

PLUMBING ABBREVIATIONS

A/E	ARCHITECT/ENGINEER	IWR	INDUSTRIAL WATER RETURN	WL	WATER LINE
AD	AREA DRAIN/ACCESS DOOR	IWS	INDUSTRIAL WATER SUPPLY	WM	WATER METER
AFF	ABOVE FINISH FLOOR			WPD	WATER PRESSURE DROP
AFG	ABOVE FINISH GRADE	KW	KILOWATT	WS	WASTE STACK
AG	AIR GAP	KWH	KILOWATT-HOUR	WSFU	WATER SUPPLY FIXTURE UNITS
AP	ACCESS PANEL			YCO	YARD CLEANOUT
AS	AUTOMATIC SPRINKLER	L/S	LITER PER SECOND	YH	YARD HYDRANT
ASD	ADJUSTABLE SPEED DRIVES	LA	LABORATORY AIR		
ASD	AUTOMATIC SPRINKLER DRAIN	LAV	LAVATORY		
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AIR CONDITIONING ENGINEERS	LBS/HR	POUNDS PER HOUR		
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	LCW	LABORATORY COLD WATER		
ASPE	AMERICAN SOCIETY OF PLUMBING ENGINEERS	LHW	LABORATORY HOT WATER		
ASR	AUTOMATIC SPRINKLER RISER	LNG	LIQUID NATURAL GAS		
AV	ACID VENT	LOX	LIQUID OXYGEN		
AW	ACID WASTE	LV	LABORATORY VACUUM		
		LW	LOW WATER		
		M	METER		
BFP	REDUCED PRESSURE BACKFLOW PREVENTER	MA	MEDICAL AIR		
BHP	BREAK HORSEPOWER	MAV	MANUAL AIR VENT		
BSP	BLACK STEEL PIPE	MBH	1000 BTUH		
BT	BATHTUB	MED	MEDICAL		
BTU	BRITISH THERMAL UNIT	MER	MECHANICAL EQUIPMENT ROOM		
BTUH	BRITISH THERMAL UNIT PER HOUR	MH	MANHOLE		
		MOU	MEMORANDUM OF UNDERSTANDING		
C	CELSIUS	MSB	MOP SERVICE BASIN		
CA	COMPRESSED AIR	MV	MEDICAL VACUUM		
CGA	COMPRESSED GAS ASSOCIATION				
CFM	CUBIC FEET PER MINUTE	N ₂	NITROGEN		
CI	CAST IRON	N ₂ O	NITROUS OXIDE		
CO	CLEANOUT	NC	NORMALLY CLOSED		
CU	COPPER	NG	NATURAL GAS		
CS	CLINICAL SINK	NIC	NOT IN CONTRACT		
CV	CONTROL VALVE	NO	NORMALLY OPEN		
		NOM	NOMINAL		
DCW	DOMESTIC COLD WATER	NPW	NON POTABLE WATER		
DFU	DRAINAGE FIXTURE UNITS	NTS	NOT TO SCALE		
DHW	DOMESTIC HOT WATER				
DHWR	DOMESTIC HOT WATER RETURN	O ₂	OXYGEN		
DHWS	DOMESTIC HOT WATER SUPPLY	OC	ON CENTER		
DI	DEIONIZED WATER	OD	OUTSIDE DIAMETER		
DN	DOWN	OFD	OVERFLOW DRAIN		
DOE	DEPARTMENT OF ENERGY	OR	OPERATING ROOM		
DS	DOWNSPOUT	OVFL	OVERFLOW		
DW	DISHWASHER				
DWG	DRAWING	PA	PASCAL		
DWH	DOMESTIC WATER HEATER	PD	PRESSURE DROP OR DIFFERENCE		
DWR	DRINKING WATER RETURN	PDI	PLUMBING AND DRAINAGE INSTITUTE		
DWS	DRINKING WATER SUPPLY	PG	PRESSURE GAGE		
DWV	DRAIN WASTE VENT	PP	PLUMBING PUMP		
		PPM	PARTS PER MILLION		
EL	ELEVATION	PRS	PRESSURE REDUCING STATION		
EMCS	ENERGY MONITORING AND CONTROL SYSTEM	PRV	PRESSURE REDUCING VALVE		
EPA	ENVIRONMENTAL PROTECTION AGENCY	PSI	POUNDS PER SQUARE INCH		
EPACT	ENERGY POLICY ACT	PSIA	POUNDS PER SQUARE INCH ATMOSPHERE		
ESC	ESCUTCHEON	PSIG	POUNDS PER SQUARE INCH GAGE		
ESH	EMERGENCY SHOWER	PTRV	PRESSURE TEMPERATURE RELIEF VALVE		
ET	EXPANSION TANK	PW	POTABLE WATER		
EW	ELECTRIC WATER HEATER				
EWS	EYE WASH STATION	RD	ROOF DRAIN		
EWS/SH	EYE WASH/DRENCH SHOWER	RDL	ROOF DRAIN LEADER		
EX	EXISTING	RL	ROOF LEADER		
		RP	RECIRCULATION PUMP		
F	FAHRENHEIT	RO	REVERSE OSMOSIS WATER		
FCO	FLOOR CLEANOUT	RWL	RAIN WATER LEADER		
FCW	FILTERED COLD WATER				
FD	FLOOR DRAIN	SAN	SANITARY SEWER		
FDC	FIRE DEPARTMENT (HOSE) CONNECTION	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION		
FM	FLOW METER	SCFM	STANDARD CUBIC FOOT/MINUTE		
FOP	FUEL OIL PUMP	SCW	SOFTENED COLD WATER		
FOR	FUEL OIL RETURN	SDMH	STORM DRAIN MANHOLE		
FOS	FUEL OIL SUPPLY	SMH	SANITARY MANHOLE		
FOV	FUEL OIL VENT	SP	SUMP PUMP		
FS	FLOOR SINK	SPR	SPRINKLER LINE		
FS	FLOW SWITCH	SQFT/SF	SQUARE FEET		
FU	FIXTURE UNITS	SS	STAINLESS STEEL		
		ST	STORAGE TANK		
GAL	GALLON	SW	STORM WATER		
GCO	GRADE CLEANOUTS				
GPD	GALLONS PER DAY	TCV	TEMPERATURE CONTROL VALVE		
GPH	GALLONS PER HOUR	TD	TEMPERATURE DIFFERENCE		
GPM	GALLONS PER MINUTE	TD	TRENCH DRAIN		
GPR	GAS PRESSURE REGULATOR	TDH	TOTAL DYNAMIC HEAD TEMP TEMPERATURE		
GRS	GAS REGULATOR STATION	TMV	THERMOSTATIC MIXING VALVE		
GT	GREASE TRAP	TP	TRAP PRIMER		
GVTR	GAS VENT THROUGH ROOF	TSTAT	THERMOSTAT		
GWH	GAS FIRED WATER HEATER	TWR	TEMPERED WATER RETURN		
		TWS	TEMPERED WATER SUPPLY		
H&CW	HOT AND COLD WATER	TYP	TYPICAL		
HB	HOSE BIBB	UEF	UNIFORM ENERGY FACTOR		
HD	HUB DRAIN				
HEX	HEAT EXCHANGER	V	VENT		
HP	HORSEPOWER	VAC	VACUUM		
HS	HAND SINK	VB	VACUUM BREAKER		
HST	HOT WATER STORAGE TANK (DOMESTIC)	VCO	VACUUM CLEANER OUTLET		
HWB	HOT WATER BOILER	VP	VACUUM PUMP		
HWCP	HOT WATER CIRCULATING PUMP	VS	VENT STACK		
HWP	HOT WATER PUMP	VSD	VARIABLE SPEED DRIVE		
HYD	HYDRANT	VTR	VENT THROUGH ROOF		
		W	WASTE		
ID	INSIDE DIAMETER	WC	WATER CLOSET		
IE	INVERT ELEVATION	WCO	WALL CLEANOUT		
ICW	INDUSTRIAL COLD WATER	WG	WATER GAGE		
IHW	INDUSTRIAL HOT WATER	WH	WALL HYDRANT		
INV	INVERT	WH	WATER HEATER		
IPC	INTERNATIONAL PLUMBING CODE	WHA	WATER HAMMER ARRESTER		
IRW	IRRIGATION WATER				
IW	INDIRECT WASTE				
IWH	INSTANTANEOUS WATER HEATER				

PLUMBING PIPING SYMBOLS

----	DOMESTIC COLD WATER, COLD WATER
----	DOMESTIC HOT WATER, HOT WATER
----	DOMESTIC HOT WATER RETURN
-- MA ---- MA -- MA --	MEDICAL AIR
-- MV ---- MV ---- MV ----	MEDICAL VACUUM
-- LA ---- LA ---- LA ----	LABORATORY AIR
-- LV ---- LV ---- LV ----	LABORATORY VACUUM
-- OA ---- OA ---- OA ----	ORAL EVACUATION
-- IA ---- IA ---- IA ----	INDUSTRIAL AIR
--- D --- D --- D ---	DRAIN
-----	VENT (SANITARY)
--- SS --- SS --- SS ---	SOIL, WASTE, OR SANITARY SEWER
--- SAN --- SAN --- SAN ---	SANITARY SEWER, BELOW GRADE
--- SD --- SD --- SD ---	STORM WATER
--- SD --- SD --- SD ---	STORM WATER, BELOW GRADE
--- SCW --- SCW --- SCW ---	SOFTEN COLD WATER
--- FCW --- FCW --- FCW ---	FILTERED COLD WATER
--- DWS --- DWS --- DWS ---	DRINKING WATER SUPPLY
--- DWR --- DWR --- DWR ---	DRINKING WATER RETURN
--- TWS --- TWS --- TWS ---	TEMPERED WATER SUPPLY
--- TWR --- TWR --- TWR ---	TEMPERED WATER RETURN
--- N ₂ O --- N ₂ O --- N ₂ O ---	NITROUS OXIDE
--- O --- O --- O ---	OXYGEN
--- N ₂ --- N ₂ --- N ₂ ---	NITROGEN
--- NG --- NG --- NG ---	NATURAL GAS
--- NG --- NG --- NG ---	NATURAL GAS, BELOW GRADE
--- FOD --- FOD --- FOD ---	FUEL OIL DISCHARGE
--- FOS --- FOS --- FOS ---	FUEL OIL SUPPLY
--- FOV --- FOV --- FOV ---	FUEL OIL VENT
--- FOR --- FOR --- FOR ---	FUEL OIL RETURN

GENERAL PLUMBING SYMBOLS

	DIRECTION OF PIPE PITCH (DOWN)
	DIRECTION OF FLOW
	ANCHOR
	REDUCER OR INCREASER
	ECCENTRIC REDUCER
	TOP CONNECTION, 45° OR 90°
	BOTTOM CONNECTION, 45° OR 90°
	SIDE CONNECTION
	CAPPED OUTLET
	RISE OR DROP IN PIPE
	UNION
	PIPE UP
	PIPE DOWN
	POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
	LIMIT OF DEMOLITION
	INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES
	FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES
	STRAINER
	THERMOMETER
	PRESSURE GAGE
	FLOW ELEMENT
	WALL CLEAN OUT
	CLEAN OUT
	HOSE BIB

PLUMBING VALVE SYMBOLS

	GATE VALVE
	GLOBE VALVE
	GATE VALVE WITH 3/4 " HOSE ADAPTER
	CHECK VALVE
	ANGLE GLOBE VALVE
	BUTTERFLY VALVE
	BALL VALVE
	MODULATING CONTROL VALVE
	TWO POSITION CONTROL VALVE
	THREE-WAY MODULATING CONTROL VALVE
	THREE-WAY TWO POSITION CONTROL VALVE
	PRESSURE REGULATING VALVE
	AUTOMATIC FLOW CONTROL VALVE
	PRESSURE RELIEF VALVE
	MANUAL AIR VENT
	TEST PLUG (PRESSURE/TEMPERATURE)
	AUTOMATIC AIR VENT
	THERMOSTATIC MIXING VALVE

PLUMBING GENERAL NOTES

- ALL PIPING IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN A FURRED CHASE OR ABOVE THE HARD SUSPENDED CEILING.
- ACCESS PANELS ARE REQUIRED FOR ALL VALVES, TRAPS, CLEANOUTS, CONTROLS, ETC. ACCESS PANELS SHALL BE FURNISHED AND INSTALLED UNDER THE ARCHITECTURAL SPECIFICATIONS.
- PROVIDE ACOUSTICAL SEALANT PER SPECIFICATIONS SECTION 07 92 00 AT ALL PIPE PENETRATIONS THROUGH SOUND RATED PARTITIONS.
- SUBMIT COMPLETE CONSOLIDATED AND COORDINATED SHOP DRAWINGS FOR ALL NEW SYSTEMS, AND FOR EXISTING SYSTEMS THAT ARE IN THE SAME AREAS. DO NOT INSTALL EQUIPMENT FOUNDATIONS, EQUIPMENT, OR PIPING UNTIL COORDINATION/SHOP DRAWINGS HAVE BEEN APPROVED.

CONSULTANTS:



ARCHITECT/ENGINEERS:



STAMP:



Drawing Title
PLUMBING ABBREVIATIONS AND LEGENDS

Approved: Project Director

Phase
100% CONSTRUCTION DOCUMENTS

Project Title
OUTPATIENT MENTAL HEALTH / EDUCATION ADDITION

Location
3687 VETERANS DRIVE , FORT HARRISON, MT 59636

Issue Date
08/05/2020

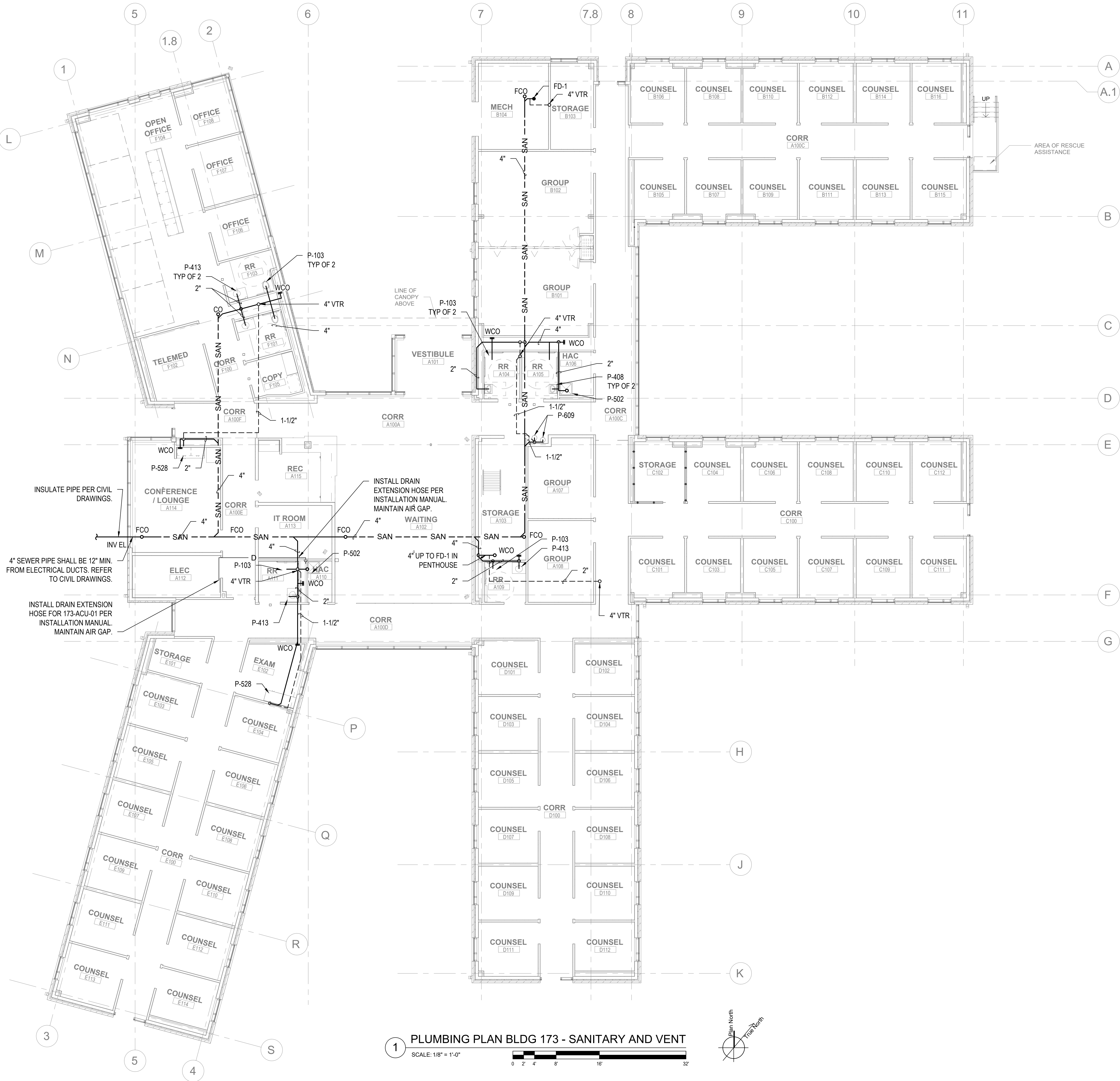
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Drawn
DN

Project Number
436-114
Building Number
173 / 154

Drawing Number
P-001

NOTES:
1. REFER TO P-501 FOR PLUMBING FIXTURE SCHEDULE.



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Drawing Title
PLUMBING PLAN - SANITARY AND VENT

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Phase
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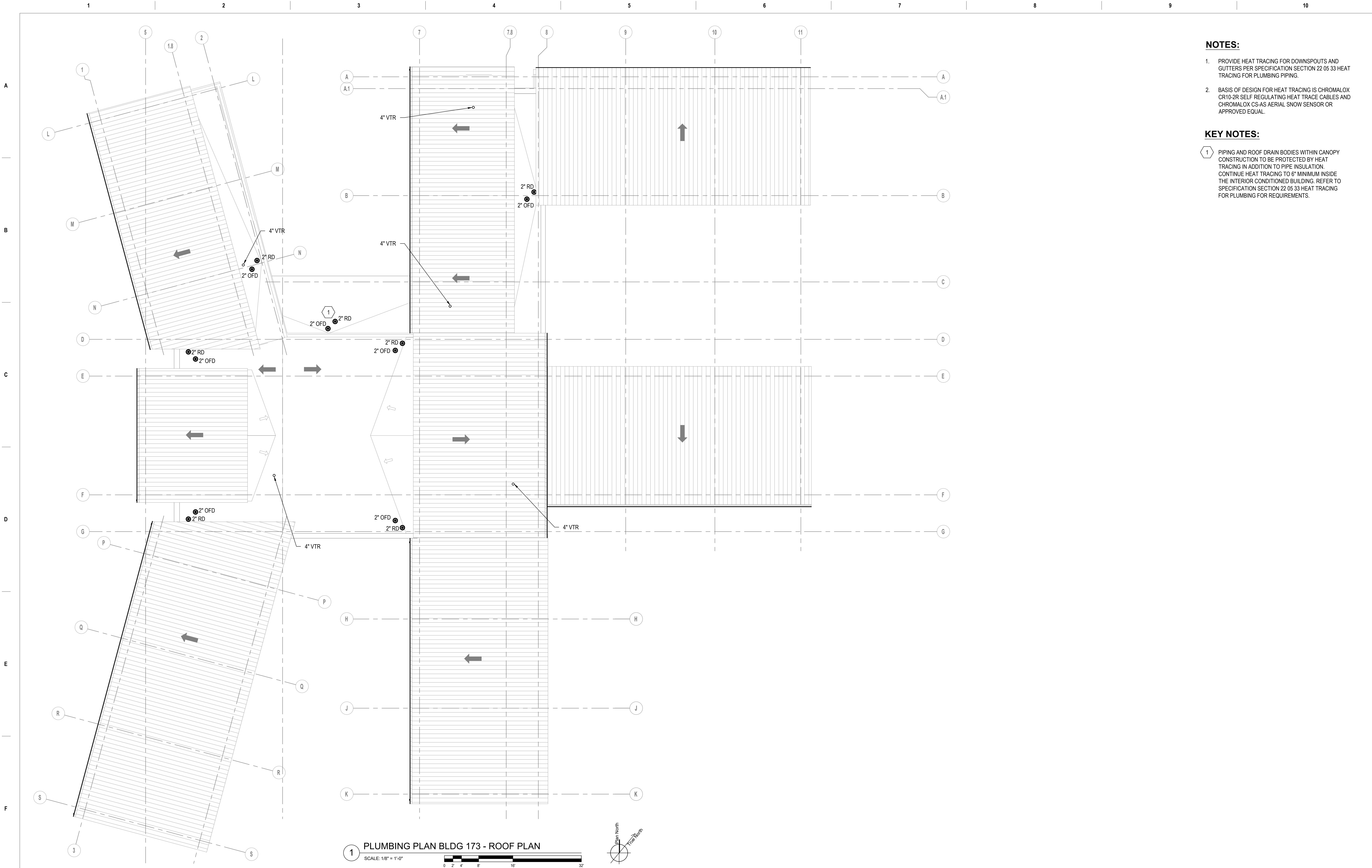
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Building Number
173

Drawing Number
PP102-P1



- NOTES:**
1. PROVIDE HEAT TRACING FOR DOWNSPOUTS AND GUTTERS PER SPECIFICATION SECTION 22 05 33 HEAT TRACING FOR PLUMBING PIPING.
 2. BASIS OF DESIGN FOR HEAT TRACING IS CHROMALOX CR10-2R SELF REGULATING HEAT TRACE CABLES AND CHROMALOX CS-AS AERIAL SNOW SENSOR OR APPROVED EQUAL.

- KEY NOTES:**
- 1 PIPING AND ROOF DRAIN BODIES WITHIN CANOPY CONSTRUCTION TO BE PROTECTED BY HEAT TRACING IN ADDITION TO PIPE INSULATION. CONTINUE HEAT TRACING TO 6" MINIMUM INSIDE THE INTERIOR CONDITIONED BUILDING. REFER TO SPECIFICATION SECTION 22 05 33 HEAT TRACING FOR PLUMBING FOR REQUIREMENTS.

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A

B

C

D

E

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A

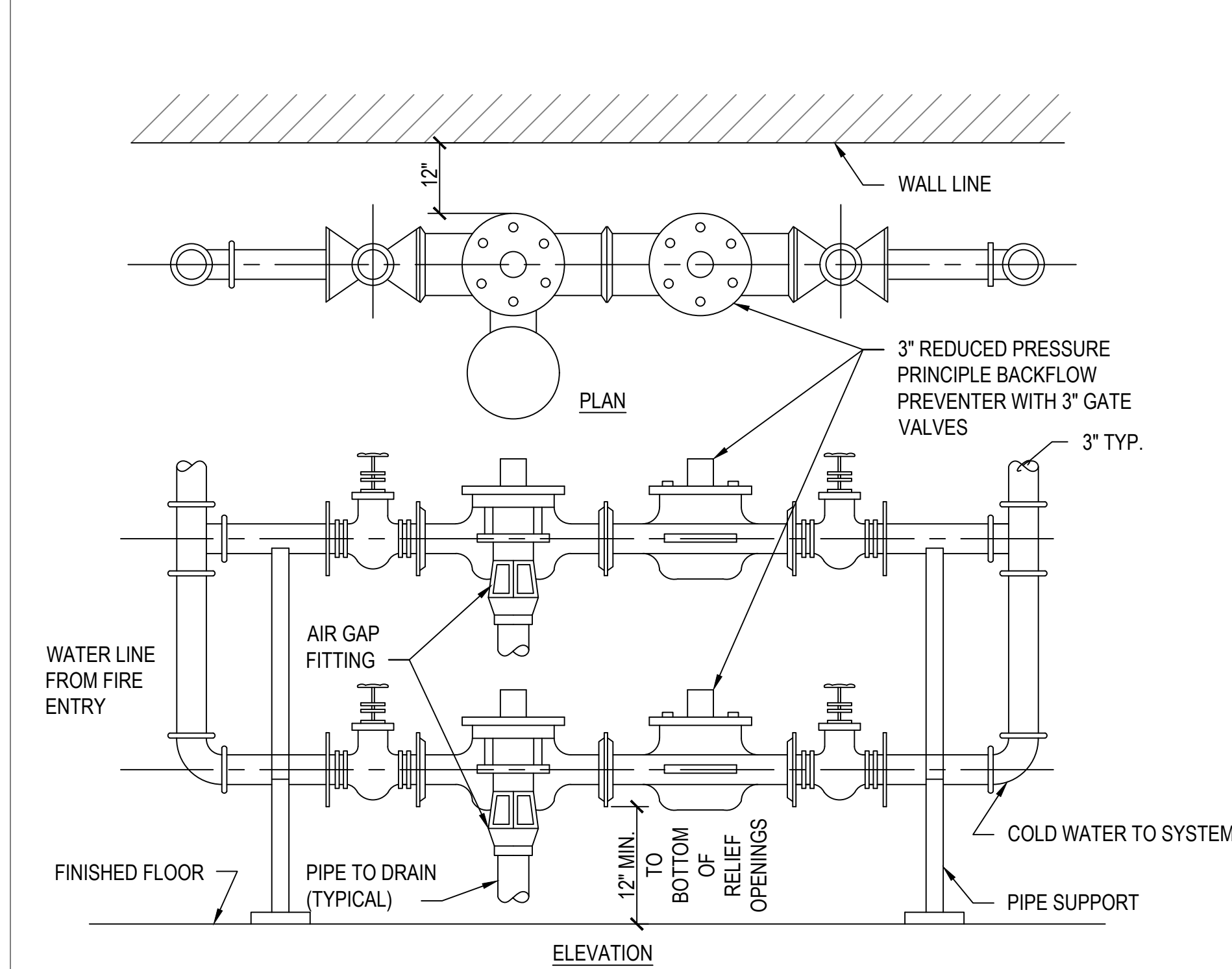
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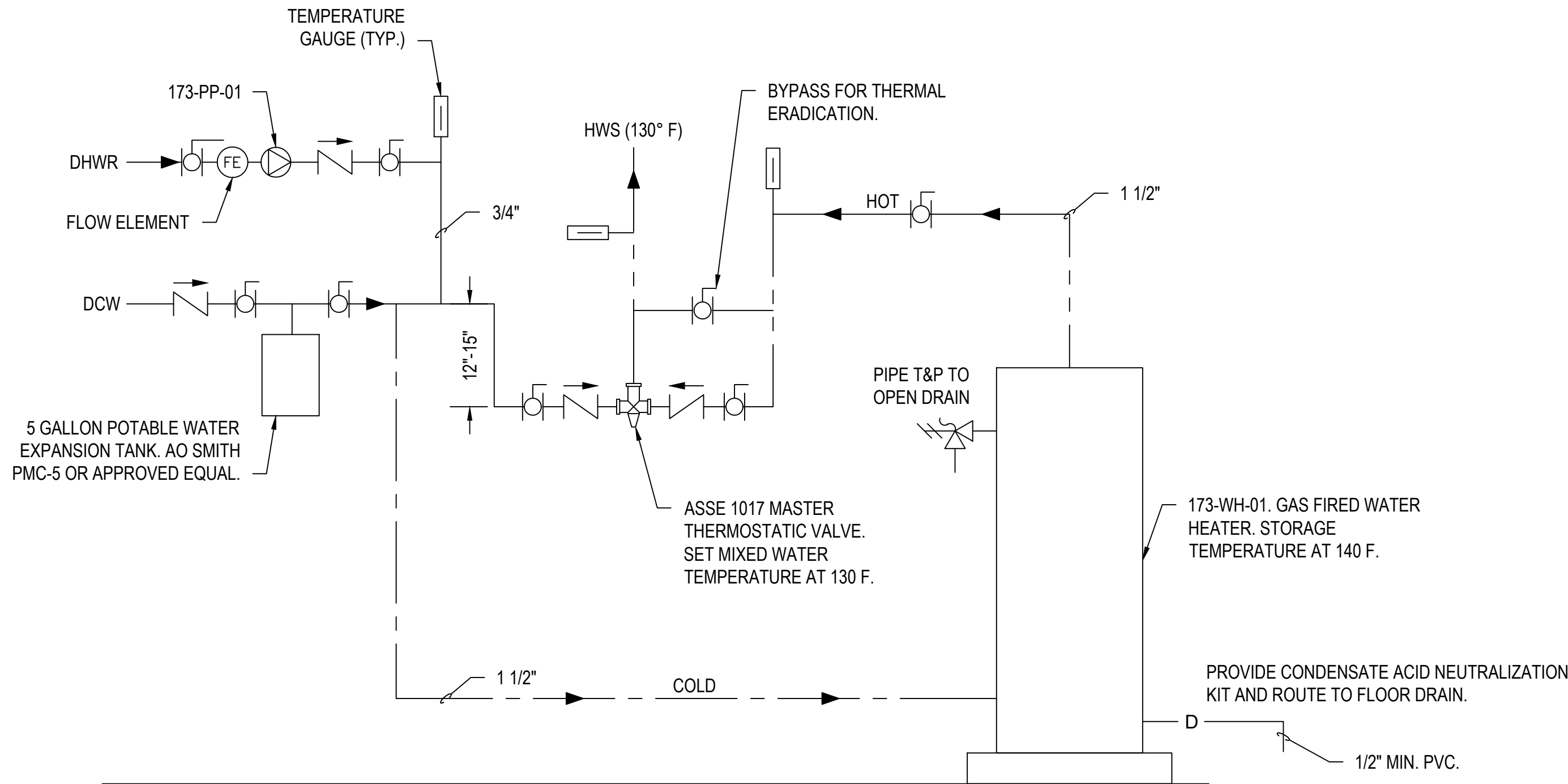
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E

F



1 BACKFLOW PREVENTER PIPING DETAIL
SCALE: NO SCALE



2 GAS FIRED WATER HEATER CONNECTION DETAIL
SCALE: NO SCALE

PUMP SCHEDULE													
MARK	SYSTEM AND/OR SERVICE	TYPE	CIRCULATING FLUID				ELECTRICAL MOTOR				MANUFACTURER AND MODEL	REMARKS	
			FLUID	FLOW GPM	HEAD FT	TEMPERATURE °F	HP	PHASE	VOLT	MAX RPM			SPEED CONTROL
173-PP-01	DOMESTIC HOT WATER PRIMARY	INLINE CIRCULATOR	HOT WATER	2	10	140	0.08	1	115	-	ECM	BELL & GOSSETT ECOCIRC 19-16 OR APPROVED EQUAL	1,2
NOTES: 1. PROVIDE UNIT WITH INTEGRAL CONTROL. 2. PROVIDE DISCONNECT FOR UNIT. REFER TO E-601 AND E-602 FOR REQUIREMENTS.													

GAS FIRED WATER HEATER SCHEDULE																
MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	STORAGE CAPACITY	RECOVERY @ 100 °F RISE	TIME TO RECOVER CONTENTS, MINUTES	RELIEF VALVE SETTING	FUEL			ELECTRICAL DATA			MANUFACTURER AND MODEL	REMARKS
					GAL	GAL/HR		PSIG	TYPE	INLET PRESSURE	FLOW	VOLT	PHASE	FLA		
173-WH-01	B104	173	DOMESTIC HOT WATER	TANK STORAGE	60	116	31	100	NG	7	120	120	1	5	AO SMITH CYCLONE MXI BTH 120A OR APPROVED EQUAL	1,2,3,4
NOTES: 1. WATER HEATER STORAGE TEMPERATURE SHALL BE SET AT 140 F MIN. 2. PROVIDE CONDENSATE ACID NEUTRALIZATION KIT. 3. PROVIDE CONCENTRIC VENT KIT. 4. PROVIDE ASME TANK CONSTRUCTION.																

PLUMBING FIXTURE SCHEDULE								
MARK	DESCRIPTION	CONNECTION SIZE (IN)				WASTE FIXTURE UNITS	WATER FIXTURE UNITS	REMARKS
		COLD WATER	HOT WATER	WASTE PIPE	VENT PIPE			
P-103	WALL HUNG WATER CLOSET	1"	-	4"	2"	4	10	1,2
P-201	URINAL	3/4"	-	1-1/2"	1-1/2"	2	3	1,2
P-408	WALL HUNG LAVATORY	1/2"	1/2"	1-1/2"	1-1/2"	1	2	1,2
P-417	COUNTERTOP LAVATORY	1/2"	1/2"	1-1/2"	1-1/2"	1	2	1,2
P-502	SERVICE SINK	3/4"	3/4"	3"	2"	2	4	1,2
P-524	SINK, CRS, DOUBLE COMPARTMENT	1/2"	1/2"	1-1/2"	1-1/2"	1	2	1,2
P-528	SINK, CRS, SINGLE COMPARTMENT	1/2"	1/2"	1-1/2"	1-1/2"	1	2	1,2
P-609	ELECTRIC WATER COOLER	1/2"	-	1-1/2"	1-1/2"	0.5	0.25	1,2
P-801	WALL HYDRANT	3/4"	-	-	-	-	-	2
P-804	HOSE BIB	3/4"	-	-	-	-	2.5	2
FD-1	TYPE-E FLOOR DRAIN	-	-	4"	2"	6	-	1,2
FD-2	TYPE-C FLOOR DRAIN	-	-	3"	2"	10	-	1,2
OFD	OVERFLOW ROOF DRAIN	-	-	-	-	-	-	2
RD	ROOF DRAIN	-	-	-	-	-	-	2
NOTES: 1. UNDERGROUND WASTE PIPES SHALL BE 2" MINIMUM REGARDLESS OF CONNECTION SIZE SHOWN. 2. REFER TO PLUMBING SPECIFICATIONS FOR FIXTURE REQUIREMENTS.								

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PLUMBING DETAILS AND SCHEDULES

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Phase

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