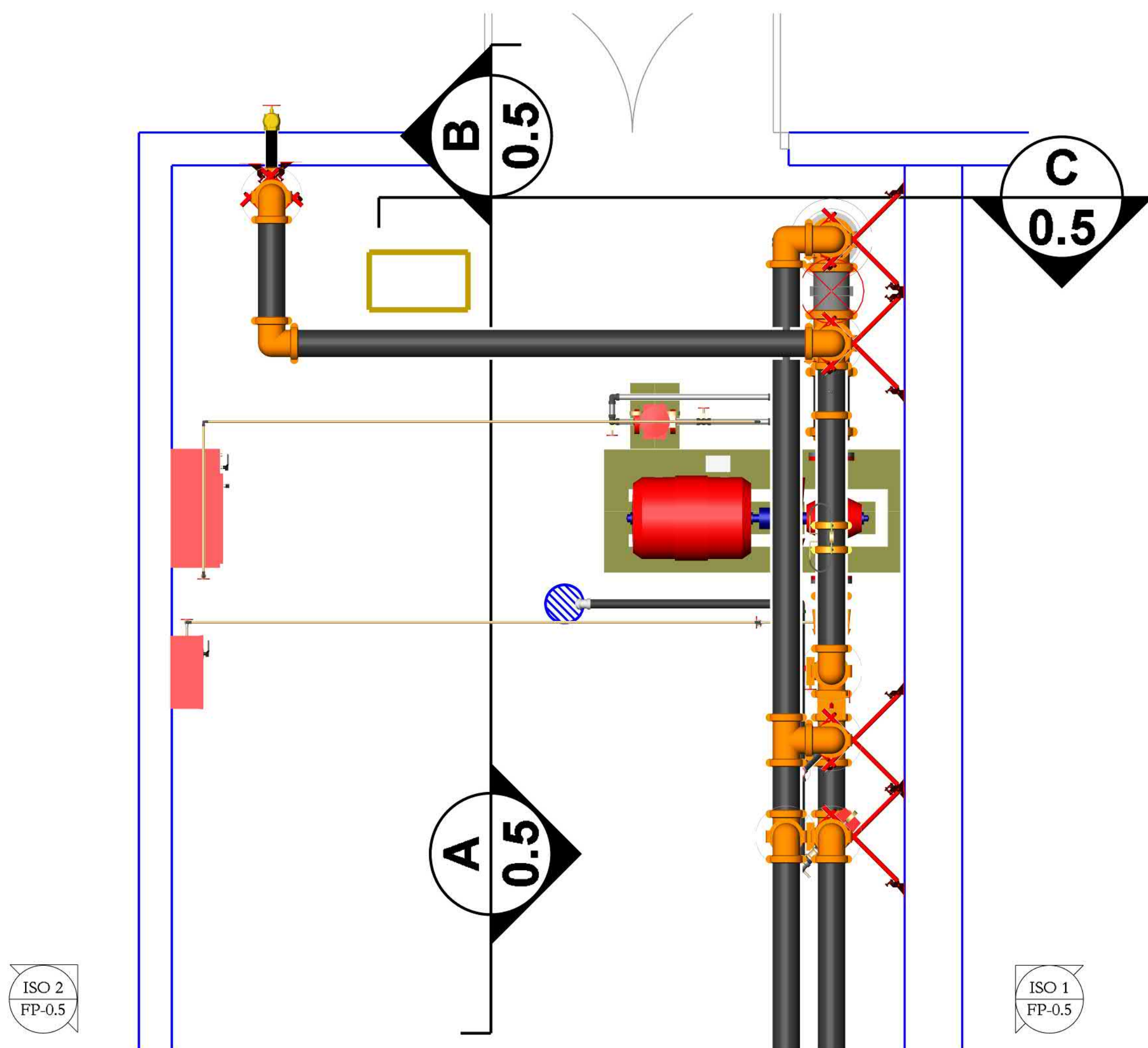
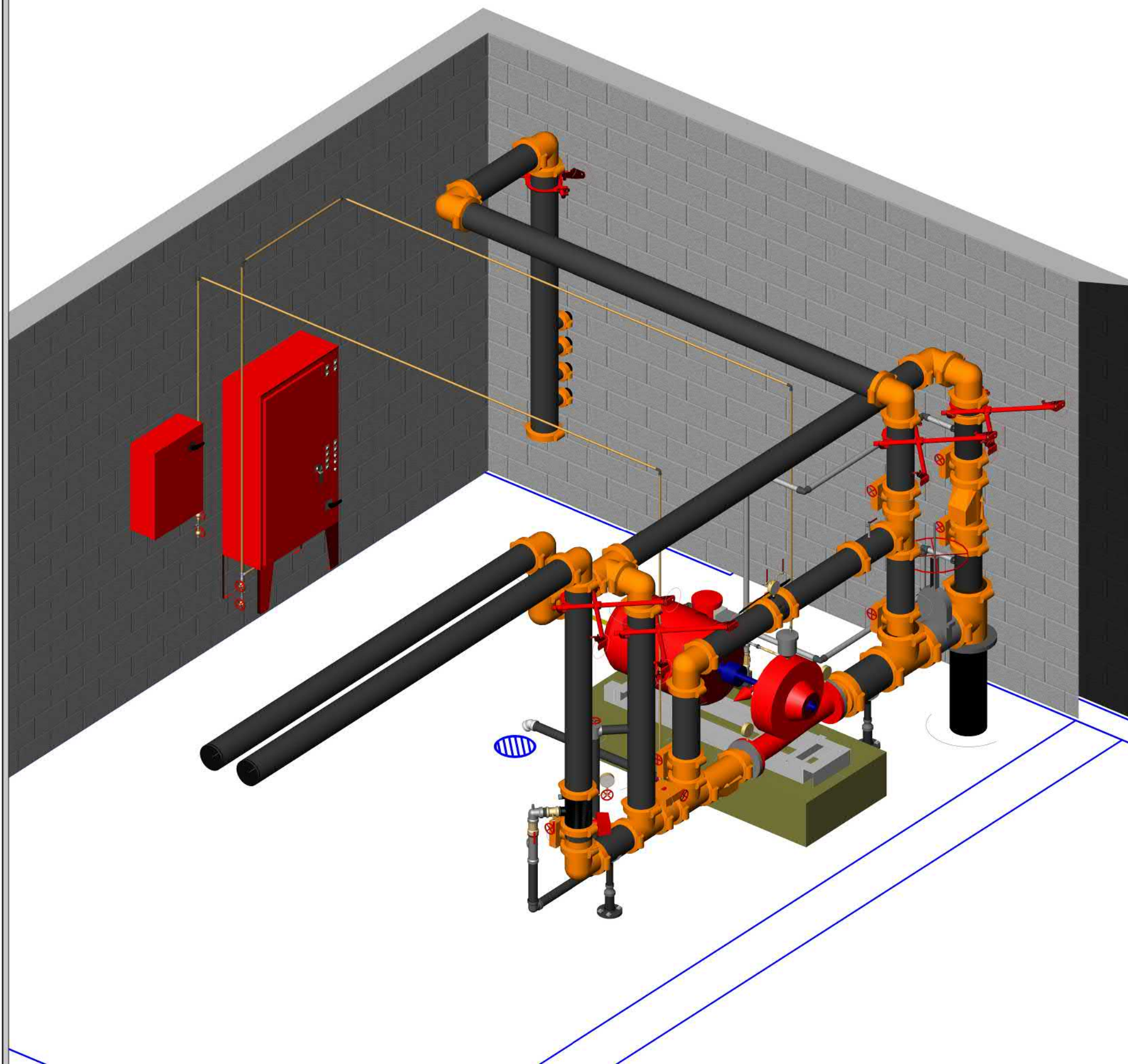


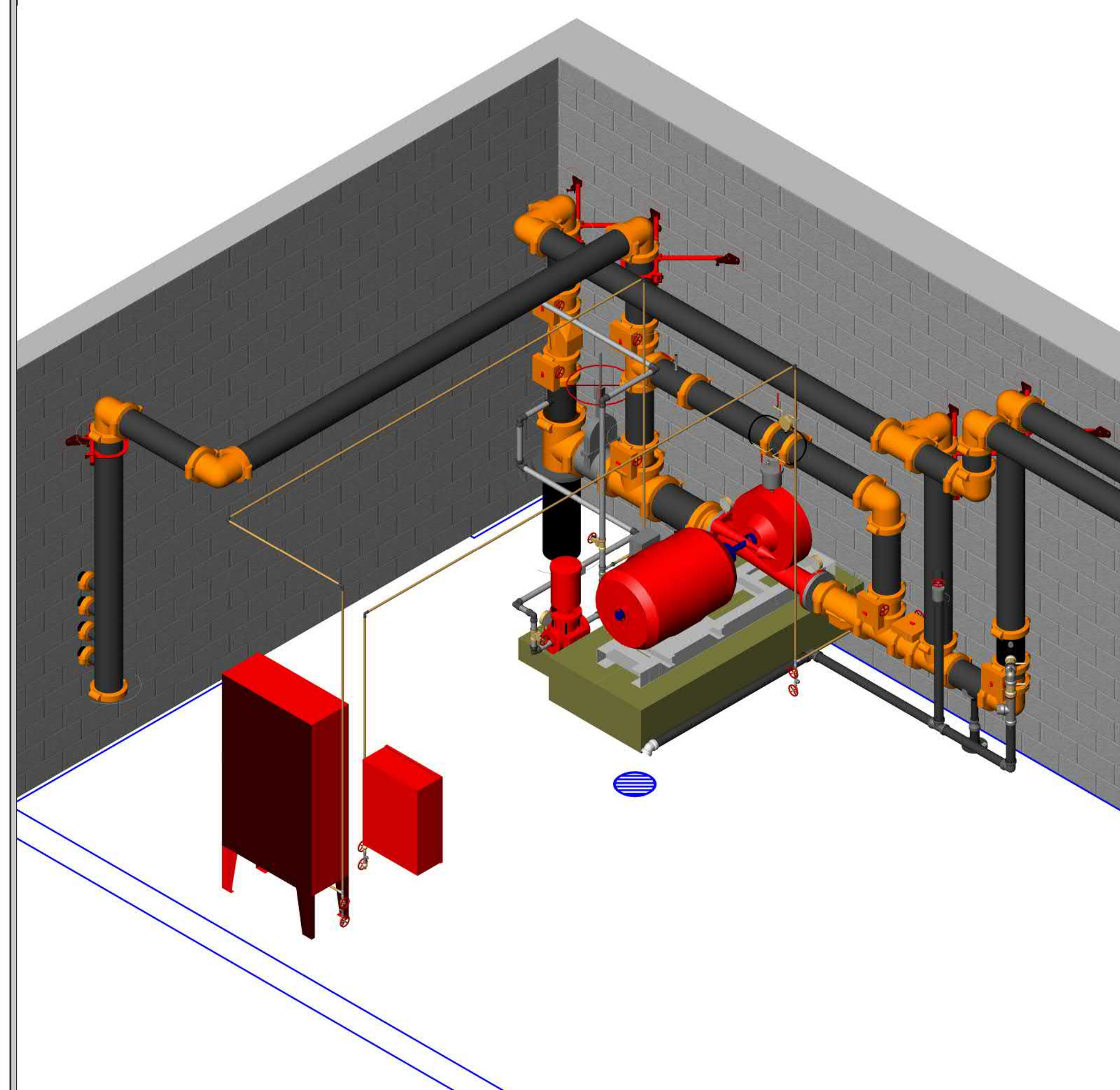
PUMP ROOM FLOOR PLAN



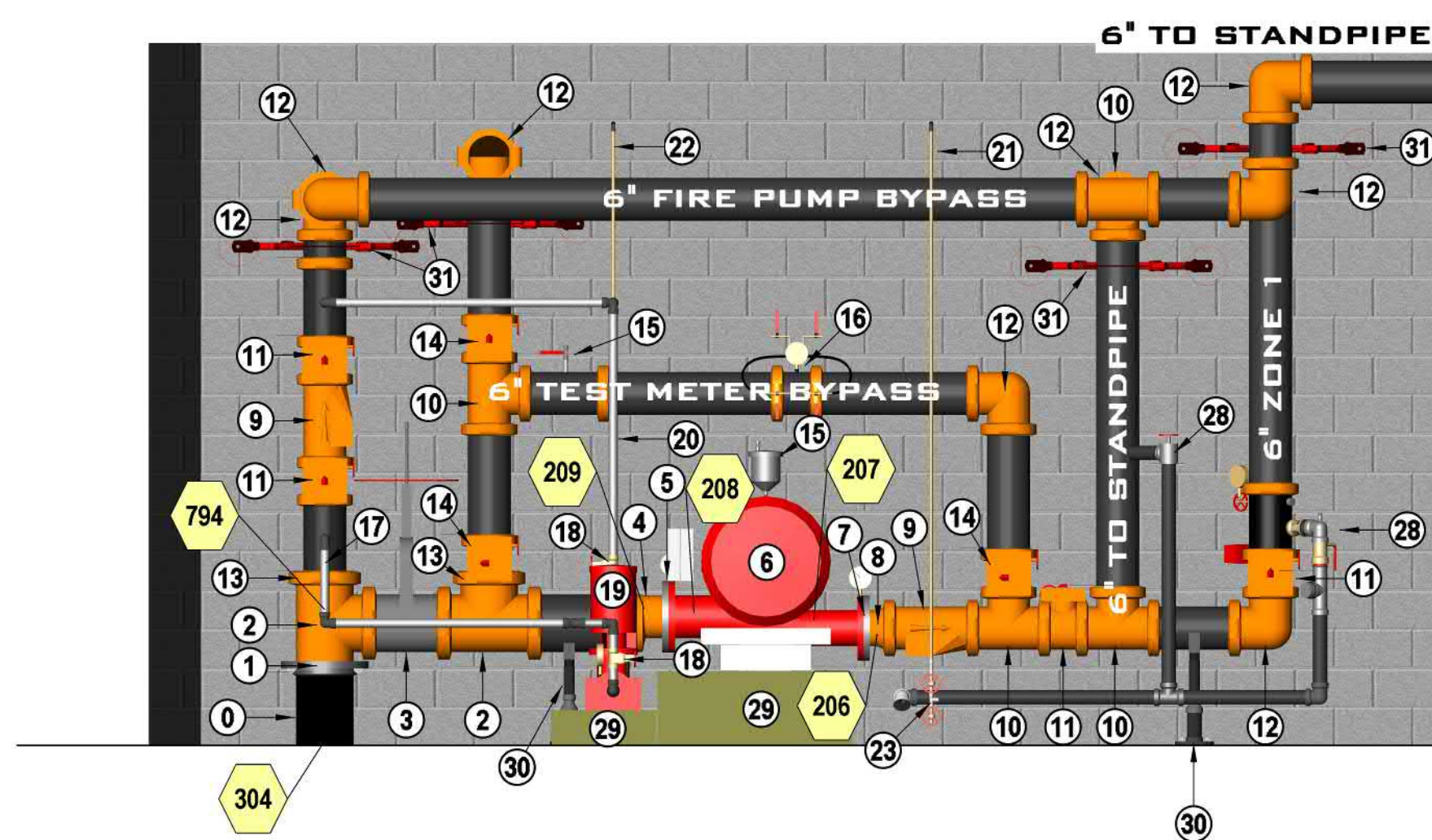
PUMP ROOM ISOMETRIC 1



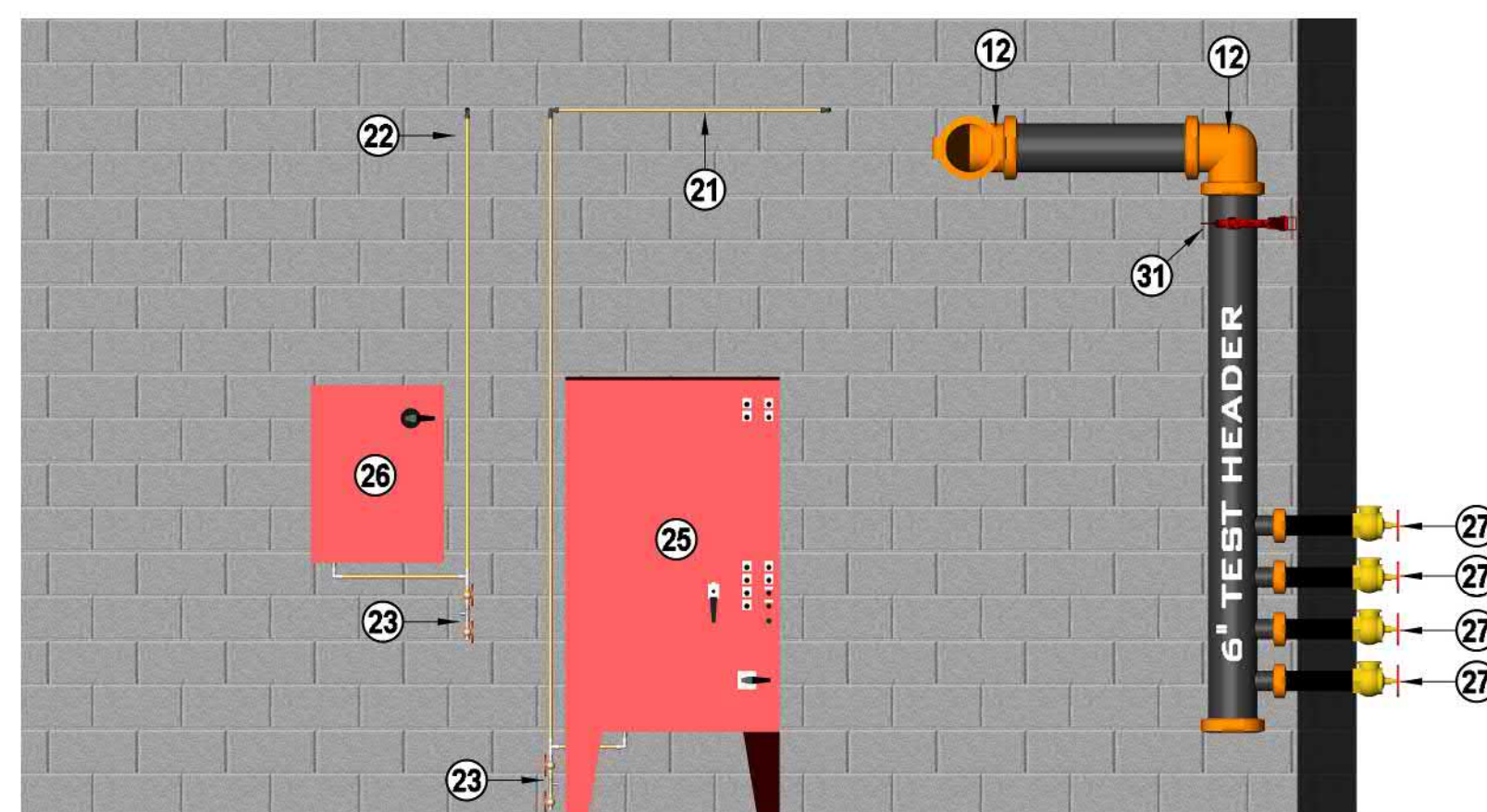
PUMP ROOM ISOMETRIC 2



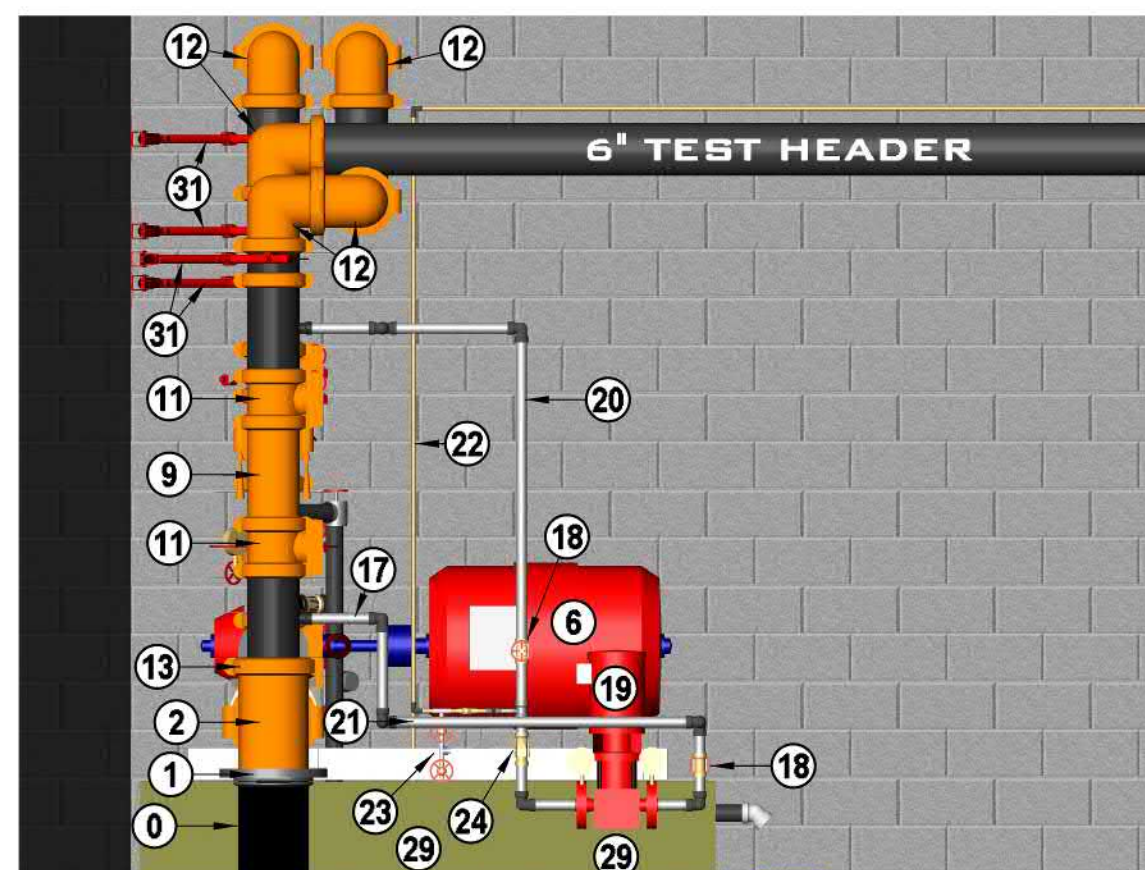
PUMP ROOM SECTION A



PUMP ROOM SECTION B



PUMP ROOM SECTION C



PUMP ROOM LEGEND

#	DESCRIPTION	REMARKS
0	8" FROM UNDERGROUND	
1	8" GROOVED FLANGE	
2	8" GROOVED TEE	
3	8" GROOVED OS&Y VALVE WITH TAMPER	
4	8" X 6" GROOVED ECCENTRIC REDUCER	
5	6" GROOVED FLANGE	
6	FIRE PUMP & DRIVER, SEE INFORMATION TABLE	
7	5" GROOVED FLANGE	
8	5" X 6" GROOVED REDUCER	
9	6" GROOVED CHECK VALVE	
10	6" GROOVED TEE	
11	6" GROOVED BUTTERFLY CONTROL VALVE, NORMALLY OPEN	
12	6" GROOVED ELBOW 90	
13	8" X 6" REDUCING COUPLING	
14	6" GROOVED BUTTERFLY CONTROL VALVE, NORMALLY CLOSED	
15	1/2" BALL VALVE	
16	FIRE PUMP TEST METER	
17	1-1/4" JOCKEY PUMP SUCTION PIPING	
18	1-1/4" OS&Y CONTROL VALVE WITH TAMPER	
19	JOCKEY PUMP, SEE INFORMATION TABLE	
20	1-1/4" JOCKEY PUMP DISCHARGE PIPING	
21	FIRE PUMP SENSING LINE	
22	JOCKEY PUMP SENSING LINE	
23	TEST ASSEMBLY PER NFPA 20	
24	1-1/4" CHECK VALVE	
25	FIRE PUMP CONTROLLER	
26	JOCKEY PUMP CONTROLLER	
27	2-1/2" HOSE VALVE	
28	2" MAIN DRAIN	
29	CONCRETE PAD BY OTHERS	
30	PIPE STAND	
31	SEISMIC BRACE	
32	NOT USED	
33	NOT USED	
34	NOT USED	
35	NOT USED	
36	NOT USED	
37	NOT USED	
38	NOT USED	
39	NOT USED	
40	NOT USED	
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52	NOT USED	
53	NOT USED	
54	NOT USED	
55	NOT USED	
56	NOT USED	
57	NOT USED	
58	NOT USED	
59	NOT USED	
60	NOT USED	

SYSTEM MONITORING

VALVE MONITORING, WATER-FLOW ALARM, AND TROUBLE SIGNALS SHALL BE AUTOMATICALLY TRANSMITTED TO AN APPROVED CENTRAL STATION. THIS WORK IS BY OTHERS.

TEST HEADER GREATER THAN 15' - 0"

TEST HEADER HAS BEEN SIZED PER HYDRAULIC CALCULATIONS PER NFPA 20, SECTION 4.21.3.4 (2).

TEST HEADER CALCULATION INFORMATION

PUMP RATING IN GPM	1,000
150% OF PUMP RATING	1,500
NUMBER OF TEST HOSE STREAMS	4
SIZE OF FIRE HOSE	2.5"

DISCHARGE NOZZLE

WHERE: P = PITOT PRESSURE IN PSI

$$P = \left(\frac{Q}{29.84 \cdot C \cdot D^2} \right)^2$$

Q = FLOW RATE IN GPM
C = NOZZLE DISCHARGE COEFFICIENT
D = NOZZLE DIAMETER IN INCHES

FLOW RATE IN GPM (150% RATING / NUMBER OF STREAMS)	Q = 375
NOZZLE DISCHARGE COEFFICIENT	C = 0.97
NOZZLE DIAMETER IN INCHES	D = 1.75
PITOT PRESSURE REQUIRED	P = 17.90

FIRE HOSE FRICTION LOSS

WHERE: FL = FRICTION LOSS IN PSI

$$FL = C \cdot \left(\frac{Q}{100} \right)^2 \cdot \left(\frac{L}{100} \right)$$

C = FRICTION LOSS COEFFICIENT
Q = FLOW RATE IN GPM
L = HOSE LENGTH

FRICTION LOSS COEFFICIENT	C = 2
FLOW RATE IN GPM (150% RATING / NUMBER OF STREAMS)	Q = 375
HOSE LENGTH	L = 50
FRICTION LOSS IN PSI	FL = 14.06
TEST HEADER HOSE VALVE DISCHARGE:	375 GPM @ 31.96 PSI

FIRE PUMP DATA

MAKE & MODEL	PENTAIR 5-481-15
TYPE	HORIZONTAL SPLITCASE
SIZE	6" X 5"
RATING	1000 GPM @ 70 PSI
RPM	1770
ROTATION	PENDING
SUCTION SIZE	6.00 IN
DISCHARGE SIZE	5.00 IN
IMPELLER	13.63 IN
ESTIMATED WEIGHT	730.0 LB
START PRESSURE (FIELD VERIFY)	140 PSI
STOP PRESSURE (FIELD VERIFY)	155 PSI

DRIVER DATA

TYPE	ELECTRIC
POWER	75.00 HP
PHASE	3 PHASE
HERTZ	60 Hz
VOLTS	208 V
RPM	1800
ESTIMATED WEIGHT	660.0 LB

JOCKEY PUMP DATA

MAKE & MODEL	PENTAIR PVM1-9
RATING	10 GPM @ 80 PSI
SUCTION & DISCHARGE SIZE	1.25 IN
POWER	1.00 HP
PHASE	3 PHASE
VOLTS	208 V
START PRESSURE (FIELD VERIFY)	145 PSI
STOP PRESSURE (FIELD VERIFY)	155 PSI

FIRE PUMP CONTROL PANEL DATA

MAKE & MODEL	EATON CUTLER HAMMER
VOLTAGE	460V
HP RANGE	5-400
SOFT START	NO
AUTOMATIC TRANSFER SWITCH	NO
REMOTE ALARMS	PHASE REVERSAL, MOTOR RUN, FAIL TO START

- KEY NOTES
- 1

TYPICAL SYSTEM RISER
SEE DETAIL ON SHEET FP-D2
- 2

TYPICAL COMBINATION STANDPIPE
SEE DETAIL ON SHEET FP-D2
- 3

TYPICAL STANDPIPE
SEE DETAIL ON SHEET FP-D2
- 4

6" TYPICAL STANDPIPE & HOSE VALVE CABINET
SEE DETAIL ON SHEET FP-D2
- 5

6" DOWN TO FLOOR BELOW
ANNULAR CLEARANCE PER NFPA 13
- 6

6" UP TO FLOOR ABOVE
ANNULAR CLEARANCE PER NFPA 13
- 7

2" DRAIN UP TO FLOOR ABOVE
ANNULAR CLEARANCE PER NFPA 13
- 8

2" DRAIN DOWN TO FLOOR BELOW
ANNULAR CLEARANCE PER NFPA 13
- 9

2" DRAIN TO SANITARY CONNECTION
- 10

1" AUXILIARY DRAIN
NIPPLE, VALVE & PLUG
- 11

1" AUXILIARY DRAIN
PIPE TO SANITARY DRAIN
- 12

9'-0" MAX. IN SMALL ROOMS
SEE DESIGN NOTE #1 ON SHEET FP-0.1
- 13

SPRINKLER OMITTED FROM BATHROOM
SEE DESIGN NOTE #2 ON SHEET FP-0.1
- 14

SPRINKLERS OMITTED FROM OVERHANG
SEE DESIGN NOTE #3 ON SHEET FP-0.1
- 15

SPRINKLERS OMITTED FROM VERTICAL SHAFT
SEE DESIGN NOTE #4 ON SHEET FP-0.1
- 16

LAUNDRY OR GARBAGE CHUTE SPRINKLER
PRE-INSTALLED & CONNECTED BY AEGIS
- 17

CPVC TO STEEL PIPE ADAPTER
THREADED OR GROOVED AS APPLICABLE

AIR VENT NOTE

AS STATED IN NFPA 13 SECTION 16.7:
AT THE DISCRETION OF THE INSTALLER,
AUTOMATIC AIR VENTS ARE TO BE INSTALLED BY ONE
OF THE FOLLOWING METHODS
(1) MANUAL VALVE, MIN 1/2"
(2) AUTOMATIC AIR VENT
(3) REMOTE INSPECTOR'S TEST VALVE
(4) OTHER APPROVED MEANS

- HATCH LEGEND
- SITE SCOPE OF WORK

MODULAR SCOPE OF WORK

CHASE

CONCRETE DECK 10" LOWER

- PIPE LEGEND
- WET CPVC

WET STEEL

- PIPING NOTES
- 1

BRANCHLINE PIPING TO BE INSTALLED 6" FROM
BOTTOM OF SLAB TO CENTER OF PIPE, TYPICAL.
- 2

BULK MAINS TO BE INSTALLED 1'-0" FROM
BOTTOM OF DECK TO CENTER OF PIPE, TYPICAL.
- 3

SYSTEM MAINS TO BE INSTALLED 1'-8" FROM
BOTTOM OF DECK TO CENTER OF PIPE, TYPICAL.
- 4

ALL EXPOSED PIPING SHALL BE STEEL PIPE PER
GENERAL NOTE # 17 ON SHEET FP-0.1.

- CONCEALED SPACES
- 1

ALL CONCEALED COMBUSTIBLE SPACES SHALL
BE ENTIRELY FILLED WITH NONCOMBUSTIBLE
INSULATION.
- 2

SPRINKLERS SHALL BE OMITTED FROM
CONCEALED COMBUSTIBLE SPACES ENTIRELY
FILLED WITH NONCOMBUSTIBLE INSULATION
PER NFPA 13, 9.2.1.7.

SPRINKLER LEGEND

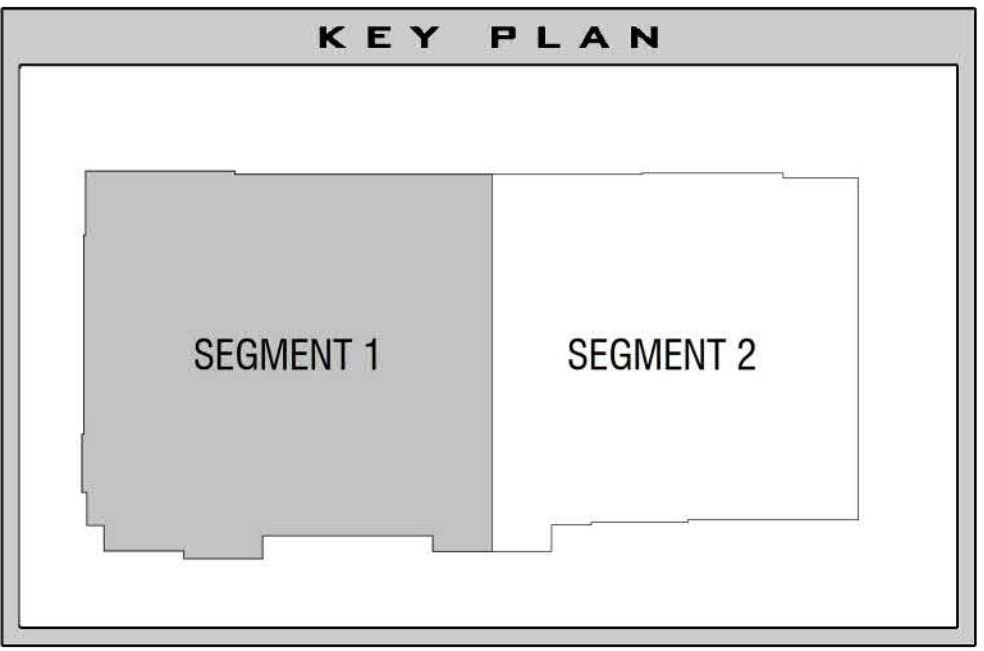
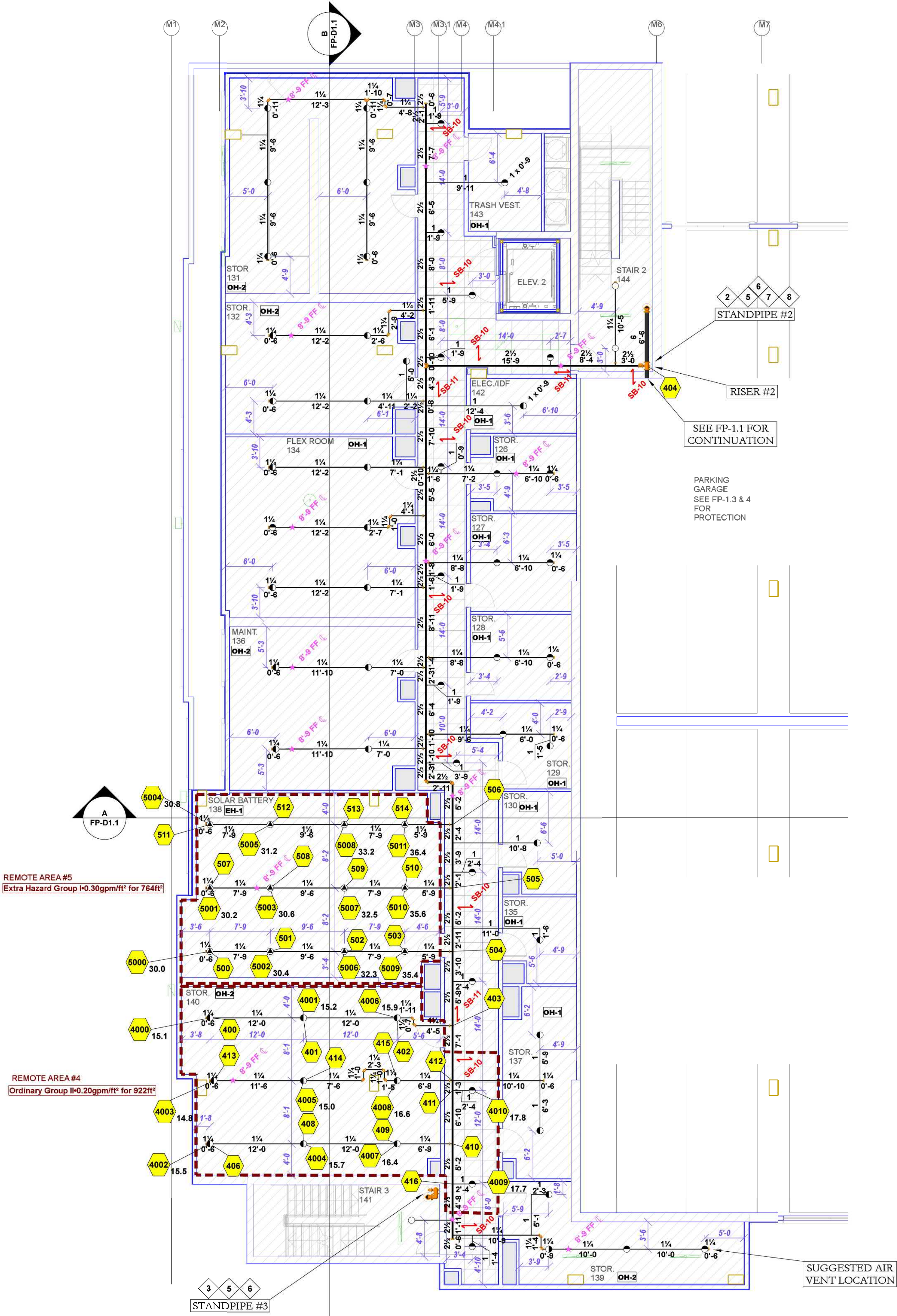
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature
	Teco	TY3231	TY-FRB	62	5.6	Pendent	1/2	Quick	White	200°F
	Teco	TY4251	TY-B	12	8	Pendent	3/4	Standard	White	200°F
	Teco	TY3131	TY-FRB	3	5.6	Upright	1/2	Quick	White	200°F
				Total = 77						

HYDRAULIC INFORMATION #4

Remote Area 4	Ordinary Group II
OCCUPANCY CLASSIFICATION	0.20 for 1500ft² (Actual 922ft²)
DENSITY (gpm/ft²)	9'-0" Ceiling (40.0%) 900ft²
QUICK RESPONSE REDUCTION	250.0
TOTAL HOSE STREAMS	11
TOTAL HEADS FLOWING	5.6
K-FACTOR	425.9
TOTAL WATER REQUIRED	-46.6
TOTAL PRESSURE REQUIRED	175.9
BASE of RISER (gpm)	49.1
BASE of RISER (psi)	+103.5 (192.0%)
SAFETY MARGIN (psi)	

HYDRAULIC INFORMATION #5

Remote Area 5	Extra Hazard Group I
OCCUPANCY CLASSIFICATION	0.30 for 2500ft² (Actual 764ft²)
DENSITY (gpm/ft²)	500.0
TOTAL HOSE STREAMS	12
TOTAL HEADS FLOWING	8
K-FACTOR	888.7
TOTAL WATER REQUIRED	32.1
TOTAL PRESSURE REQUIRED	388.7
BASE of RISER (gpm)	18.9
BASE of RISER (psi)	+24.4 (43.2%)
SAFETY MARGIN (psi)	



- KEY NOTES**
- 1 TYPICAL SYSTEM RISER
SEE DETAIL ON SHEET FP-D2
 - 2 TYPICAL COMBINATION STANDPIPE
SEE DETAIL ON SHEET FP-D2
 - 3 TYPICAL STANDPIPE
SEE DETAIL ON SHEET FP-D2
 - 4 6" TYPICAL STANDPIPE & HOSE VALVE CABINET
SEE DETAIL ON SHEET FP-D2
 - 5 6" DOWN TO FLOOR BELOW
ANNULAR CLEARANCE PER NFPA 13
 - 6 6" UP TO FLOOR ABOVE
ANNULAR CLEARANCE PER NFPA 13
 - 7 2" DRAIN UP TO FLOOR ABOVE
ANNULAR CLEARANCE PER NFPA 13
 - 8 2" DRAIN DOWN TO FLOOR BELOW
ANNULAR CLEARANCE PER NFPA 13
 - 9 2" DRAIN TO SANITARY CONNECTION
 - 10 1" AUXILIARY DRAIN
NIPPLE, VALVE & PLUG
 - 11 1" AUXILIARY DRAIN
PIPE TO SANITARY DRAIN
 - 12 9'-0 MAX. IN SMALL ROOMS
SEE DESIGN NOTE #1 ON SHEET FP-0.1
 - 13 SPRINKLER OMITTED FROM BATHROOM
SEE DESIGN NOTE #2 ON SHEET FP-0.1
 - 14 SPRINKLERS OMITTED FROM OVERHANG
SEE DESIGN NOTE #3 ON SHEET FP-0.1
 - 15 SPRINKLERS OMITTED FROM VERTICAL SHAFT
SEE DESIGN NOTE #4 ON SHEET FP-0.1
 - 16 LAUNDRY OR GARBAGE CHUTE SPRINKLER
PRE-INSTALLED & CONNECTED BY AEGIS
 - 17 CPVC TO STEEL PIPE ADAPTER
THREADED OR GROOVED AS APPLICABLE

- PIPING NOTES**
- 1 BRANCHLINE PIPING TO BE INSTALLED 6" FROM
BOTTOM OF SLAB TO CENTER OF PIPE, TYPICAL.
 - 2 BULK MAINS TO BE INSTALLED 1'-0" FROM
BOTTOM OF DECK TO CENTER OF PIPE, TYPICAL.
 - 3 SYSTEM MAINS TO BE INSTALLED 1'-8" FROM
BOTTOM OF DECK TO CENTER OF PIPE, TYPICAL.
 - 4 ALL EXPOSED PIPING SHALL BE STEEL PIPE PER
GENERAL NOTE # 17 ON SHEET FP-0.1.

- CONCEALED SPACES**
- 1 ALL CONCEALED COMBUSTIBLE SPACES SHALL
BE ENTIRELY FILLED WITH NONCOMBUSTIBLE
INSULATION.
 - 2 SPRINKLERS SHALL BE OMITTED FROM
CONCEALED COMBUSTIBLE SPACES ENTIRELY
FILLED WITH NONCOMBUSTIBLE INSULATION
PER NFPA 13, 9.2.1.7.

AIR VENT NOTE

AS STATED IN NFPA 13 SECTION 16.7:
AT THE DISCRETION OF THE INSTALLER,
AUTOMATIC AIR VENTS ARE TO BE INSTALLED BY ONE
OF THE FOLLOWING METHODS

- (1) MANUAL VALVE, MIN 1/2"
- (2) AUTOMATIC AIR VENT
- (3) REMOTE INSPECTOR'S TEST VALVE
- (4) OTHER APPROVED MEANS

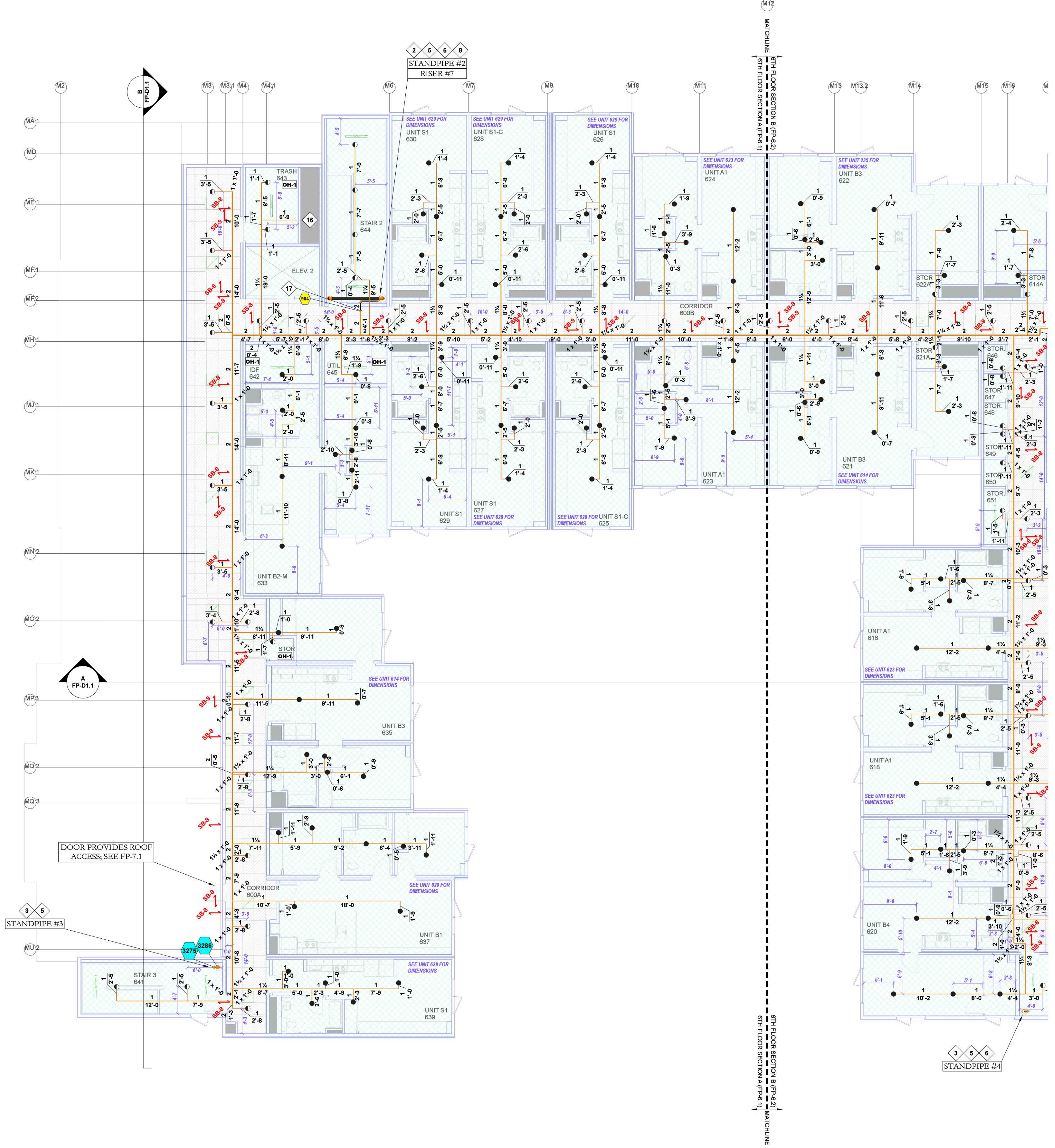
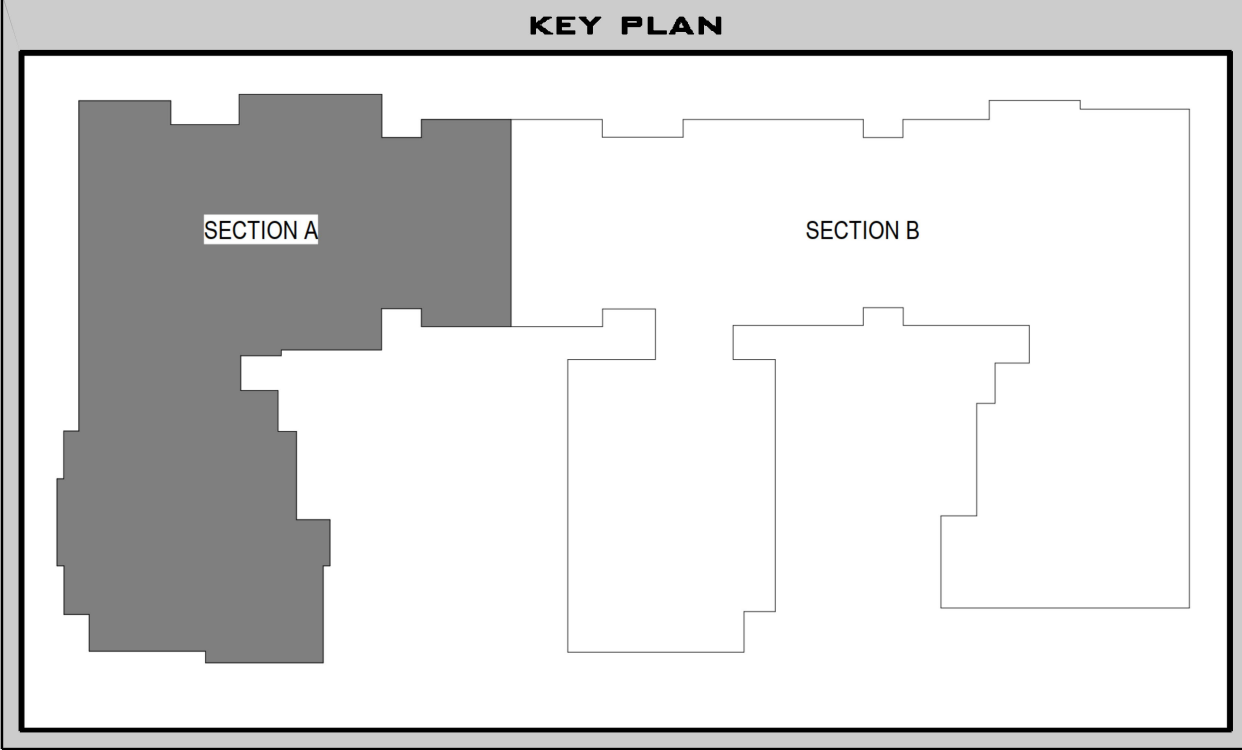
HATCH LEGEND

- SITE SCOPE OF WORK
- MODULAR SCOPE OF WORK
- CHASE

PIPE LEGEND

- WET CPVC
- WET STEEL

SPRINKLER LEGEND												
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temp.	MAX. Spacing	Escutcheon
	Tyco	TY3231	TY-FRB	30	5.6	Pendent	½	Quick	White	200°F	15' x 15'	Recessed
	Tyco	TY2236	LFII	72	4.9	Pendent	½	Fast	White	175°F	18' x 18'	Recessed
				Total = 102								



- KEY NOTES**
- 1 TYPICAL SYSTEM RISER
SEE DETAIL ON SHEET FP-D2
 - 2 TYPICAL COMBINATION STANDPIPE
SEE DETAIL ON SHEET FP-D2
 - 3 TYPICAL STANDPIPE
SEE DETAIL ON SHEET FP-D2
 - 4 6" TYPICAL STANDPIPE & HOSE VALVE CABINET
SEE DETAIL ON SHEET FP-D2
 - 5 6" DOWN TO FLOOR BELOW
ANNULAR CLEARANCE PER NFPA 13
 - 6 6" UP TO FLOOR ABOVE
ANNULAR CLEARANCE PER NFPA 13
 - 7 2" DRAIN UP TO FLOOR ABOVE
ANNULAR CLEARANCE PER NFPA 13
 - 8 2" DRAIN DOWN TO FLOOR BELOW
ANNULAR CLEARANCE PER NFPA 13
 - 9 2" DRAIN TO SANITARY CONNECTION
 - 10 1" AUXILIARY DRAIN
NIPPLE, VALVE & PLUG
 - 11 1" AUXILIARY DRAIN
PIPE TO SANITARY DRAIN
 - 12 9'-0" MAX. IN SMALL ROOMS
SEE DESIGN NOTE #1 ON SHEET FP-0.1
 - 13 SPRINKLER OMITTED FROM BATHROOM
SEE DESIGN NOTE #2 ON SHEET FP-0.1
 - 14 SPRINKLERS OMITTED FROM OVERHANG
SEE DESIGN NOTE #3 ON SHEET FP-0.1
 - 15 SPRINKLERS OMITTED FROM VERTICAL SHAFT
SEE DESIGN NOTE #4 ON SHEET FP-0.1
 - 16 LAUNDRY OR GARBAGE CHUTE SPRINKLER
PRE-INSTALLED & CONNECTED BY AEGIS
 - 17 CPVC TO STEEL PIPE ADAPTER
THREADED OR GROOVED AS APPLICABLE

- PIPING NOTES**
- 1 BRANCHLINE PIPING TO BE INSTALLED 6" FROM
BOTTOM OF SLAB TO CENTER OF PIPE, TYPICAL.
 - 2 BULK MAINS TO BE INSTALLED 1'-0" FROM
BOTTOM OF DECK TO CENTER OF PIPE, TYPICAL.
 - 3 SYSTEM MAINS TO BE INSTALLED 1'-8" FROM
BOTTOM OF DECK TO CENTER OF PIPE, TYPICAL.
 - 4 ALL EXPOSED PIPING SHALL BE STEEL PIPE PER
GENERAL NOTE # 17 ON SHEET FP-0.1.

- CONCEALED SPACES**
- 1 ALL CONCEALED COMBUSTIBLE SPACES SHALL
BE ENTIRELY FILLED WITH NONCOMBUSTIBLE
INSULATION.
 - 2 SPRINKLERS SHALL BE OMITTED FROM
CONCEALED COMBUSTIBLE SPACES ENTIRELY
FILLED WITH NONCOMBUSTIBLE INSULATION
PER NFPA 13, 9.2.1.7.

AIR VENT NOTE

AS STATED IN NFPA 13 SECTION 16.7:
AT THE DISCRETION OF THE INSTALLER,
AUTOMATIC AIR VENTS ARE TO BE INSTALLED BY ONE
OF THE FOLLOWING METHODS

- (1) MANUAL VALVE, MIN 1/2"
- (2) AUTOMATIC AIR VENT
- (3) REMOTE INSPECTOR'S TEST VALVE
- (4) OTHER APPROVED MEANS

HATCH LEGEND

- SITE SCOPE OF WORK
- MODULAR SCOPE OF WORK
- CHASE

PIPE LEGEND

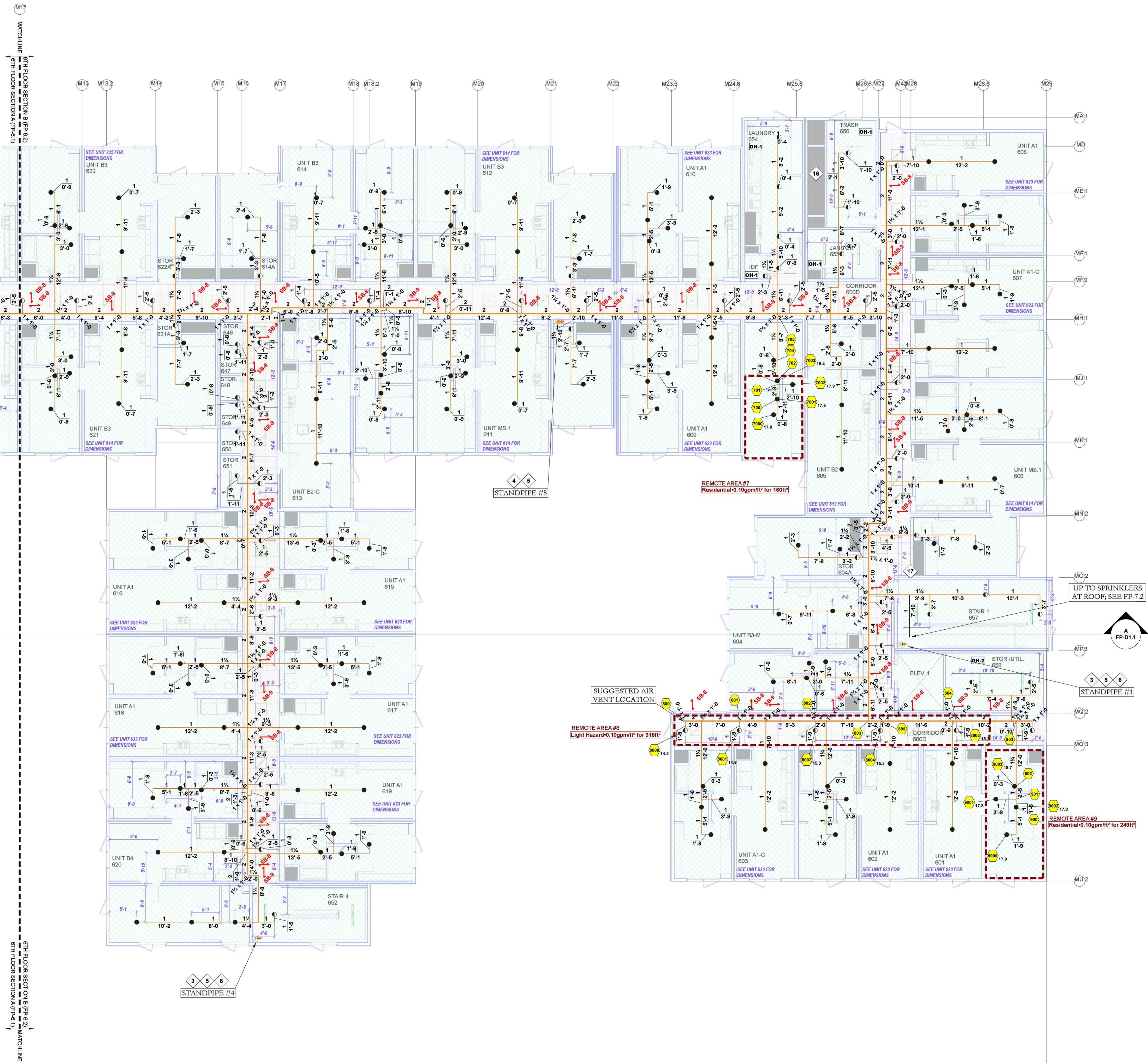
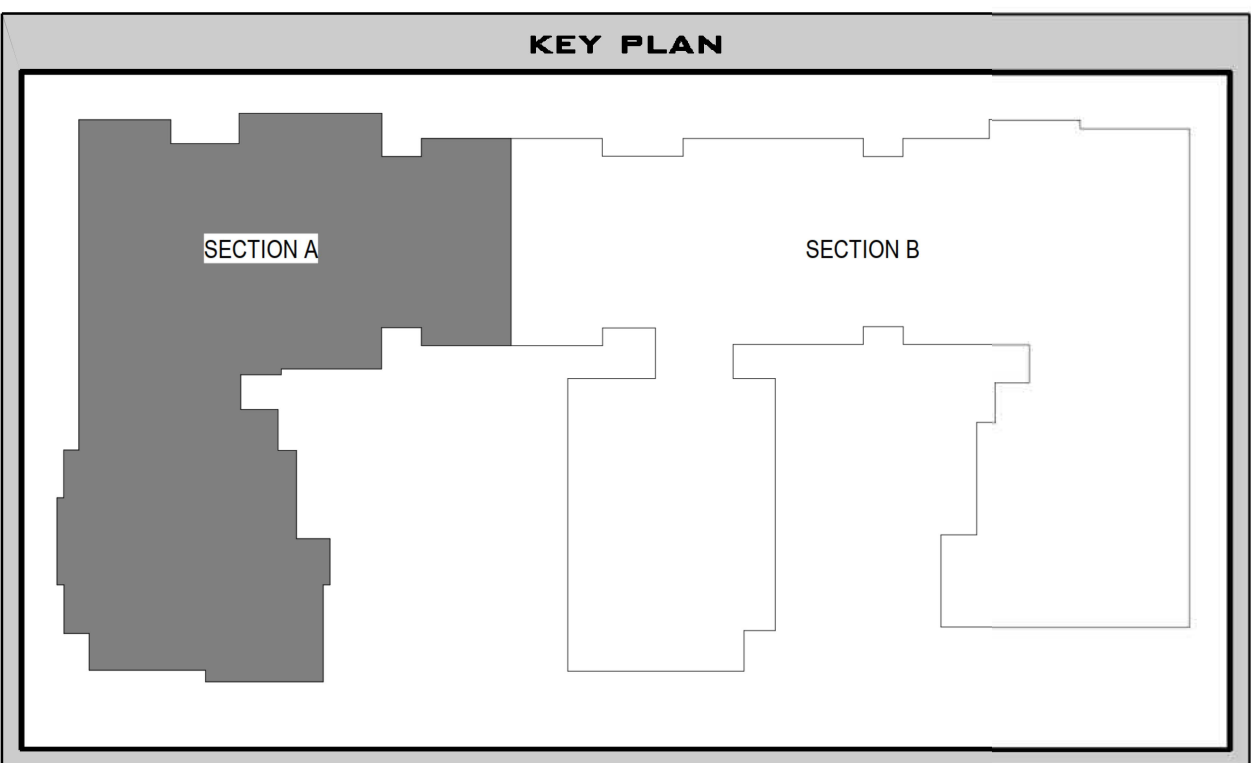
- WET CPVC
- WET STEEL

SPRINKLER LEGEND										
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temp.
	Tyco	TY3231	TY-FRB	65	5.6	Pendent	1/2"	Quick	White	200°F
	Tyco	TY2236	LFII	153	4.9	Pendent	1/2"	Fast	White	175°F
				Total = 218						
						MAX. Spacing	Escutcheon			
						15' x 15'	Recessed			

HYDRAULIC INFORMATION #7	
Remote Area 7	
OCCUPANCY CLASSIFICATION	Residential
DENSITY (gpm/ft²)	0.10 for 800ft² (Actual 160ft²)
TOTAL HOSE STREAMS	100.0
TOTAL HEADS FLOWING	4
K-FACTOR	4.9
TOTAL WATER REQUIRED	170.7
TOTAL PRESSURE REQUIRED	-14.2
BASE OF RISER (gpm)	70.7
BASE OF RISER (psi)	-26.5
SAFETY MARGIN (psi)	+71.2 (124.9%)

HYDRAULIC INFORMATION #8	
Remote Area 8	
OCCUPANCY CLASSIFICATION	Light Hazard
DENSITY (gpm/ft²)	0.10 for 1500ft² (Actual 318ft²)
TOTAL HOSE STREAMS	100.0
TOTAL HEADS FLOWING	5
K-FACTOR	5.6
TOTAL WATER REQUIRED	175.3
TOTAL PRESSURE REQUIRED	-19.7
BASE OF RISER (gpm)	75.3
BASE OF RISER (psi)	-32.1
SAFETY MARGIN (psi)	+76.7 (134.7%)

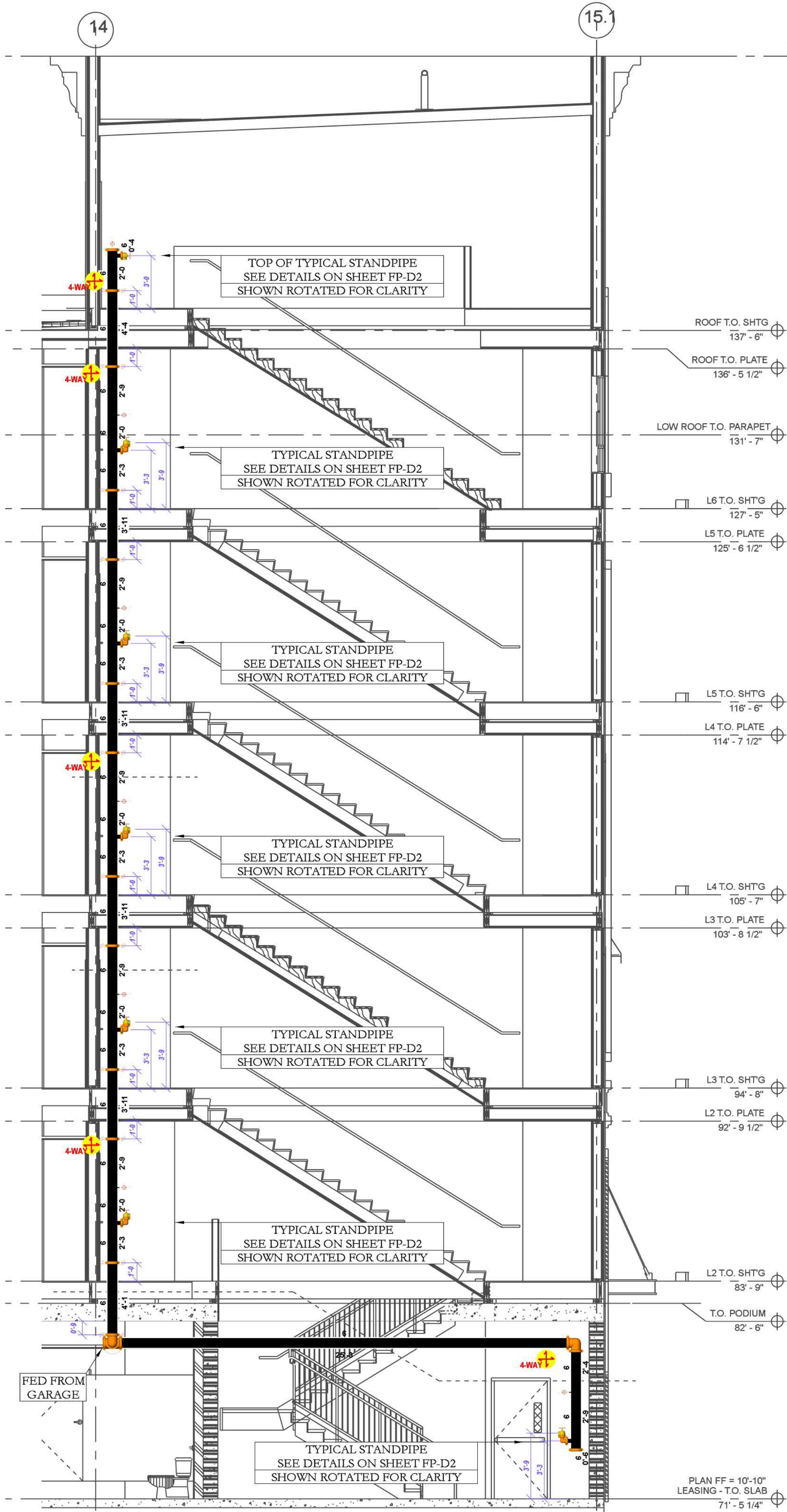
HYDRAULIC INFORMATION #9	
Remote Area 9	
OCCUPANCY CLASSIFICATION	Residential
QUICK RESPONSE REDUCTION	9'-0" Ceiling (40.0%) 540ft²
TOTAL HOSE STREAMS	100.0
TOTAL HEADS FLOWING	4
K-FACTOR	4.9
TOTAL WATER REQUIRED	171.4
TOTAL PRESSURE REQUIRED	-7.3
BASE OF RISER (gpm)	71.4
BASE OF RISER (psi)	-19.8
SAFETY MARGIN (psi)	+64.3 (112.8%)



STAIR SECTION

NOTE: 4-WAY BRACES HAVE SHALL BE PERMITTED TO BE OMITTED WHERE RISERS PENETRATE INTERMEDIATE FLOORS WHERE THE CLEARANCE DOES NOT EXCEED THE LIMITS OF 9.3.4, PER NFPA 13 - 9.3.5.8.5.

LIMITED CLEARANCE AROUND A RISER EXTENDING THROUGH A SUBSTANTIAL FLOOR OR ROOF RESTRICTS MOVEMENT AND PROVIDES THE EQUIVALENT OF BRACING (SEE 9.3.5.8.3). FOR RISERS THAT EXTEND ABOVE A ROOF TO SERVE A STANDPIPE OUTLET, THE BRACING CAN BE LOCATED AT THE UNDERSIDE OF THE ROOF OR CAN BE PROVIDED BY THE CLEARANCE THROUGH THE ROOF STRUCTURE IN THIS MANNER.

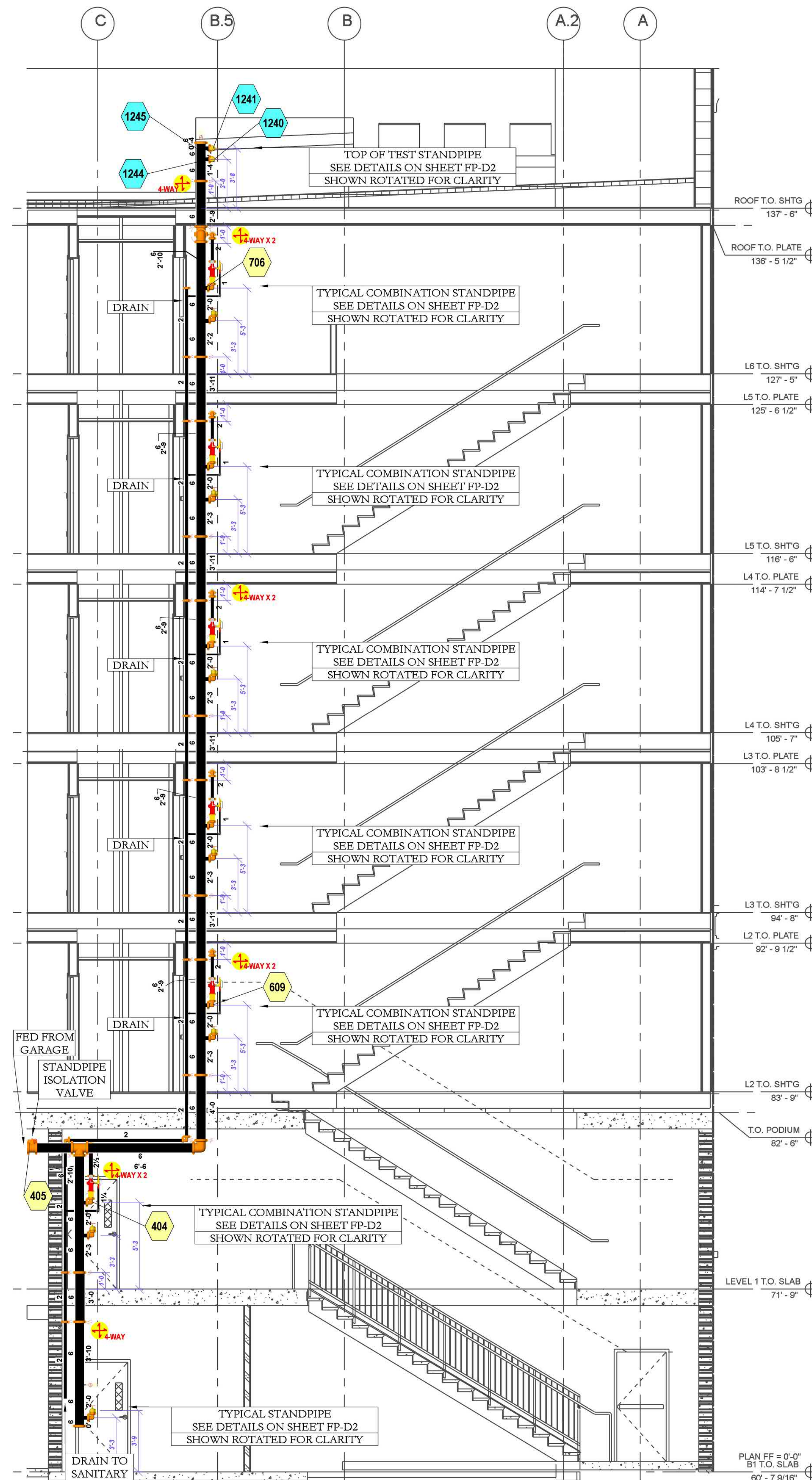


STAIR #1

STAIR SECTION

NOTE: 4-WAY BRACES HAVE SHALL BE PERMITTED TO BE OMITTED WHERE RISERS PENETRATE INTERMEDIATE FLOORS WHERE THE CLEARANCE DOES NOT EXCEED THE LIMITS OF 9.3.4, PER NFPA 13 - 9.3.5.8.5.

LIMITED CLEARANCE AROUND A RISER EXTENDING THROUGH A SUBSTANTIAL FLOOR OR ROOF RESTRICTS MOVEMENT AND PROVIDES THE EQUIVALENT OF BRACING (SEE 9.3.5.8.3). FOR RISERS THAT EXTEND ABOVE A ROOF TO SERVE A STANDPIPE OUTLET, THE BRACING CAN BE LOCATED AT THE UNDERSIDE OF THE ROOF OR CAN BE PROVIDED BY THE CLEARANCE THROUGH THE ROOF STRUCTURE IN THIS MANNER.

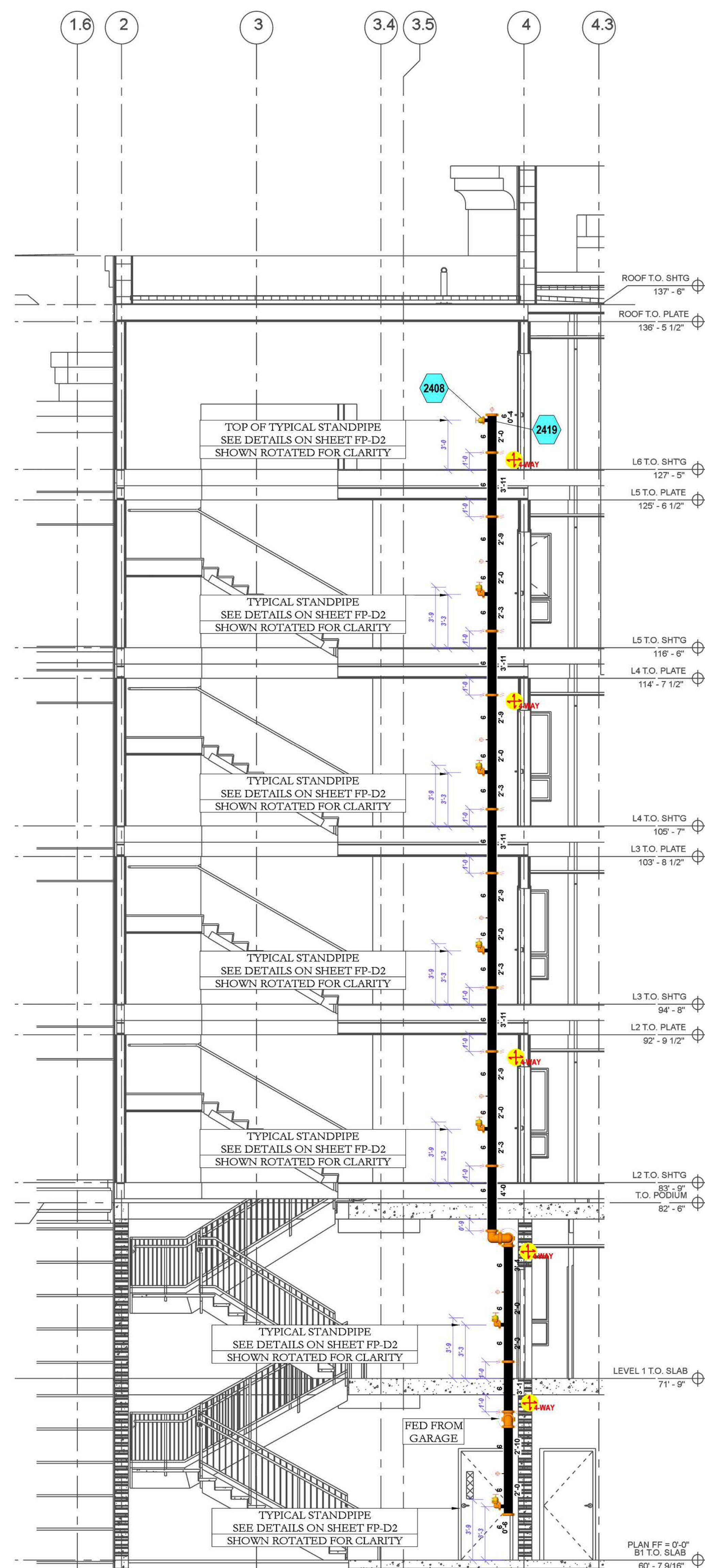


STAIR #2

STAIR SECTION

NOTE: 4-WAY BRACES HAVE SHALL BE PERMITTED TO BE OMITTED WHERE RISERS PENETRATE INTERMEDIATE FLOORS WHERE THE CLEARANCE DOES NOT EXCEED THE LIMITS OF 9.3.4, PER NFPA 13 - 9.3.5.8.5.

LIMITED CLEARANCE AROUND A RISER EXTENDING THROUGH A SUBSTANTIAL FLOOR OR ROOF RESTRICTS MOVEMENT AND PROVIDES THE EQUIVALENT OF BRACING (SEE 9.3.5.8.3). FOR RISERS THAT EXTEND ABOVE A ROOF TO SERVE A STANDPIPE OUTLET, THE BRACING CAN BE LOCATED AT THE UNDERSIDE OF THE ROOF OR CAN BE PROVIDED BY THE CLEARANCE THROUGH THE ROOF STRUCTURE IN THIS MANNER.



STAIR #3