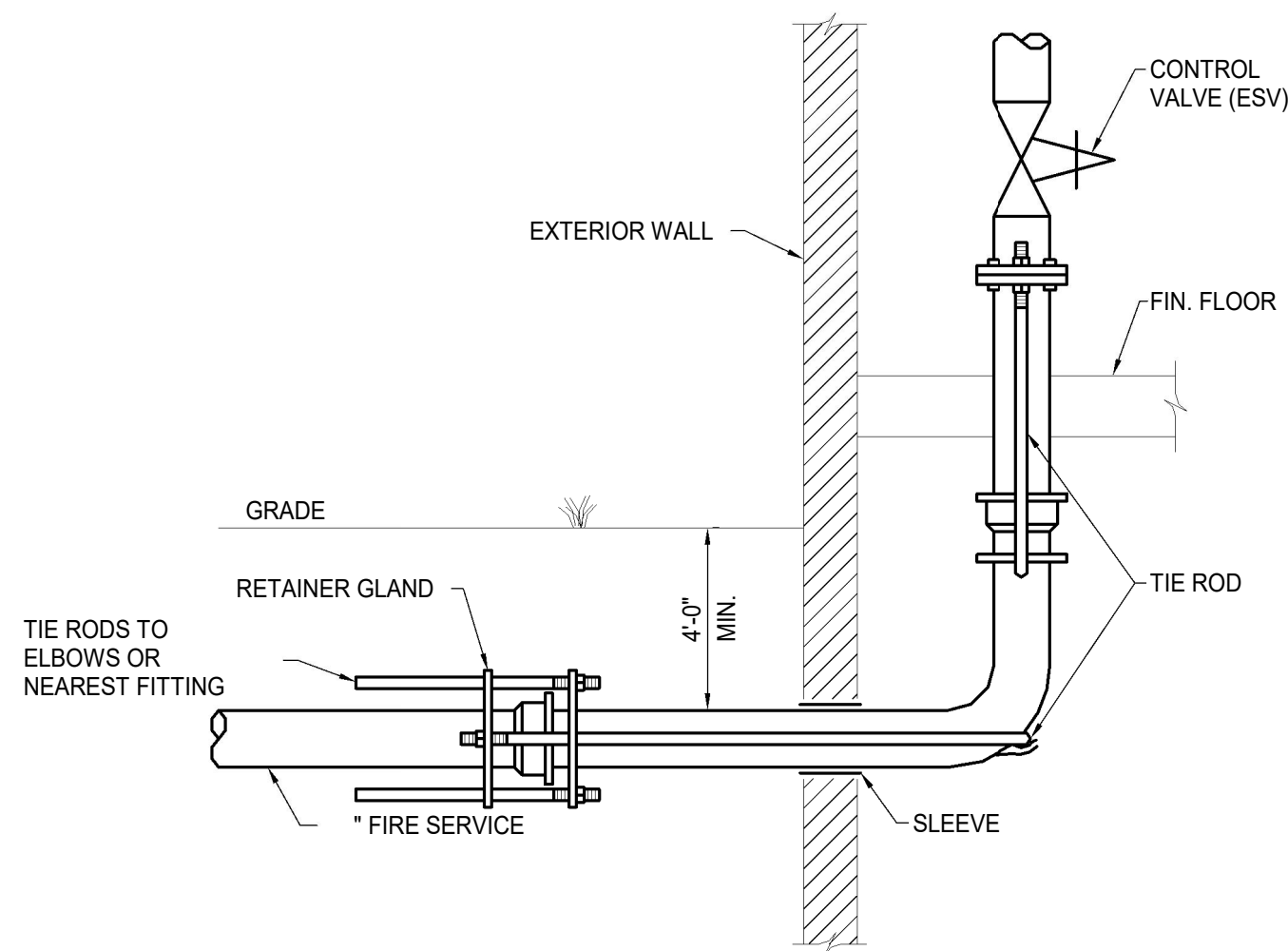
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

## CONSTRUCTION SET

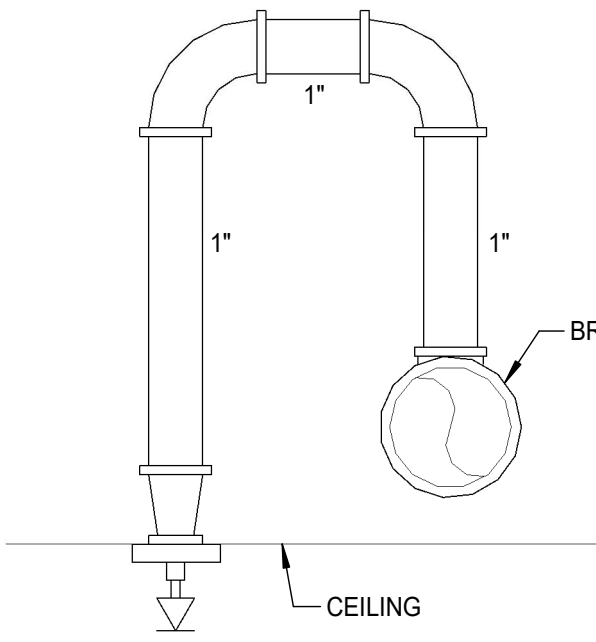
REVISIONS

# P0.3

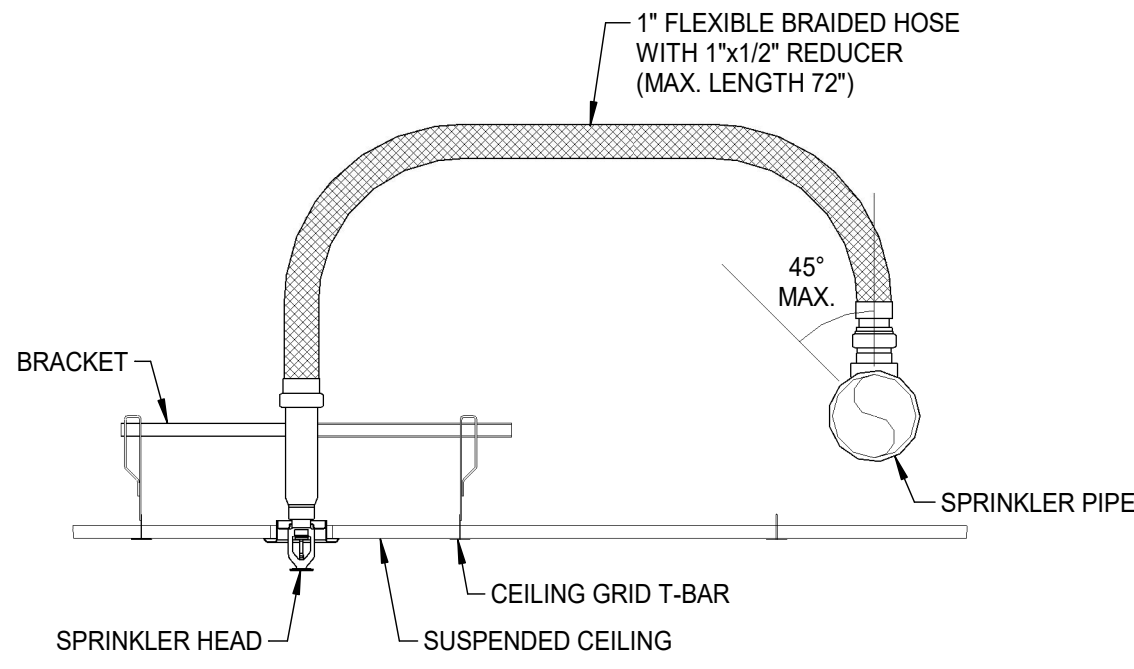
PLUMBING DETAILS



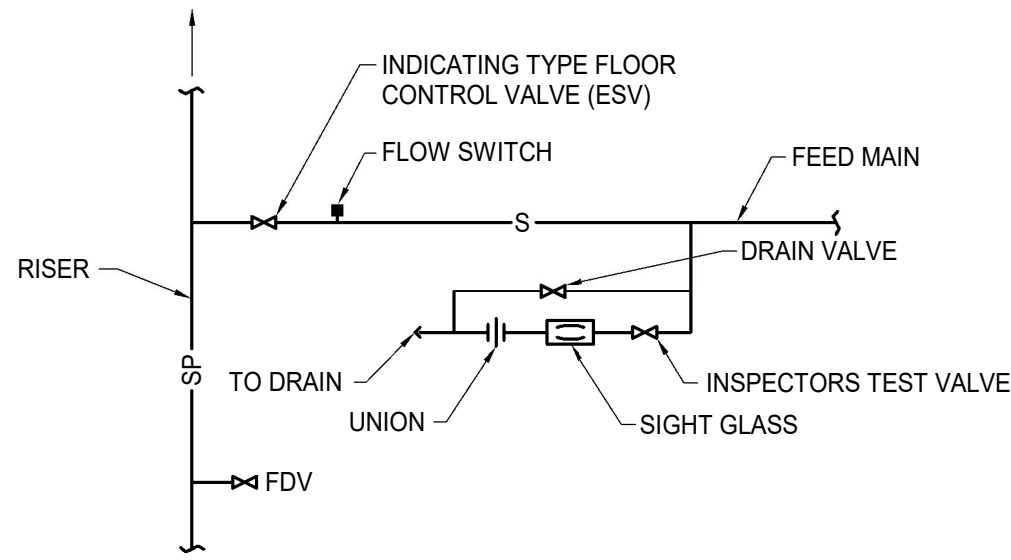
**FIRE SERVICE ENTRANCE DETAIL**  
NO SCALE



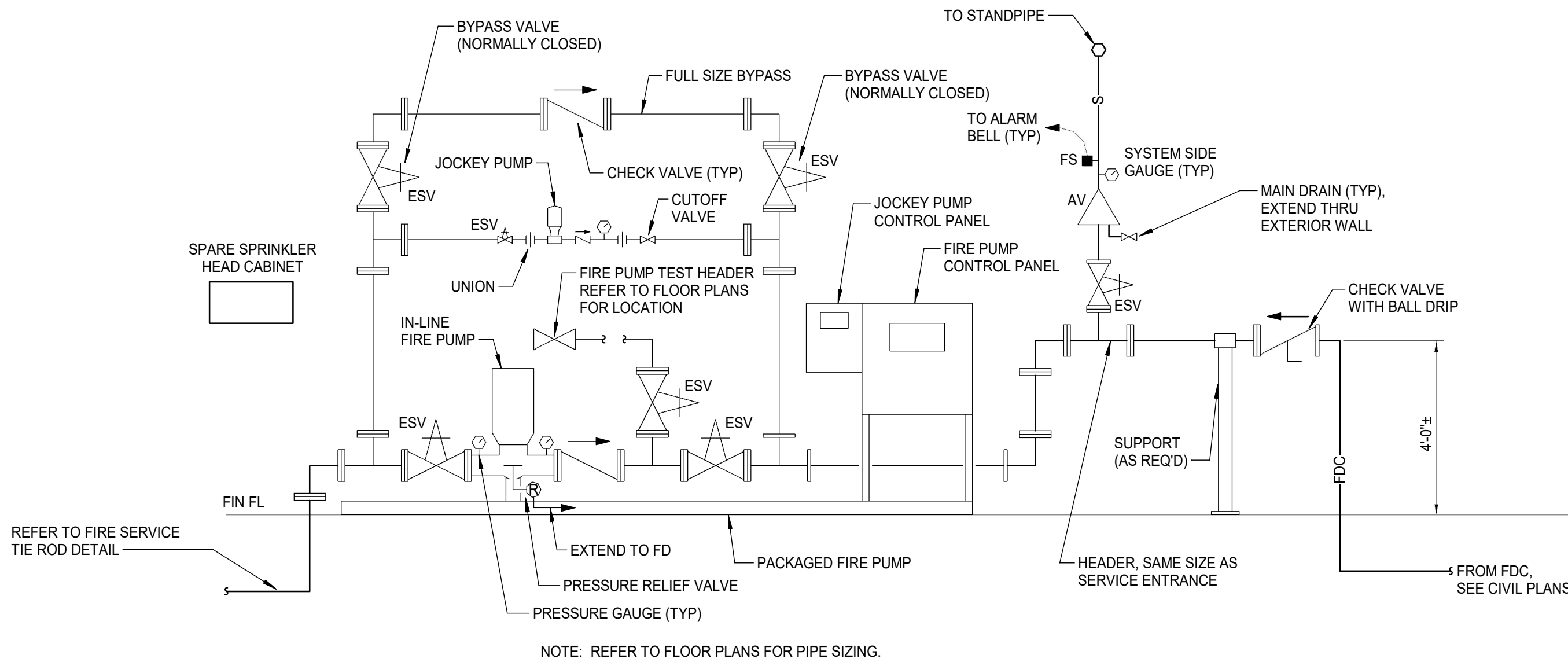
**TYPICAL ARMOVERT DETAIL**  
NOT TO SCALE



NOTE: INSTALL PER MANUFACTURER'S PRINTED GUIDELINES.  
**FLEXIBLE SPRINKLER HEAD CONNECTION DETAIL**  
NO SCALE



**TYPICAL ZONE TEST VALVE DETAIL**  
SCHEMATIC



NOTE: REFER TO FLOOR PLANS FOR PIPE SIZING.  
**SPRINKLER SYSTEM HEADER AND RISER**  
SCHEMATIC

## FIRE SUPPRESSION GENERAL NOTES

- FURNISH AND INSTALL A COMBINED SPRINKLER/STANDPIPE SYSTEM THROUGHOUT THE ENTIRE BUILDING. SPRINKLER/PIPING LOCATIONS ARE SHOWN ONLY WHERE SPECIFIC LOCATIONS OR SPECIAL HEADS ARE REQUIRED. CONTRACTOR SHALL LOCATE ALL OTHERS.
- SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL COMPLY WITH NFPA 13, 14, 20 AND THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE. SYSTEM SHALL PROVIDE COVERAGE FOR ENTIRE BUILDING PER NFPA 13, 14, 20.
- REFER TO THE CIVIL DRAWINGS FOR THE EXACT LOCATION OF ALL FIRE SUPPRESSION PIPING ENTERING AND EXITING THE BUILDING.
- SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR BUILDING DETAILS.

## FIRE SUPPRESSION DESIGN GUIDELINES

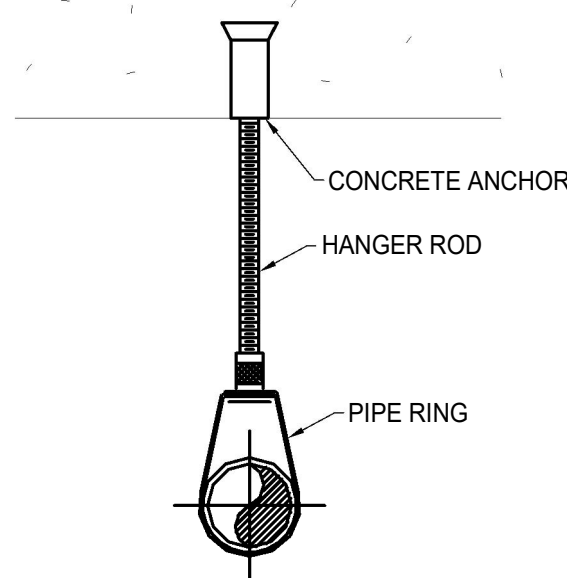
- THE RESIDENT ROOMS, TOILETS, CORRIDORS, COMMON SPACES AND OTHER SIMILAR SPACES SHALL BE LIGHT HAZARD WITH A MINIMUM DENSITY OF 0.10 GAL PER MINUTE OVER THE HYDRAULICALLY MOST REMOTE 1,500 SQ. FT. AREA, WITH ALL HEADS INCLUDED IN THE CALCULATIONS.
- THE STORAGE SPACES, MECHANICAL/ELECTRICAL ROOMS, KITCHEN AND OTHER SIMILAR SPACES SHALL BE ORDINARY HAZARD (GROUP 1) WITH A MINIMUM DENSITY OF 0.15 GAL PER MINUTE OVER THE HYDRAULICALLY MOST REMOTE 1,500 SQ. FT. AREA, WITH ALL HEADS INCLUDED IN THE CALCULATIONS.
- EXTENDED COVERAGE SPRINKLER HEADS MAY BE USED IN LIGHT HAZARD APPLICATIONS WITH A MINIMUM AND MAXIMUM SPACING IN ACCORDANCE WITH THEIR LISTING PER NFPA-13.
- PROVIDE DRY SPRINKLER HEADS IN WALK-IN FREEZER, REFRIGERATOR AND LOADING DOCKS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING/PERFORMING CURRENT FIRE FLOW TEST DATA PRIOR TO PREPARATION OF HYDRAULIC CALCULATIONS. REFER TO "FLOW TEST DATA" ON THIS SHEET FOR PRELIMINARY TEST DATA.
- CONTRACTOR SHALL COORDINATE FINAL LOCATION OF FIRE DEPARTMENT CONNECTION AND POST INDICATOR VALVE WITH A/E AND A/H PRIOR TO PREPARATION OF SHOP DRAWINGS.
- A 100 GPM ALLOWANCE FOR LIGHT HAZARD CLASSIFICATION AND A 250 GPM ALLOWANCE FOR ORDINARY HAZARD CLASSIFICATION SHALL BE ADDED TO THE COMBINED SPRINKLER/STANDPIPE REQUIREMENTS, FOR COMBINED INSIDE AND OUTSIDE HOSE, AT THE POINT OF CONNECTION TO THE SYSTEM.
- THE CLASS 1 STANDPIPE HOSE STREAM ALLOWANCE SHALL BE 500 GPM AT 100 PSI AT THE TOP FLOOR. AT THE HYDRAULICALLY MOST REMOTE OUTLETS AND 250 GPM FOR EACH ADDITIONAL STANDPIPE RISER, WITH A MAXIMUM DESIGN FLOW OF 1000 GPM.
- CONTRACTOR SHALL PROVIDE HYDRAULIC CALCULATIONS PROVIDING ALL PIPE SIZES. THE CONTRACTOR SHALL INDICATE ALL SPRINKLERS AND PIPING REQUIRED TO PROVIDE THE REQUIRED COVERAGE ON THE SUBMITTALS.
- ALLOW TEN (10) PSI PRESSURE LOSS SAFETY FACTOR FOR REDUCTION OR FLUCTUATION OF WATER PRESSURE

## FIRE SUPPRESSION INSTALLATION

- ALL SPRINKLER HEADS SHALL BE INSTALLED ALONG CENTER LINE OF CEILING TILES WHERE TILE CEILINGS OCCUR.
- STAINLESS STEEL, BRAIDED FLEXIBLE SPRINKLER HOSE FITTINGS MAY BE USED FOR APPLICATIONS IN ACCORDANCE WITH THEIR LISTING PER NFPA-13.
- PROVIDE SPRINKLER HEAD GUARDS IN ALL MECHANICAL SPACES, STORAGE ROOMS AND OTHER SERVICE SPACES.
- SPRINKLER HEADS SHALL BE INSTALLED IN ELEVATOR MACHINE ROOMS AND ELEVATOR HOISTWAYS. SPRINKLER INSTALLATION SHALL BE IN ACCORDANCE WITH ASME-A17.1, 1993 SAFETY CODE FOR ELEVATORS, NFPA-13 AND VIRGINIA UNIFORM STATEWIDE BUILDING CODE.
- DRY SPRINKLER HEADS SHALL BE INSTALLED IN WALK-IN FREEZER, REFRIGERATOR.
- SPRINKLER HEADS SHALL BE INSTALLED AT THE TOP OF ALL ACCESSIBLE VERTICAL SHAFTS.
- CEILING CAVITIES ABOVE HORIZONTAL OBSTRUCTIONS INCLUDING, BUT NOT LIMITED TO, DUCTS AND SOFFITS, SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA-13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING COVERAGE FOR THESE AREAS WITH ALL OTHER TRADES.
- SPRINKLERS SHALL BE LOCATED ABOVE AND BELOW ALL EXPOSED HVAC DUCTWORK EXCEEDING 48" IN WIDTH PER NFPA-13.
- SPRINKLER SYSTEM SHALL BE CONCEALED ABOVE FINISHED CEILINGS WHERE POSSIBLE. PIPING SHALL BE ROUTED THROUGH OR BETWEEN OPEN STRUCTURAL ELEMENTS (SUCH AS BAR JOISTS) AND AROUND SOLID STRUCTURAL ELEMENTS (SUCH AS W-SHAPES). REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR DETAILS OF BUILDING CONSTRUCTION. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING TYPES AND HEIGHTS.
- SPRINKLERS AND PIPING SHALL BE INSTALLED AS HIGH AS POSSIBLE IN EXPOSED AREAS. ROUTE IN AN INCONSPICUOUS MANNER, TIGHT IN CORNERS, AWAY FROM DIRECT VIEW.
- SLEEVE AND FIRESTOP ALL PENETRATIONS THROUGH FIRE RATED CEILINGS, FLOORS OR WALLS IN ORDER TO MAINTAIN THE FIRE RATING INTEGRITY. SLEEVE AND CAULK ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRESTOPPING DETAILS AND DETAILS OF PENETRATIONS THROUGH NON-FIRE RATED FLOORS AND WALLS.
- ALL WET PIPING SHALL BE WITHIN THE CONDITIONED ENVELOPE OF THE BUILDING. NO PIPING SHALL BE EXPOSED TO FREEZING CONDITIONS.
- EXTEND INSPECTOR'S TEST AND DRAIN FOR EACH ZONE TO EXTERIOR BUILDING WALL AND DISCHARGE ABOVE GRADE THRU 45° ELBOW. DRAIN SHALL BE IN AN INCONSPICUOUS LOCATION APPROVED BY THE ARCHITECT/ENGINEER.
- PROVIDE MISCELLANEOUS STEEL AS REQUIRED TO PROPERLY SUPPORT SUSPENDED PIPING. STEEL SHALL BE SUPPORTED FROM STRUCTURAL FRAMING MEMBERS. STEEL SHALL BE HOT DIPPED IN ACCORDANCE WITH ASTM A123.

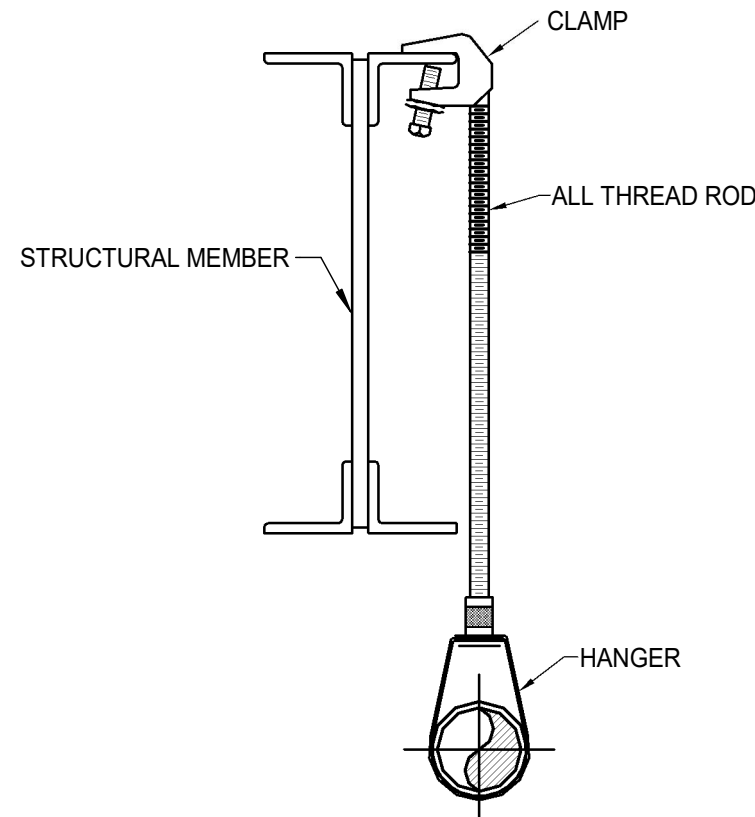
## FIRE SUPPRESSION COORDINATION

- CONTRACTOR SHALL COORDINATE WORK WITH ALL OTHER TRADES PRIOR TO FABRICATIONS OR INSTALLATION OF ANY NEW PIPING OR EQUIPMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE WORK OF OTHER TRADES (INCLUDING, BUT NOT LIMITED TO, STRUCTURAL, ARCHITECTURAL, CIVIL, FIRE ALARM, MECHANICAL, PLUMBING, AND ELECTRICAL) AS IT AFFECTS FIRE SUPPRESSION WORK, AND AS FIRE SUPPRESSION WORK AFFECTS OTHER TRADES TO ENSURE THAT THE CONSTRUCTION DOCUMENTS ARE CLOSELY FOLLOWED. WHERE DISCREPANCIES ARISE, THEY SHALL BE REFERRED TO THE A/E PRIOR TO PROCEEDING FURTHER.
- SPRINKLER HEAD LOCATIONS AND ROUTING OF SPRINKLER PIPING SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS AND WITH ALL OTHER TRADES. THE SPRINKLER CONTRACTOR IS REQUIRED TO COORDINATE ALL PIPE LOCATIONS AND ELEVATIONS PRIOR TO SUBMISSION OF SHOP DRAWINGS AND PRIOR TO BEGINNING FABRICATION AND INSTALLATION.
- MAINTAIN EASEMENTS FOR OTHER TRADES: SUCH AS LIGHT FIXTURES, ELECTRIC SWITCHGEAR, PANELBOARDS, HVAC EQUIPMENT, DUCTS, GRILLES, HEATING AND PLUMBING PIPING, ETC. FULL ACCESS AND CLEARANCE REQUIREMENTS AROUND ALL EQUIPMENT SHALL BE MAINTAINED.
- COORDINATE EXACT LOCATION AND TYPE OF ALL ACCESS PANELS AND PROVIDE INSTALLATION DETAILS TO THE ARCHITECT. OBTAIN APPROVAL PRIOR TO ORDERING AND INSTALLATION OF EQUIPMENT.
- COORDINATE SPRINKLER HEAD SPACING AND ARRANGEMENT IN MECHANICAL ROOMS WITH EQUIPMENT, PIPING AND DUCTWORK.
- COORDINATE ALL FIRE ALARM SYSTEM CONNECTION REQUIREMENTS WITH FIRE ALARM CONTRACTOR.



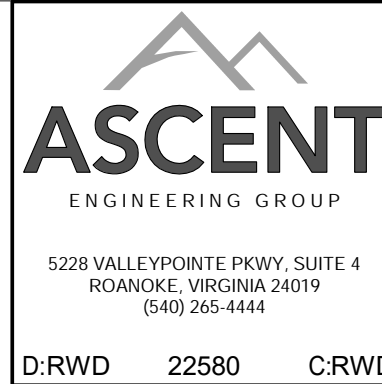
NOTE: HANGER AND HANGER INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA-13 SECTION 2.6.

**TYPICAL PIPE HANGER DETAIL**  
NO SCALE



NOTE: HANGER AND HANGER INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA-13 SECTION 9.1.

**TYPICAL PIPE HANGER DETAIL**  
NO SCALE



## FIRE SUPPRESSION LEGEND SYMBOLS AND ABBREVIATIONS

TEE OR ELBOW FROM TOP OF MAIN	
TOP OF MAIN	—○—
BOTTOM OF MAIN	—○—
SIDE OF MAIN	—○—
IN PLAN	—○—
DIAGRAMMATIC	—○—
ALARM VALVE	—△—
EXISTING TO REMAIN	—
EXISTING TO BE DEMOLISHED	----
FIRE MAIN	—FM—
STANDPIPE	—SP—
SPRINKLER	—S—
ELECTRICALLY SUPERVISED VALVE	—ESV—
GATE VALVE - OS&Y	—G—
FLOW SWITCH	—FS—
FIRE DEPARTMENT CONNECTION	—FD—
WATER MOTOR ALARM / ELECTRIC BELL	—WB—
OUTSIDE DRAIN	—ID—
ABV - ABOVE	FDC - FIRE DEPARTMENT CONNECTION
AD - ACCESS DOOR	FDV - FIRE DEPARTMENT VALVE
AV - ALARM VALVE	FL - FLOOR
BEL - BELOW	FM - FIRE MAIN
BFP - BACKFLOW PREVENTER	FS - FLOW SWITCH
CLG - CEILING	LO - LOCKED OPEN
CONC - CONCRETE	OS&Y - OUTSIDE SCREW AND YOKE
DI - DUCTILE IRON	PO - PLUGGED OUTLET
DN - DOWN	S - SPRINKLER
DR - DRAIN	SP - STANDPIPE
E - EXISTING TO REMAIN	UNO - UNLESS NOTED OTHERWISE
ELEV - ELEVATION	
ESV - ELECTRICALLY SUPERVISED VALVE	

## FLOW TEST DATA

DATE OF TEST: 12/08/2022  
PERFORMED BY: WVVVA  
RESIDUAL HYDRANT #1 - 12806  
LOCATION - CRYSTAL SPRING AVE.  
STATIC PRESSURE - 74 PSI  
RESIDUAL PRESSURE - 57 PSI  
FLOW HYDRANT - 12805  
LOCATION - CRYSTAL SPRING AVE.  
FLOW - 750 GPM  
FIRE SUPPRESSION SUBCONTRACTOR SHALL VERIFY EXACT FLOW AND PRESSURE. REFER TO SPECIFICATIONS.

## FIRE PUMP DATA

FIRE PUMP: PATTERSON VIP VERTICAL IN-LINE PUMP;  
750 GPM, 48 PSI, 180 TDH, 50 HP, 208V, 3Ø  
CAPACITY DESIGN POINTS:  
• 0 GPM, 90 PSI HD  
• 750 GPM, 78 PSI HD  
• 1125 GPM, 50.7 PSI HD  
CONTROLLER: CUTLER HAMMER MODEL FT90-50A,  
COMBINED MANUAL AUTOMATIC  
JOCKEY PUMP: PATTERSON MODEL T41DF7364636,  
5 GPM, 80 PSI, 3/4 HP, 208V, 3Ø  
CONTROLLER: CUTLER HAMMER MODEL XTJP-G02

## IDENTIFICATION KEY

NUMBER INDICATES SECTION.  
DRAWING NUMBER WHERE ELEVATION, SECTION, OR DETAIL IS TAKEN.  
LETTER INDICATES ELEVATION OR DETAIL.  
DRAWING NUMBER WHERE ELEVATION, SECTION, OR DETAIL IS DRAWN.  
ADDITIONAL REFERENCED DRAWINGS  
SECTION, ELEVATION, OR DETAIL SYMBOL

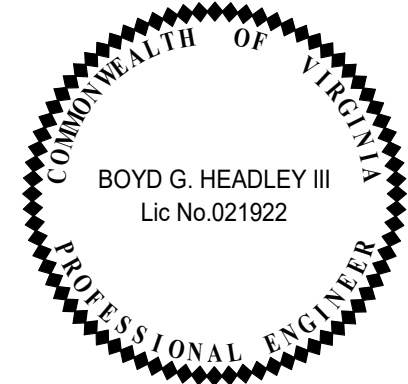


## THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR

## VAN THIEL



JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

## CONSTRUCTION SET

## REVISIONS

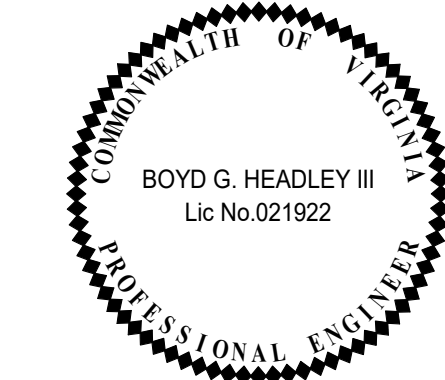
# P0.4

## FIRE SUPPRESSION LEGEND, NOTES AND DETAILS

THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

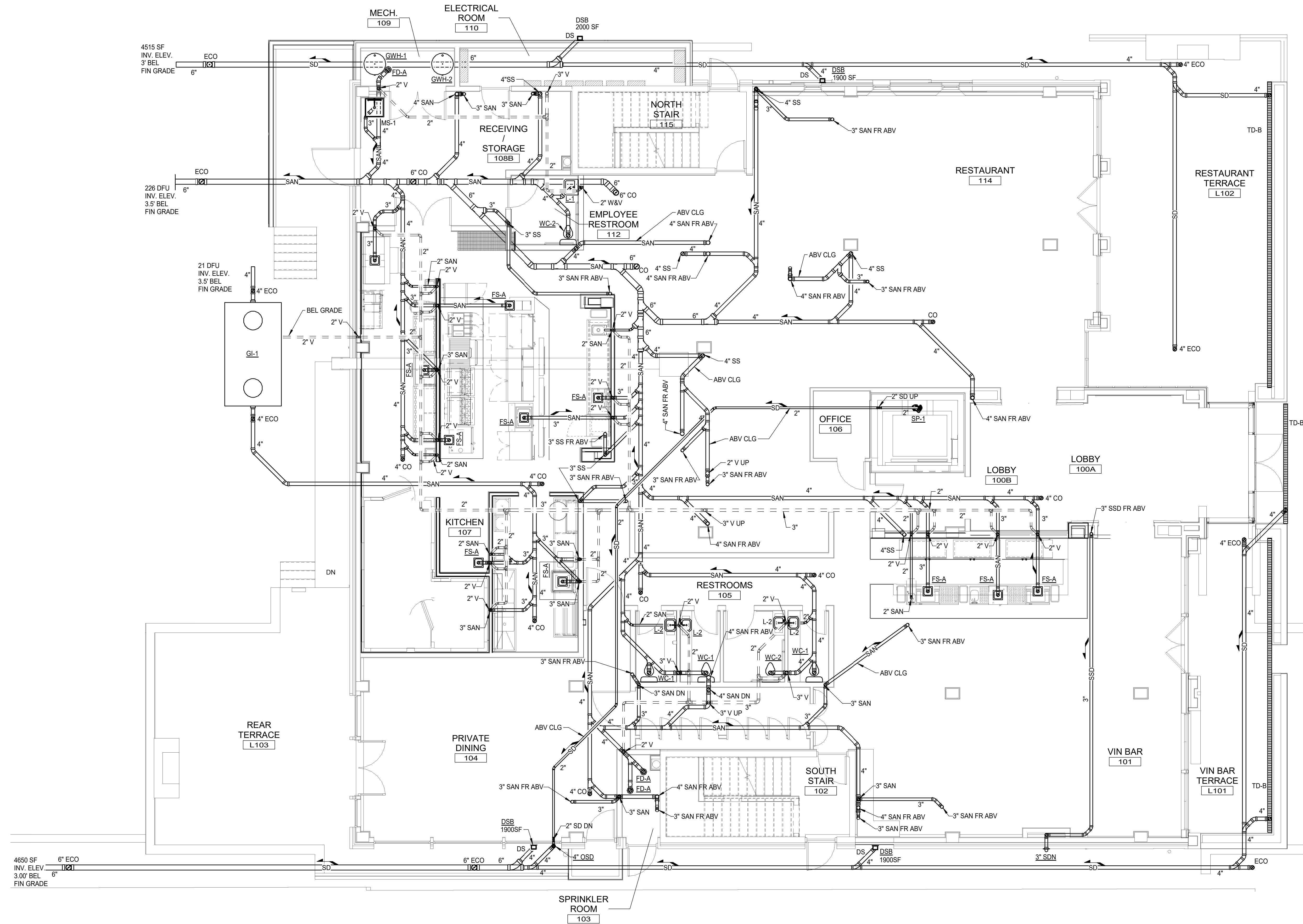
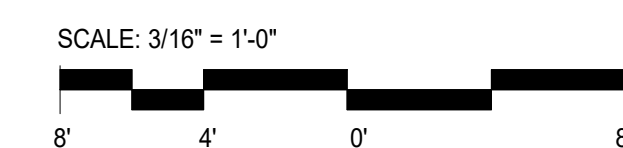
CONSTRUCTION  
SET

REVISIONS


P1.1

PLUMBING 1ST  
FLOOR PLAN -  
SANITARY

GRAPHIC SCALE

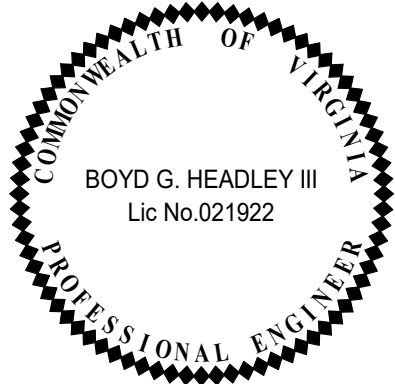


1  
P1.1 F1 - PLUMBING FLOOR PLAN - SANITARY  
SCALE: 3/16" = 1'-0"

THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



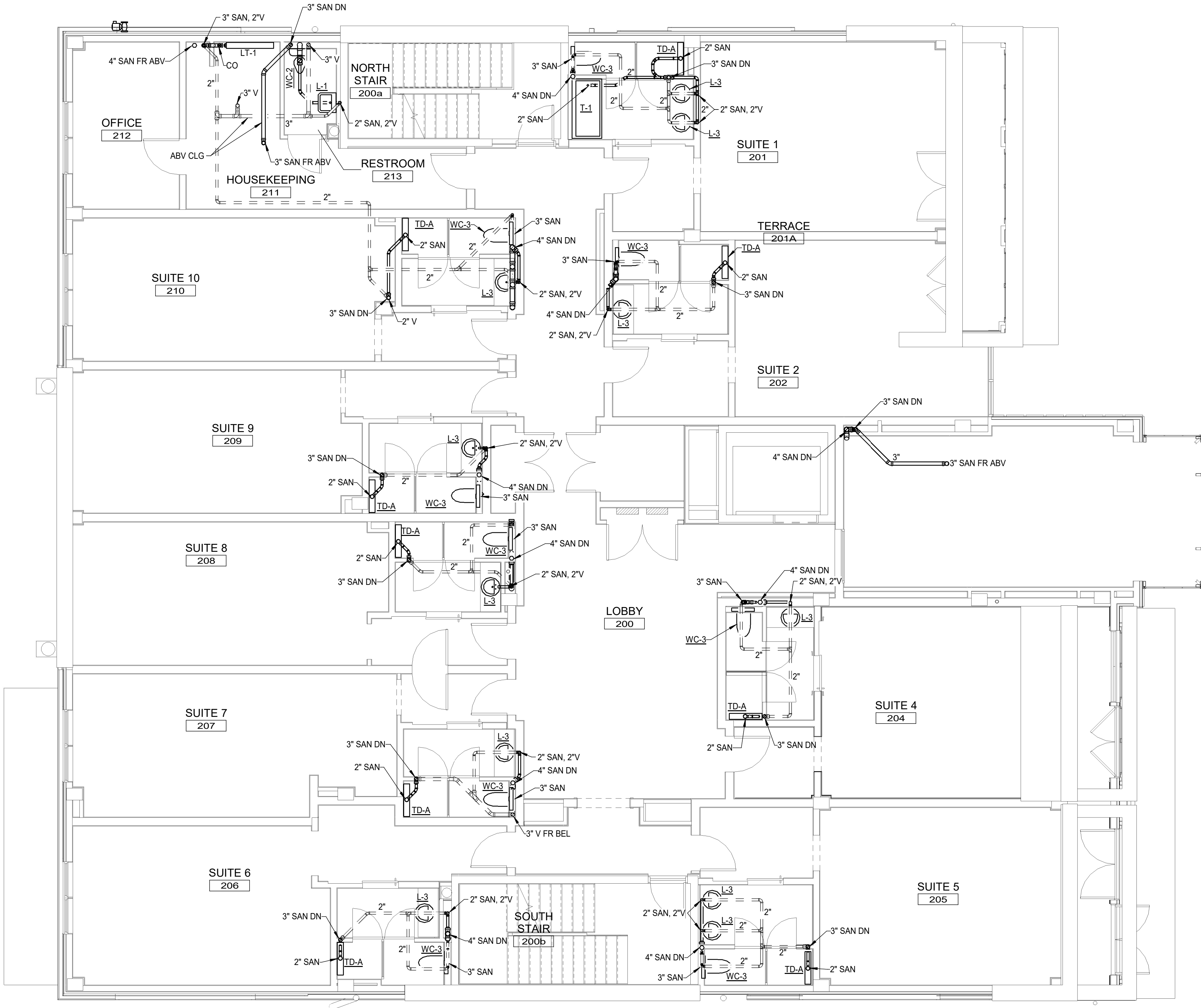
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

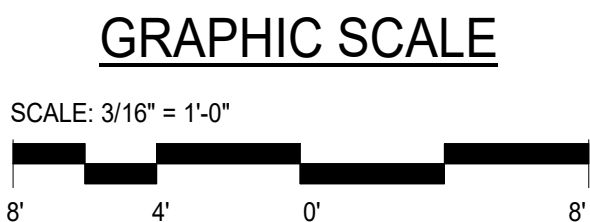
REVISIONS	

P1.2

PLUMBING 2ND  
FLOOR PLAN -  
SANITARY



1 F2 - PLUMBING FLOOR PLAN - SANITARY  
P1.2 SCALE: 3/16" = 1'-0"

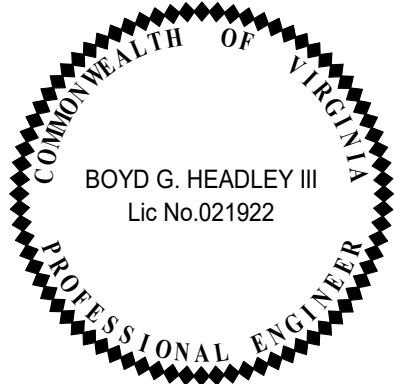




THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



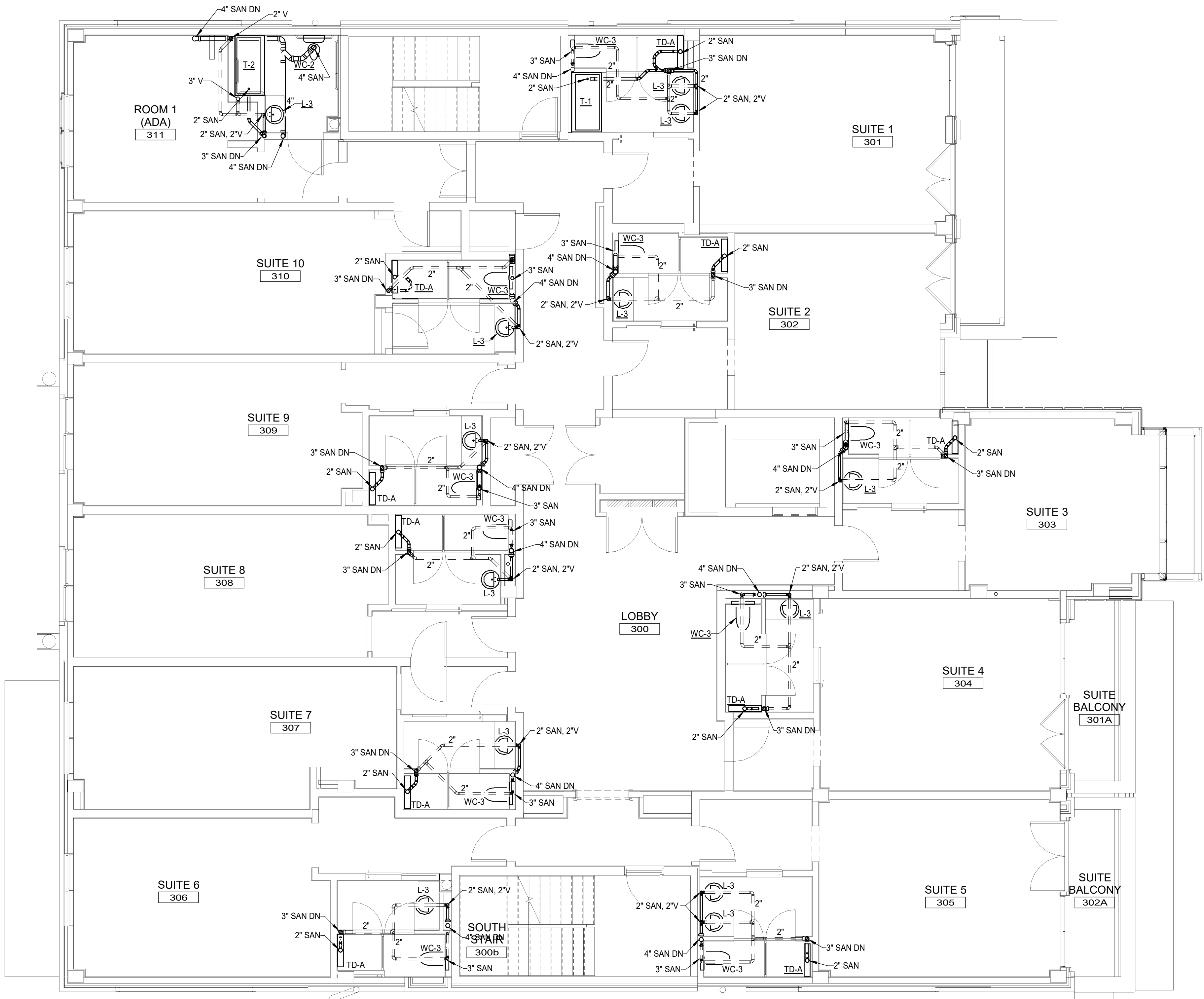
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

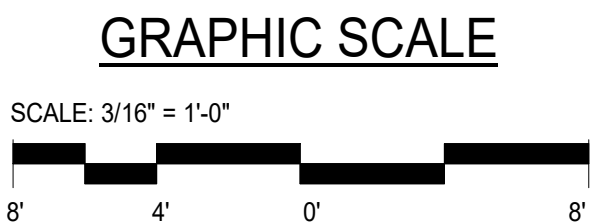
REVISIONS


P1.3

PLUMBING 3RD  
FLOOR PLAN -  
SANITARY



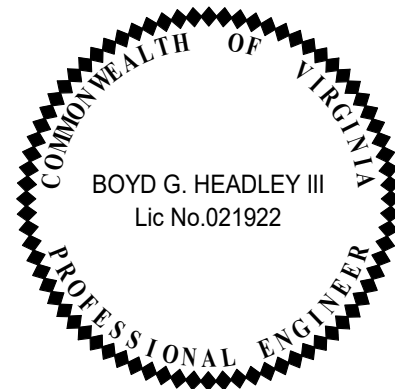
1  
P1.3 F3 - PLUMBING FLOOR PLAN - SANITARY  
SCALE: 3/16" = 1'-0"



THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



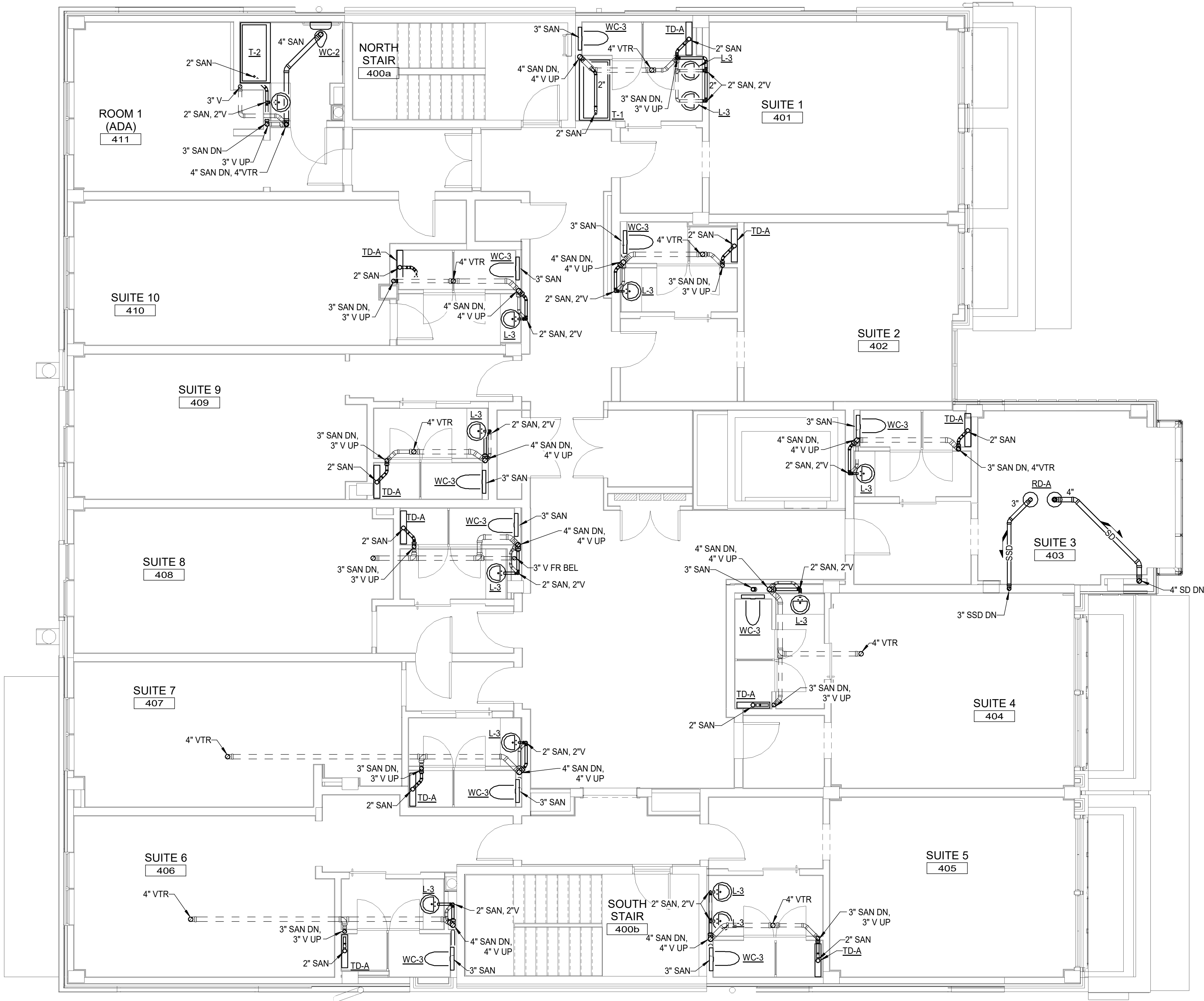
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

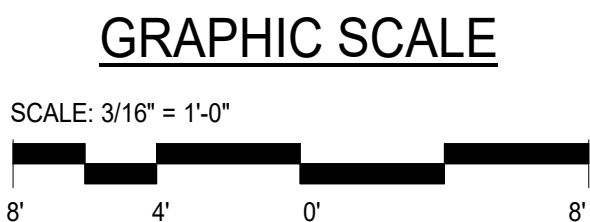
REVISIONS


P1.4

PLUMBING 4TH  
FLOOR PLAN -  
SANITARY



1 F4 - PLUMBING FLOOR PLAN - SANITARY  
P1.4 SCALE: 3/16" = 1'-0"

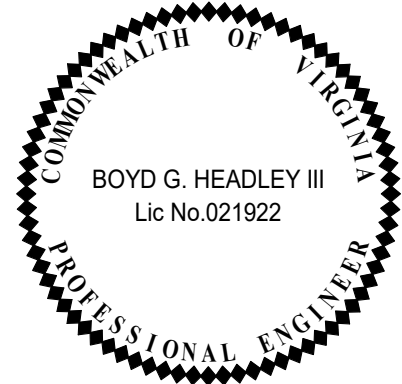




THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



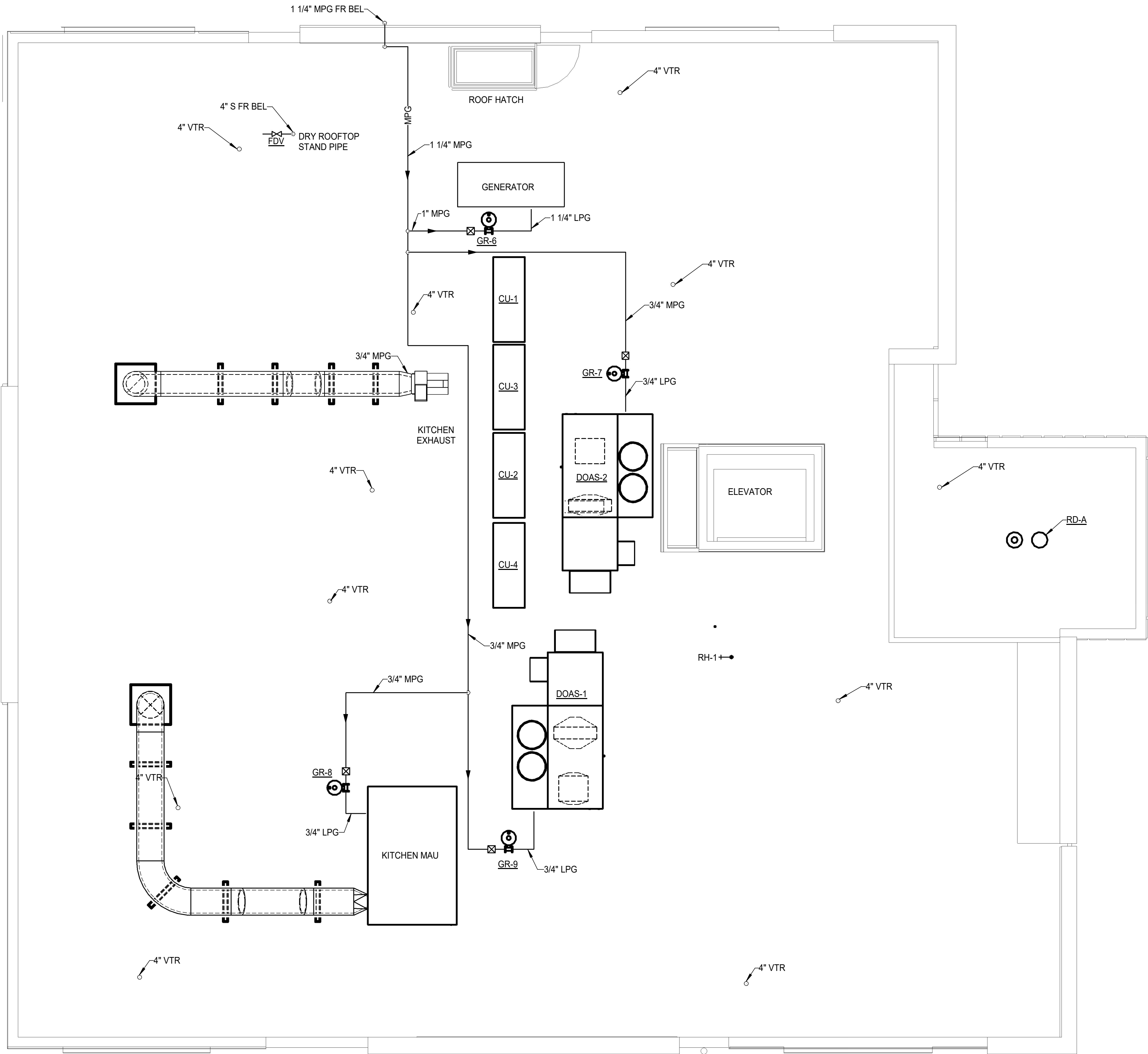
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

REVISIONS	

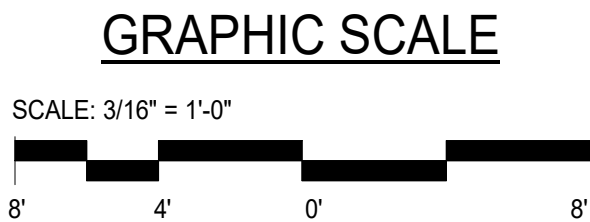
P1.5

PLUMBING ROOF  
PLAN



1 PLUMBING FLOOR PLAN - ROOF  
P1.5 SCALE: 3/16" = 1'-0"

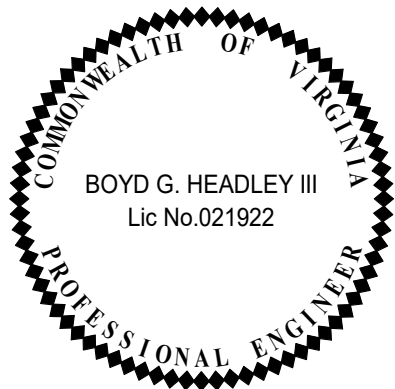
NOTE: EXACT GAS LOCATIONS FOR ROOFTOP  
EQUIPMENT SHALL BE COORDINATED BY THE  
CONTRACTOR.



THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



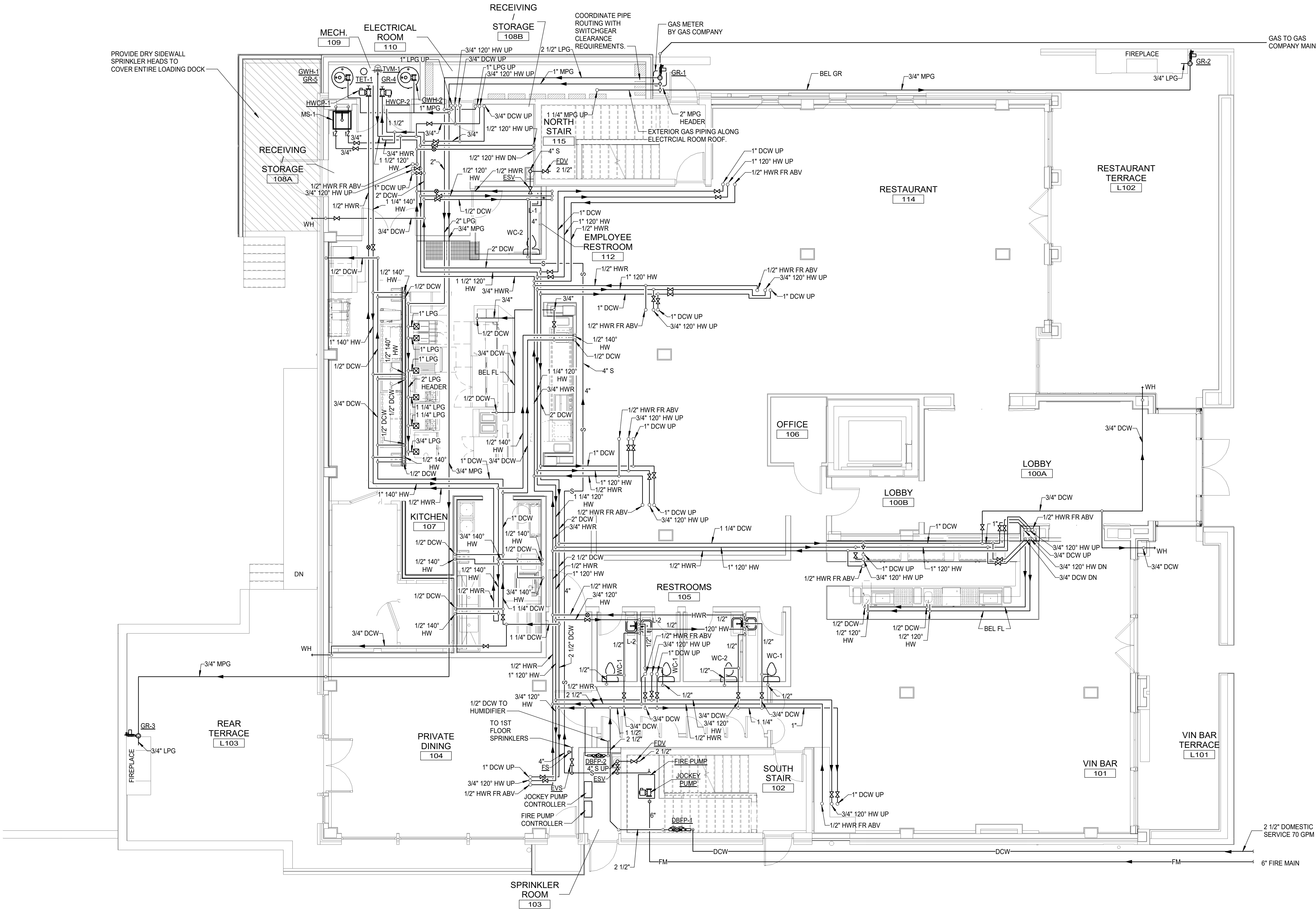
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

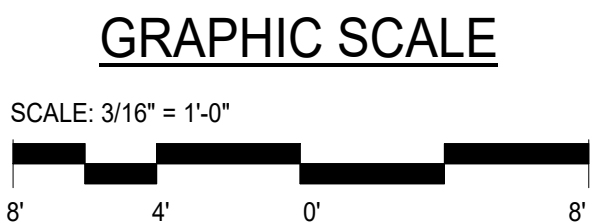
REVISIONS


P2.1

PLUMBING 1ST  
FLOOR PLAN -  
DOMESTIC WATER



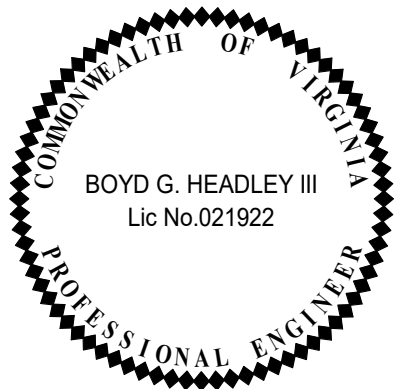
1  
P2.1 F1 - PLUMBING FLOOR PLAN - DOMESTIC WATER  
SCALE: 3/16" = 1'-0"



THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



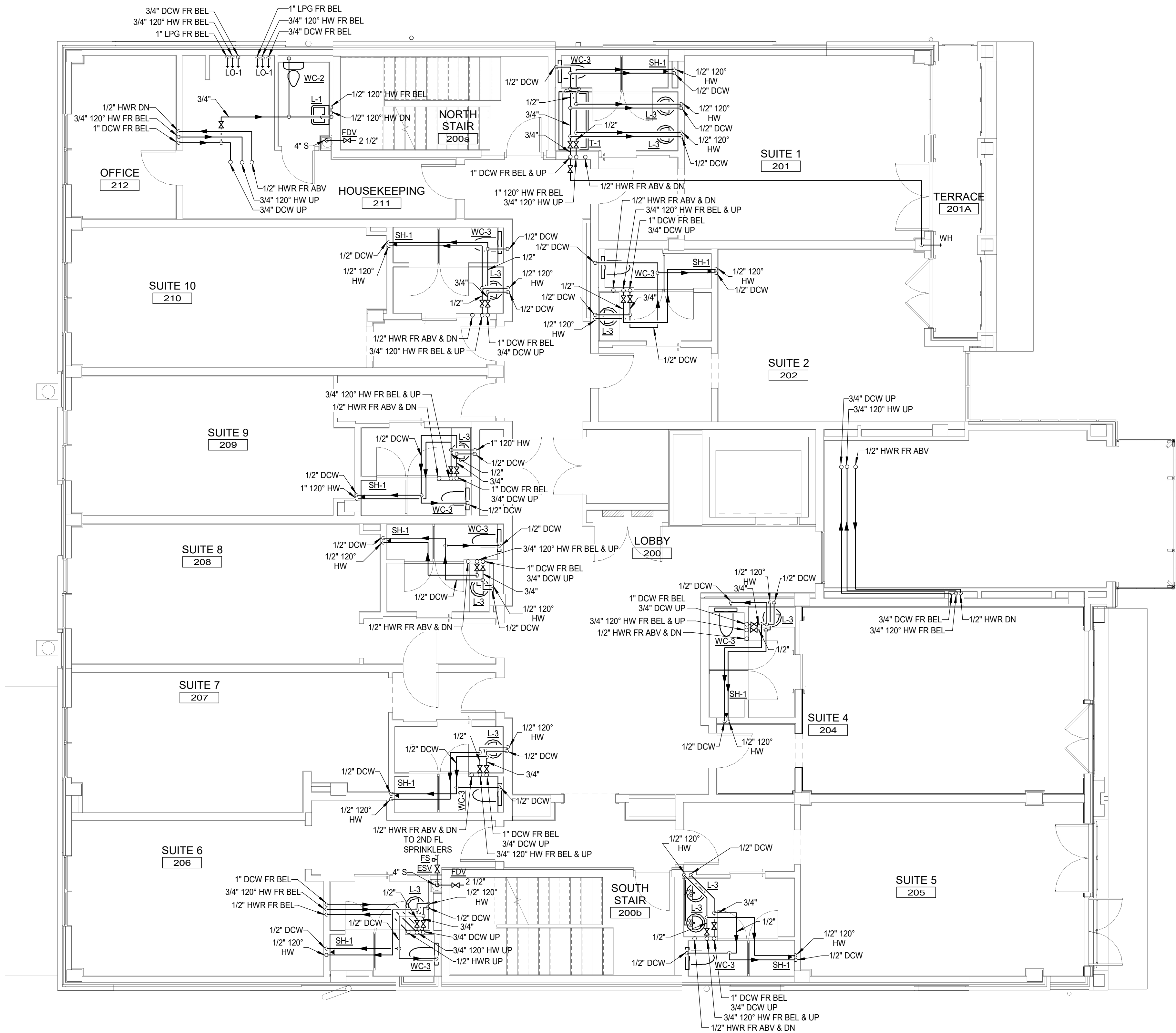
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

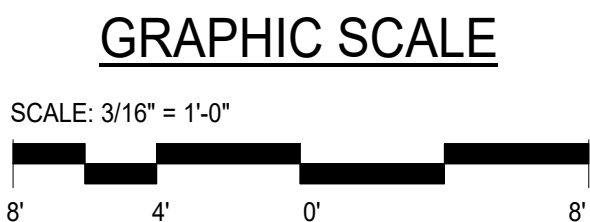
REVISIONS


P2.2

PLUMBING 2ND  
FLOOR PLAN -  
DOMESTIC WATER



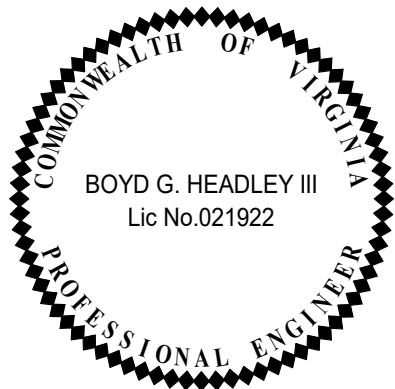
1  
P2.2 F2 - PLUMBING FLOOR PLAN - DOMESTIC WATER  
SCALE: 3/16" = 1'-0"





2221 CRYSTAL SPRING AVE SW  
ROANOKE. VA 24014

FOR  
VAN THIEL



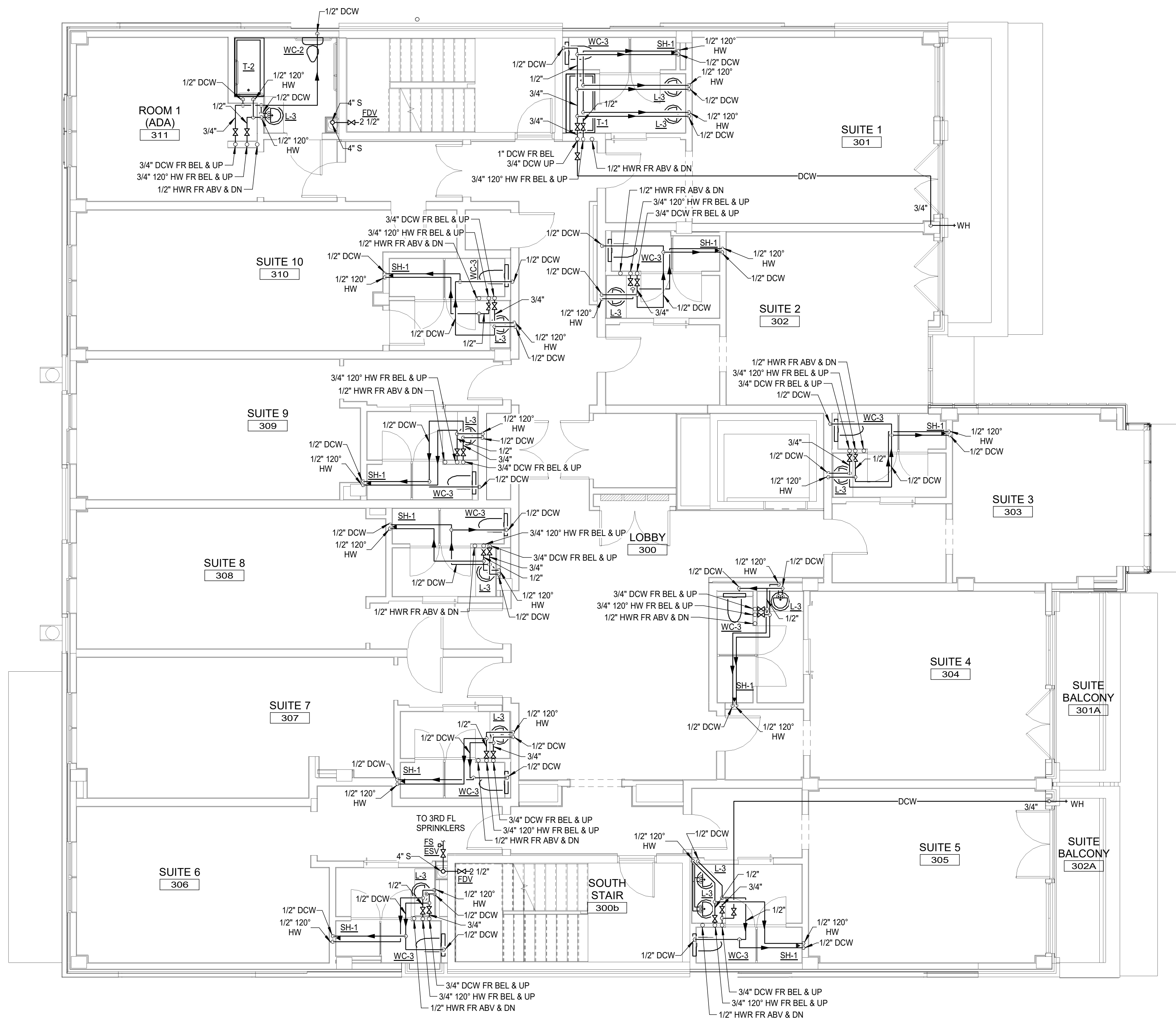
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

# CONSTRUCTION SET

[illegible]

## P2.3

PLUMBING 3RD  
FLOOR PLAN -  
DOMESTIC WATER



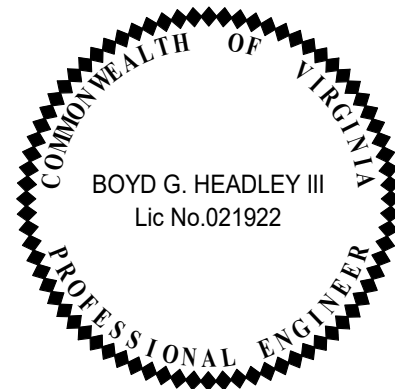
**F3 - PLUMBING FLOOR PLAN - DOMESTIC WATER**

SCALE:  $\frac{3}{16}'' = 1'-0''$

THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



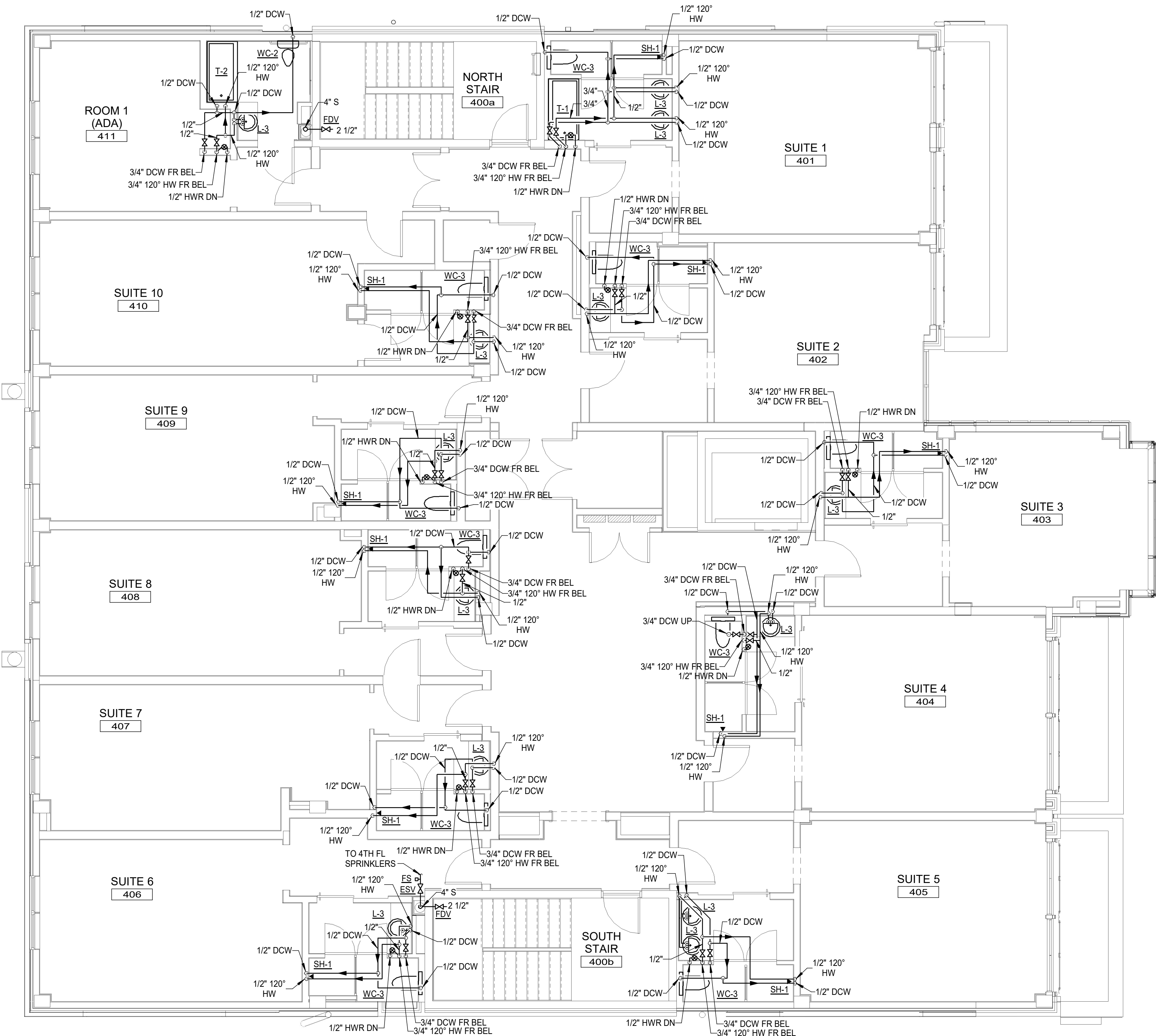
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

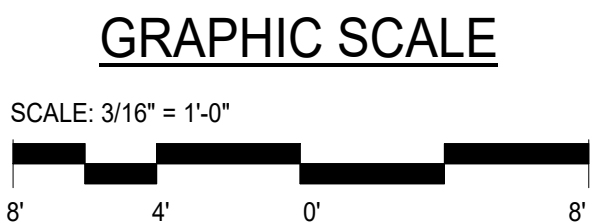
REVISIONS


P2.4

PLUMBING 4TH  
FLOOR PLAN -  
DOMESTIC WATER



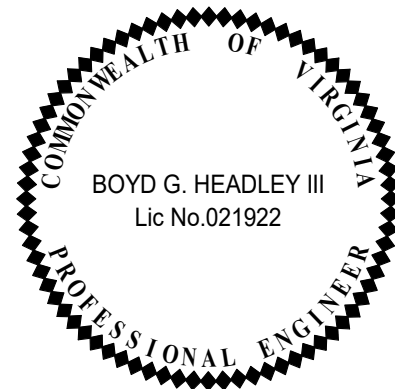
1 F4 - PLUMBING FLOOR PLAN - DOMESTIC WATER  
P2.4 SCALE: 3/16" = 1'-0"



THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



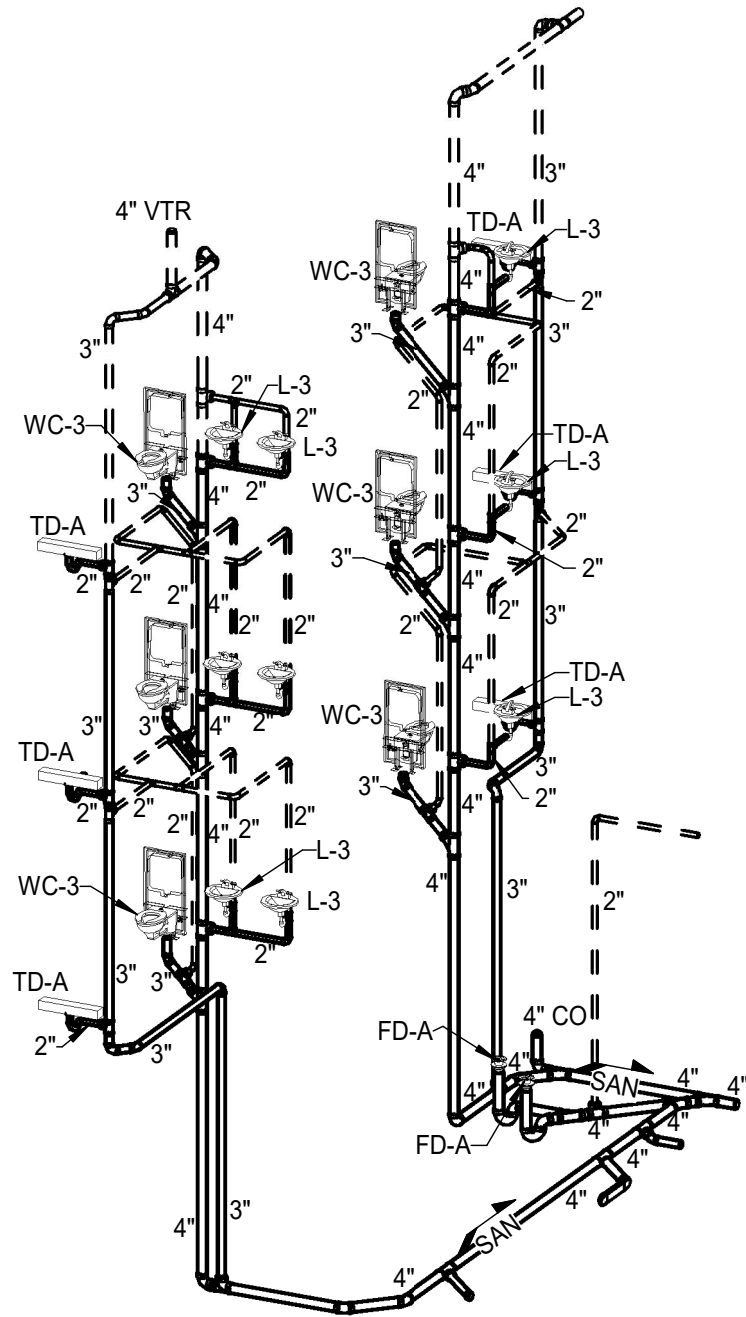
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

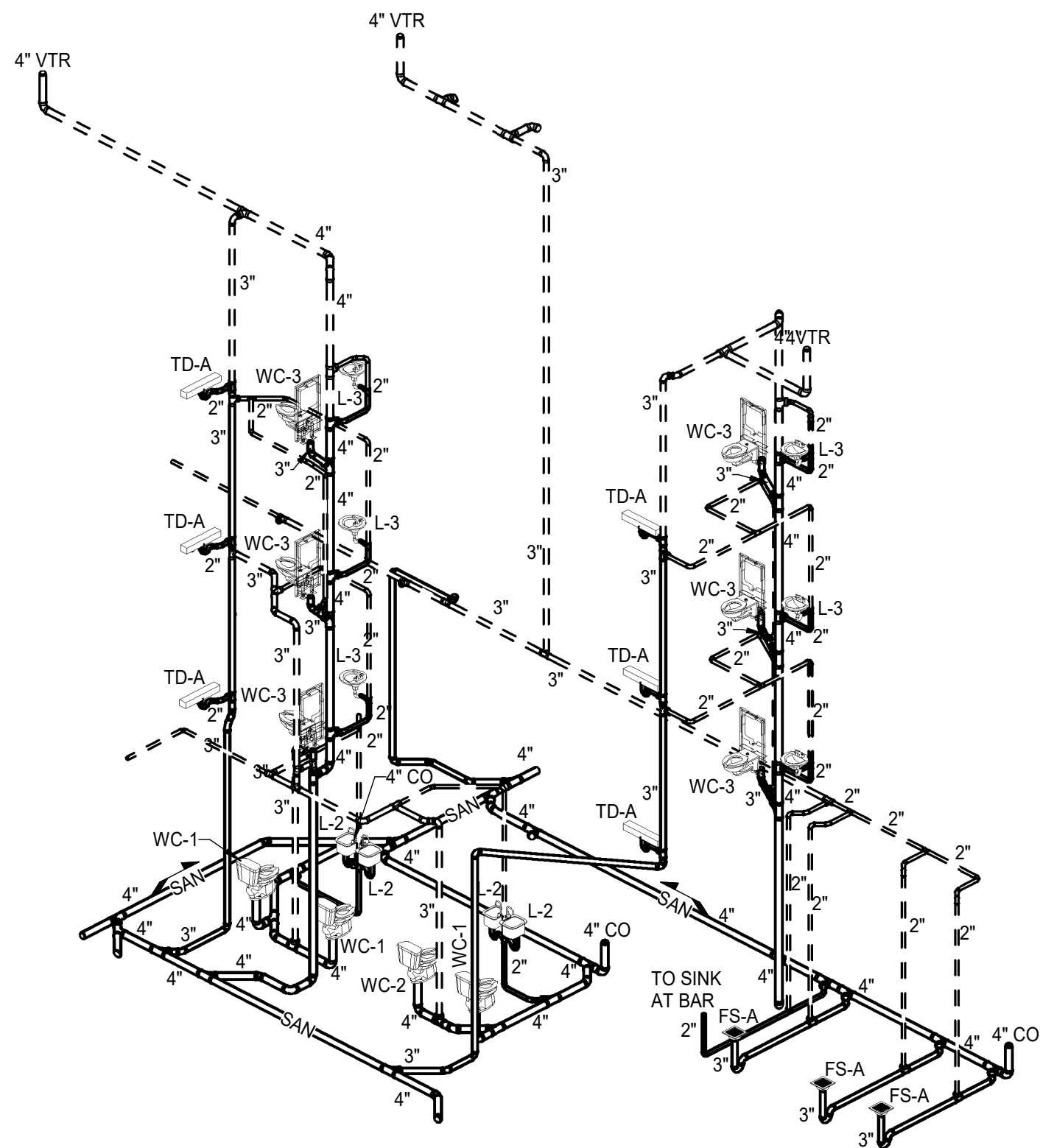
REVISIONS

P3.1

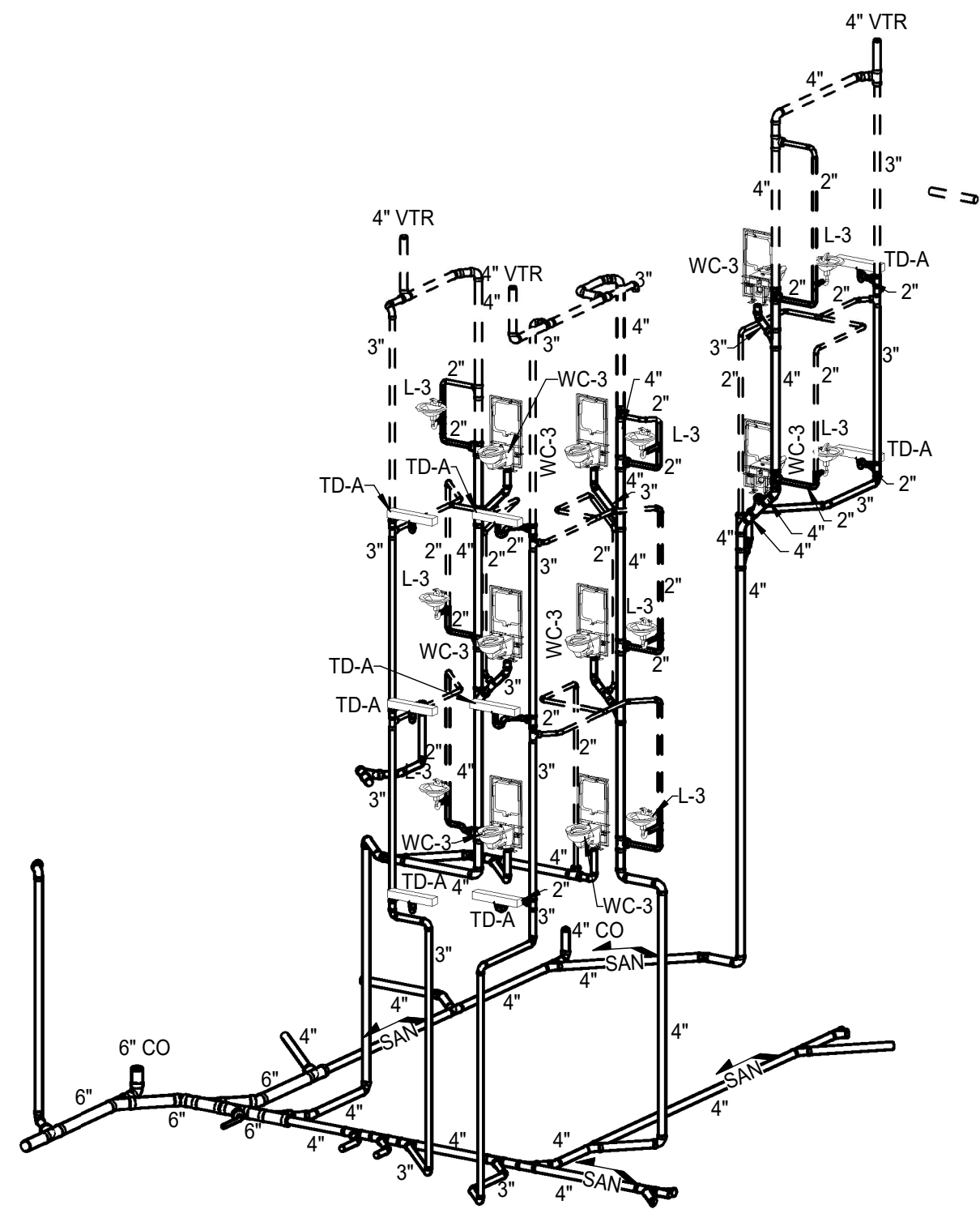
PLUMBING RISER  
DIAGRAMS -  
SANITARY



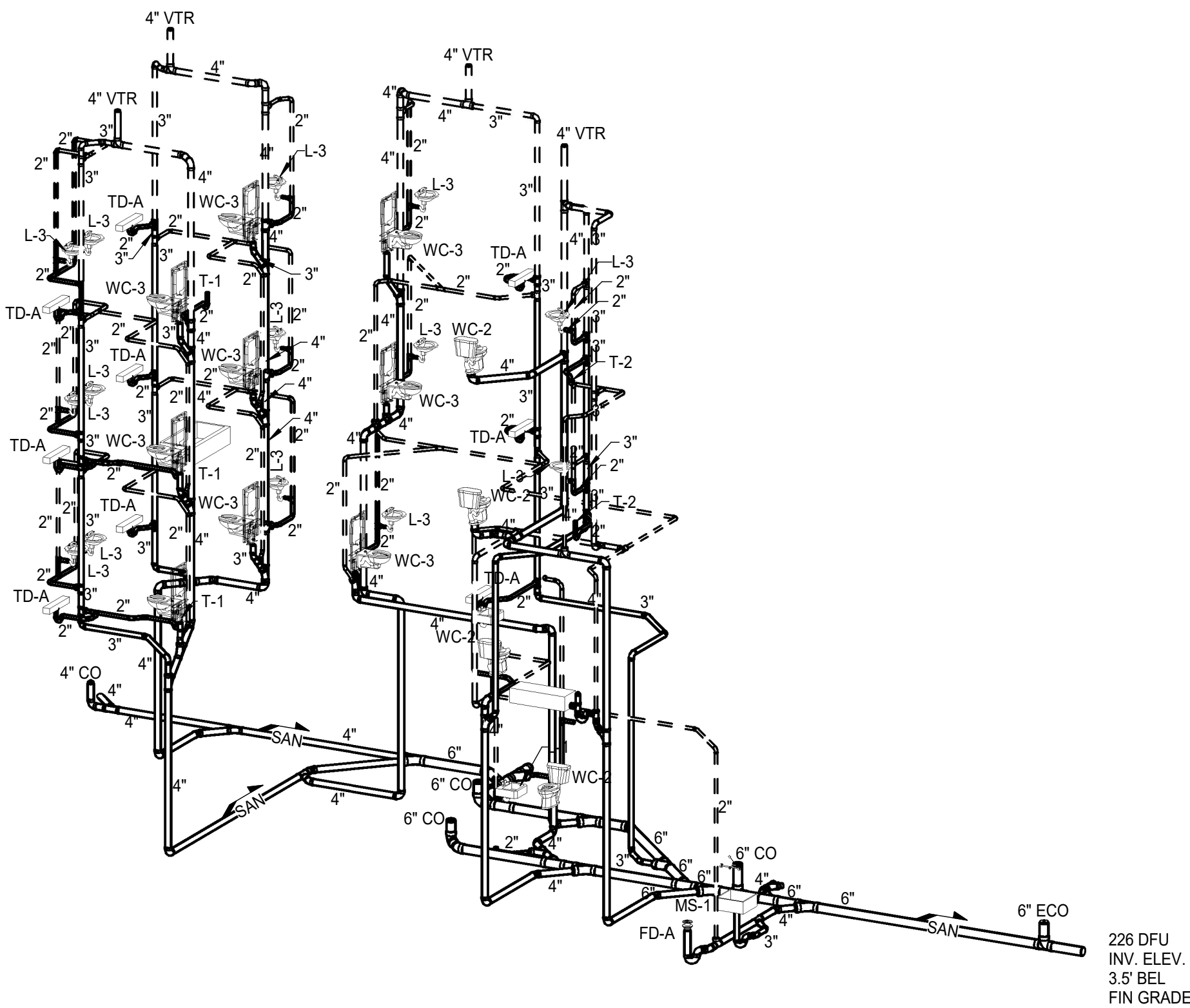
PLAN SOUTH SANITARY RISER  
DIAGRAM  
S1



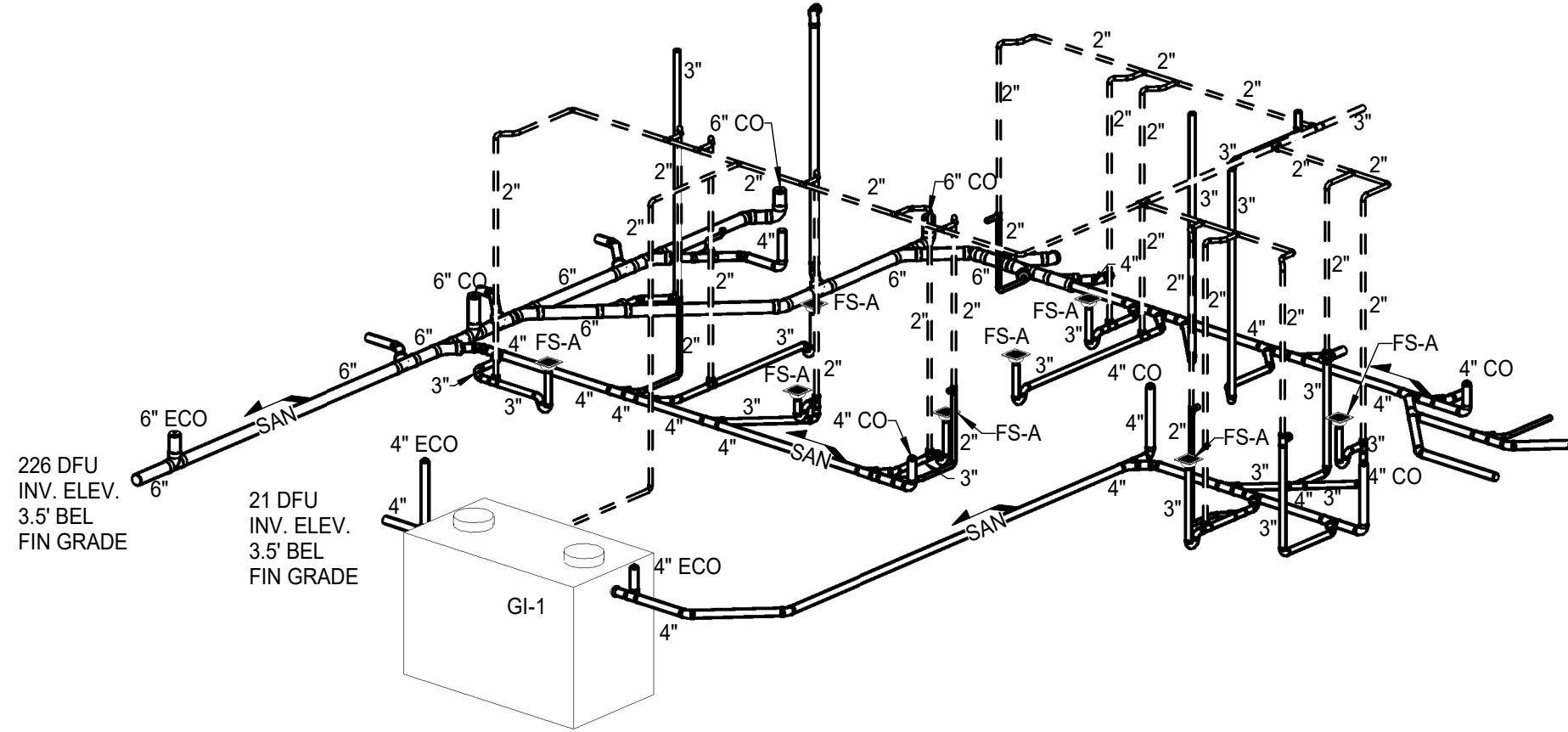
BAR AND BAR AREA RISER DIAGRAM  
S2



MID AREA RISER DIAGRAM  
S3

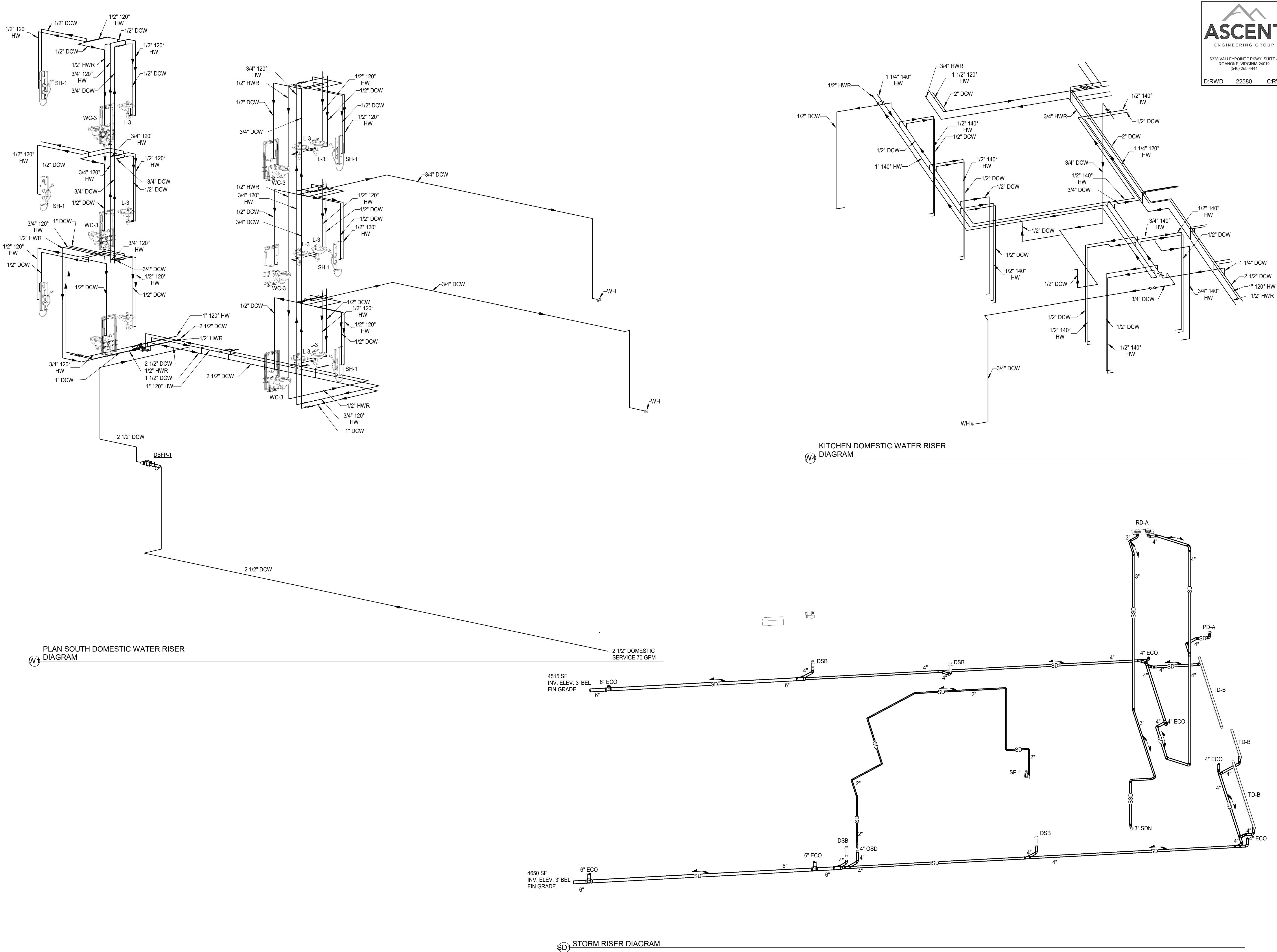


PLAN NORTH SANITARY RISER  
DIAGRAM  
S4



KITCHEN SANITARY RISER  
S5







**ASCENT**  
ENGINEERING GROUP

5228 VALLEYPOINTE PKWY, SUITE 4  
ROANOKE, VIRGINIA 24019  
(540) 265-4444

D:RWD 22580 C:RWD



**BRW** ARCHITECTS

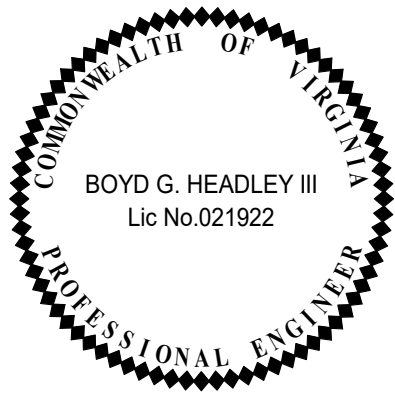
112 fourth street ne  
charlottesville virginia 22902  
434.971.7160  
brw-architects.com

THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR

VAN THIEL



JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION SET

REVISIONS	

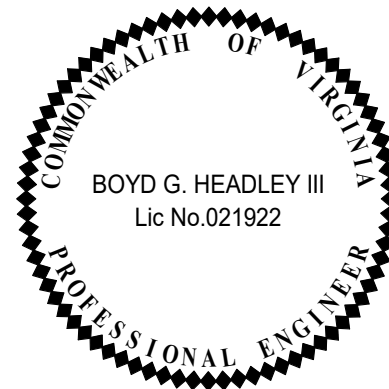
P3.2

PLUMBING RISER  
DIAGRAM - STORM &  
DOMESTIC WATER

THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

FOR  
VAN THIEL



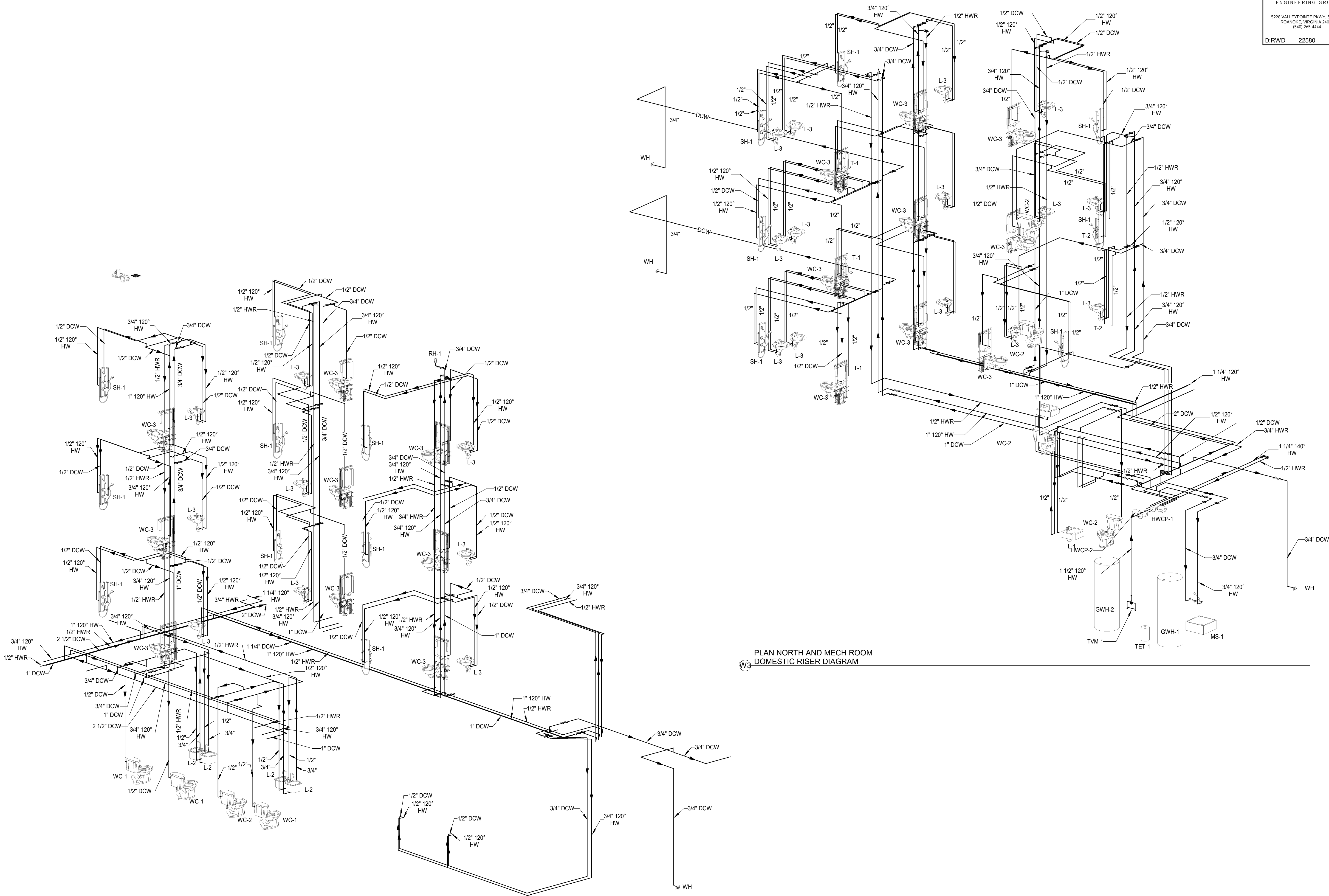
JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

REVISIONS

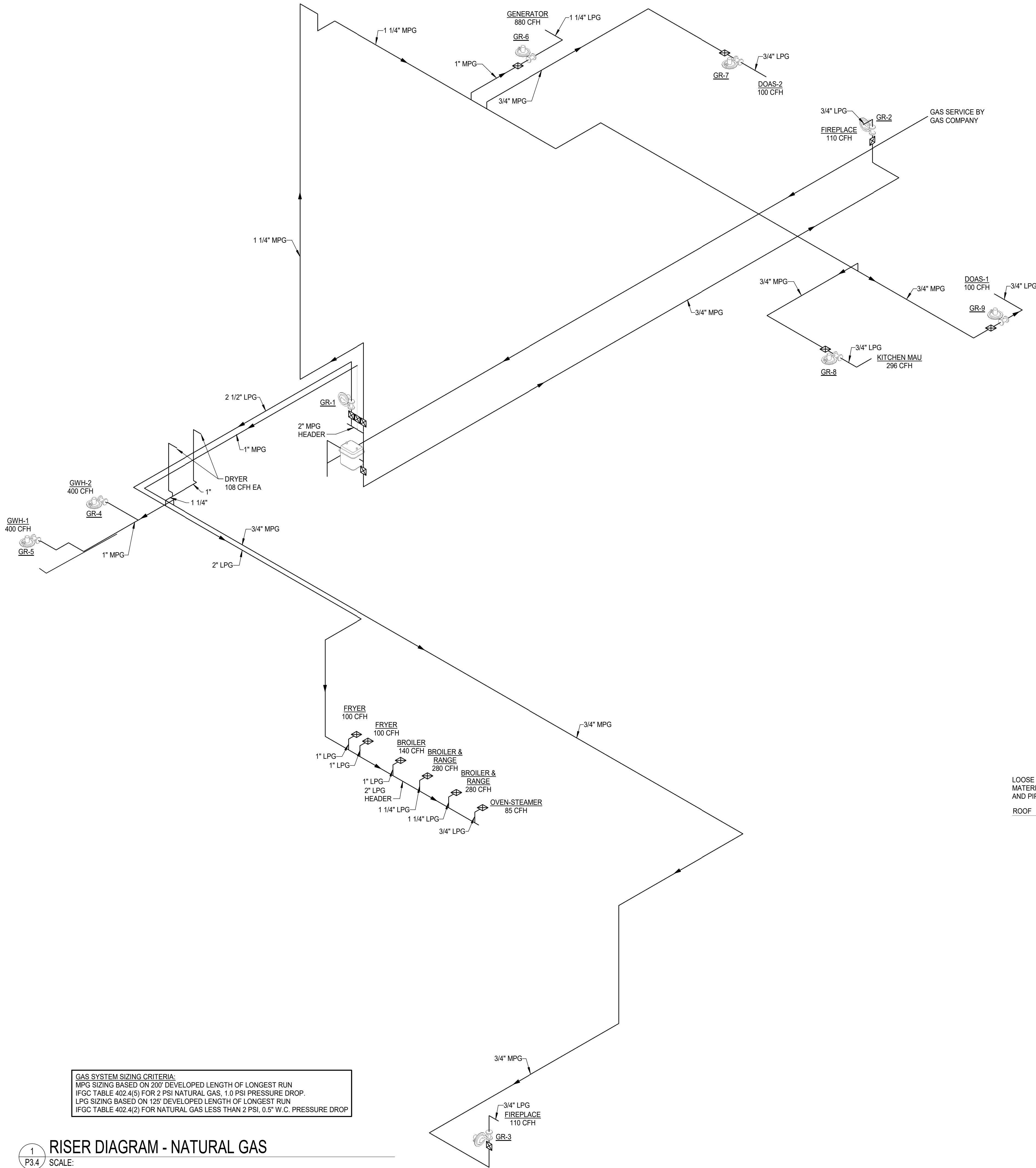
P3.3

PLUMBING RISER  
DIAGRAMS -  
DOMESTIC WATER



TYP. MID, BAR AND BAR AREA  
DOMESTIC RISER DIAGRAM

PLAN NORTH AND MECH ROOM  
DOMESTIC RISER DIAGRAM



GAS SYSTEM SIZING CRITERIA:  
MPG SIZING BASED ON 200' DEVELOPED LENGTH OF LONGEST RUN  
IFGC TABLE 402.4(5) FOR 2 PSI NATURAL GAS, 1.0 PSI PRESSURE DROP.  
LPG SIZING BASED ON 125' DEVELOPED LENGTH OF LONGEST RUN  
IFGC TABLE 402.4(2) FOR NATURAL GAS LESS THAN 2 PSI, 0.5" W.C. PRESSURE DROP

1  
P3.4  
RISER DIAGRAM - NATURAL GAS  
SCALE:

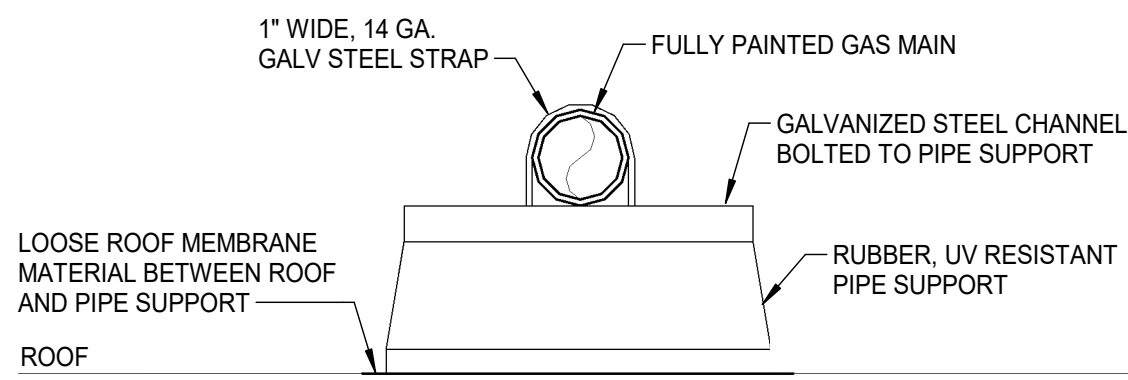
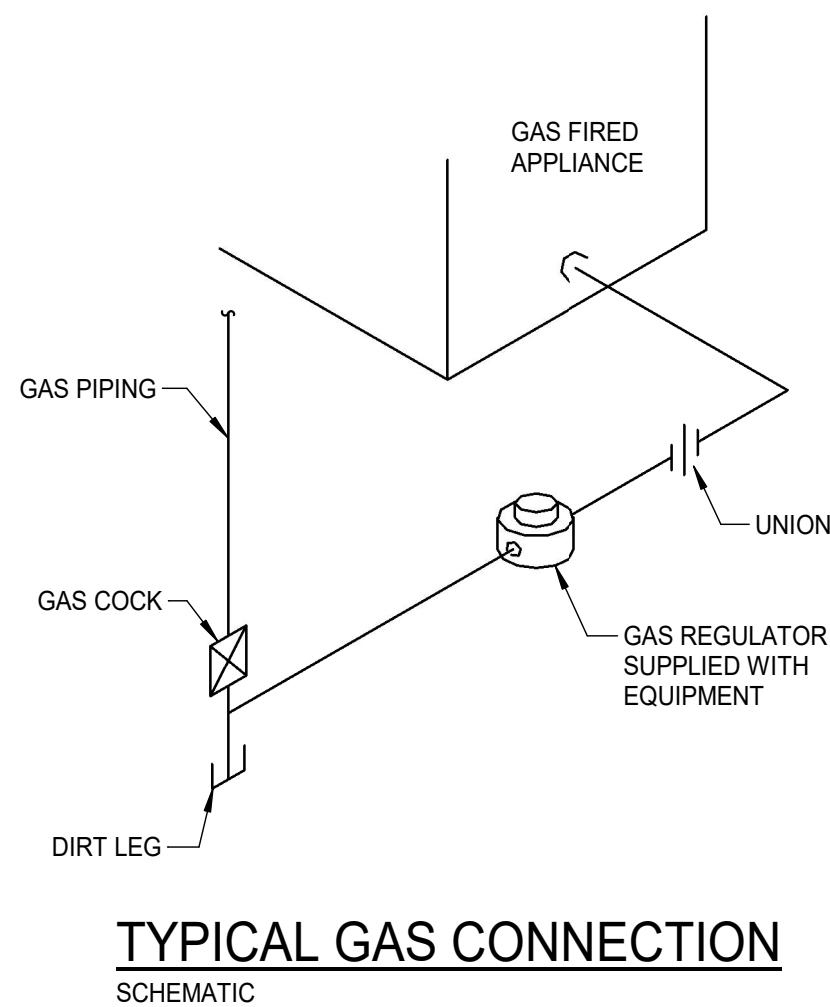
ASCENT  
ENGINEERING GROUP  
5228 VALLEYPONTE PKWY, SUITE 4  
ROANOKE, VIRGINIA 24019  
(540) 265-4444  
D:RWD 22580 C:RWD

BRW  
ARCHITECTS  
112 fourth street ne  
charlottesville virginia 22902  
434.971.7160  
brw-architects.com

THE HAYNES

2221 CRYSTAL SPRING AVE SW  
ROANOKE, VA 24014

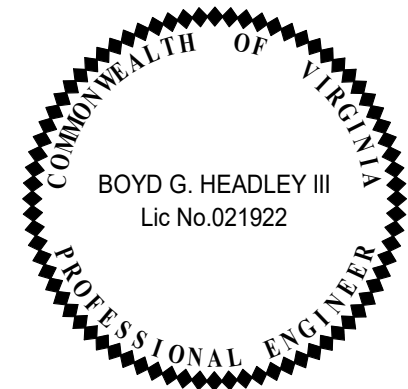
FOR  
VAN THIEL



- NOTES:  
1. INSTALL PIPE SUPPORTS @ 10'-0" O.C. FOR SIZES 1-1/2" AND LARGER, @6'-0" FOR SIZES 1-1/4" AND SMALLER.  
2. ALL FASTENERS SHALL BE GALVANIZED COATED.

ROOFTOP GAS PIPE SUPPORT  
NO SCALE

GAS CONNECTED LOADS		
EQUIPMENT	CONNECTED LOAD, CFH	CONNECTION SIZE
BROILER	40	3/4" LPG
BROILER	40	3/4" LPG
BROILER	140	1" LPG
DOAS-1	100	3/4" LPG
DOAS-2	100	3/4" LPG
FIREPLACE	110	3/4" LPG
FIREPLACE	110	3/4" LPG
FRYER	100	3/4" LPG
FRYER	100	3/4" LPG
GENERATOR	880	1 1/4" LPG
GWH-1	400	1" LPG
GWH-2	400	1" LPG
MAU	296	3/4" LPG
OVEN-STEAMER	85	3/4" LPG
RANGE	240	1 1/4" LPG
RANGE	240	1 1/4" LPG
DRYER	108	1" LPG
DRYER	108	1" LPG
TOTAL CONNECTED LOAD	3,597	



JOB NUMBER	22011
DATE	08/30/24
DRAWN BY	Author
APPROVED BY	Approver
2017	© brwarchitects, p.c.

CONSTRUCTION  
SET

REVISIONS	

P3.4

PLUMBING RISER  
DIAGRAM - NATURAL  
GAS