

SPRINKLER NOTES/ SPECIFICATIONS:

THE ENTIRE BUILDING ADDITION SHALL BE PROVIDED WITH A FULLY FUNCTIONAL FIRE SUPPRESSION SYSTEM IN ACCORDANCE WITH NFPA 13 AND THE 2021 VIRGINIA UNIFORM STATEWIDE BUILDING CODE.

1. GENERAL PROVISIONS:

- 1.A. PROVIDE A COMPLETE AUTOMATIC WET SPRINKLER SYSTEM PROTECTING THE ENTIRE BUILDING ADDITION CONFORMING TO NFPA 13, HYDRAULICALLY CALCULATED FOR ALL AREAS OF THE BUILDING. PERFORM HYDRANT FLOW TEST TO DETERMINE ADEQUATE FLOW AND PRESSURE.
- 1.B. COORDINATE WITH FIRE ALARM INSTALLER FOR CONNECTION OF ALL FLOW AND TAMPER SWITCHES.

2. MATERIALS:

- 2.A. WET PIPE SPRINKLER PIPING ABOVE GROUND:
STEEL PIPE: ASTM A53; ASTM A135; ASTM A135 UL LISTED, THREADABLE, LIGHT WALL; ASTM A795 (GALVANIZED) OR ASME B36.10; SCHEDULE 10 OR THREADABLE THINWALL FOR PIPING 2'-1/2" OR LARGER AND SCHEDULE 40 BLACK FOR 2" AND SMALLER.

FITTINGS: ALL PIPE FITTINGS SHALL BE PROVIDED AS REQUIRED AND RATED FOR A MINIMUM WORKING PRESSURE OF 365 PSI.

2.B. SPRINKLERS:

- 2.B.A. SUSPENDED CEILING TYPE: RECESSED OR CONCEALED PENDANT TYPE WITH MATCHING PUSH ON ESCUTCHEON PLATE. PROVIDE CHROME PLATED OR WHITE FINISH. ESCUTCHEON PLATE FINISH SHALL MATCH ASSOCIATED SPRINKLER HEAD FINISH. PROVIDE FRANGIBLE GLASS BULB TYPE, TEMPERATURE RATED FOR SPECIFIC AREA HAZARD CLASSIFICATION. EXPOSED AREA TYPE: STANDARD, UPRIGHT TYPE SPRINKLER HEADS WITH BRASS, CHROME PLATED, OR WHITE FINISH. PROVIDE FRANGIBLE GLASS BULB TYPE, TEMPERATURE RATED FOR SPECIFIC AREA HAZARD CLASSIFICATION.
- 2.B.C. SIDEWALL TYPE: RECESSED HORIZONTAL SIDEWALL TYPE WITH MATCHING PUSH ON ESCUTCHEON PLATE. PROVIDE CHROME PLATED OR WHITE FINISH. ESCUTCHEON PLATE FINISH SHALL MATCH ASSOCIATED SPRINKLER HEAD FINISH. PROVIDE FRANGIBLE GLASS BULB TYPE, TEMPERATURE RATED FOR SPECIFIC AREA HAZARD CLASSIFICATION.

2.C. VALVES:

- 2.C.A. BUTTERFLY VALVES: BRONZE BODY, STAINLESS STEEL DISC, RESILIENT REPLACEABLE SEAT, THREADED OR GROOVED ENDS, EXTENDED NECK, HAND WHEEL AND GEAR DRIVE AND INTEGRAL INDICATING DEVICE, AND BUILT-IN TAMPER PROOF SWITCH RATED 10 AMP AT 115 VOLT AC.
- 2.C.B. CHECK VALVES: UP TO AND INCLUDING 2 INCHES: BRONZE BODY AND SWING DISC, RUBBER SEAT, THREADED ENDS.

2.D. EQUIPMENT:

- 2.D.A. SPRINKLER ALARM BELL: ELECTRONICALLY OPERATED RED ENAMELED GONG WITH PRESSURE ALARM SWITCH.
- 2.D.B. FIRE DEPARTMENT CONNECTION: FLUSH MOUNTED WALL TYPE WITH CHROME PLATED FINISH FOR WALL PLATE, CONNECTIONS AND COVERS. OUTLETS: TWO-WAY WITH FIRE DEPARTMENT THREAD SIZE (COORDINATE WITH LOCAL FIRE DEPARTMENT). THREADED DUST-CAP AND CHAIN OF MATCHING MATERIAL AND FINISH. DRAIN: 3/4 INCH, AUTOMATIC DRIP OUTSIDE. LABEL: "SPRINKLER - FIRE DEPARTMENT CONNECTION" WHERE APPLICABLE, INSTALL 90° ELBOW WITH DRAIN CONNECTION AT EACH FIRE DEPARTMENT CONNECTION.
- 2.D.C. WATER FLOW SWITCH: VANE TYPE SWITCH FOR MOUNTING HORIZONTAL OR VERTICAL, WITH TWO CONTACTS; RATED 10 AMP AT 125 VOLT AC AND 2.5 AMP AT 24 VOLT DC.

PLUMBING FIXTURE SCHEDULE:

WC-1 WATER CLOSET: AMERICAN STANDARD "AFWALL MILLENNIUM FLOWISE ELONGATED FLUSHOMETER TOILET" MODEL #3352.101, VITREOUS CHINA ELONGATED SIPHON JET BOWL, WALL MOUNTED, WHITE EXTRA HEAVY DUTY SOLID PLASTIC OPEN FRONT SEAT WITHOUT COVER, TOP SPUD WITH SLOTTED RIM FOR BEDPAN HOLDING, STAINLESS STEEL CHECK HINGE, ADA COMPLIANT. PERMANENT EVERCLEAN ANTIMICROBIAL SURFACE. FLUSH VALVE SHALL BE MOEN 8310M128 SERIES OR EQUAL WITH BED PAN WASHER MODEL 8310BPW16 (BED PAN WASHER SHALL ONLY BE PROVIDED FOR PATIENT ROOMS), 1.28 GPF CHROME PISTON FLUSH VALVE WITH ADA COMPLIANT HANDLE. PROVIDE WITH NEW WATER CLOSET CARRIER IN WALL.

L-1 AMERICAN STANDARD "LUCERNE" 0355.012 WHITE VITREOUS CHINA WALL HUNG HANDICAP LAVATORY, THREE HOLE MOUNT FOR 4" CENTERS, WITH MOEN 8413F05 CENTERSET CHROME FAUCET WITH SINGLE LEVER HANDLE, METAL GRID STRAINER, OFFSET PVC P-TRAP, FLEXIBLE TUBING SUPPLIES, COMPRESSION FITTINGS AND STOPS. PROVIDE TRUEBRO #102W PRE- MOLDED INSULATION ON BOTH WATER SUPPLIES AND DRAIN. PROVIDE WITH WALL CARRIER.

L-2 WUDUMATE MODULAR UNIT #WM-MOD, WHITE SINGLE CARTON WITH SEAT. SEAT POST SHALL BE STAINLESS STEEL, SEAT TOP SHALL BE DOUBLE SKIN, SANITARY-GRADE ACRYLIC, AND WALL MOUNTED TAP WITH SENSOR, SUPPORT BRACKET AND FITTINGS.

SH-1 SIGNATURE HARDWARE SHOWER ONLY TRIM PACKAGE WITH RAIN SHOWER HEAD MODEL 953771.INCLUDES BALANCE VALVE WITH INTEGRAL STOPS, 1 LEVER HANDLE.

S-1 HAND SINK: ELKAY EHS-14X STAINLESS STEEL HAND SINK WITH SPLASH MOUNT, GOOSENECK FAUCET (INCLUDED) AND BASKET STRAINER (INCLUDED). NSF APPROVE.

S-2 3-COMPARTMENT SINK: ELKAY WNSF83604 STAINLESS STEEL 3-COMPARTMENT SINK WITH PRE-RINSE UNIT AND SPRAY VALVE ENCORE KL53-1000-AF4, CENTER DRAIN, WALL MOUNT NSF APPROVED. PROVIDE PERMADRAIN DRAINSHIELD.

S-3 ELKAY LUSTERTONE CLASSIC STAINLESS STEEL 31"x22"x7-5/8" SINGLE BLOW DROP IN SINK, MODEL LR3122, 18 GAUGE 304 STAINLESS STEEL, CENTER DRAIN PLACEMENT, 3 HOLE, FAUCET MODEL LKGT1041.

S-4 AMERICAN STANDARD "LUCERNE" 0356 WHITE VITREOUS CHINA WALL HUNG HANDICAP LAVATORY, SINGLE CENTER FAUCET HOLE, WITH MOEN 8413F05 CENTERSET CHROME FAUCET WITH SINGLE LEVER HANDLE, METAL GRID STRAINER, OFFSET PVC P-TRAP, FLEXIBLE TUBING SUPPLIES, COMPRESSION FITTINGS AND STOPS. PROVIDE TRUEBRO #102W PRE- MOLDED INSULATION ON BOTH WATER SUPPLIES AND DRAIN. PROVIDE WITH WALL CARRIER

MS-1 MOP SINK: FLORESTONE MODEL MSR-2424 MOLDED MOP SINK, ONE PIECE WITH RIBBED UNDERBODY AND INTEGRAL DRAIN FOR 3" ABS PIPE, AND 16 GAUGE STAINLESS STEEL, FLAT TYPE #430 DRAIN GRID.

EW-1: ELECTRIC WATER COOLER: ELKAY EZH20 BOTTLE FILLER STATION WITH FILTERED BI-LEVEL COOLER. MODEL LZSTL8WS(VR)SP WITH HI/O CONFIGURATION. UNIT SHALL DELIVER 8 GPH OF 50°F OF DRINKING WATER AT 90°F AMBIENT AND 80°F INLET WATER. PUSH BAR ACTIVATION. BOTTLE FILLING UNITS SHALL INCLUDE AN ELECTRONIC SENSOR FOR TOUCHLESS ACTIVATION WITH AN AUTOMATIC 20-SECOND SHUT-OFF TIMER. LED LIGHT ILLUMINATING THE WATER DISPENSING AREA, BRIGHTENING AS WATER IS BEING DISPENSED. SHALL INCLUDE A GREEN TICKER™ DISPLAYING COUNT OF PLASTIC BOTTLES SAVED FROM WASTE. BOTTLE FILLER SHALL PROVIDE A 1.1 GPM FLOW RATE WITH LAMINAR FLOW TO MINIMIZE SPLASHING. SHALL INCLUDE THE WATERSENTRY® PLUS 3000-GALLON CAPACITY FILTER. CERTIFIED TO NSF/ANSI 42 & 53, WITH VISUAL FILTER MONITOR TO INDICATE WHEN REPLACEMENT IS NECESSARY. UNIT SHALL AUTOMATICALLY DETECT A NEW FILTER AND RESET VISUAL FILTER MONITOR ACCORDINGLY. UNIT SHALL HAVE THE ABILITY TO TURN OFF REFRIGERATION SYSTEM AS NEEDED, IN ADDITION TO SELF DIAGNOSING SYSTEM ISSUES AND DISPLAY RELATED MESSAGES. SHALL INCLUDE INTEGRATED SILVER ION ANTI-MICROBIAL PROTECTION IN KEY AREAS. UNIT SHALL MEET ADA GUIDELINES. UNIT SHALL BE A LEAD-FREE DESIGN WHICH IS CERTIFIED TO NSF/ANSI 61 AND 372 AND MEETS FEDERAL AND STATE LOW-LEAD REQUIREMENTS.

PIPE DIAMETER (IN)	MINIMUM NUMBER OF DRAINAGE FIXTURE UNITS			
	TOTAL FOR HORIZONTAL BRANCH	TOTAL DISCHARGE INTO ONE BRANCH	TOTAL FOR STACK OF THREE BRANCH INTERVALS OF LESS	TOTAL FOR STACK GREATER THEN THREE BRANCH INTERVALS
1 1/2	3	2	4	8
2	6	6	10	24
2 1/2	12	9	20	42
3	20	20	48	72
4	160	90	240	500
5	360	200	540	1,100
6	620	350	960	1,900
8	1,400	600	2,200	3,600
10	2,500	1,000	3,800	5,600
12	3,900	1,500	6,000	8,400
15	7,000	-	-	-

IPC TABLE 710.1(2) HORIZONTAL FIXTURE BRANCHES AND STACKS

PIPE DIAMETER (IN)	MINIMUM NUMBER OF DRAINAGE FIXTURE UNITS CONNECTED TO ANY PORTION OF THE BUILDING DRAIN OR BUILDING SEWER INCLUDING BRANCHES OF THE BUILDING DRAIN			
	SLOPE PER FOOT			
	1/16 INCH	1/8 INCH	1/4 INCH	1/2 INCH
1 1/4	-	-	1	1
1 1/2	-	-	3	3
2	-	-	21	26
2 1/2	-	-	24	31
3	-	36	42	50
4	-	180	216	250
5	-	390	480	575
6	-	700	840	1,000
8	1,400	1,600	1,920	2,300
10	2,500	2,900	3,500	4,200
12	3,900	4,600	5,600	6,700
15	7,000	8,300	10,000	12,000

IPC TABLE 710.1(1) BUILDING DRAINS AND SEWERS

SLOPE OF HORIZONTAL SANITARY PIPING	
SIZE (INCHES)	MINIMUM SLOPE (INCHES PER FOOT)
2 1/2 OR LESS	1/4
3 TO 6	1/8
8 AND LARGER	1/16

IPC TABLE 704.1

NATURAL GAS SIZING TABLE	
BASED ON IFGC 2021 TABLE 402.4(2) LESS THAN 2 PSI, 0.5" WC, 0.60VSPECIFIC GRAVITY TOTAL PIPE LENGTH (FT)=200	
PIPE SIZE	MAX. MBH (CFH)
1/2"	34
3/4"	71
1"	134
1-1/4"	275
1-1/2"	412
2"	794
2-1/2"	1270
3"	2240
4"	4560

LEGEND

BRANCH CONNECTION - BOTTOM OF MAIN
BRANCH CONNECTION - SIDE OF MAIN
BRANCH CONNECTION - TOP OF MAIN
PIPE DOWN OR PIPE FROM BELOW
PIPE UP OR PIPE FROM ABOVE
DIRECTION OF FLOW
DOMESTIC COLD WATER
DOMESTIC HOT WATER
DOMESTIC HOT WATER RECIRCULATING
NATURAL GAS PIPING
SANITARY SEWER, GREASE WASTE OR DRAIN
SANITARY VENT
CLEANOUT FLUSH WITH FLOOR
OUTLET WITH P-TRAP
WALL HYDRANT
WATER HAMMER ARRESTER
GATE VALVE
BALL VALVE
SHUTOFF VALVE IN VERTICAL
CHECK VALVE
T&P RELIEF VALVE
BALANCING COCK
UNION
PRESSURE GAUGE AND GAUGE COCK
THERMOMETER
STRAINER, STRAINER WITH DRAIN
RELIEF VALVE
BACKFLOW PREVENTER (BFP)
MEDICAL GAS PIPING - OXYGEN
MEDICAL GAS PIPING - VACUUM
MEDICAL GAS PIPING - MEDICAL AIR

ABBREVIATIONS

AAV AIR ADMITTANCE VALVE
ABV ABOVE
AFF ABOVE FINISHED FLOOR
BFF BELOW FINISHED FLOOR
BTU BRITISH THERMAL UNIT
BEL BELOW
CLG CEILING
CO CLEANOUT
CONN CONNECT, CONNECTION
CW COLD WATER
CONT CONTINUED
DN DOWN
EA EACH
ELEV ELEVATION
EWC ELECTRIC WATER COOLER
F DEGREES FAHRENHEIT
FD FLOOR DRAIN
FIN FINISHED
FLR FLOOR
FR FROM
FT FEET
GPH GALLONS PER HOUR
GPM GALLONS PER MINUTE
GW GREASE WASTE
HB HOSE BIBB
HC HANDICAPPED ACCESSIBLE
HW HOT WATER
HP HORSEPOWER
IN INCH, INCHES
INV INVERT
MAX MAXIMUM
MBH THOUSAND BTU PER HOUR
MIN MINIMUM
SH SHEET
TYP TYPICAL
V SANITARY VENT
VTR VENT THRU ROOF
W SANITARY WASTE
WCO WALL CLEANOUT
WH WALL HYDRANT
WHA WATER HAMMER ARRESTER
ZVB MEDICAL GAS ZONE VALVE BOX

CONNECT TO EXISTING
LIMITS OF DEMOLITION

PLUMBING EQUIPMENT SCHEDULE:

- FD** FLOOR DRAIN, ZURN MODEL Z415, DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS.

FOR MECHANICAL ROOM DRAINS NOT RECEIVING INDIRECT WASTE, FINISHED SPACES INCLUDING TOILET, SHOWER, LOCKER ROOMS, ETC., PROVIDE WITH TYPE B, ROUND, POLISHED NICKEL BRONZE, LIGHT DUTY HEEL PROOF STRAINER.

ALL FLOOR DRAINS SHALL BE PROTECTED AGAINST LOSS OF TRAP SEAL BY EVAPORATION BY INSTALLATION OF ELASTOMERIC TRAP GUARD DRAIN INSERT, EQUAL TO PROSET SYSTEMS MODEL #TG.
- TD** TRENCH DRAIN, ZURN #Z880 2-1/2" WIDE REVEAL TRENCH DRAIN SYSTEM, 3" DEEP, 48" SECTIONS. DRAIN SHALL BE MADE OF HIGH DENSITY POLYETHYLENE, AND IS UV-10 STABILIZED. DRAIN SHALL HAVE TONGUE AND GROOVE SNAP FIT CONNECTION.
- WHA** JOSAM #75000 SERIES WATER HAMMER ARRESTER, SIZE AND LOCATION IN ACCORDANCE WITH P.D.I STD WH-201. STAINLESS STEEL SHELL, ELASTOMER BELLOWS TYPE, FACTORY PRE-CHARGED WITH THREADED PLUG.
- HB** HOSE BIBB/ WALL FAUCET. ZURN MODEL Z1341-BFP. EXPOSED, ANTI-SIPHON, WALL FAUCET FOR USE IN MODERATE CLIMATE INSTALLATION, COMPLETE WITH Z1399-BFP EXTERNAL BACKFLOW PREVENTER, ALL BRONZE INTERIOR COMPONENTS, VANDAL-RESISTANT OPERATING STEM, ROUGH BRONZE EXTERIOR AND 3/4 MALE HOSE CONNECTION (CONFORM TO ASME B1.20.7).
- BFP-1** REDUCED PRESSURE ZONE BACK FLOW PREVENTER (FOR BUILDING SERVICE) SIZES 2-1/2" - 4". WATTS SERIES 909. PROVIDE WITH OUTSIDE STEM AND YOKE RESILIENT SEATED GATE VALVES AND AIR GAP DRAIN OUTLET PIPED TO NEAREST FLOOR DRAIN.
- EX** EXPANSION TANK - AMTROL THERM-X-TROL MODEL #ST-5 THERMAL EXPANSION TANK, 2.0 GALLONS MIN. ACCEPTANCE VOLUME WITH DIAPHRAGM. FACTORY PRE-CHARGED TO 40 PSI, SET EQUAL TO LINE PRESSURE.
- GWH-1** GAS WATER HEATER, A.O. SMITH MODEL #BTH-199A, 199 MBH GAS INPUT, 100 GALLON CAPACITY TANK, 235 GAL./HR. RECOVERY AT 40 DEG.F. ENT.AND 100 DEG.F. RISE, 208V/1PH; T & P RELIEF VALVE. PIPING CONNECTIONS INCLUDING T&P RELIEF VALVE ON SIDE OF EQUIPMENT. WATER HEATER SHALL BE PROVIDED WITH FACTORY INSTALLED HEAT TRAP.
- HWCP-1** HOT WATER RE-CIRCULATION PUMP, TACO #005 CIRCULATING PUMP, 1/35 HP., 115V/1PH, 1.0 GPM AT 8 FT OF HEAD, ALL BROZE CONSTRUCTION.
- TMV-1** LAWLOR #801, HIGH/LOW MIXING VALVE WITH UNION END STOP AND CHECK INLETS WITH REMOVABLE STAINLESS STEEL STRAINERS. PROVIDE WITH BRONZE FINISH DIAL THERMOMETER AND SHUT-OFF VALVE ON OUTLET. 15 GPM CAPACITY @5 PSI PD. SET AT 120 DEGREE F LEAVING WATER TEMPERATURE.
- TV** WATTS MODEL SERIES LFUSG-B-M2 UNDER SINK GUARDIAN ASSE 1080 THERMOSTATIC TEMPERING VALVE FOR SINGLE FIXTURE APPLICATIONS. SET VALVE FOR MAXIMUM 109 DEG. F.
- CO** JOSAM CLEANOUT
- FCO** FLOOR CLEANOUT (FINISHED) - RECESSED SATIN BRONZE TOP TO RECEIVE FLOOR FINISH MATERIAL (CARPET/TILE), RECESSED PLUG.
- GI-1** GREASE INTERCEPTOR: ZURN GREASE INTERCEPTOR, MODEL #GT2700-35, PDI RATED AT 35 GPM AND 70 LBS GREASE CAPACITY. SIZE FOR 2 MINUTE DRAINAGE PERIOD.
- FS-1** FLOOR SINK, JOSAM #49320A-NB, CAST IRON 12" SQUARE AND 6-1/4" DEEP SUPER-FLO-SEPTOR FLOOR SINK WITH ACID RESISTING INTERIOR, DOUBLE DRAINAGE FLANGE WITH WEEPHOLES, BOTTOM OUTLET, ALUMINUM INTERNAL DOME STRAINER, NIKALOY SANITARY SLOPED RIM AND NIKALOY LIGHT-DUTY SUPER-FLO, ANTI-FILLING GRATE.
- RD** ROOF DRAIN, WATTS MODEL RD-300-F, EPOXY COATED CAST IRON ROOF DRAIN WITH FLASHING CLAMP AND INTEGRAL GRAVEL STOP, HEAVY GAUGE ZINC PLATED STEEL FLANGE, SELF LOCKING POLYETHYLENE DOME.
- ORD** OVERFLOW ROOF DRAIN, WATTS MODEL RD-300-F, EPOXY COATED CAST IRON OVERFLOW ROOF DRAIN WITH 4" HIGH INTERNAL WATER DAM, SELF LOCKING POLYETHYLENE DOME.
- RD-2** COMBINATION/ DUAL OUTLET ROOF DRAIN WITH PRIMARY AND SECONDARY DRAIN IN ONE. WATTS MODEL RD-700 W/ 4" HIGH INTERNAL OVERFLOW STANDPIPE ON SECONDARY INLET.

CODE COMPLIANCE		
1.	GOVERNING CODES & REGULATIONS	2021 VIRGINIA CONSTRUCTION CODE (IBC 2021 AMENDED) 2021 VIRGINIA EXISTING BUILDING CODE (IEBC 2021 AMENDED) 2021 VIRGINIA MECHANICAL CODE (IMC 2021 AMENDED) 2020 VIRGINIA ELECTRICAL CODE (NFPA 70, 2020 AMENDED) 2021 VIRGINIA PLUMBING CODE (IPC 2021 AMENDED) 2021 VIRGINIA FUEL GAS CODE (IFGC 2021 AMENDED) 2021 VIRGINIA ENERGY CONSERVATION CODE

DRAWING INDEX	
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P200	PLUMBING FIRST FLOOR PLAN - WASTE, VENT & STORM
P201	PLUMBING SECOND FLOOR PLAN - WASTE, VENT & STORM
P300	PLUMBING ROOF PLAN
P400	PLUMBING DETAILS 1 OF 2
P401	PLUMBING DETAILS 2 OF 2
P500	PLUMBING SPECIFICATIONS

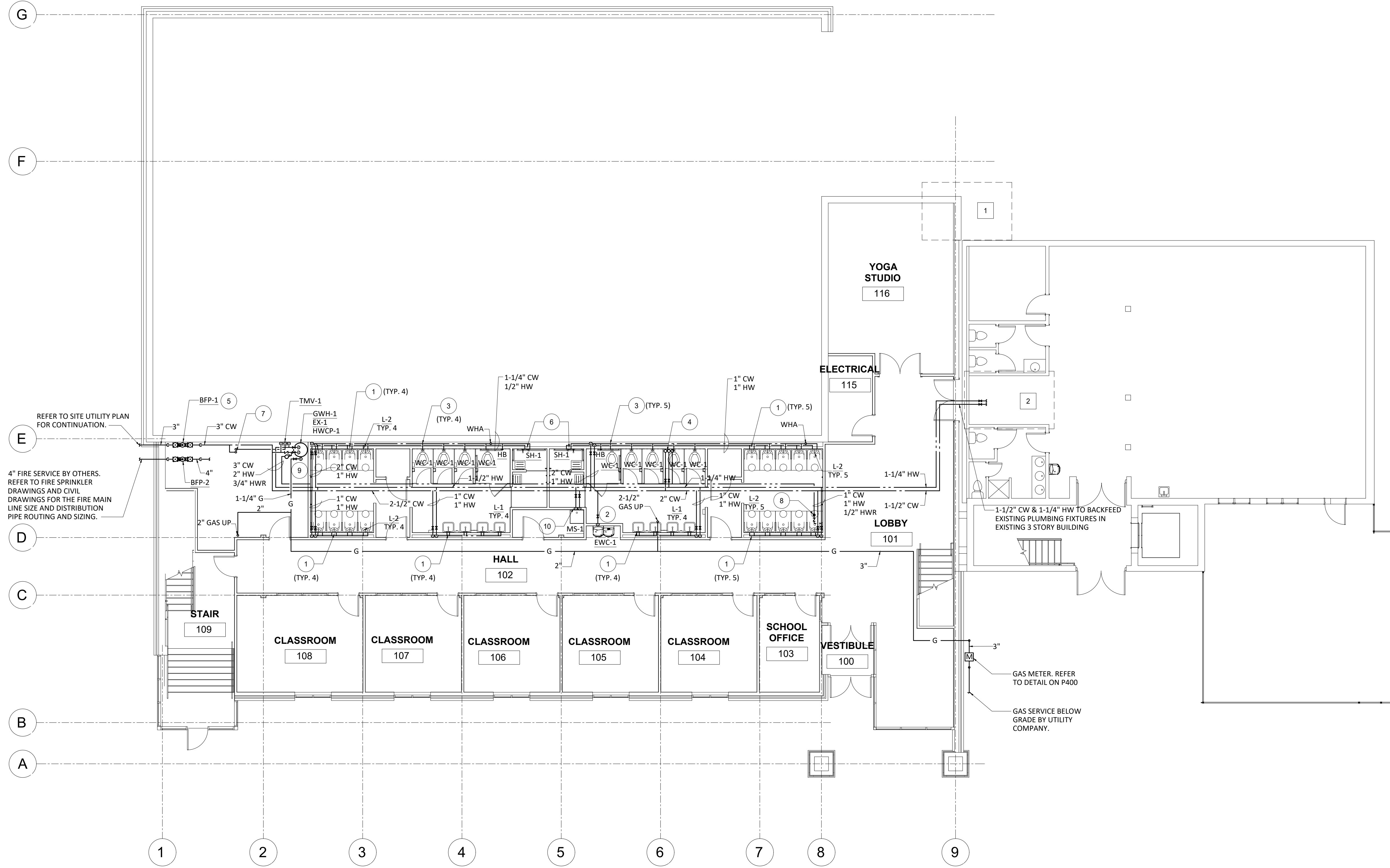
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PLUMBING OVERVIEW SHEET
ISNRV BUILDING EXPANSION
 Blacksburg, VA



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REVISIONS	DESCRIPTION	DATE
No.		



PLUMBING FIRST FLOOR PLAN - WATER & GAS

1 P100 SCALE = 1/8"=1'-0"

- GENERAL NOTES:**
- CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF EXISTING DOMESTIC HOT WATER AND COLD WATER LINES IN EXISTING BUILDING PRIOR TO STARTING NEW CONSTRUCTION.
 - REFER TO ARCHITECTURAL PLANS FOR ROOM NAMES AND NUMBERS IF NOT SHOWN ON THIS PLAN.
 - ALL DOMESTIC WATER PIPING INDICATED ON THIS PLAN SHALL BE ABOVE CEILING UNLESS NOTED OTHERWISE.

- NEW WORK KEYED NOTES**
- 1/2" HW & CW DN TO SINK OR LAV. PROVIDE TV.
 - 3/4" CW DN TO ELECTRIC WATER COOLER (EWC).
 - 1" CW DOWN TO FLUSH VALVE WATER CLOSET (WC).
 - 2" CW & 1-1/4" HW UP.
 - 3" DOMESTIC WATER SERVICE. SEE SITE UTILITY PLAN FOR CONTINUATION.
 - 1/2" CW & HW TO SHOWER (SH).
 - 3/4" HW (120°F) & 3/4" CW UP TO KITCHEN ON FLOOR ABOVE.
 - CIRCUIT SETTER & CHECK VALVE ON HOT WATER RETURN (HWR) PIPING, SET TO .33 GPM.
 - PROVIDE INTAKE AND EXHAUST VENTS FOR THE GAS-FIRED WATER HEATER. TERMINATE WITH HOODED WALL CAP. INSTALL PER MANUFACTURER RECOMMENDATIONS.
 - 3/4" HW & CW DOWN TO MOP SINK.

BUILDING GAS LOADS:

RTU-1:	200 MBH
RTU-2:	450 MBH
RTU-3:	200 MBH
MUA-1:	114 MBH
OVEN/RANGE x2:	396 MBH
GAS FIRED WATER HEATER:	200 MBH
TOTAL GAS LOAD:	1,560 MBH

- WATER DEMO NOTES:**
- EXISTING SINK LOCATED IN EXISTING STORAGE ROOM BEING REMOVED SHALL BE REMOVED IN ITS ENTIRETY. REMOVE ALL ASSOCIATED HW & CW PIPING AND DEMO BACK TO THE MAIN AND CAP.
 - ALL PLUMBING FIXTURES LOCATED IN EXISTING WUDU SHALL BE REMOVED. REMOVE ALL ASSOCIATED HW & CW PIPING AND DEMO BACK TO MAIN AND CAP.

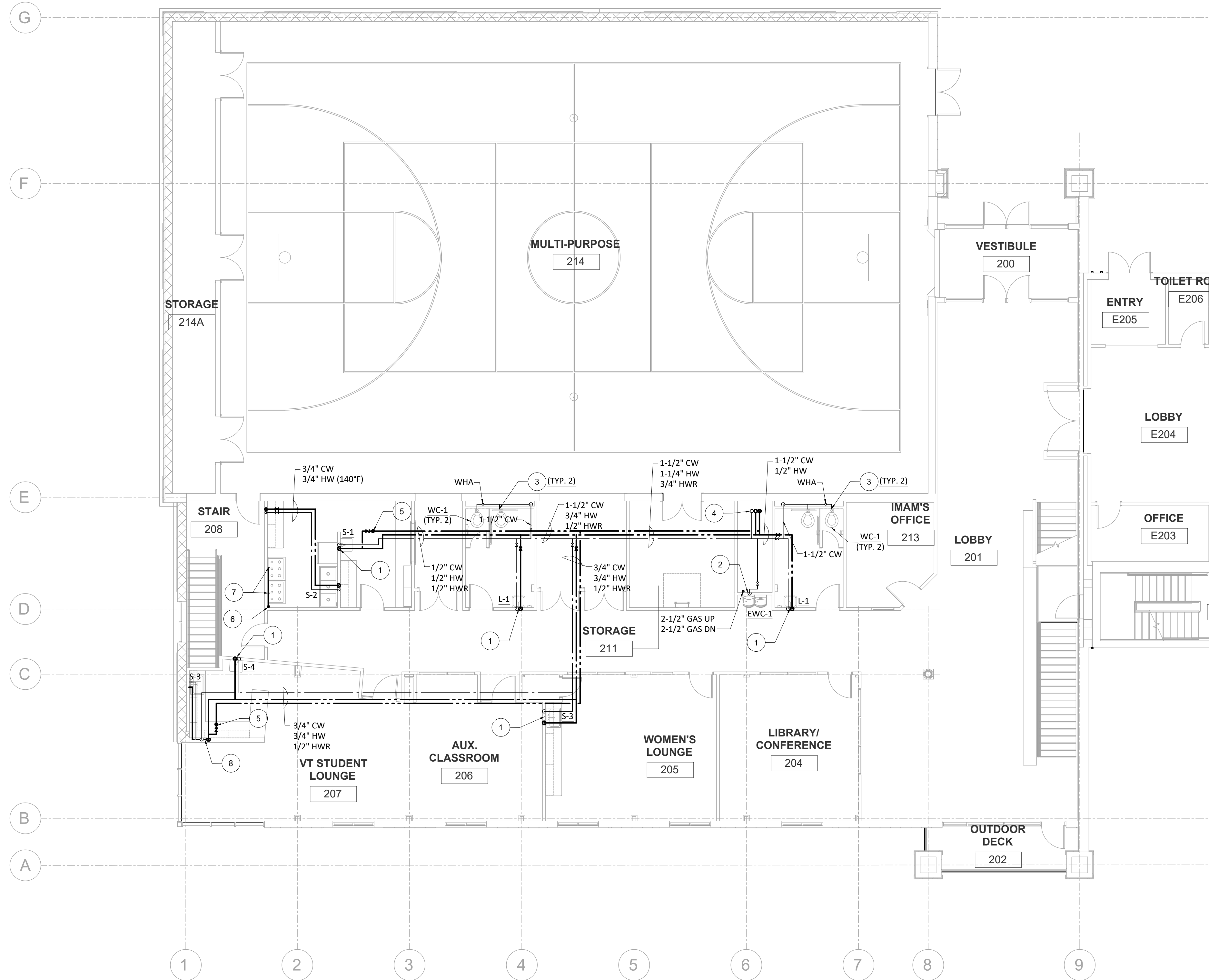
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PLUMBING FIRST FLOOR PLAN - WATER & GAS
ISNRV BUILDING EXPANSION
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PLUMBING SECOND FLOOR PLAN - WATER & GAS

1 P101 SCALE = 1/8"=1'-0"

GENERAL NOTES:

- REFER TO ARCHITECTURAL PLANS FOR ROOM NAMES AND NUMBERS IF NOT SHOWN ON THIS PLAN.
- ALL DOMESTIC WATER PIPING INDICATED ON THIS PLAN SHALL BE ABOVE CEILING UNLESS NOTED OTHERWISE.

NEW WORK KEYED NOTES

- 1/2" HW & CW DN TO SINK OR LAV. PROVIDE TV.
- 3/4" CW DN TO ELECTRIC WATER COOLER (EWC).
- 1" CW DOWN TO FLUSH VALVE WATER CLOSET (WC).
- 2" CW & 1-1/4" HW UP FROM BELOW.
- CIRCUIT SETTER AND CHECK VALVE ON HOT WATER RETURN (HWR) PIPING, SET TO .33 GPM.
- 2" GAS UP FROM BELOW. PROVIDE SOLENOID GAS SHUTOFF IN VERTICAL RISER, COORDINATE WITH HOOD FIRE SUPPRESSION SYSTEM.
- 1-1/4" GAS LINE TO EACH OVEN/RAGE COMBO UNIT.
- 1/2" HW & CW DN IN WALL. ROUTE IN CABINET TO SINK.

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PLUMBING SECOND FLOOR PLAN - WATER & GAS

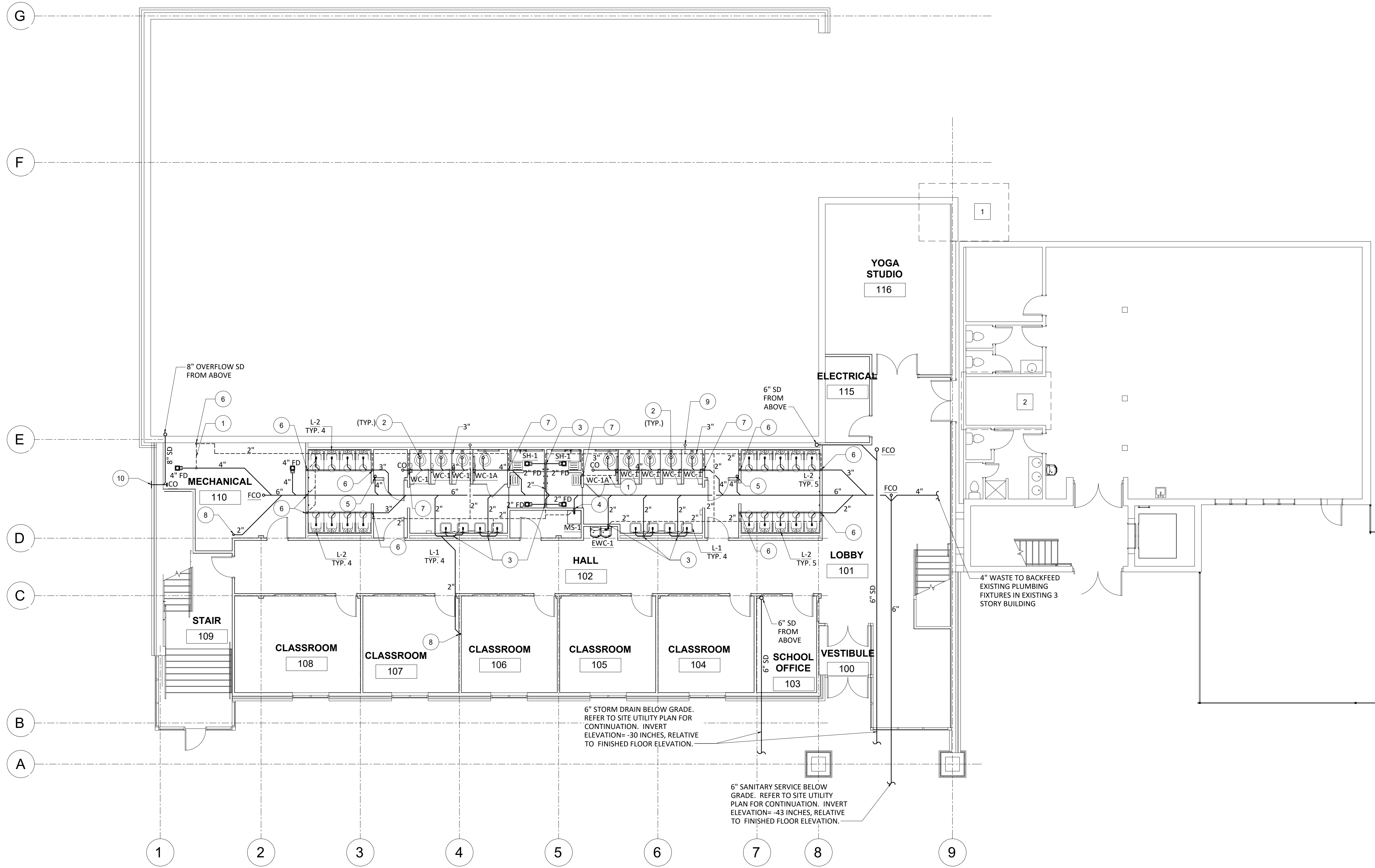
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PLUMBING FIRST FLOOR PLAN - WASTE, VENT & STORM

1 P100 SCALE = 1/8"=1'-0"

GENERAL NOTES:

- CONTRACTOR SHALL VERIFY SIZE, LOCATION, AND INVERT ELEVATION OF EXISTING SANITARY PRIOR TO STARTING NEW CONSTRUCTION.
- REFER TO ARCHITECTURAL PLANS FOR ROOM NAMES AND NUMBERS IF NOT SHOWN ON THIS PLAN.
- ALL VENT PIPING INDICATED ON THIS PLAN SHALL BE ABOVE CEILING UNLESS NOTED OTHERWISE.
- ALL WASTE PIPING INDICATED ON THIS PLAN SHALL BE BELOW FLOOR UNLESS NOTED OTHERWISE.

WASTE & VENT KEYED NOTES

- VENT PIPING BELOW FLOOR.
- 4" WASTE DOWN FROM WATER CLOSET (TYP.)
- 2" WASTE DOWN AND 2" VENT UP.
- 3" WASTE DOWN AND 2" VENT UP.
- 4" WASTE DOWN FROM ABOVE.
- 2" VENT UP.
- 3" VENT UP.
- 2" WASTE DOWN FROM ABOVE.
- 3" VENT UP THRU ROOF (VTR)
- 8" OVERFLOW STORM PIPING TO DAYLIGHT. PROVIDE WATTS RD-940 DOWNSPOUT NOZZLE AT WALL.

WASTE & VENT DEMO NOTES:

- EXISTING SINK LOCATED IN EXISTING STORAGE ROOM BEING REMOVED SHALL BE REMOVED IN ITS ENTIRETY. REMOVE ALL ASSOCIATED WASTE & VENT PIPING AND DEMO BACK TO THE MAIN AND CAP.
- ALL PLUMBING FIXTURES AND DRAINS LOCATED IN EXISTING WUDU SHALL BE REMOVED. REMOVE ALL ASSOCIATED WASTE AND VENT PIPING AND DEMO BACK TO MAIN AND CAP.

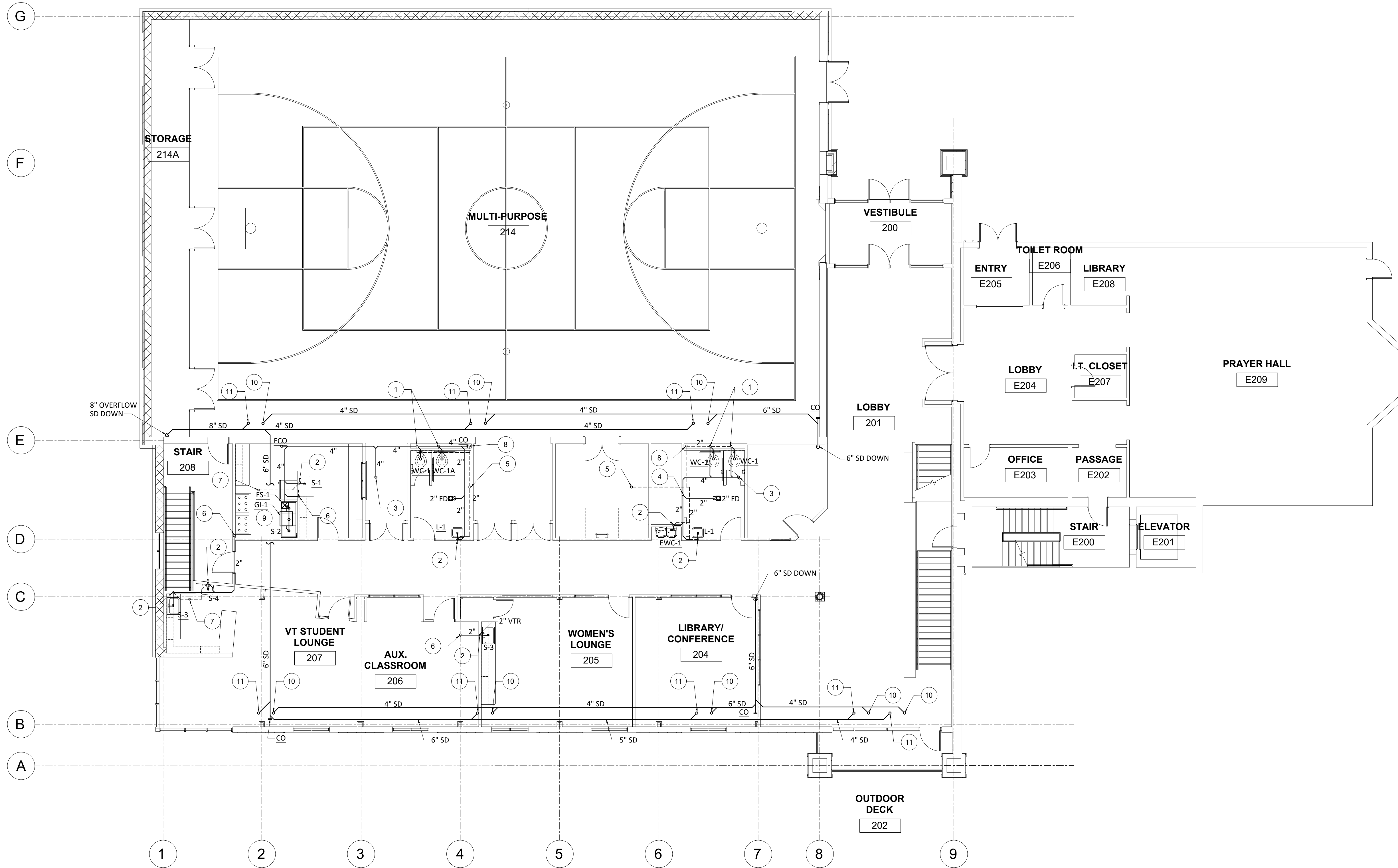
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PLUMBING FIRST FLOOR PLAN - WASTE, VENT & STORM
ISNRV BUILDING EXPANSION
Blacksburg, VA



5 Design, LLC
20 Midway Plaza Dr
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Christiansburg, VA 24073
540-230-2619
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PLUMBING SECOND FLOOR PLAN - WASTE, VENT & STORM

1 P101 SCALE = 1/8"=1'-0"

GENERAL NOTES:

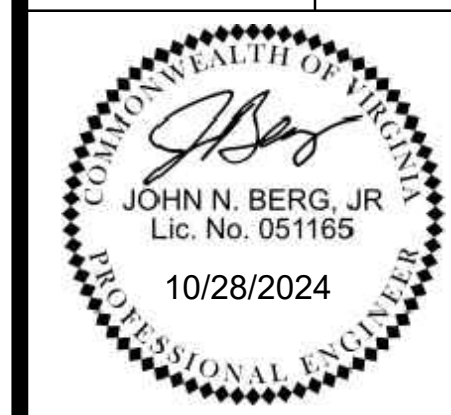
1. CONTRACTOR SHALL VERIFY SIZE, LOCATION, AND INVERT ELEVATION OF EXISTING SANITARY PRIOR TO STARTING NEW CONSTRUCTION.
2. REFER TO ARCHITECTURAL PLANS FOR ROOM NAMES AND NUMBERS IF NOT SHOWN ON THIS PLAN.
3. ALL VENT PIPING INDICATED ON THIS PLAN SHALL BE ABOVE CEILING UNLESS NOTED OTHERWISE.
4. ALL WASTE PIPING INDICATED ON THIS PLAN SHALL BE BELOW FLOOR UNLESS NOTED OTHERWISE.

WASTE & VENT KEYED NOTES

- 1 4" WASTE DOWN AND 2" VENT UP.
- 2 2" WASTE DOWN AND 2" VENT UP.
- 3 4" WASTE DOWN.
- 4 2" VENT UP.
- 5 3" VENT UP THRU ROOF.
- 6 2" WASTE DOWN.
- 7 2" VENT UP THRU ROOF.
- 8 3" VENT UP FROM BELOW.
- 9 ABOVE FLOOR GREASE INTERCEPTOR.
- 10 4" STORM PIPING FROM ROOF DRAIN ABOVE.
- 11 4" OVERFLOW STORM PIPING FROM ROOF DRAIN ABOVE.

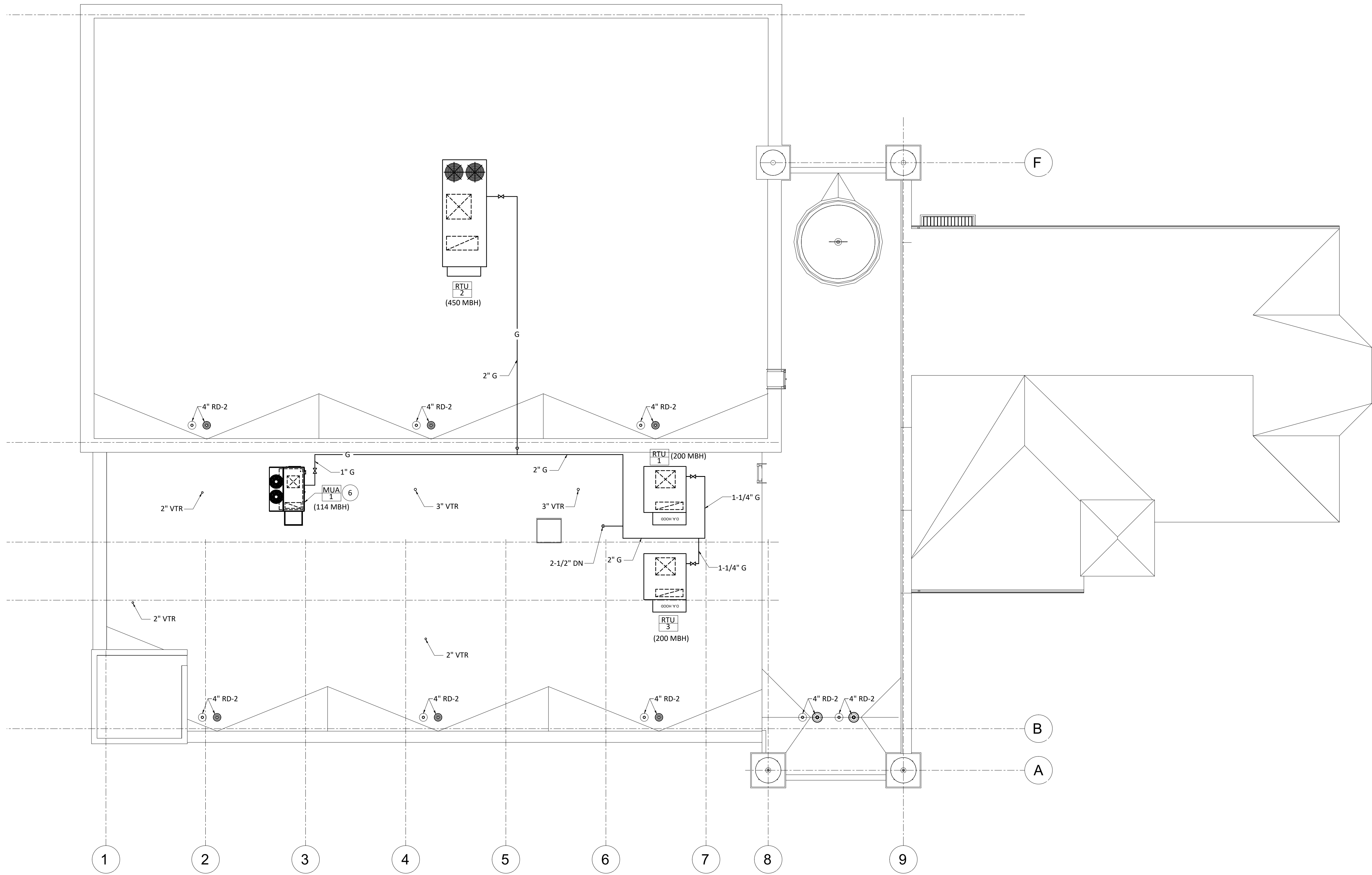
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PLUMBING SECOND FLOOR PLAN - WASTE, VENT & STORM
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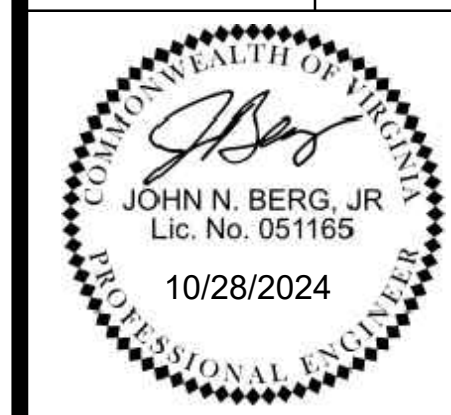
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1 PLUMBING ROOF PLAN
 P300 SCALE = 1/8"=1'-0"

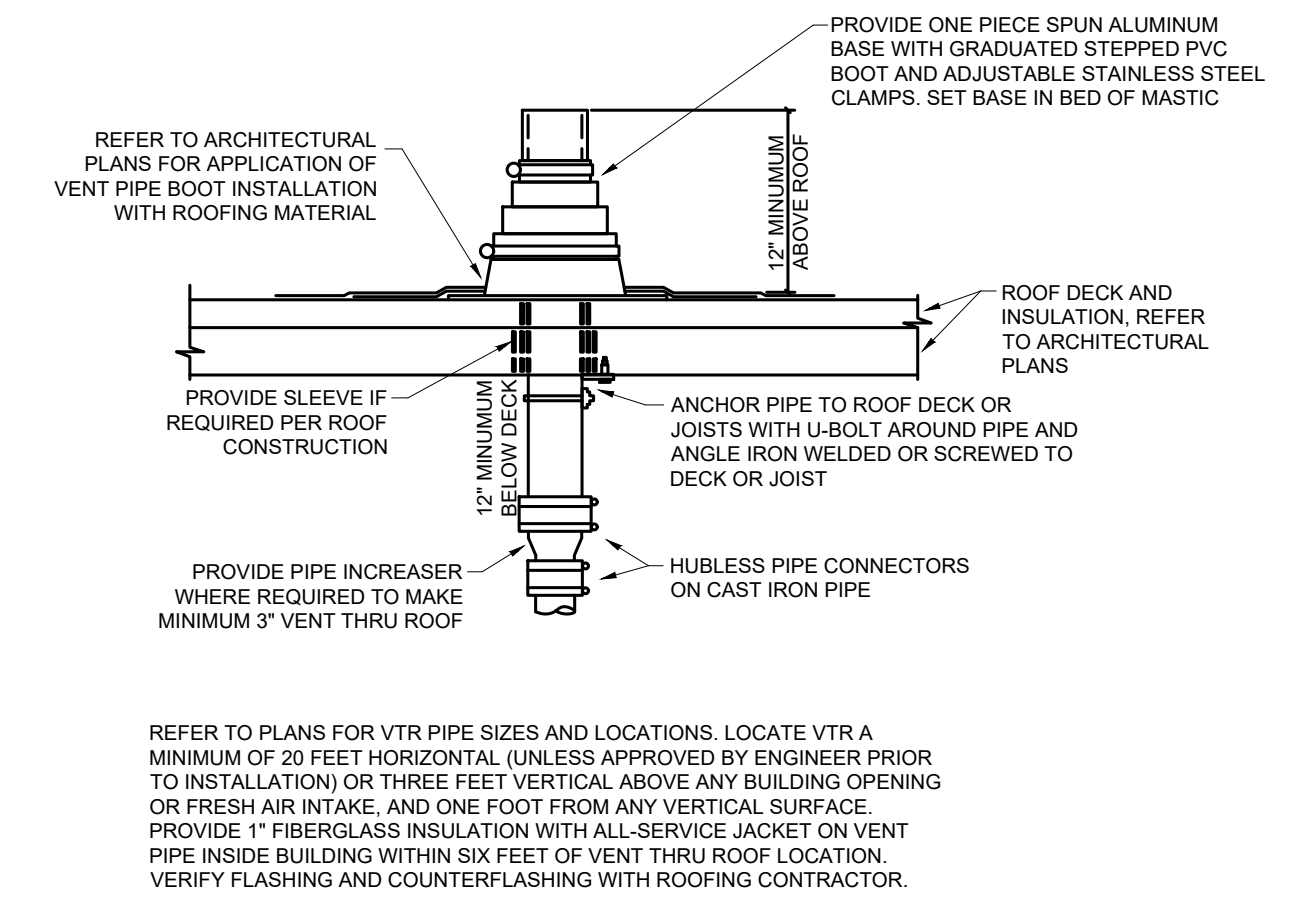
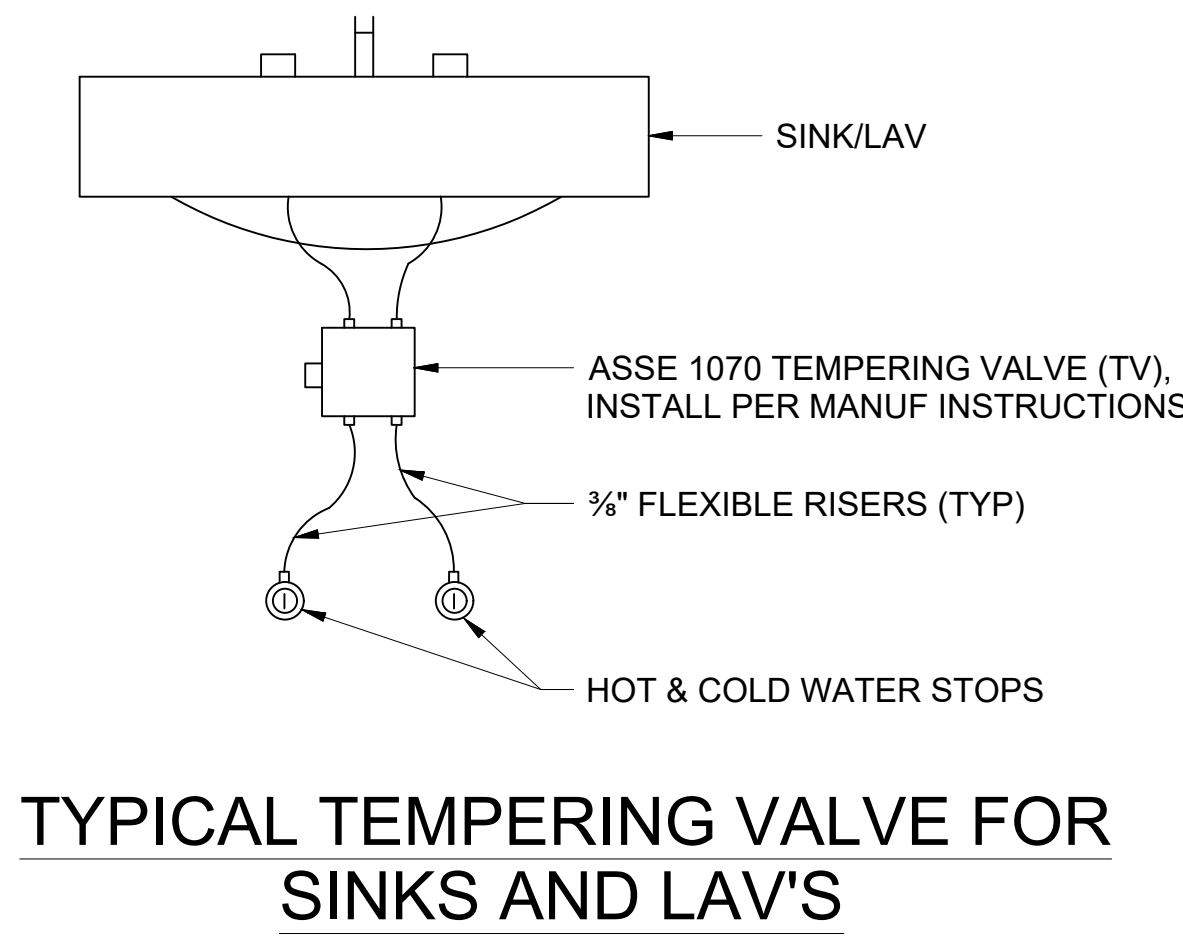
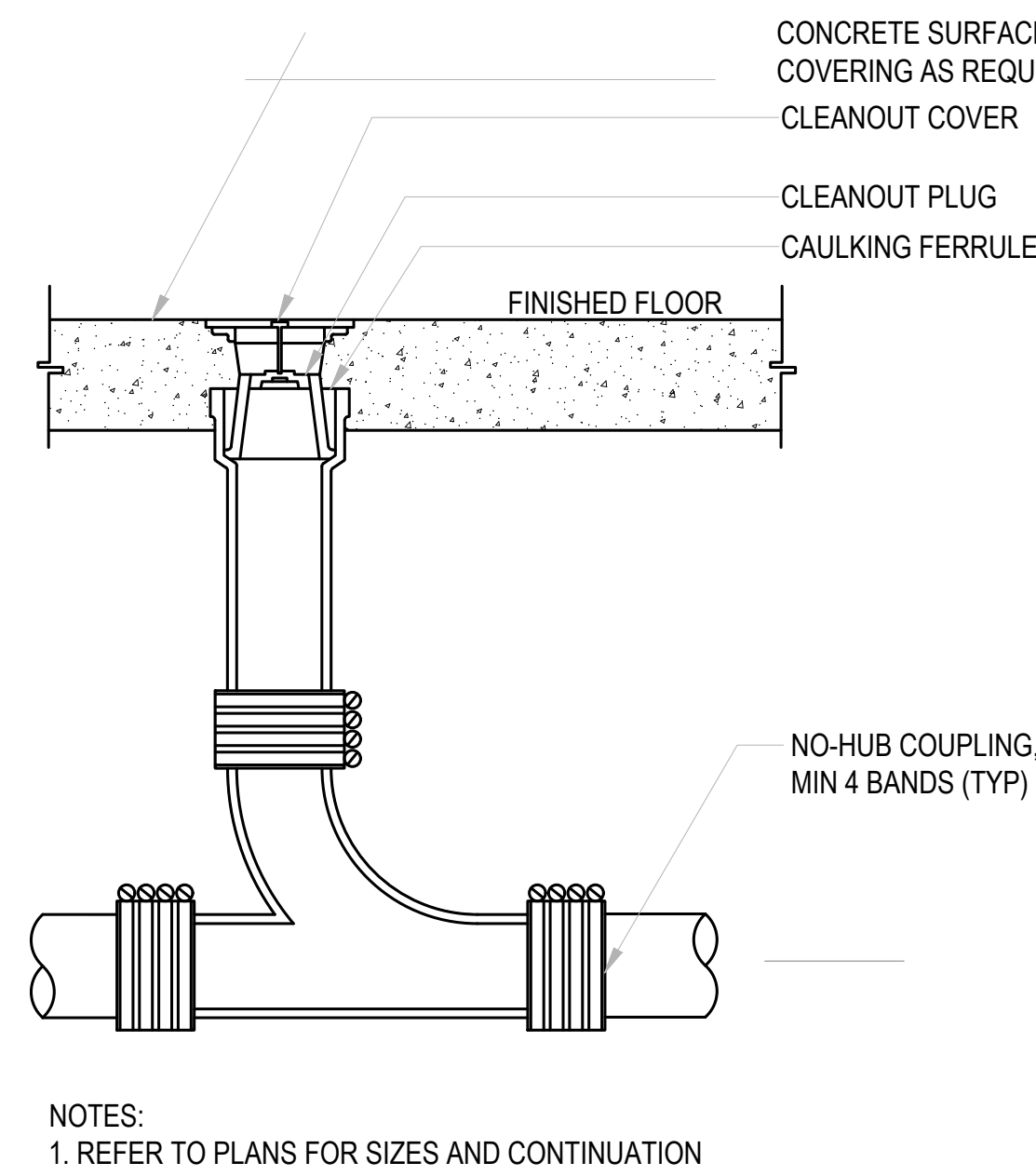
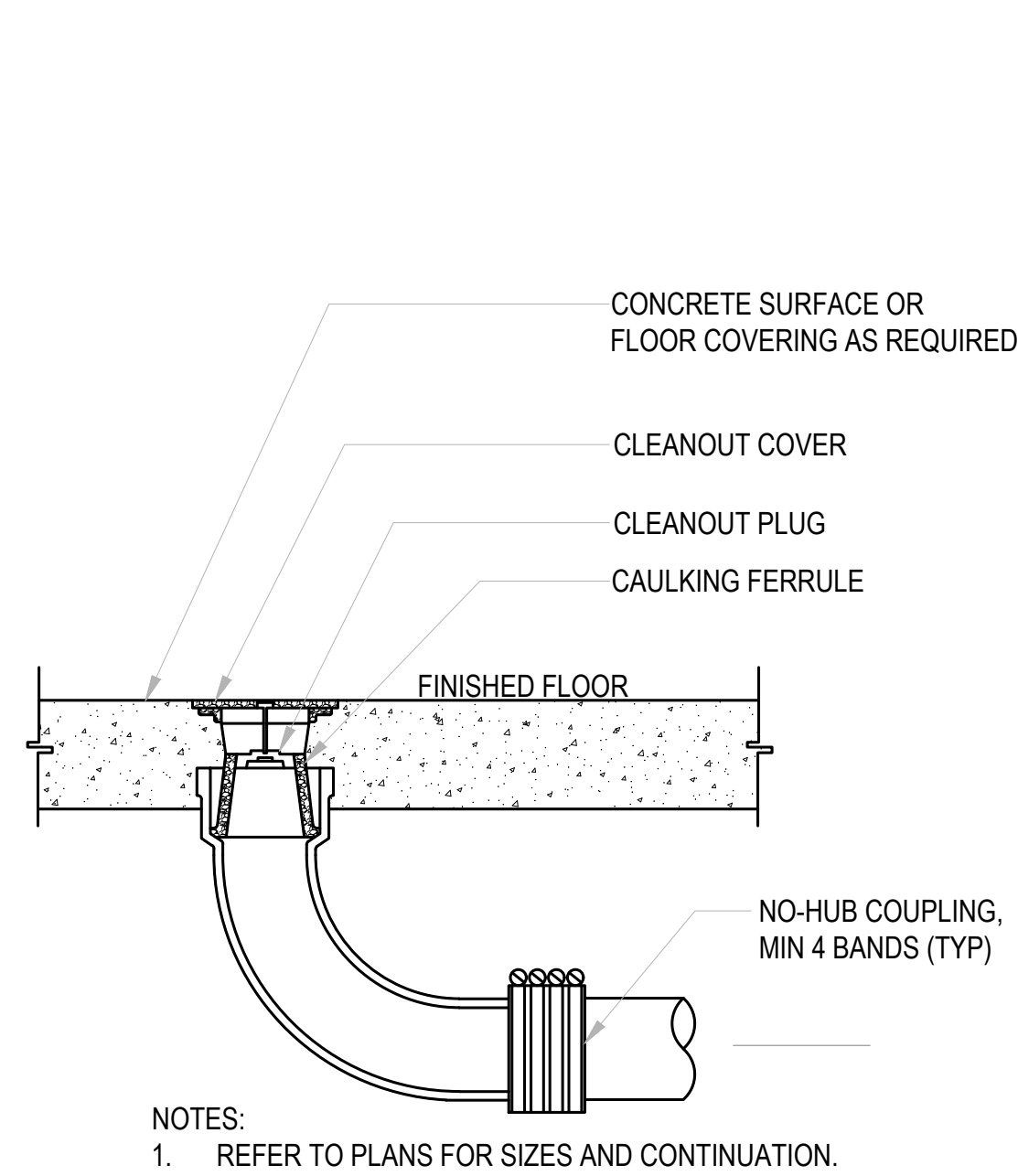
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PLUMBING ROOF PLAN
ISNRV BUILDING EXPANSION
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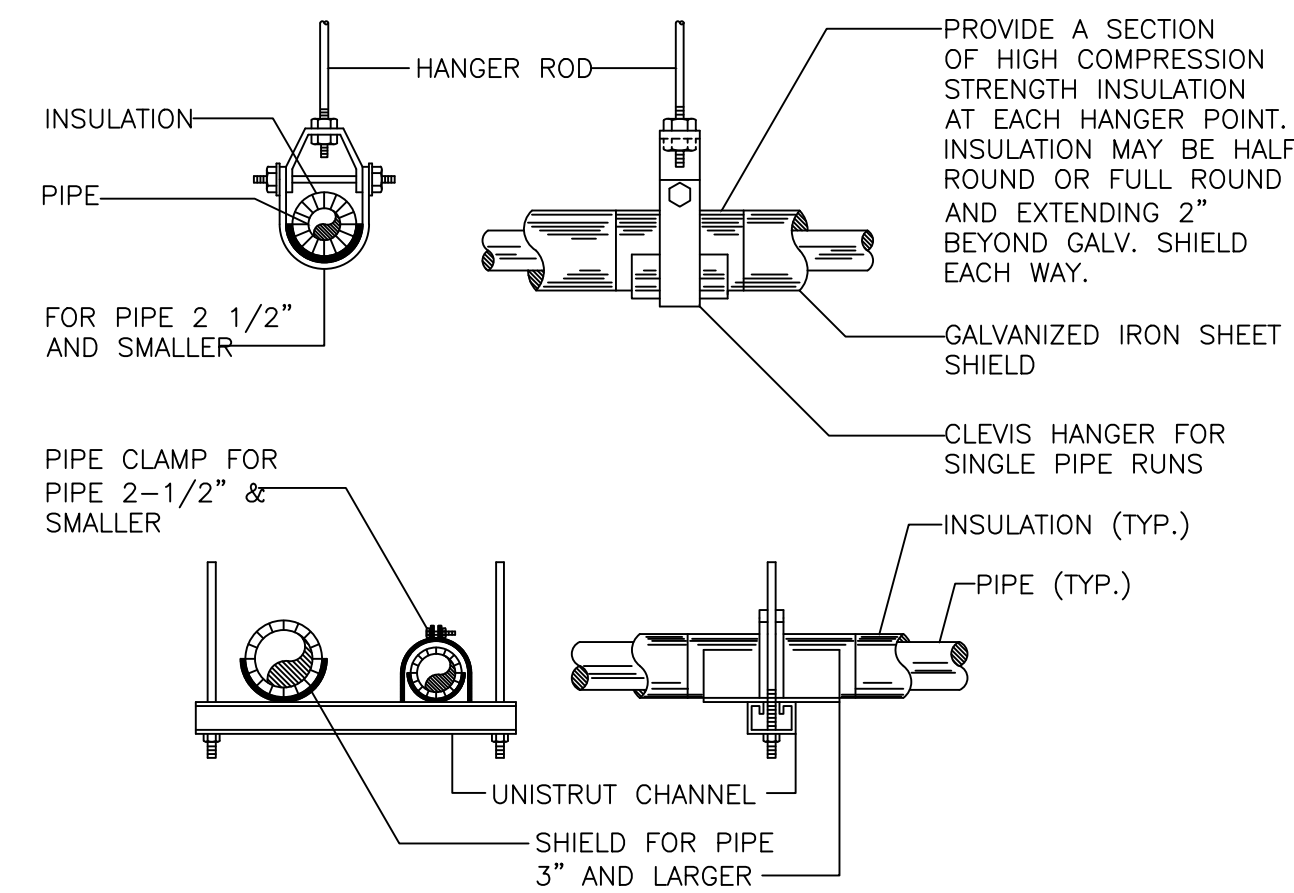
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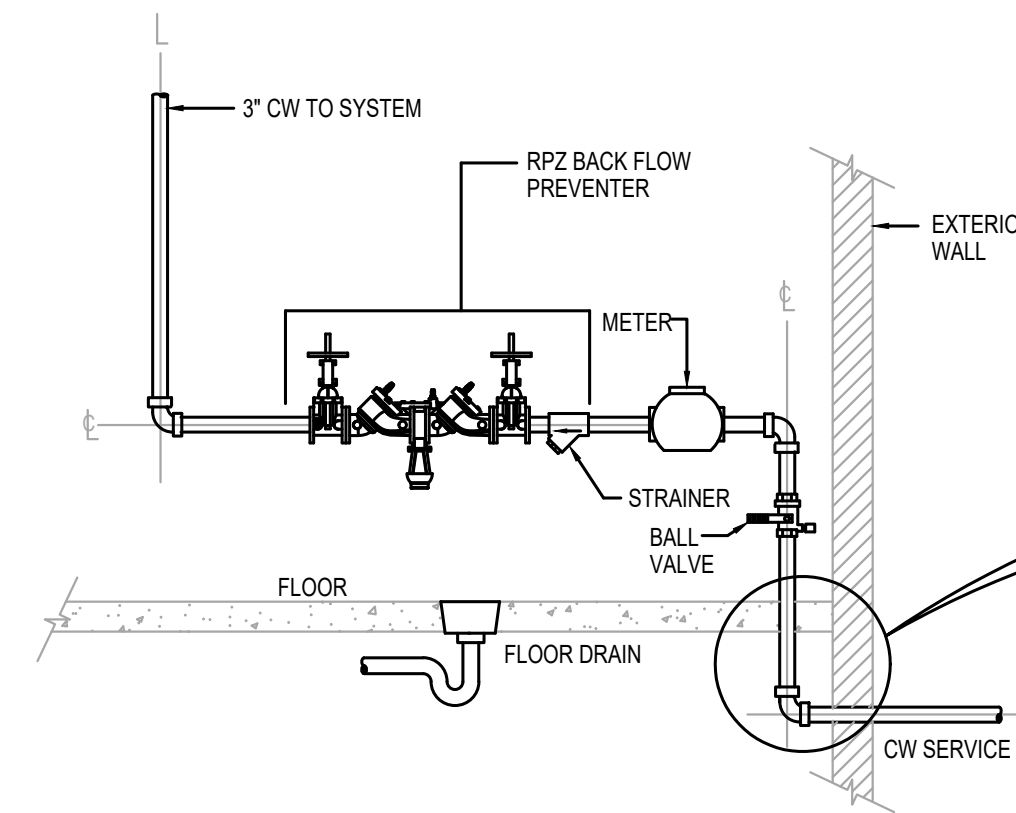


VENT THRU ROOF (VTR) DETAIL

SANITARY CLEANOUT DETAILS

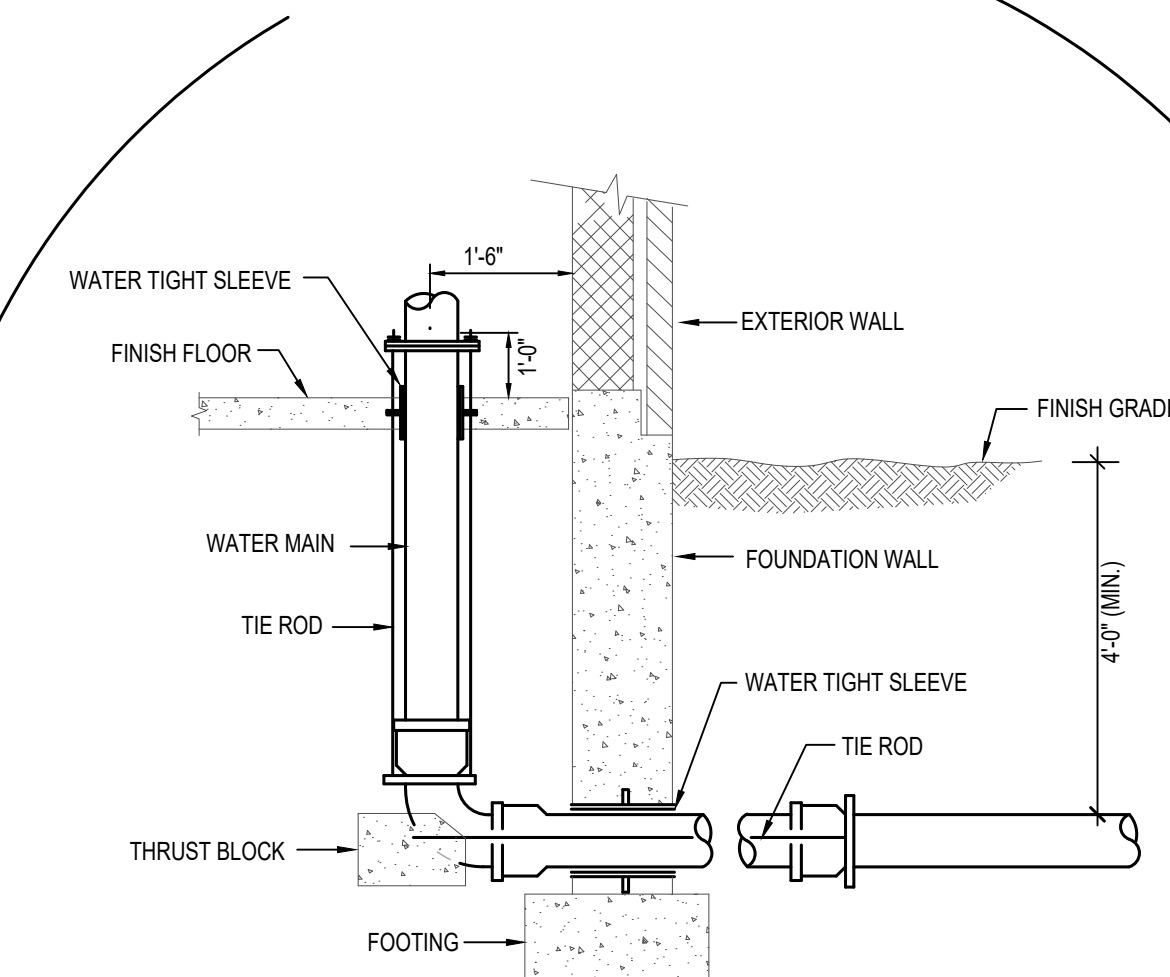


PIPE HANGER DETAIL

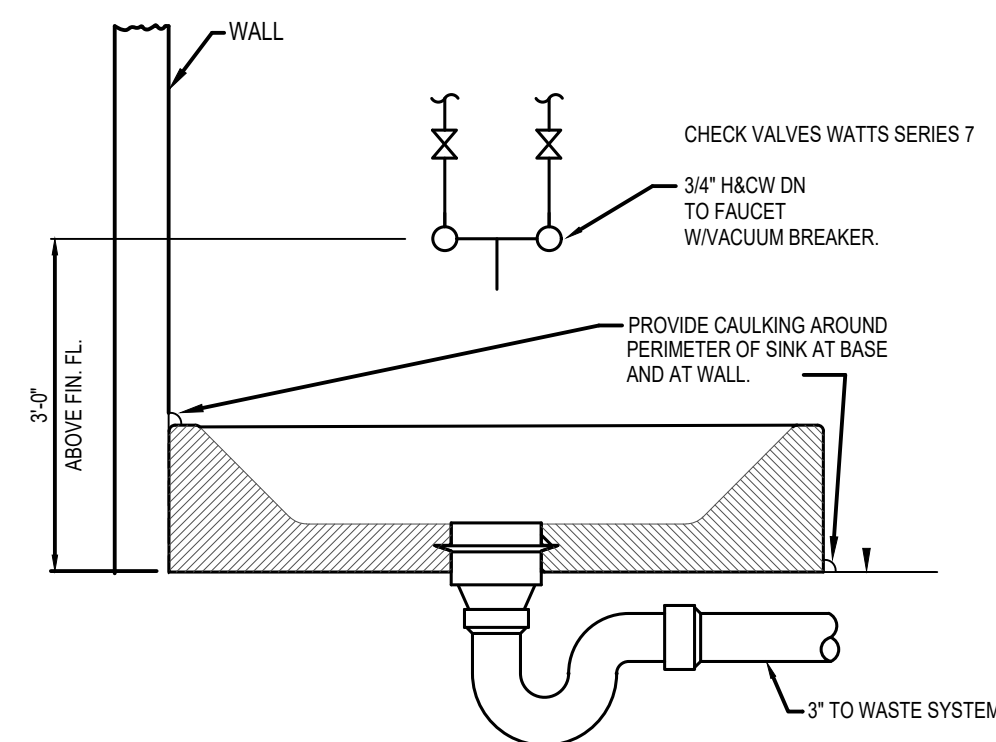


- NOTES:
1. R.P.Z. SHALL BE LOCATED WITHIN THE BUILDING AFTER BUT CLOSE TO THE POINT OF SERVICE ENTRY.
 2. R.P.Z. SHALL BE INSTALLED ABOVE GROUND AND IN HORIZONTAL POSITION ONLY. COORDINATE INSTALLATION REQUIREMENTS WITH LOCAL WATER COMPANY AND LOCAL AUTHORITY HAVING JURISDICTION.
 3. R.P.Z. SHALL BE INSTALLED BETWEEN 12" FROM THE LOWEST PART OF THE DEVICE.
 4. R.P.Z. SHALL BE ADEQUATELY SUPPORTED AND/OR RESTRAINED TO PREVENT LATERAL MOVEMENT.
 5. THERE SHALL BE NO OUTLET, TEE, TAP OF CONNECTION OF ANY KIND TO OR FROM THE SUPPLY LINE BETWEEN THE METER AND THE R.P.Z. ASSEMBLY.
 6. PLUMBING CONTRACTOR SHALL COORDINATE WITH THE PLANS, DETAILS, NOTES, SPECIFICATIONS AND APPROVED APPLICATION FOR BACKFLOW PREVENTION DEVICE INSTALLATION BY LOCAL WATER COMPANY AND LOCAL AUTHORITY HAVING JURISDICTION.

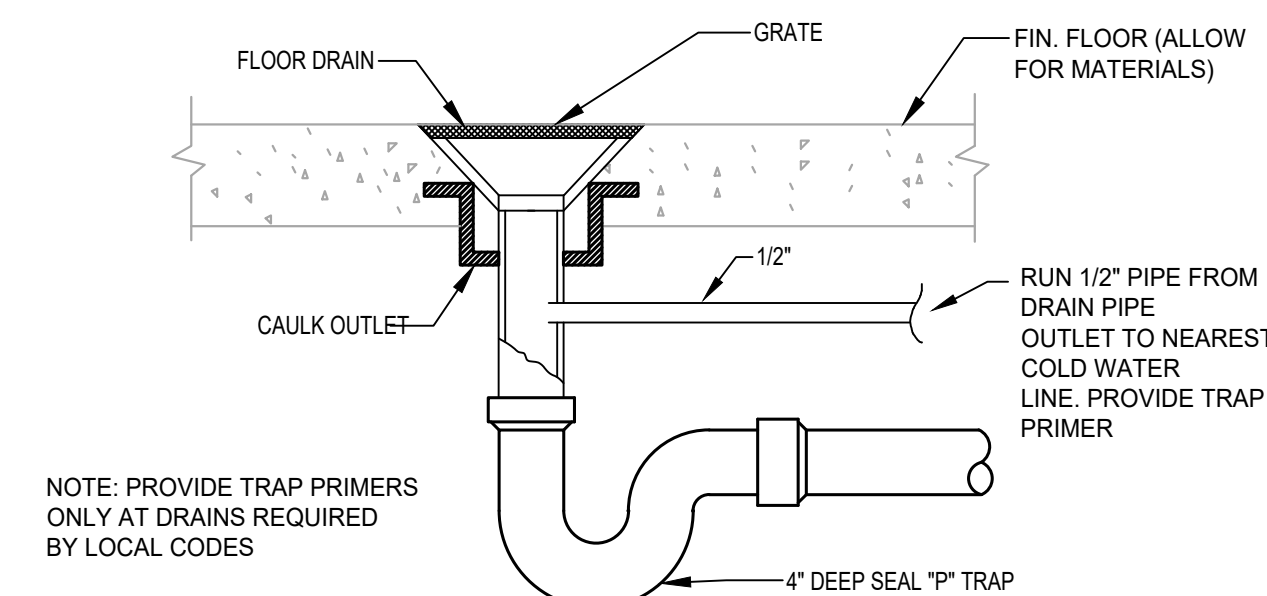
INCOMING WATER SERVICE CONNECTION DETAIL



MAIN AND TIE BACK DETAIL



MOP SINK DETAIL



TYPICAL FLOOR DRAIN DETAIL

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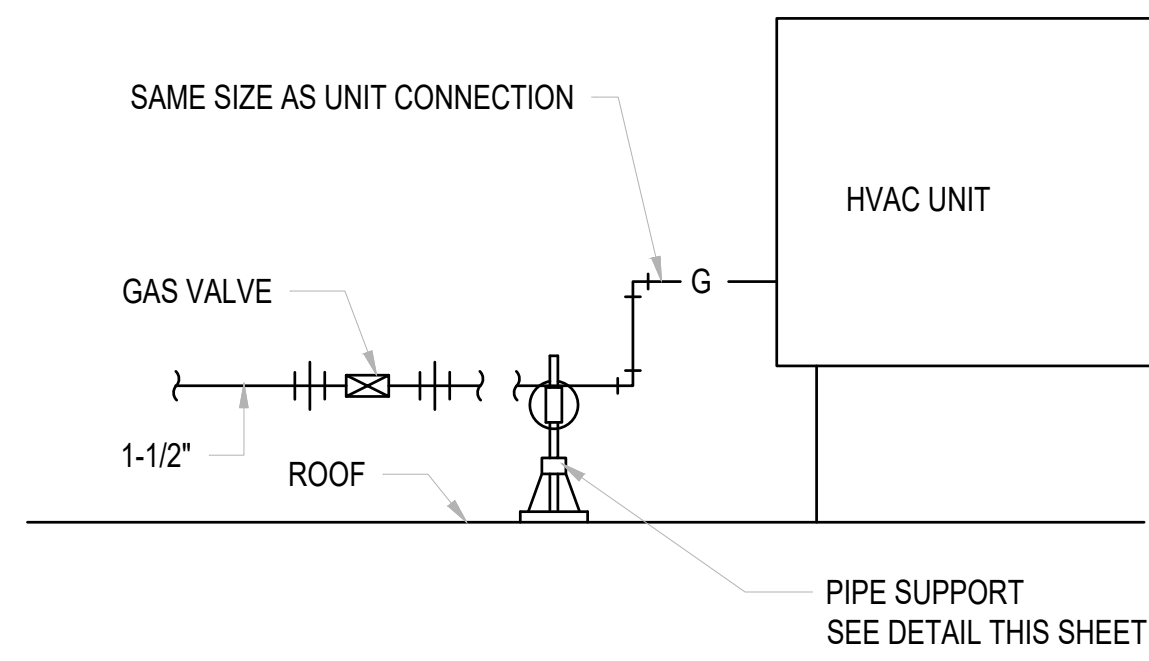
PLUMBING DETAILS 1 OF 2

ISNRV BUILDING EXPANSION
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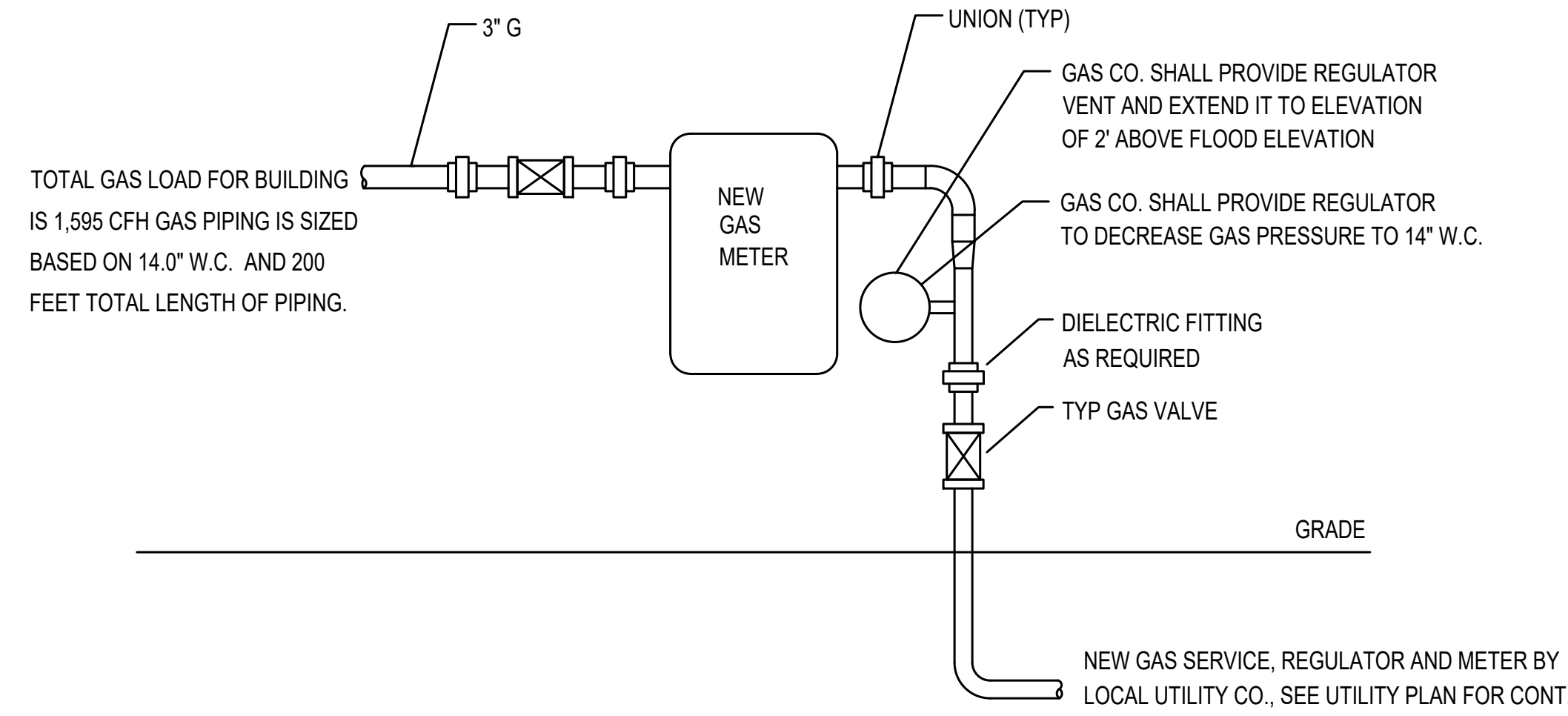


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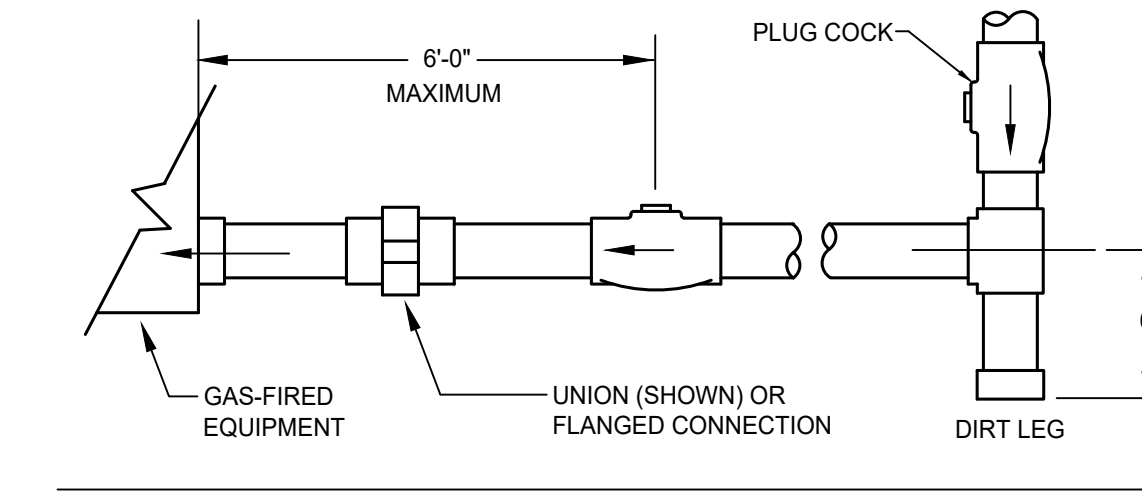
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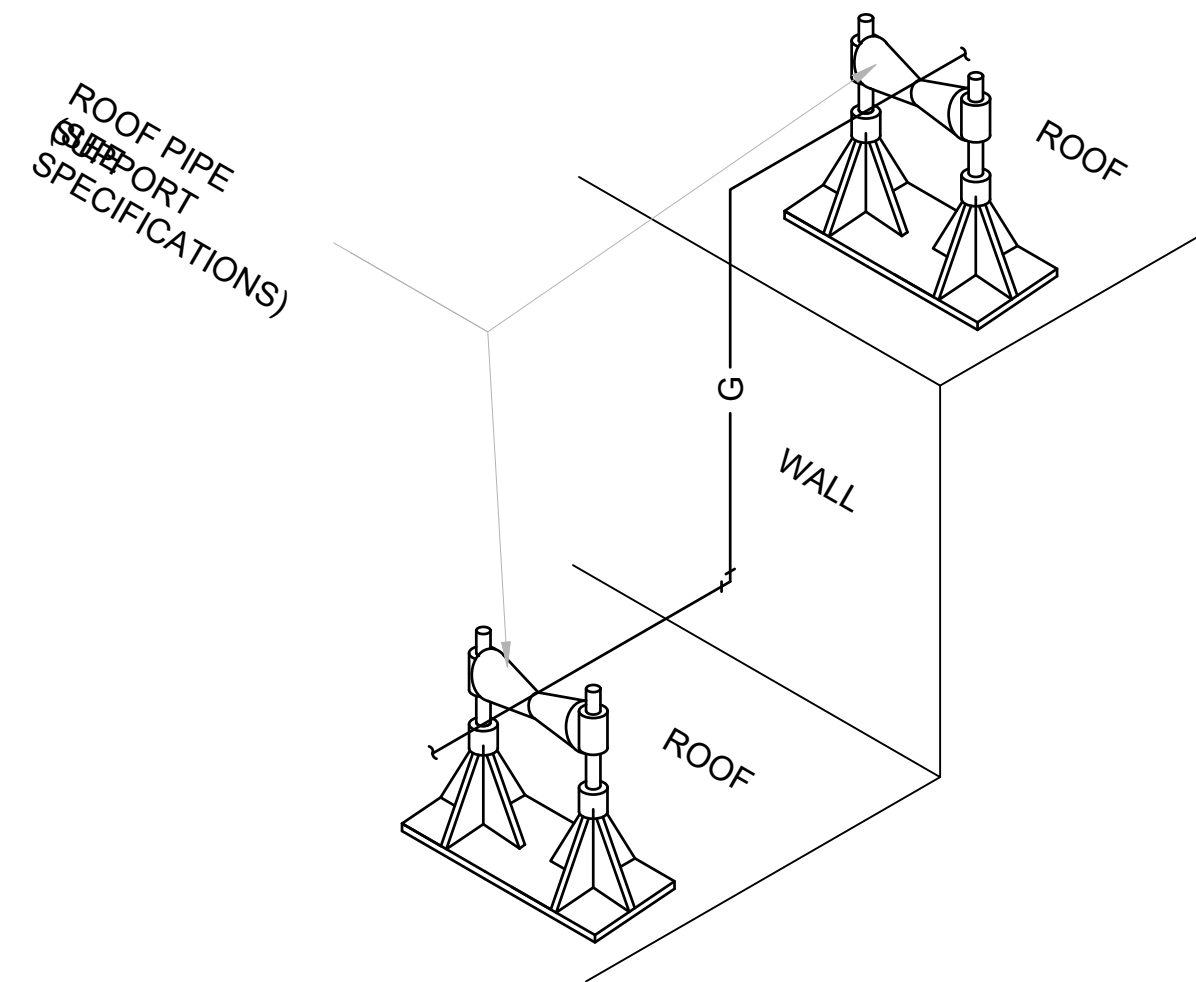
GAS CONNECTION TO RTU DETAIL



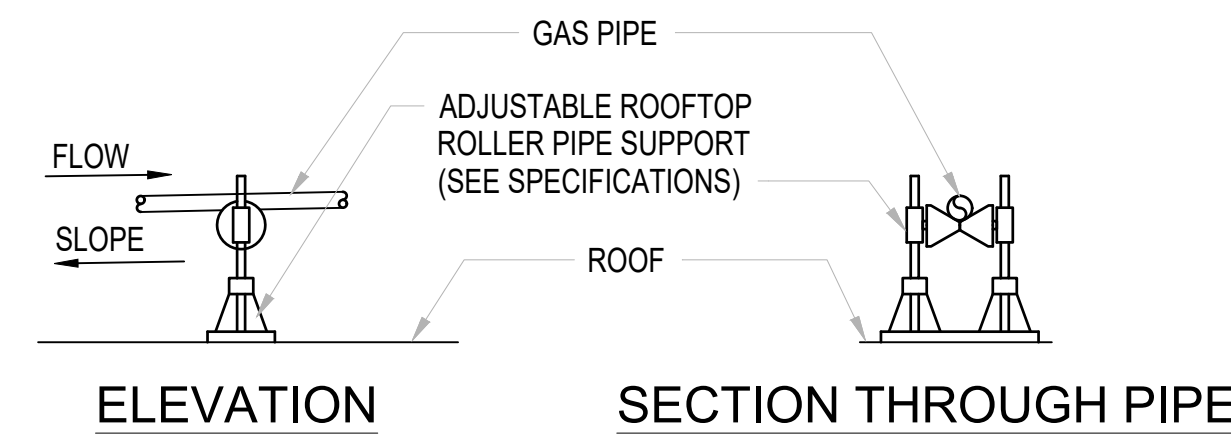
NEW GAS METER CONNECTION DETAIL



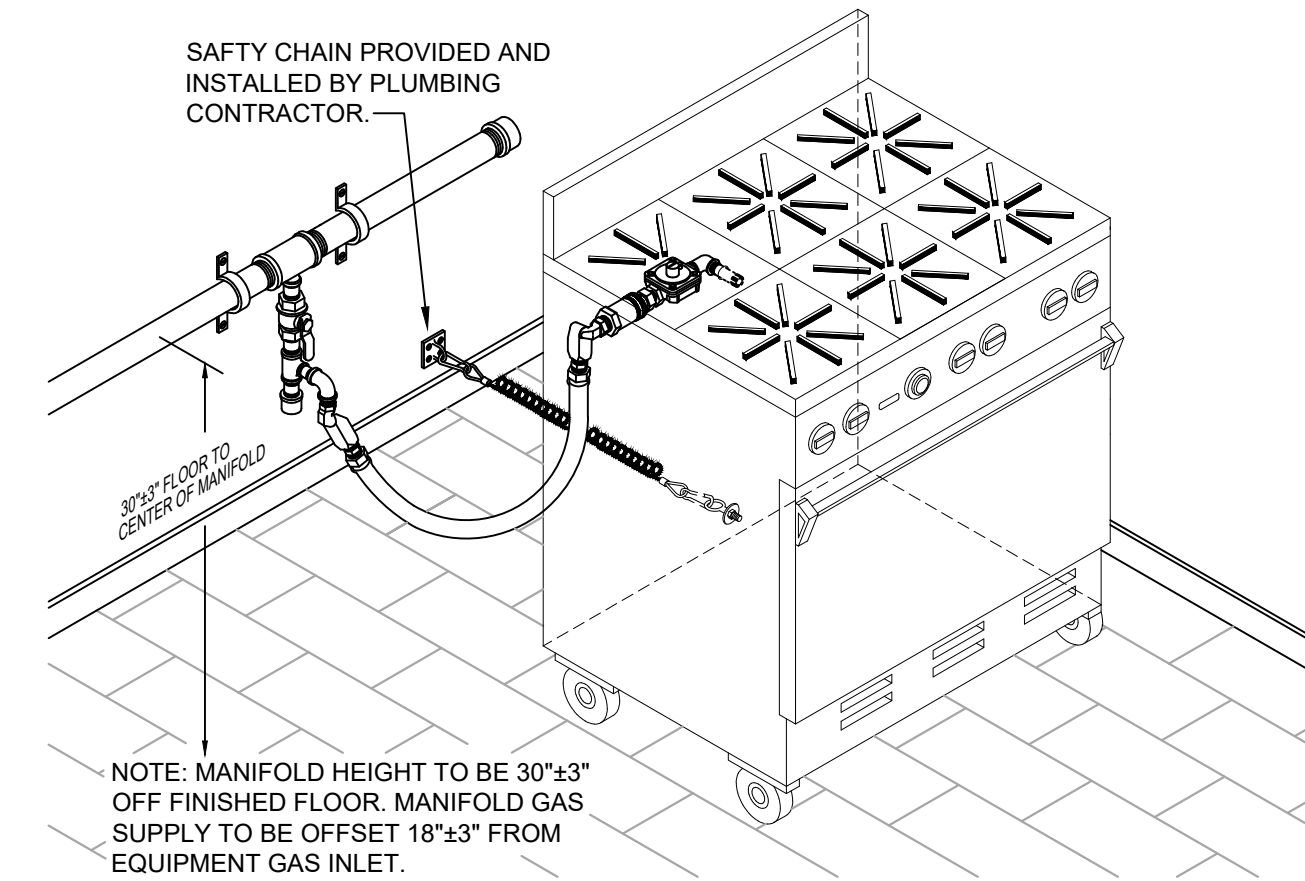
GAS EQUIPMENT CONNECTION DETAIL



ROOF ELEVATION CHANGE PIPING DETAIL



GAS PIPING ROOF SUPPORT DETAIL

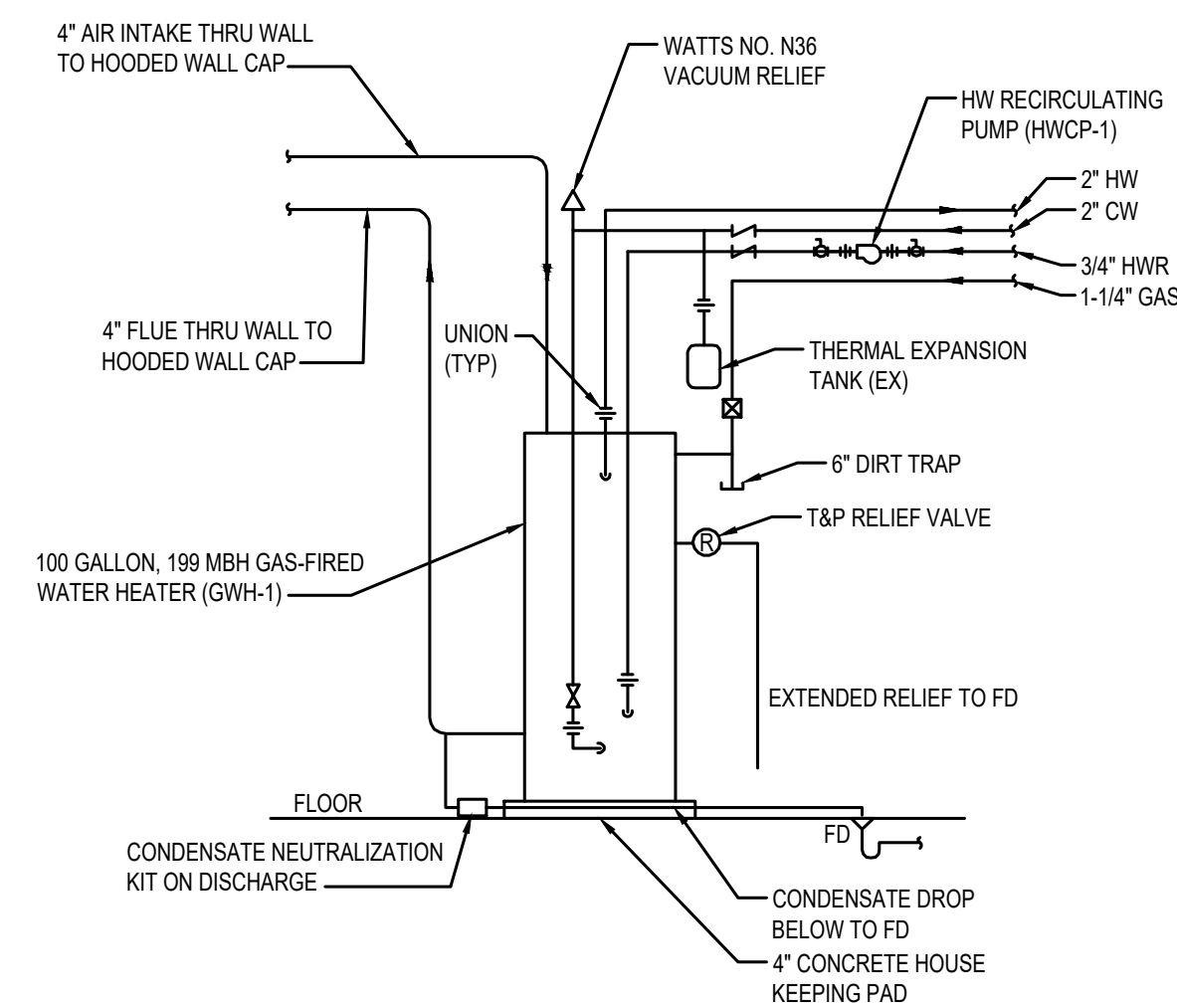


NOTE: MANIFOLD HEIGHT TO BE 30"±3" OFF FINISHED FLOOR. MANIFOLD GAS SUPPLY TO BE OFFSET 18"±3" FROM EQUIPMENT GAS INLET.

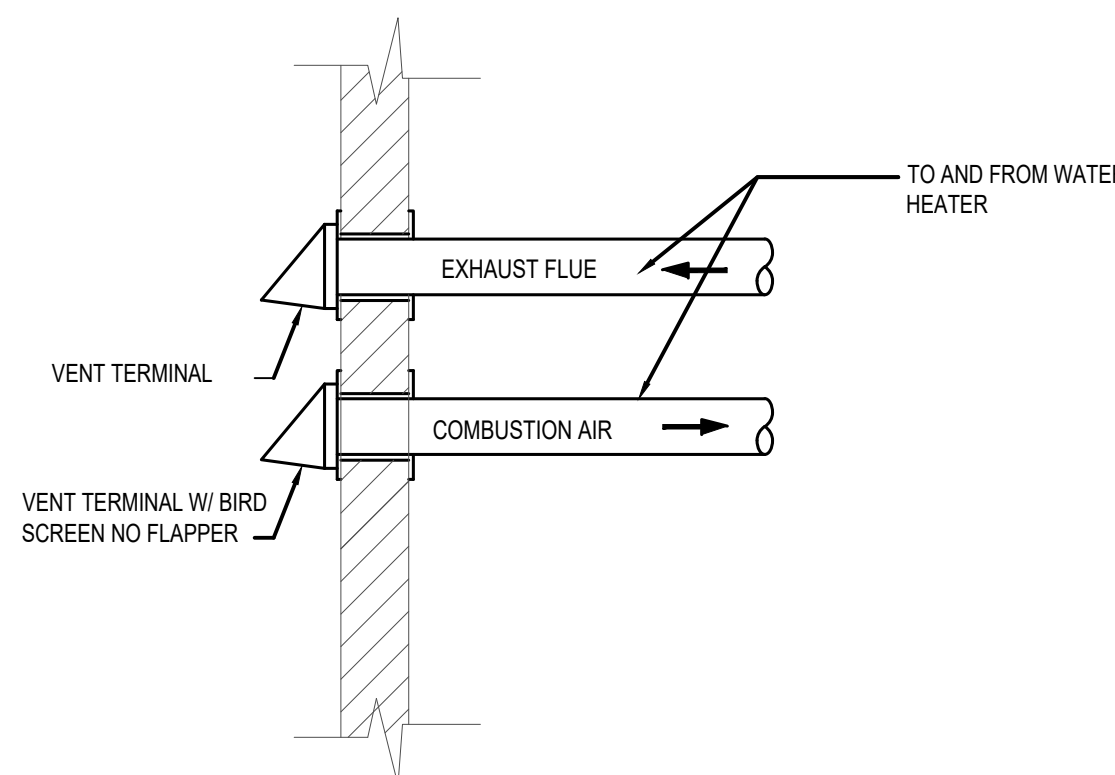
TYPICAL FOR RANGES AND OVENS.

THIS DETAIL IS FOR REFERENCE ONLY AND ITS ONLY PURPOSE IS TO REPRESENT A TYPICAL INSTALLATION. ALL GAS FIRED COOKING APPLIANCES SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS AND COMPLY WITH BUILDING AND LOCAL CODES.

GAS FIRED COOKING EQUIPMENT DETAIL



GAS-FIRED WATER HEATER DETAIL



NOTE:

1. INSTALL AND SEAL PIPE PORTAL PER MANUFACTURER DIRECTION.
2. USE STAINLESS STEEL CLAMP ON ALL PIPE.
3. INSTALL FLUE EXHAUST AND AIR INTAKE FOR WATER HEATER PER MANUFACTURER DIRECTION.
4. GENERAL CONTRACTOR SHALL COORDINATE SUPPORTING BRACKETS, HANGERS, ETC. WITH METAL BUILDING MFR. TO ENSURE PROPER SUPPORT (WITH NO IMPACT TO FRAME OR ROOF).

WATER HEATER VENTING DETAIL

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PLUMBING DETAILS 2 OF 2

ISNRV BUILDING EXPANSION
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PLUMBING SPECIFICATIONS:

1. GENERAL PROVISIONS:

- 1.A. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE, ALL FEDERAL, STATE, AND CITY CODES, ORDINANCES, AND STANDARDS.
- 1.B. THE PLANS ARE DIAGRAMMATIC IN NATURE AND BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT. VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO BE USED. INSTALLATION SHALL BE WITHIN THE LIMITATIONS IMPOSED BY THE ARCHITECTURAL, STRUCTURAL, HVAC, ELECTRICAL, AND PLUMBING REQUIREMENTS WITH ADEQUATE SPACE FOR MAINTENANCE.
- 1.C. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE AND CONTRACTOR SHALL MAKE GOOD, WITHOUT ADDITIONAL COST TO THE OWNER, ANY DEFECTS WHICH MAY APPEAR WITHIN THAT PERIOD. MANUFACTURER'S WARRANTIES EXTENDING BEYOND ONE YEAR SHALL BE PROCESSED AND TURNED OVER TO THE OWNER.
- 1.D. MAJOR ITEMS ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INCIDENTAL ITEMS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
- 1.E. A TRADE NAMES AND CATALOG NUMBERS SHALL BE INTERPRETED AS ESTABLISHING A GENERAL DESIGN AND STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. UNLESS STATED OTHERWISE, THE CONTRACTOR MAY USE ANY ARTICLE WHICH, IN HIS JUDGEMENT, AND WITH WRITTEN COMMENT FROM THE ARCHITECT/ENGINEER INDICATING NO OBJECTION, IS EQUAL OR SUPERIOR TO THAT SPECIFIED. DRAWINGS SHOWING CHANGES OR REVISIONS REQUIRED BY THE SUBSTITUTION FOR SPECIFIED ITEMS SHALL BE SUBMITTED WITH THE SHOP DRAWING DATA, AND THE COSTS OF ALL SUCH CHANGES SHALL BE BORNE BY THE CONTRACTOR.
- 1.F. SIMILAR ITEMS SHALL BE PROVIDED BY A SINGLE MANUFACTURER.
- 1.G. ALL REQUIRED WALL OR FLOOR OPENINGS SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND/OR OTHER RELEVANT TRADES.
- 1.H. ALL PIPING SHALL BE INSTALLED ABOVE THE CEILING UNLESS INDICATED OTHERWISE. ALL WATER PIPING AND P-TRAPS SHALL BE INSTALLED WITHIN THE BUILDINGS INSULATION ENVELOPE OR BE PROVIDED WITH A FREEZE PROTECTION SYSTEM.
- 1.I. PROVIDE SUPPORTS TO RIGIDLY ATTACH ALL EQUIPMENT, APPURTENANCES AND PIPE AS REQUIRED FOR SUPPORT. PRIOR TO INSTALLATION OF HANGERS AND INSERTS, THE CONTRACTOR SHALL COORDINATE LOCATIONS AND REQUIREMENTS TO MINIMIZE CONFLICTS WITH OTHER BUILDING SYSTEMS. INSTALLATION OF PIPE HANGERS AND SUPPORTS SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURERS STANDARDIZATION SOCIETY (MSS) STANDARDS SP-58, 69 AND 89.
- 1.J. THE CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL EQUIPMENT INDICATED TO BE FURNISHED BY OTHERS.

2. SUBMITTAL AND SHOP DRAWINGS:

- 2.A. SUBMIT MANUFACTURER'S CERTIFIED DATA RELATIVE TO ALL EQUIPMENT, PIPING, CONTROLS, ETC. REQUIRED FOR THE INSTALLATION OF THE PLUMBING AND FIRE PROTECTION SYSTEMS. SUBMIT FOR REVIEW ALL NECESSARY ENGINEERING, PRODUCT AND INSTALLATION DATA, SHOP DRAWINGS, SAMPLES ETC. FOR ALL EQUIPMENT, MATERIAL, AND SYSTEMS TO ASCERTAIN COMPLIANCE WITH THE TECHNICAL REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- 2.B. SUBMIT A DIGITAL PDF OF ALL NECESSARY DATA, CUTS, MANUFACTURER'S SELECTIONS, CATALOGS, BULLETINS, INSTALLATION INSTRUCTIONS, DRAWINGS, DIAGRAMS, CURVES, ETC. CLEARLY INDICATE ON THE SUBMITTED DATA, THE MANUFACTURER'S NAME, PRODUCT NUMBER(S), OPTIONS, EQUIPMENT CAPACITY, DIMENSIONAL DATA, WEIGHTS, AND OTHER APPLICABLE TECHNICAL DATA FOR THE PROJECT.
- 2.C. TRADE NAMES, MANUFACTURERS, AND CATALOGUE NUMBERS ARE MENTIONED HEREIN AND ON THE DRAWINGS SOLELY IN ORDER TO ESTABLISH A STANDARD FOR THE TYPE, GENERAL DESIGN, AND QUALITY OF PRODUCT REQUIRED. OTHER PRODUCTS SIMILAR IN DESIGN OF EQUIVALENT QUALITY CAPABLE OF FITTING WITHIN THE SPACES ALLOCATED AND COMPLYING WITH THE DRAWINGS AND SPECIFICATIONS WILL BE CONSIDERED AFTER THE CONTRACT IS LET

UNLESS "PRIOR APPROVAL" REQUIREMENTS ARE SET FORTH IN THESE DOCUMENTS.

- 2.D. REVIEW OF SUBMITTALS AND SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR FITTING THE EQUIPMENT IN THE SPACE ALLOTTED WITH SPACE FOR ALL CONNECTIONS AND SERVICING AND FOR THE COORDINATION OF THE WORK WITH WORK OF OTHER TRADES.
- 2.E. THE CONTRACTOR SHALL REVIEW ALL SUBMITTALS AND SHOP DRAWINGS AND INDICATE BY STAMP OR LETTER THAT HE HAS REVIEWED THEM, BEFORE FORWARDING THEM TO THE ARCHITECT AND/OR ENGINEER. SUBMITTALS AND DRAWINGS WILL BE RETURNED AFTER REVIEW INDICATING WHETHER EXCEPTIONS ARE TAKEN, THE SUBMITTAL RETURNED WITH CORRECTIONS, OR IS COMPLETELY REJECTED. RESUBMISSION OF REVISED SUBMITTALS AND SHOP DRAWINGS, IF REQUIRED, SHALL BE DONE BEFORE INSTALLATION AND CONSTRUCTION IS BEGUN.
- 2.F. CORRECTIONS OR COMMENTS MADE ON THE SUBMITTALS AND DRAWINGS DURING THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THIS REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, FABRICATION PROCESSES, TECHNIQUES OF CONSTRUCTION, COORDINATING THE WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING WORK IN A SAFE AND SATISFACTORY MANNER. REVIEW OF THE SUBMITTALS SHALL NOT PERMIT ANY DEVIATION FROM PLANS AND SPECIFICATIONS.
- 3. AS-BUILT DRAWINGS:
 - 3.A. MAINTAIN DAILY UPDATED DRAWINGS SHOWING DEVIATIONS FROM CONSTRUCTION DOCUMENTS. AT THE END OF THE PROJECT, PROFESSIONALLY PREPARE AS-BUILT DRAWINGS AND SUBMIT DRAWINGS TO THE ARCHITECT/ENGINEER.
- 4. OPERATION AND MAINTENANCE MANUALS:
 - 4.A. UPON COMPLETION OF THE PROJECT, SUBMIT ALL OPERATION AND MAINTENANCE MANUALS, WARRANTIES, SPARE PARTS LIST, AS-BUILT DRAWINGS, TEST AND BALANCE REPORTS, AND LETTER OF GUARANTEE ALL BOUND IN THREE RING BINDERS, CLEARLY SHOWING WHICH EQUIPMENT WAS SUPPLIED TO THE JOB.
- 5. PIPING SPECIALTIES:
 - 5.A. ACCESS DOORS: ACCESS DOORS SHALL BE PROVIDED FOR ALL CONCEALED VALVES, CONTROLS, AND ANY OTHER EQUIPMENT OR MATERIALS REQUIRING INSPECTION OR MAINTENANCE. ACCESS DOORS SHALL BE FURNISHED FOR FLOORS, WALLS AND CEILINGS, OF ADEQUATE SIZE SO THAT CONCEALED ITEMS WILL BE READILY ACCESSIBLE FOR SERVICING OR FOR REMOVAL AND REPLACEMENT IF NECESSARY.
 - 5.B. PIPE ESCUTCHEONS: INSTALL PIPE ESCUTCHEONS ON EACH PIPE PENETRATION THRU FLOORS, WALLS PARTITIONS, AND CEILINGS WHERE PENETRATION IS EXPOSED TO VIEW AND ON EXTERIOR OF BUILDING. SECURE ESCUTCHEON TO PIPE OR INSULATION SO ESCUTCHEON COVERS PENETRATION HOLE, AND IS FLUSH WITH ADJOINING SURFACE. PROVIDE SHEET STEEL ESCUTCHEONS, SOLID OR SPLIT HINGED. FOR AREAS WHERE WATER AND CONDENSATION CAN BE EXPECTED TO ACCUMULATE, PROVIDE CAST BRASS OR SHEET BRASS ESCUTCHEONS, SOLID OR SPLIT HINGED.
 - 5.C. PIPE SLEEVES: INSTALL PIPE SLEEVES WHERE PIPING PASSES THROUGH WALLS, FLOORS, CEILINGS, AND ROOFS. DO NOT INSTALL SLEEVES THROUGH STRUCTURAL MEMBERS OF WORK, EXCEPT AS DETAILED ON DRAWINGS, OR AS REVIEWED BY ARCHITECT/ENGINEER. SIZE SLEEVES SO THAT PIPING AND INSULATION (IF ANY) WILL HAVE FREE MOVEMENT IN SLEEVE, INCLUDING ALLOWANCE FOR THERMAL EXPANSION; BUT NOT LESS THAN 2 PIPE SIZES LARGER THAN PIPING RUN. INSTALL LENGTH OF SLEEVE EQUAL TO THICKNESS OF CONSTRUCTION PENETRATED, AND FINISH FLUSH TO SURFACE; EXCEPT FLOOR SLEEVES. EXTEND FLOOR SLEEVES 1/4 INCH ABOVE LEVEL FLOOR FINISH, AND 3/4 INCH ABOVE FLOOR FINISH SLOPED TO DRAIN. PROVIDE TEMPORARY SUPPORT OF SLEEVES DURING PLACEMENT OF CONCRETE AND OTHER WORK AROUND SLEEVES, AND PROVIDE TEMPORARY CLOSURE TO PREVENT CONCRETE AND OTHER MATERIALS FROM ENTERING SLEEVES.
 - 5.D. WATER HAMMER ARRESTORS (WHA): PROVIDE AT ALL FAST OPENING WATER VALVES INCLUDING WATER CLOSETS, URNIALS, AND CLOTHES WASHERS. SHALL BE ZURN MODEL 1260XL OR EQUIVALENT AND SHALL BE SIZED AND PLACED WITHIN THE SYSTEM AS RECOMMENDED BY THE MANUFACTURER.

6. INSULATION:

- 6.A. FLAME/SMOKE RATINGS: PROVIDE COMPOSITE PLUMBING INSULATION (INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES) WITH FLAME-SPREAD RATING OF 25 OR LESS, AND SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 METHOD. INSULATION SHALL BE LABELED BY THE MANUFACTURER. THE LABEL SHALL INDICATE THE INSULATING VALUE, FLAME SPREAD AND SMOKE-DEVELOPED RATING.
- 6.B. INSTALLATION: INSULATION SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS USING ONLY ADHESIVES, MASTICS AND PLUMBING FASTENERS APPROVED BY THE INSULATION MANUFACTURER. INSULATION SHALL NOT BE APPLIED UNTIL AFTER THE EQUIPMENT HAS BEEN TESTED WITH RESULTS ACCEPTABLE TO THE ARCHITECT/ENGINEER. INSULATION WITH A VAPOR BARRIER JACKET SHALL BE APPLIED WITH A CONTINUOUS, UNBROKEN VAPOR SEAL AND ALL JOINTS SHALL BE SEALED WITH A VAPOR BARRIER ADHESIVE UNLESS OTHERWISE INDICATED. STAPLES, STICK CLIPS AND HANGERS SHALL BE VAPOR SEALED WHERE THEY PUNCTURE VAPOR BARRIER JACKETS.
- 6.C. MATERIALS:
 - 6.C.A. GLASS FIBER PIPE INSULATION: HEAVY DENSITY PREFORMED PIPE INSULATION WITH OPERATING TEMPERATURE RANGE OF -60 DEGREES F TO 350 DEGREES F, THERMAL CONDUCTIVITY "K"=0.24 BTU-IN/HOUR-SF-DEG F AT 100 DEGREES F. FACTORY APPLIED JACKET (ASJ) SHALL CONSIST OF WHITE KRAFT PAPER BONDED TO ALUMINUM FOIL AND REINFORCED WITH GLASS FIBER YARN. EQUAL TO OWENS-CORNING ASJ.
 - 6.C.B. CELLULAR FOAM PIPE INSULATION: TUBULAR, FLEXIBLE, FIRE RESISTANT INSULATION WITH OPERATING TEMPERATURE RANGE OF -40 DEGREES F TO 220 DEGREES F, THERMAL CONDUCTIVITY "K"=0.27 BTU-IN/HOUR-SF-DEG F AT 75 DEGREES F. NO JACKET REQUIRED. EQUAL TO ARMSTRONG ARMAFLEX AP.
 - 6.C.C. A POLYETHYLENE PIPE INSULATION: INSULATION MATERIALS CORPORATION OF AMERICA (IMCOA), FLEXIBLE CLOSED CELL POLYETHYLENE TUBING, ASTM C534. "K"=0.24 AT 75 DEGREES F, SERVICE TEMPERATURE -110F TO 210F. NO JACKET REQUIRED.
- 6.D. OMIT INSULATION ON EXPOSED PLUMBING FIXTURE RUNOUTS FROM FACES OF WALL OR FLOOR TO FIXTURE; ON UNIONS, FLANGES, STRAINERS, FLEXIBLE CONNECTIONS, AND EXPANSION JOINTS.
- 6.E. COVER VALVES, FITTINGS AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN.
- 6.F. ALL DOMESTIC WATER PIPING ABOVE GROUND INCLUDING COLD, HOT, AND HOT WATER RE-CIRCULATING PIPING SHALL BE INSULATED WITH A MINIMUM 1/2" THICK INSULATION.
- 7. PLUMBING PIPING:
 - 7.A. DOMESTIC WATER PIPING SHALL BE COPPER TUBE AND FITTINGS IN ACCORDANCE WITH ASTM B88, TYPE L HARD DRAWN COPPER. JOINTS SHALL BE MADE WITH LEAD FREE SOLDER.
 - 7.B. STORM, SOIL, WASTE, AND VENT PIPING BELOW GRADE SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS. PVC SCHEDULE 40 PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785. INJECTION MOLDED PVC SCHEDULE 40 FITTINGS SHALL CONFORM TO ASTM D 2466. PIPE AND FITTINGS SHALL BE MANUFACTURED AS A SYSTEM AND BE THE PRODUCT OF ONE MANUFACTURER. PIPE AND FITTINGS SHALL CONFORM TO NSF INTERNATIONAL STANDARD 61 AND THE HEALTH-EFFECTS PORTION OF NSF STANDARD 14.
 - 7.C. STORM, SOIL, WASTE, AND VENT PIPING ABOVE GRADE SHALL BE HUBLESS CAST IRON TYPE DESIGNED FOR SAID APPLICATION. HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. ALL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE® AND LISTED BY NSF® INTERNATIONAL. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310, SHALL BE MANUFACTURED IN THE UNITED STATES, AND BE CERTIFIED BY NSF® INTERNATIONAL.
 - 7.D. CONDENSATE DRAINS SHALL BE TYPE L HARD DRAWN COPPER. JOINTS SHALL BE MADE WITH LEAD FREE SOLDER.
 - 7.E. SLOPE ALL DRAIN LINES AT 1/4 INCH PER FOOT FOR

SIZES LESS THAN 4 INCHES. SLOPE AT 1/8 INCH PER FOOT FOR SIZES 4 INCH AND LARGER.

- 7.F. SOIL, WASTE, AND VENT PIPING BELOW GRADE SHALL BE A MINIMUM OF 2 INCH AND SHALL BE PROVIDED WITH METALLIC TRACING/DETECTION WIRE.
- 7.G. VENTS SHALL EXTEND A MINIMUM OF 12 INCHES ABOVE THE ROOF. ROOF FLASHING SHALL BE PROVIDED AND COORDINATED WITH THE GENERAL AND ROOFING CONTRACTORS.
- 7.H. TRENCHING AS REQUIRED FOR UNDERGROUND PIPING SHALL BE GRADED TO UNIFORM PITCH AND SHALL BE NO WIDER THAN NECESSARY FOR PIPING INSTALLATION. CLEAN BACKFILL SHALL BE USED AND THOROUGHLY TAMPED IN LAYERS NOT EXCEEDING 6 INCHES TO A MINIMUM DEPTH OF 1 FOOT ABOVE PIPE. COMPACTED BACKFILL SHALL BE USED FOR THE ENTIRE DEPTH OF EXCAVATION UNDER SLAB ON GRADE CONSTRUCTION.
- 7.I. NATURAL GAS SYSTEMS: PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE, ASTM A120/A53-CW OR ASTM/A53 GRADE B (WELDED OR SEAMLESS); WROUGHT STEEL BUTTWELDING FITTINGS. GAS COCKS 2 INCHES AND SMALLER SHALL BE RATED FOR 150 PSI, NON SHOCK WOG, BRONZE STRAIGHTWAY COCK, FLAT OR SQUARE HEAD, WITH THREADED ENDS. ALL GAS PIPING CONNECTIONS SHALL BE PROVIDED WITH A 6 INCH DIRT TRAP, UNION, AND GAS COCK SHUT OFF VALVE. ALL JOINTS SHALL BE SEALED WITH CHEMICALLY RESISTANT SEALER APPLIED TO MALE THREADS OF PIPE CONNECTION. GAS PIPING SHALL BE INSTALLED WITH A 1/64 INCH PER FOOT DOWNWARD SLOPE IN THE DIRECTION OF FLOW. A ROLLER BEARING TYPE PIPE SUPPORT SHALL BE USED TO SUPPORT ALL GAS PIPING LOCATED ON THE ROOF. SUPPORTS SHALL HAVE A POLYCARBONATE BASE, WITH PIPE RESTING ON A SELF LUBRICATING POLYCARBONATE RESIN AXLE AND ROLLER AND BE SIZED FOR THE PIPE BEING SUPPORTED. MAXIMUM SPACING SHALL NOT EXCEED 10FT.
- 8. PLUMBING FIXTURES, PUMPS, AND WATER HEATERS SHALL BE PROVIDED AND INSTALLED AS PER THE PLUMBING FIXTURE SCHEDULE. ALL EXPOSED FIXTURE SUPPLIES AND WASTE LINES SHALL BE CHROME PLATED. NO EXPOSED COPPER, PVC, AND/OR CAST IRON IS ALLOWED.
- 9. CLEANOUTS SHALL BE THE SAME SIZE AS LINE SERVED, BUT NOT LARGER THAN 4 INCHES, AND SHALL BE PROVIDED AT THE BASE OF EACH SOIL AND WASTE STACK, AT ALL POINTS WHERE DIRECTION CHANGE IS MORE THAN 45 DEGREES, AT MINIMUM INTERVALS OF 50 FEET FOR 4 INCH AND SMALLER PIPING, AT MINIMUM INTERVALS OF 100 FEET FOR PIPING LARGER THAN 4 INCHES, AS REQUIRED BY CODE AND AS INDICATED ON THE DRAWINGS. COVERS SHALL BE SET FLUSH WITH FLOOR OR WALL.
- 10. PLUMBING VALVES
 - 10.A. PROVIDE SHUT-OFF VALVE AND UNION OR EQUIVALENT AT EACH HOT AND COLD WATER EQUIPMENT CONNECTION. PROVIDE SHUTOFF VALVE ON EACH BRANCH OR RISER THAT SERVES TWO OR MORE PLUMBING FIXTURES.
 - 10.B. GATE VALVES 2-1/2 INCHES AND SMALLER: ALL BRONZE, RISING STEM, SOLID WEDGE DISC. STOCKHAM B-100 OR B-108.
 - 10.C. GLOBE VALVES: ALL BRONZE, RENEWABLE COMPOSITION DISC. STOCKHAM B-16 OR B-14-T.
 - 10.D. CHECK VALVES IN HORIZONTAL PIPES: 2 INCHES AND SMALLER: ALL BRONZE, REGRINDING BRONZE DISC, HORIZONTAL SWING, Y-PATTERN. STOCKHAM B-3190R B-309.
 - 10.E. CHECK VALVES IN VERTICAL PIPES AND PUMP DISCHARGE: SILENT CHECK VALVE WITH SEMI-STEEL BODY, BRONZE TRIM AND STAINLESS STEEL SPRING. METRAFLEX 700 SERIES.
 - 10.F. BALL VALVES MAY BE USED IN LIEU OF GATE VALVES 2 INCHES AND SMALLER. BALL VALVES SHALL HAVE BRONZE BODY, BRONZE BALL AND TFE SEATS AND SEALS. STOCKHAM S-216BRRT OR S-216BRRS.
- 11. CLEANING AND TESTING
 - 11.A. ALL WATER PIPING, VALVES, ETC. SHALL BE THOROUGHLY FLUSHED OF FOREIGN MATTER AND TESTED FOR LEAKS IN ACCORDANCE WITH THE PLUMBING AND BUILDING CODE, LATEST EDITION. ANY LEAKAGE SHALL BE REPAIRED. DISINFECT DOMESTIC WATER PIPING INCLUDING WATER SERVICE PIPING IN ACCORDANCE WITH AWWA C601.
 - 11.B. ALL DRAIN, WASTE AND VENT PIPING SHALL BE TESTED FOR LEAKS IN ACCORDANCE WITH THE PLUMBING AND BUILDING CODE CODE, LATEST EDITION. NO VISIBLE DROP IN WATER LEVEL WILL BE ACCEPTABLE.

END OF SPECIFICATIONS.

DATE:	10/28/2024
COMM No:	23-30
DRAWN BY:	JNB
CHECKED BY:	JNB
STATE PROJECT No:	

PLUMBING SPECIFICATIONS

ISNRV BUILDING EXPANSION

Blacksburg, VA



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REVISIONS	DESCRIPTION	DATE
No.		