

**GENERAL NOTES**

CONTRACTOR'S WORK SHALL CONSIST OF ALL NECESSARY LABOR AND MATERIAL FOR A COMPLETE INSTALLATION IN ACCORDANCE WITH BEST & ASSOCIATES DESIGN INTENT DRAWINGS FP101, FP102, FP103, FP201 AND FP202 DATED AUGUST 4, 2017 IN CONJUNCTION WITH THE FOLLOWING:

- MANCHESTER FIRE & RESCUE
- ADOPTED EDITION OF NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
- ADOPTED EDITION OF NFPA 14, STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS
- ADOPTED EDITION OF NFPA 20, STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION

CONTRACTORS RESPONSIBILITIES EXCLUDES AND ELECTRICAL WORK.

ALL MATERIALS AND DEVICES TO BE APPROVED FOR FIRE SERVICE.

ALL PIPING ON THE MAIN LEVEL AND ANY EXPOSED PIPING SHALL BE STEEL WITH GROOVED OR SCREWED FITTINGS.

ALL CONCEALED PIPING ON FLOORS 2, 3 AND 4 SHALL BE CPVC WITH CPVC FITTINGS.

ALL HANGERS SHALL BE IN ACCORDANCE WITH NFPA 13 AND THE HANGER LISTING REQUIREMENTS (SEE SPK2).

CONTRACTOR SHALL FIELD VERIFY ALL SPRINKLER AND PIPE LOCATIONS PRIOR TO INSTALLATION.

ALL STEEL PIPE MEASUREMENTS ARE CUT.

ALL CPVC PIPE MEASUREMENTS ARE CENTER-TO-CENTER.

PROVIDE AUXILIARY DRAINS THROUGHOUT FACILITY AS NEEDED IN ACCORDANCE WITH NFPA 13.

CONTRACTOR SHALL FIELD VERIFY ALL CEILING HEIGHTS PRIOR TO INSTALLATION.

PROVIDE SPARE HEAD CABINETS IN ACCORDANCE WITH NFPA 13.

PROVIDE ALL PERTINENT SIGNS IN ACCORDANCE WITH NFPA 13.

ALL HANGERS SHALL BE FIELD LOCATED IN ACCORDANCE WITH NFPA 13.

PROVIDE PIPE SLEEVES AND FIRE CAULKING IF INCLUDED IN THE CONTRACT.

**CPVC COMPATIBILITY**

THIS BUILDING CONTAINS A CPVC FIRE SPRINKLER SYSTEM. THIS IS A LIFE SAFETY ASSEMBLY AND MUST BE TREATED CAREFULLY. PLEASE READ THE FOLLOWING BEFORE PERFORMING ANY ACTIVITY THAT COULD COME INTO CONTACT WITH THIS SYSTEM.

CPVC PIPING COMPONENTS MAY BE DAMAGED BY CERTAIN SUBSTANCES AND CONSTRUCTION PRACTICES.

DO NOT STACK, SUPPORT, HANG EQUIPMENT, OR HANG FLEXIBLE WIRE OR CABLE, ESPECIALLY COMMUNICATIONS CABLE, OR OTHER MATERIAL ON THE FIRE SPRINKLER SYSTEM.

ONLY SYSTEM COMPATIBLE MATERIALS INCLUDING BUT NOT LIMITED TO SOLVENT CEMENTS, CAULKS, SEALANTS, CUTTING OILS AND THREAD PASTES AS NOTED BY THE CPVC FIRE SPRINKLER PIPING SYSTEM MANUFACTURER'S INSTALLATION INSTRUCTIONS SHOULD BE USED IN CONTACT WITH THIS SYSTEM.

DO NOT EXPOSE CPVC PRODUCTS TO INCOMPATIBLE SUBSTANCE SUCH AS CUTTING OILS, NON-WATER BASED PAINTS, PACKING OILS, TRADITIONAL PIPE THREAD PASTE AND DOPE, FUNGICIDES, TERMITICIDES, INSECTICIDES, DETERGENTS, BULKING CAULKS, ADHESIVE TAPE, SOLDER FLUX, FLEXIBLE WIRE OR CABLE (WITH SPECIAL CONSIDERATION FOR COMMUNICATIONS CABLING), AND NON-APPROVED SPRAY FOAM INSULATION MATERIALS.

DO NOT EXPOSE CPVC PRODUCTS TO EDIBLE OILS, SOLVENTS, OR GLYCOL-BASED ANTIFREEZE FLUIDS.

DO NOT EXPOSE CPVC PRODUCTS TO OPEN FLAMES, SOLDER, AND SOLDERING FLUX.

DO NOT DROP, DISTORT OR IMPACT CPVC PRODUCTS OR ALLOW OBJECTS TO BE DROPPED ON THEM.

DO NOT HANDLE CPVC PRODUCTS WITH GLOVES CONTAMINATED WITH OILS (HYDROCARBONS) OR OTHER INCOMPATIBLE MATERIALS.

DO NOT INJECT SYSTEM WITH M.I.C. INHIBITORS UNLESS THEY ARE LISTED IN COMBINATION WITH THIS SYSTEM.

FAILURE TO FOLLOW THIS NOTICE MAY CAUSE CRACKS OR FRACTURES TO DEVELOP IN CPVC PRODUCTS RESULTING IN PROPERTY DAMAGE DUE TO LEAKS OR FLOODING. THE PRESENCE OF ANY VISIBLE CRACKS MAY REQUIRE PARTIAL OR FULL SYSTEM REPLACEMENT. FOR ADDITIONAL INFORMATION CONTACT THE GENERAL CONTRACTOR OR THE FIRE SPRINKLER SYSTEM INSTALLER.

**DESIGN CRITERIA – SEE SPK6 & SPK9**

DESIGN CRITERIA AS PER BEST & ASSOCIATES ARCHITECTS DRAWINGS FP101, FP102, FP103, FP201, AND FP202 DATED AUGUST 4, 2017.

SPRINKLERS FOR THIS PROJECT ARE INTERMEDIATE-TEMPERATURE HEADS WHICH WILL PROVIDE GREATER SPRINKLER PLACEMENT FLEXIBILITY CONCERNING DISTANCES FROM HEAT SOURCES AND ELIMINATE THE GUESSWORK OF WHETHER SPRINKLERS WILL EXPERIENCE AMBIENT TEMPERATURES GREATER THAN PERMITTED WITH ORDINARY TEMPERATURE SPRINKLERS.

ALL SPRINKLERS FOR DWELLING UNITS AND CORRIDORS ON THE 2ND, 3RD AND 4TH FLOORS AND A LIMITED NUMBER OF DWELLING UNITS ON THE FIRST FLOOR SHALL BE RESIDENTIAL. ALL OTHER SPRINKLER HEADS SHALL BE QUICK-RESPONSE.

THE RESIDENTIAL SPRINKLERS ON THE FOURTH FLOOR SHALL BE HYDRAULICALLY CALCULATED BASED ON THE FOUR (4) CONTIGUOUS SPRINKLERS THAT TOGETHER PRODUCE THE GREATEST DEMAND. ONE (1) SET OF CALCULATIONS FOR THE VIKING VK486 RESIDENTIAL PENDENT SPRINKLER AND ONE (1) SET OF CALCULATIONS FOR THE VIKING VK486 RESIDENTIAL SIDEWALL SPRINKLER.

Hydraulic Information		Hydraulic Information	
Remote Area 1		Remote Area 2	
OCCUPANCY CLASSIFICATION	Residential / Light Hazard	OCCUPANCY CLASSIFICATION	Residential / Light Hazard
DENSITY (gpm/ft²)	0.10 for 900ft² (Actual 364ft²)	DENSITY (gpm/ft²)	0.10 for 909ft² (Actual 909ft²)
TOTAL HEADS FLOWING	4	TOTAL HEADS FLOWING	4
K-FACTOR	4.9	K-FACTOR	4
TOTAL WATER REQUIRED	82.20	TOTAL WATER REQUIRED	93.79
TOTAL PRESSURE REQUIRED	-38.23	TOTAL PRESSURE REQUIRED	-18.44
BASE OF RISER (gpm)	82.20	BASE OF RISER (gpm)	93.79
BASE OF RISER (psi)	62.78	BASE OF RISER (psi)	81.62
SAFETY MARGIN (psi)	+96.08 (166.1%)	SAFETY MARGIN (psi)	+76.25 (131.9%)
VIKING, VK486 PENDENT SPRINKLER 20"X20" MAX SPACING (10 FEET MAX OFF WALLS) 1/2" NPT, K4.9, 175°F LISTED FLOW AT START POINT = 20 GPM LISTED PRESSURE AT START POINT = 16.7 PSI		VIKING, VK486 HORIZONTAL SIDEWALL SPRINKLER 18"X20" MAX SPACING (9 FEET MAX OFF WALLS) 1/2" NPT, K4.0, 175°F LISTED FLOW AT START POINT = 23 GPM LISTED PRESSURE AT START POINT = 33.1 PSI FOR INSTALLATION 6 TO 12 INCHES BELOW CLG	

FIRST FLOOR CALCULATIONS CONSIST OF TWO DESIGN AREAS: ONE (1) FOR LIGHT HAZARD OCCUPANCY AND ONE (1) FOR ORDINARY HAZARD GROUP 1 OCCUPANCY.

Hydraulic Information		Hydraulic Information	
Remote Area 3		Remote Area 4	
OCCUPANCY CLASSIFICATION	Light Hazard	OCCUPANCY CLASSIFICATION	Ordinary Group 1
DENSITY (gpm/ft²)	0.10 for 1500ft² (Actual 958ft²)	DENSITY (gpm/ft²)	0.15 for 1500ft² (Actual 888ft²)
QUICK RESPONSE REDUCTION	9"-2 Ceiling (40.0%) 900ft²	QUICK RESPONSE REDUCTION	8"-6 Ceiling (40.0%) 900ft²
TOTAL HOSE STREAMS	100.00	TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	7	TOTAL HEADS FLOWING	9
K-FACTOR	5.8	K-FACTOR	5.8
TOTAL WATER REQUIRED	480.83	TOTAL WATER REQUIRED	410.69
TOTAL PRESSURE REQUIRED	35.30	TOTAL PRESSURE REQUIRED	-32.77
BASE OF RISER (gpm)	330.83	BASE OF RISER (gpm)	160.69
BASE OF RISER (psi)	141.96	BASE OF RISER (psi)	21.69
SAFETY MARGIN (psi)	+19.53 (35.6%)	SAFETY MARGIN (psi)	+147.87 (268.4%)
VIKING, VK600 EXTENDED COVERAGE PENDENT 20"X20" MAX SPACING (10 FEET MAX OFF WALLS) 1/2" NPT, K5.6, 175°F LISTED FLOW AT START POINT = 40 GPM LISTED PRESSURE AT START POINT = 51.0 PSI		VIKING, VK302 STANDARD COVERAGE PENDENT 130 SF MAXIMUM SPACING 1/2" NPT, K5.6, 175°F LISTED FLOW AT START POINT = 14.91 GPM LISTED PRESSURE AT START POINT = 7 PSI	

**STANDPIPE CRITERIA – SEE SPK5**

STANDPIPE DESIGN TAKEN FROM BEST & ASSOCIATES ARCHITECTS DRAWING FP201 DATED AUGUST 4, 2017.

STANDPIPE TYPE: AUTOMATIC / WET  
STANDPIPE CLASSIFICATION: CLASS I  
REQUIRED FLOW: 750 GPM  
(500 GPM FOR 1ST STANDPIPE / 250 GPM FOR 2ND)  
REQUIRED PRESSURE: 100 PSI

**FIRE PUMP CRITERIA – SEE SPK4**

PUMP SIZE TAKEN FROM BEST & ASSOCIATES ARCHITECTS DRAWING FP201 DATED AUGUST 4, 2017.

ELECTRIC VERTICAL IN-LINE FIRE PUMP (8" SUCTION FLANGE / 6" DISCHARGE FLANGE)

CHURN / SHUT-OFF = 128 PSI @ 0 FLOW  
(140% OF PUMP'S RATED PRESSURE @ 0 FLOW)

PUMP RATING = 1000 GPM @ 90 PSI

OVERFLOW / OVERLOAD = 58.5 PSI @ 1500 GPM  
(65% OF RATED PRESSURE AT 150% OF RATED FLOW)



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To Whom It May Concern,

Whenever a fire booster pump is designed into a fire sprinkler system supply, with the capacity (in itself) to exceed the system demand, it is considered by any hydraulics program to be an "over-sized" pump. This simply means that, based on the information given, the program is reporting that the pump could be reduced in pressure output and still be capable of accommodating the remote area being calculated.

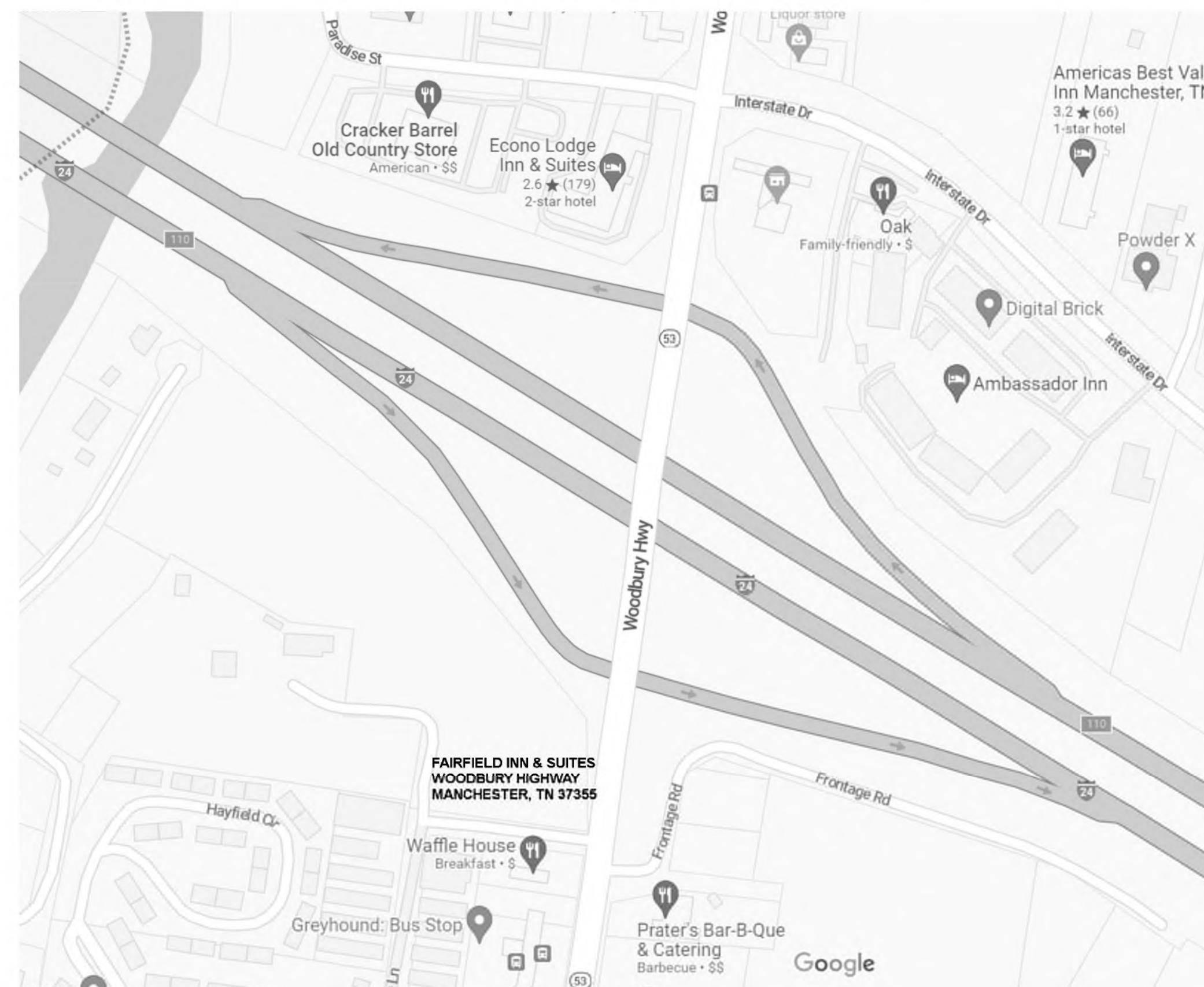
This condition commonly occurs when a pump is required for a more demanding system area but a specific calculation is for a less demanding area. With an over-sized booster pump, the negative pressures being reported from the suction-side of the pump to the source are accounting for the friction losses within this piping; and, a negative required pressure at the source is quite simply saying that this is the amount of pressure that is not needed from the available pressure at the source.

When viewed with this in mind, there is really no better way to accurately report this circumstance. A few other hydraulic software programs use some "creative reporting methods" to avoid showing these negative values; we chose not to do so. We do have an option in the program that will report the Required Pressure of 0.0 PSI, at the Supply on the Hydraulic Summary report, which is also an accurate statement. The Hydraulic Analysis report, however, still reports the actual values. This is only available in AutoSPRINK 2019 and older versions. AutoSPRINK 2020 and newer does not support this feature.

A negative Required Pressure in no way implies any problem with the City/District water supply, quite to the contrary. The most obvious time that there would be a problem with the water supply is if the demand GPM of the system were to exceed the available GPM @ 0.0 PSI. (The City/District water provider may have their own restrictions for a minimum drawdown pressure.)



FAIRFIELD MANCHESTER



↑ SITE LOCATION  
NTS

**CODE COMPLIANCE**

INSTALLATIONS SHALL COMPLY WITH THE FOLLOWING:

TENNESSEE STATE FIRE MARSHAL:

TFM NUMBER: 18976  
PROJECT NUMBER: 2017-06-28-02

NFPA 13 – STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS  
NFPA 14 – STANDARD FOR THE INSTALLATION OF STANDPIPES AND HOSE SYSTEMS  
NFPA 20 – STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION

**AUTHORITIES HAVING JURISDICTION (AHJ):**

FIRE CHIEF: GEORGE CHAMBERS, 200 WEST FORT STREET, MANCHESTER, TN 37355  
EMAIL: GCHAMBER@CITYOFMANCHESTER.TN.COM  
OFFICE: (931) 728-2999  
CELL: (931) 952-1911

FIRE INSPECTOR: ALLEN BAUMSTEIN, 200 WEST FORT STREET, MANCHESTER, TN 37355  
EMAIL: ABAUMSTEIN@CITYOFMANCHESTER.TN.COM  
OFFICE: (931) 723-1484  
CELL: (931) 581-4280

BUILDING INSPECTOR: BRITTANY FISKE, 200 WEST FORT STREET, MANCHESTER, TN 37355  
EMAIL: BFISKE@CITYOFMANCHESTER.TN.COM  
OFFICE: (931) 723-1484  
CELL: (931) 952-9017

**ACTUAL FLOOR AREAS**

FIRST FLOOR – 11,026 SF  
SECOND FLOOR – 10,955 SF  
THIRD FLOOR – 10,356 SF  
FOURTH FLOOR – 10,356 SF  
TOTAL AREA – 43,891 SF

**FAIRFIELD INN & SUITES  
by MARRIOTT #9282007**  
WOODBURY HIGHWAY 53 & I-24  
MANCHESTER, TN 37355

REVISION NOTES	NO	DESCRIPTION	DATE



PREPARED BY:  
GPS FIRE SAFETY SYSTEMS  
CONTACT INFORMATION:  
4116 WALNEY RD, SUITE A  
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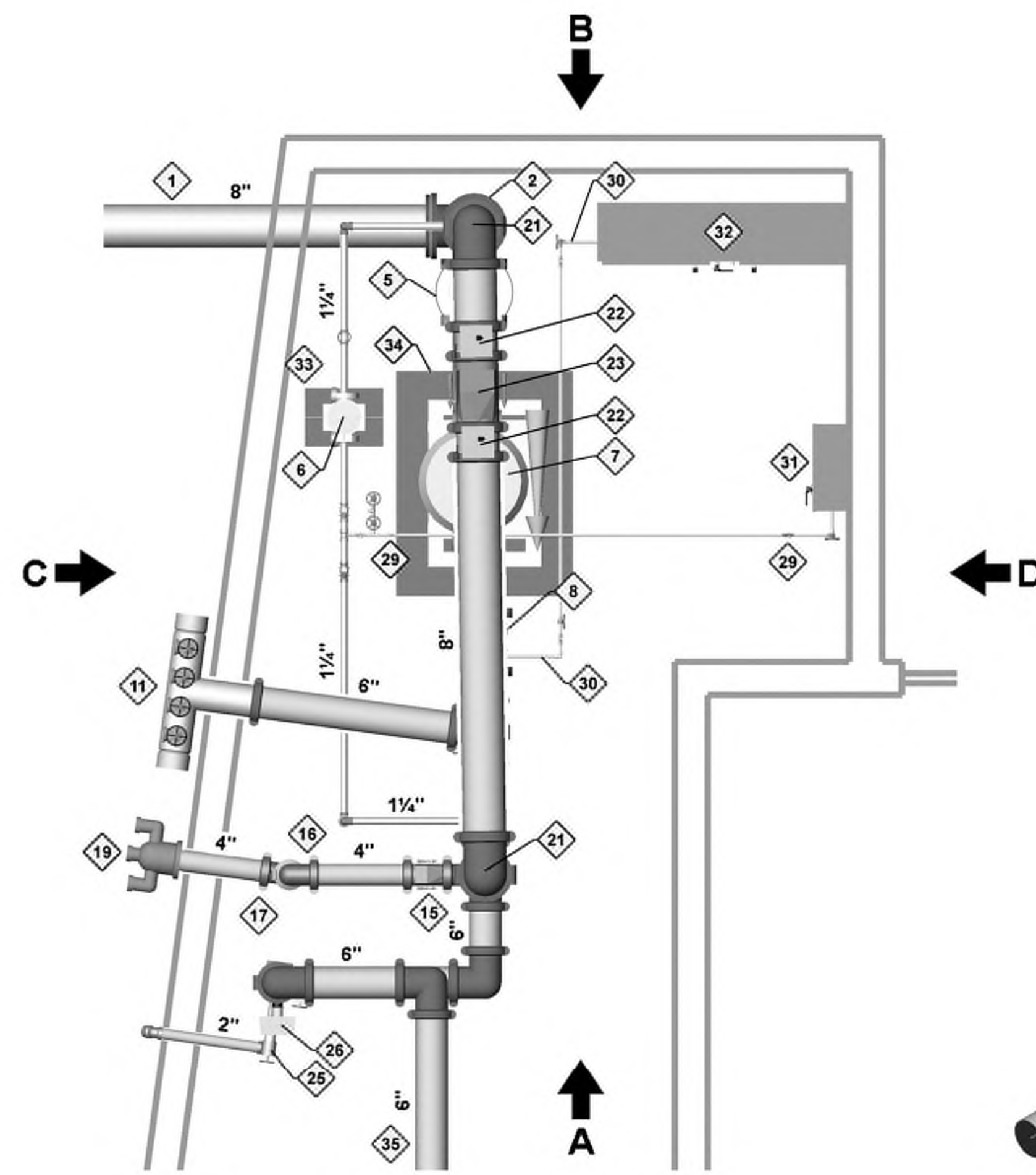
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DATE: 10/17/2023  
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SHEET NUMBER:

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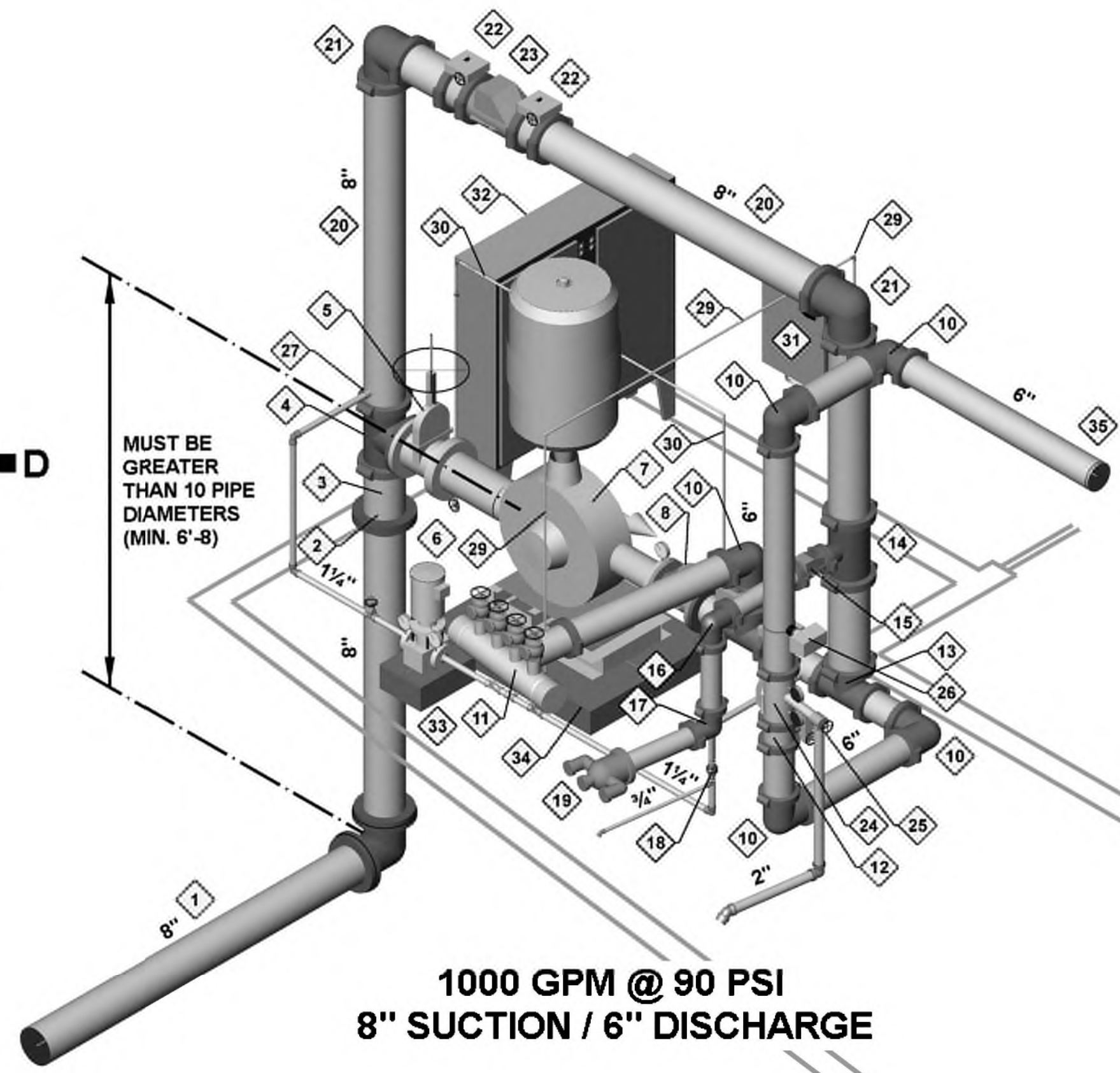
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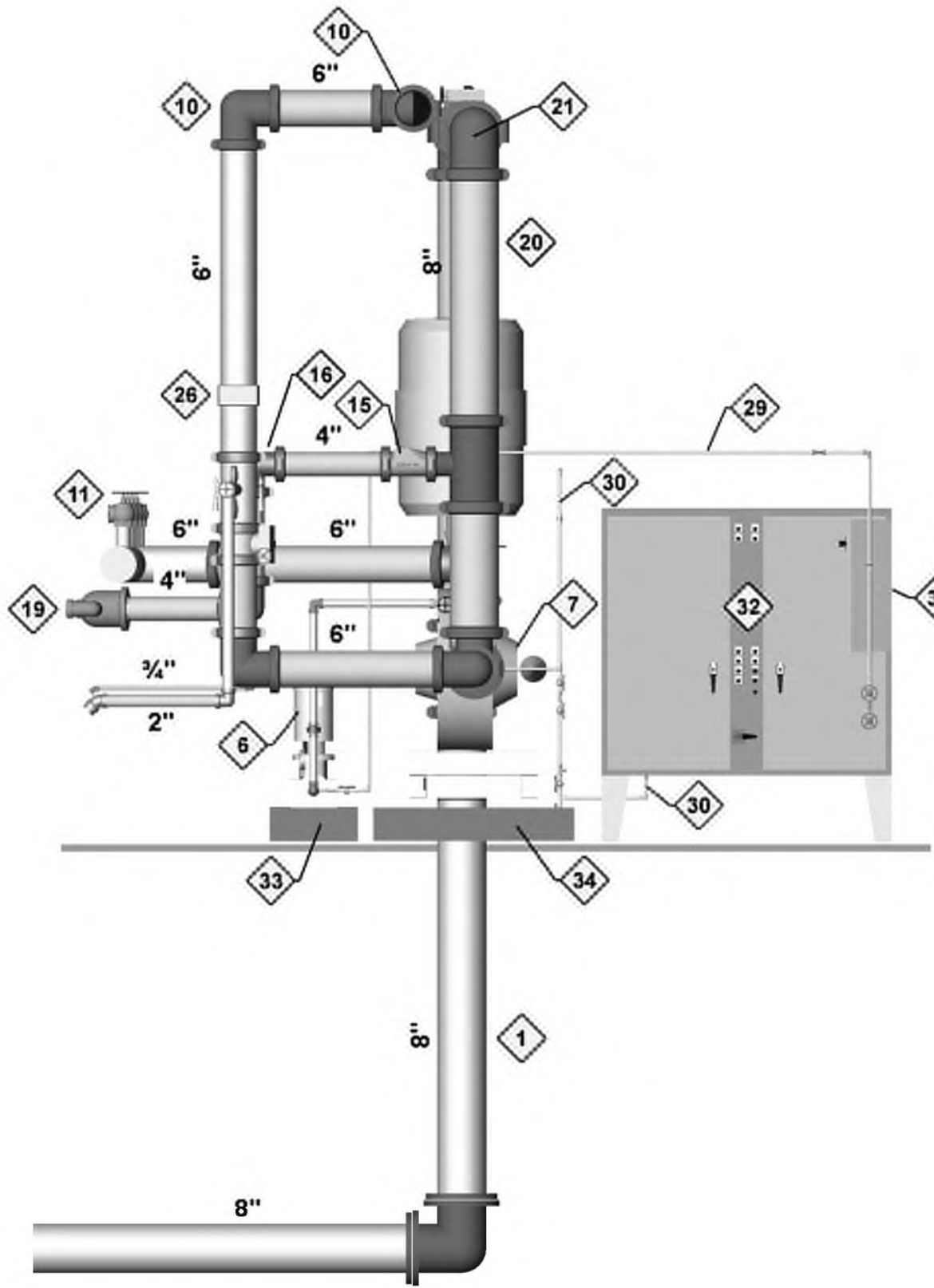


**FIRE PUMP PLAN**  
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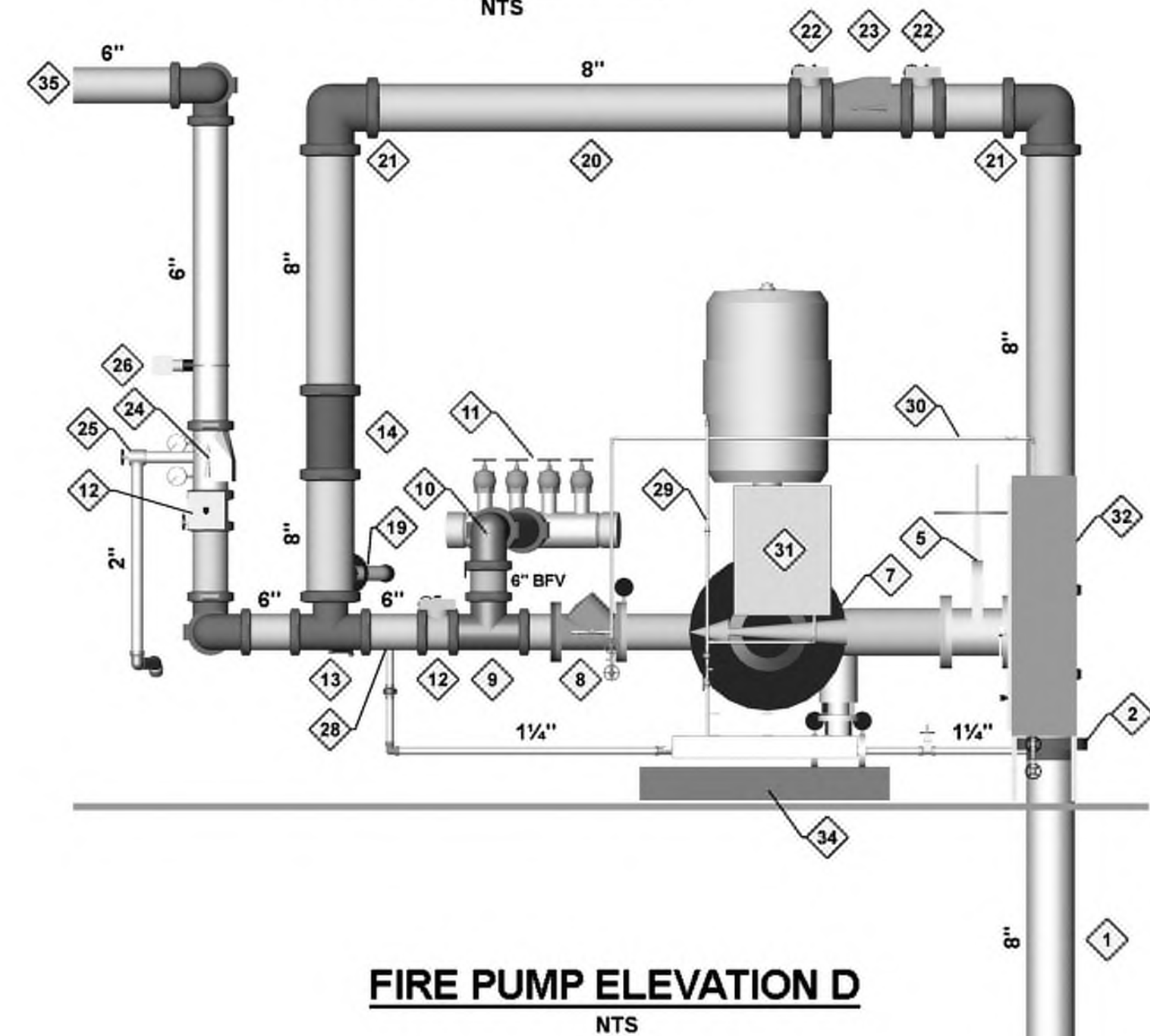


**1000 GPM @ 90 PSI**  
**8" SUCTION / 6" DISCHARGE**

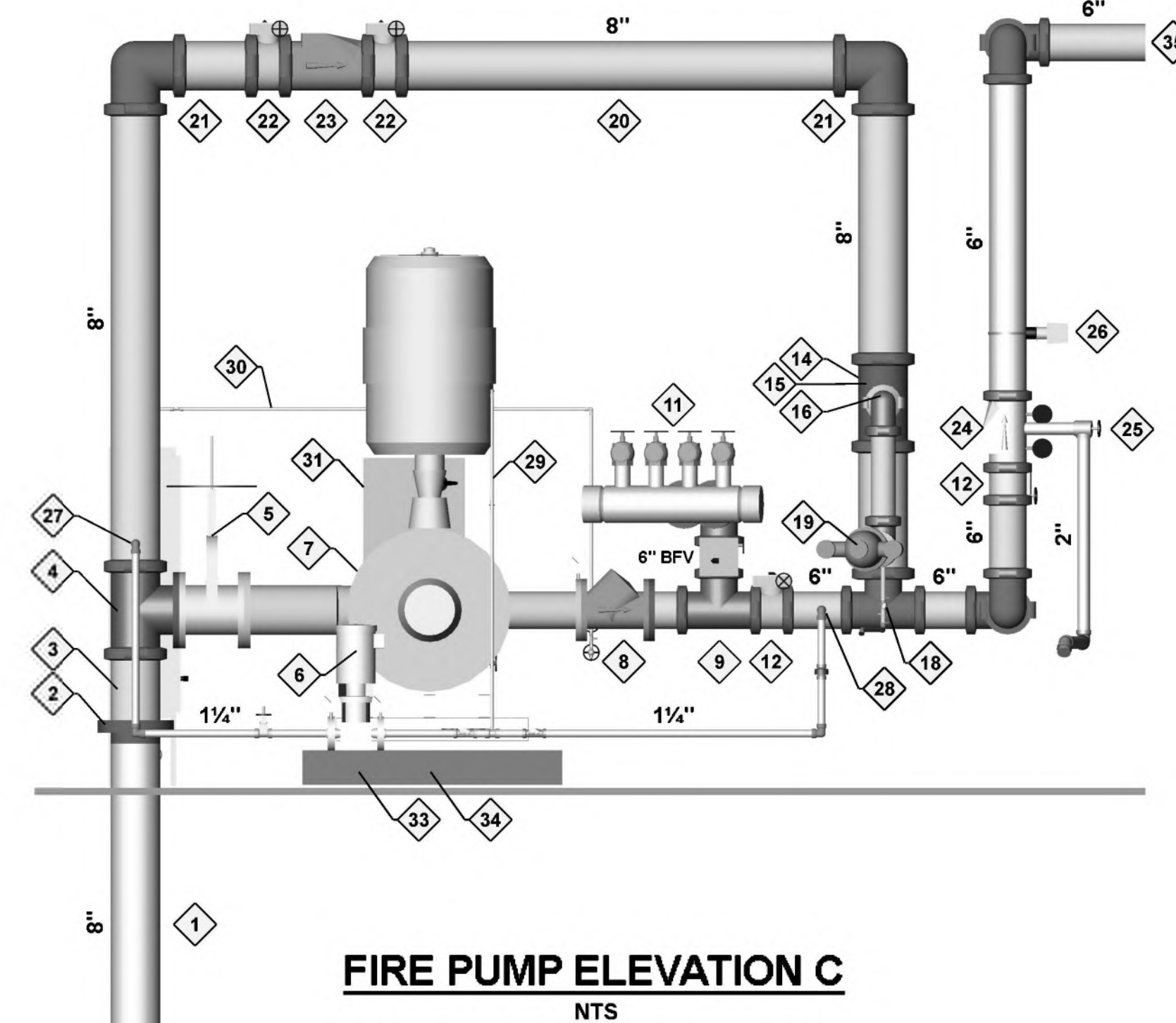
**FIRE PUMP ISOMETRIC**  
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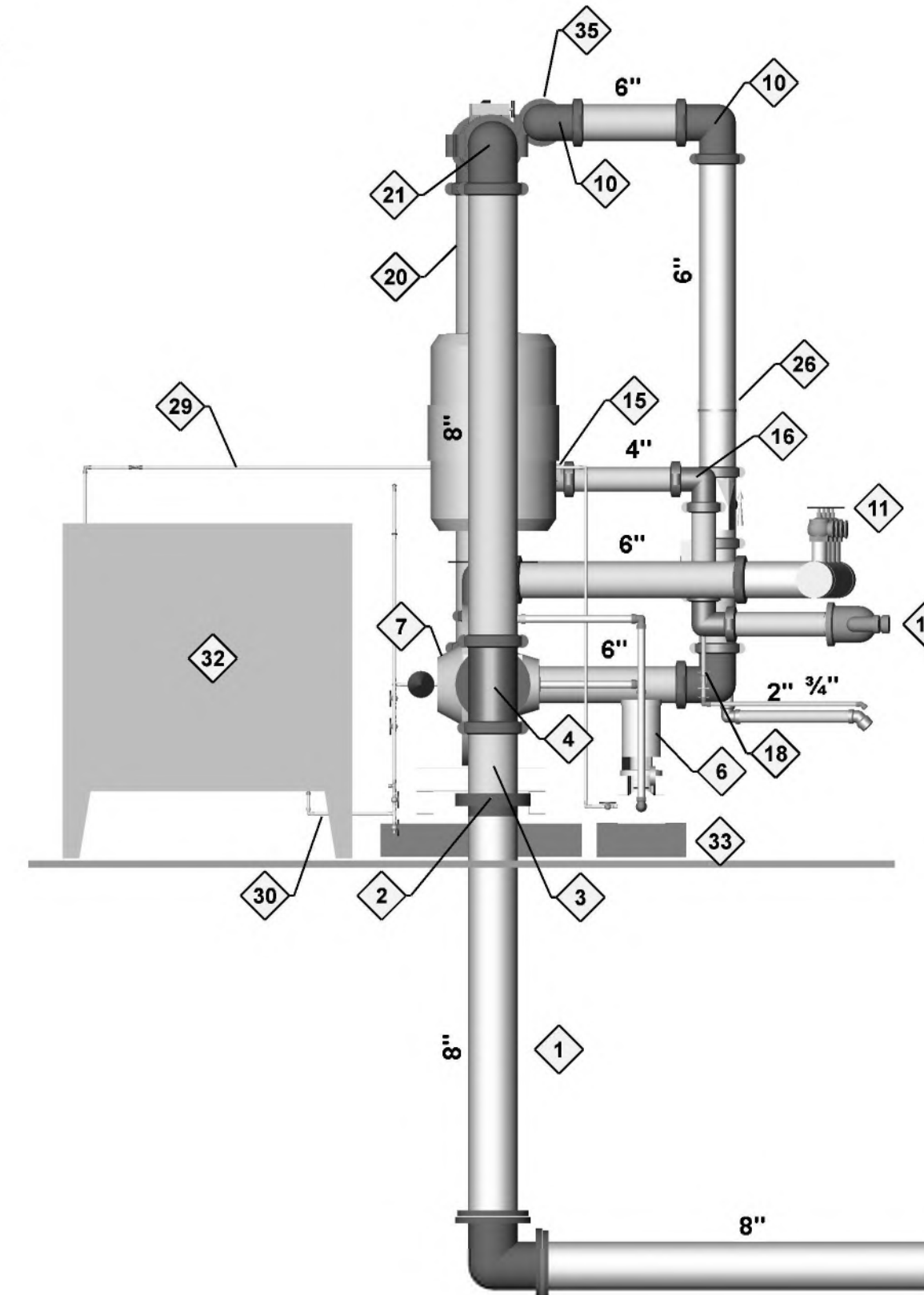
**FIRE PUMP ELEVATION A**  
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**FIRE PUMP ELEVATION D**  
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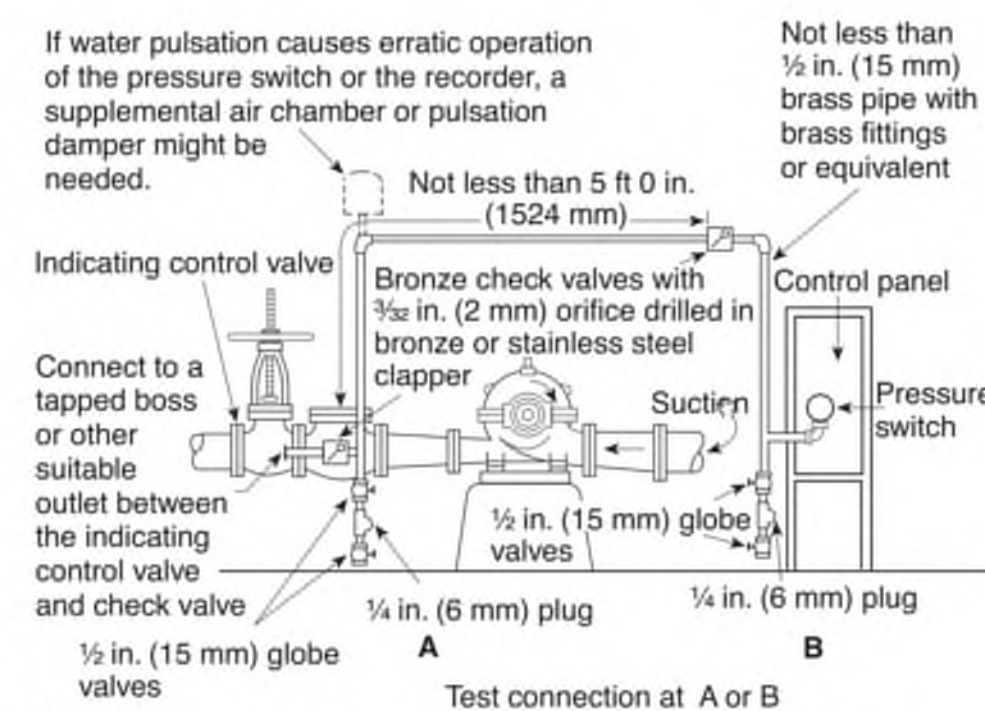
**FIRE PUMP ELEVATION C**  
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**FIRE PUMP ELEVATION B**  
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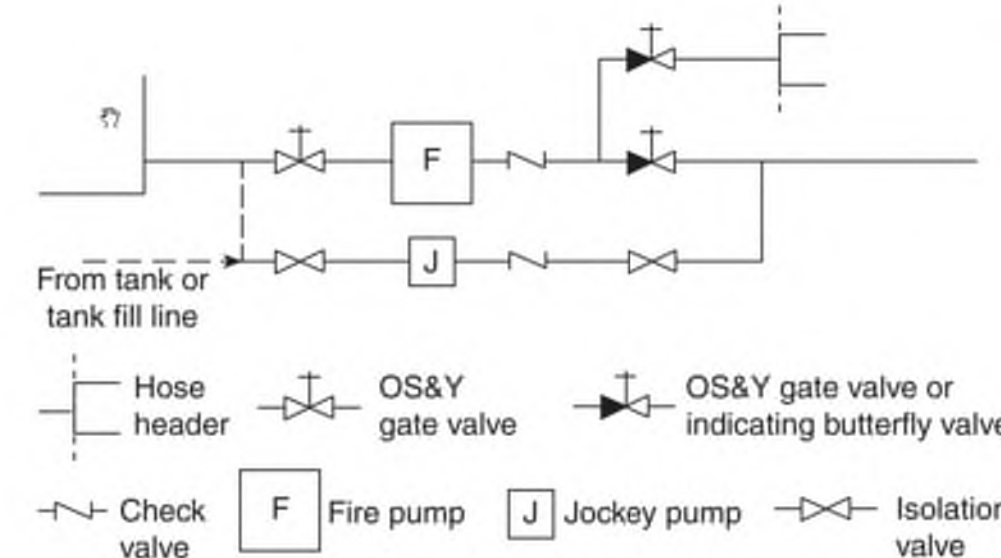
**FIRE PUMP EQUIPMENT**

- 1 8" UNDERGROUND FIRE MAIN BY OTHERS
- 2 AMERICAN EAGLE WORK BEGINS AT 1-FT ABOVE FINISH FLOOR
- 3 8" FILLER PIECE (CUT IN FIELD)
- 4 8" GROOVED OR FLANGED TEE
- 5 8" FLANGED OS&Y GATE VALVE W/ TAMPER SWITCH
- 6 JOCKEY PUMP (1% OF FIRE PUMP'S FLOW AND 110% OF FIRE PUMP'S PRESSURE)  
FLOW RATE & PRESSURE: 10 GPM @ 100 PSI
- 7 ELECTRIC VERTICAL IN-LINE FIRE PUMP (8" SUCTION FLANGE / 6" DISCHARGE FLANGE)  
CHURN / SHUT-OFF = 125 PSI @ 0 FLOW  
(140% OF PUMP'S RATED PRESSURE)  
PUMP RATING = 1000 GPM @ 90 PSI  
OVERFLOW / OVERLOAD = 58.5 PSI @ 1500 GPM  
(65% OF RATED PRESSURE AT 150% OF RATED FLOW)
- 8 6" FLANGED CHECK VALVE
- 9 6" GROOVED TEE WITH BUTTERFLY VALVE FOR TEST HEADER
- 10 6" GROOVED 90° ELBOW
- 11 6" TEST HEADER W/ FOUR (4) 2 1/2" HOSE VALVES W/ CAPS & CHAINS
- 12 6" GROOVED BUTTERFLY VALVE W/ TAMPER SWITCH
- 13 6" GROOVED TEE W/ 8"x6" RED COUP FOR 8" BYPASS
- 14 8"x4 GROOVED RED TEE FOR FIRE DEPARTMENT CONNECTION
- 15 4" GROOVED CHECK VALVE
- 16 4" GROOVED 90° ELBOW
- 17 4" GROOVED DRAIN ELBOW (OUTLET FOR BALL DRIP)
- 18 1/2" BALL DRIP
- 19 THREE (3) 2 1/2" OUTLET FIRE DEPARTMENT CONNECTION (FDC CONNECTION)  
SIZES SHALL BE BASED ON THE STANDPIPE SYSTEM DEMAND AND SHALL  
INCLUDE ONE (1) 2 1/2" INLET PER EVERY 250 GPM)
- 20 8" FIRE PUMP BY-PASS LINE
- 21 8" GROOVED 90° ELBOW
- 22 8" GROOVED BUTTERFLY VALVE
- 23 8" GROOVED CHECK VALVE
- 24 6" GROOVED EASY RISER SWING CHECK VALVE MODEL E-1 W/ TRIM
- 25 2" MAIN DRAIN (PIPED TO OUTSIDE AND SPILL ON GRADE)
- 26 6" FLOW SWITCH
- 27 1 1/2" THREAD-O-LET FOR JOCKEY PUMP CONNECTION
- 28 6" GROOVED / GROOVED SHORT PIECE OF PIPE W/ 1 1/2" THREAD-O-LET FOR JOCKEY PUMP CONNECTION
- 29 SENSING LINE FOR JOCKEY PUMP CONTROL PANEL
- 30 SENSING LINE FOR FIRE PUMP CONTROL PANEL
- 31 JOCKEY PUMP CONTROL PANEL
- 32 FIRE PUMP CONTROL PANEL
- 33 JOCKEY PUMP PAD
- 34 FIRE PUMP PAD
- 35 6" FEEDING TWO (2) STANDPIPES AND FOUR (4) LEVELS OF FIRE SPRINKLERS



Notes:  
(1) Solenoid drain valve used for engine-driven fire pumps can be at A, B, or inside controller enclosure.  
(2) If water is clean, ground-face unions with noncorrosive diaphragms drilled for 1/2 in. orifices can be used in place of the check valves.

**FIGURE A.4.32(a) Piping Connection for Each Automatic Pressure Switch (for Electric-Driven and Diesel Fire Pump and Jockey Pumps).**



**FIGURE A.4.27.6.5 Jockey Pump Installation with Fire Pump.**

**FIRE PUMP / JOCKEY PUMP SENSING LINE DETAIL**  
NTS (FROM NFPA 20, 2019)

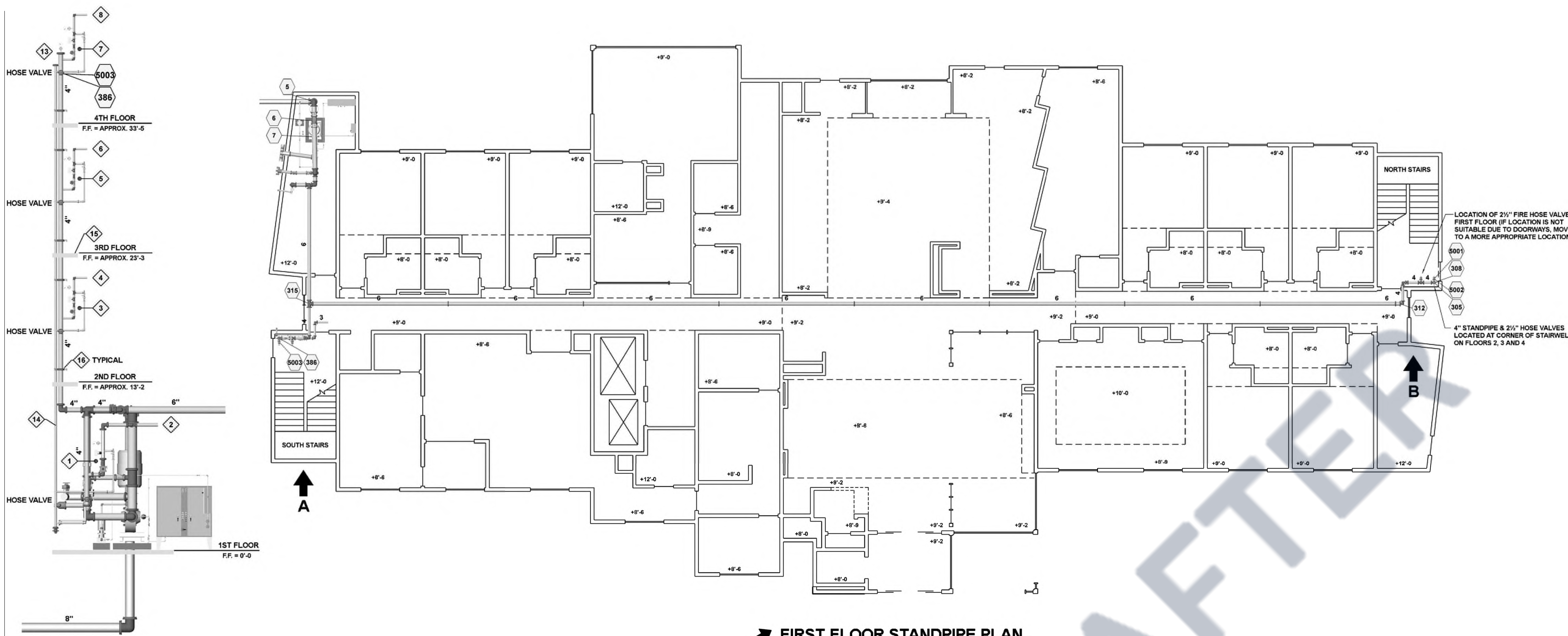
- CHECKLIST FOR INSTALLATION OF SENSING LINES IN JOCKEY AND FIRE PUMP SYSTEMS**
- BOTH FIRE PUMP AND JOCKEY PUMP SENSING LINES ARE PIPED EXACTLY THE SAME WITH SEPARATE CONNECTIONS.
  - NON-FERROUS MATERIAL IS USED FOR THE SENSING LINE (BRONZE, STAINLESS, OR COPPER).
  - BOTH LINES HAVE 2 ORIFICES DRILLED INTO CHECK VALVES AT LEAST 5 FEET APART
  - SIZE OF THE ORIFICE IN CHECK VALVES IS 3/32 INCH
  - ARROWS ON CHECK VALVES POINT AWAY FROM THE CONTROL PANEL
  - SIZE OF SENSING LINES ARE 1/2"
  - JOCKEY PUMP IS INSTALLED ON THE HIGH PRESSURE SIDE OF THE FIRE PUMP PIPING.
  - FIRE PUMP IS INSTALLED ON THE HIGH PRESSURE SIDE OF THE FIRE PUMP PIPING.
  - A 3/4" CASING RELIEF VALVE HAS BEEN INSTALLED ON THE DISCHARGE SIDE OF THE FIRE PUMP BEFORE - THE FIRE PUMP CHECK VALVE.
  - THE DIRECTION OF THE ARROW ON THE CASING RELIEF VALVE IS POINTING TOWARDS THE DRAIN.

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DATE: 10/17/2023  
REVISION: FA-03  
SHEET NUMBER: FA - RISER DIAGRAM I

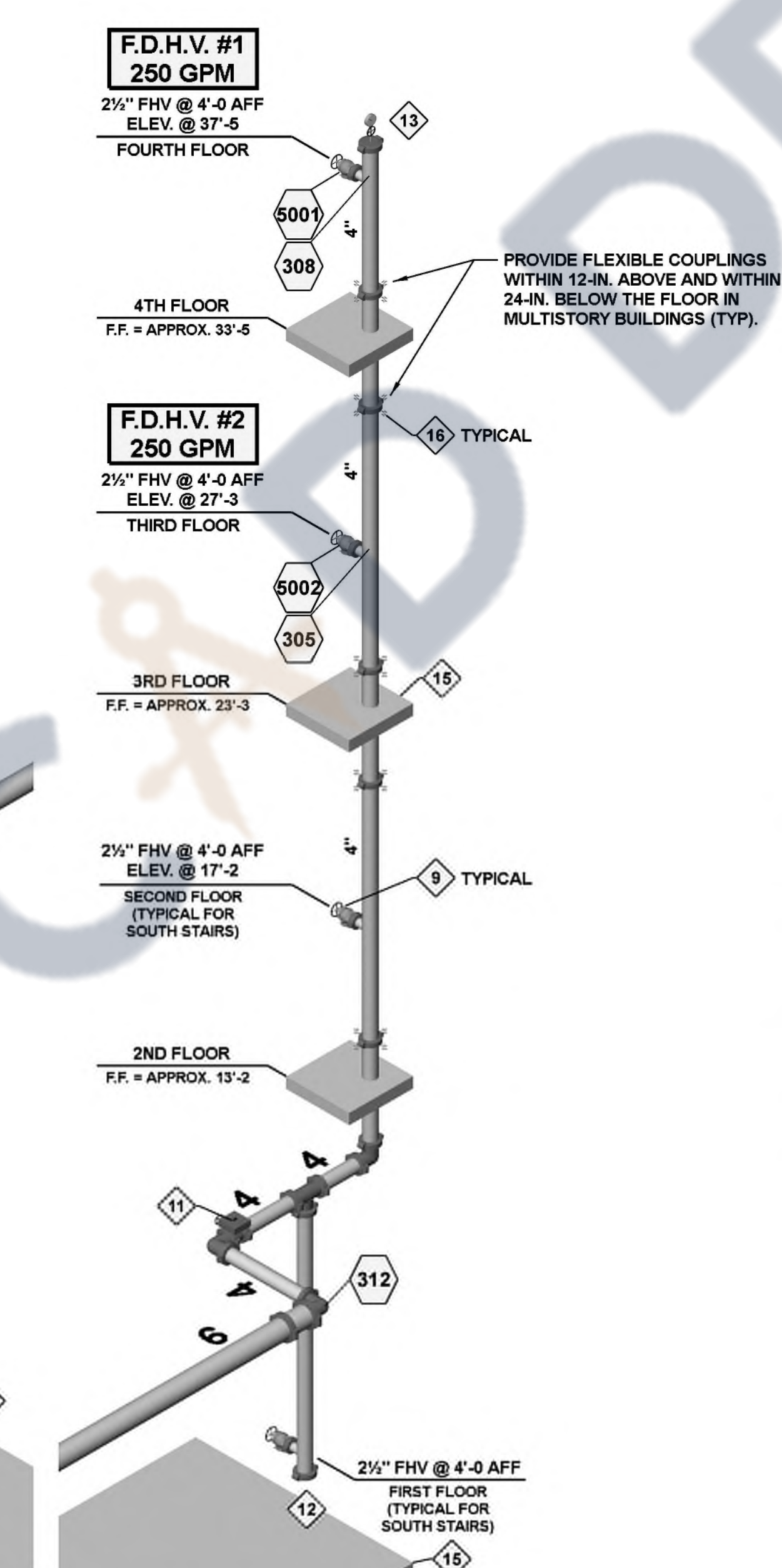
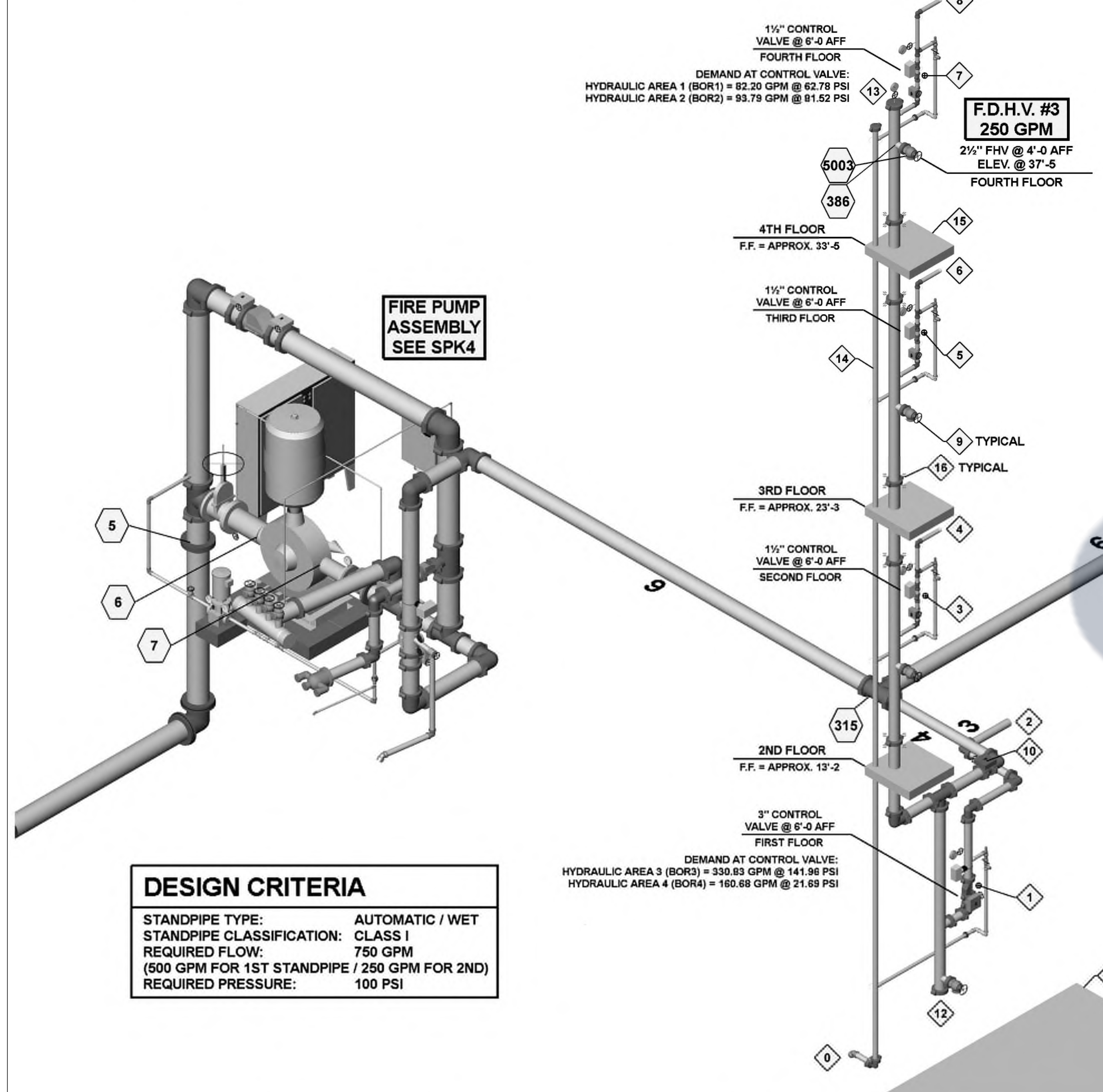
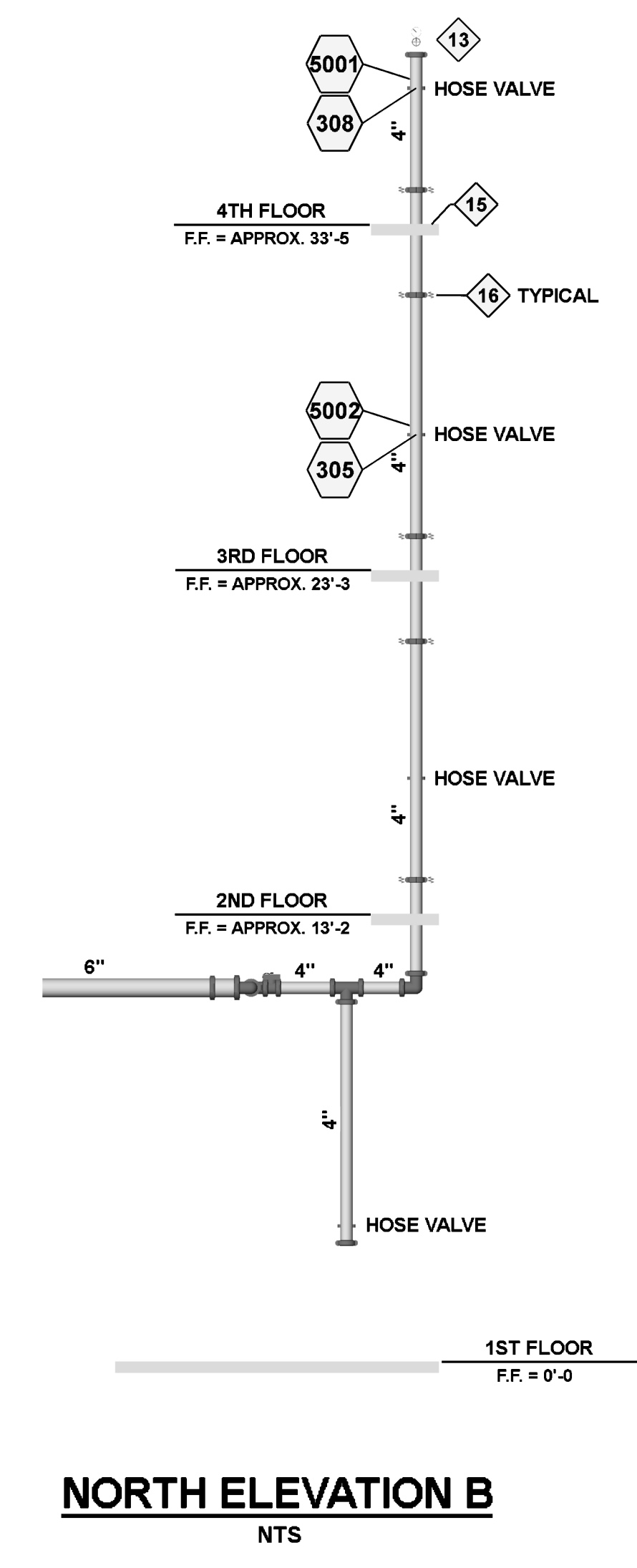
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**by MARRIOTT #9282007**  
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MANCHESTER, TN 37355

REVISION NOTES	NO	DESCRIPTION	DATE

**FIRE SAFETY SYSTEMS**  
PREPARED BY:  
GPS FIRE SAFETY SYSTEMS  
CONTACT INFORMATION:  
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PHONE: (571) 548-2185



**SOUTH ELEVATION A**  
NTS



- STANDPIPE EQUIPMENT**
- 1 FIRST FLOOR 3" CONTROL VALVE ASSEMBLY
  - 2 3" TO FIRST FLOOR SPRINKLERS
  - 3 SECOND FLOOR 1 1/2" CONTROL VALVE ASSEMBLY
  - 4 1 1/2" TO SECOND FLOOR SPRINKLERS
  - 5 THIRD 1 1/2" CONTROL VALVE ASSEMBLY
  - 6 1 1/2" TO THIRD FLOOR SPRINKLERS
  - 7 FOURTH FLOOR 1 1/2" CONTROL VALVE ASSEMBLY
  - 8 1 1/2" TO FOURTH FLOOR SPRINKLERS
  - 9 2 1/2" FIRE HOSE VALVE (TYPICAL)
  - 10 4" SOUTH STAIRS BUTTERFLY VALVE W/ TAMPER SWITCH
  - 11 4" NORTH STAIRS BUTTERFLY VALVE W/ TAMPER SWITCH
  - 12 4" GROOVED COUPLING W/ CAP AT BOTTOM OF STANDPIPE
  - 13 4" GROOVED COUPLING W/ CAP & GAUGE AT TOP OF STANDPIPE
  - 14 STANDPIPE & RISER DRAIN (SIZED PER CHART BELOW)
  - 15 FLOOR SLABS (TYPICAL)
  - 16 4" FLEXIBLE COUPLINGS

**Sizing for Standpipe Riser Drains**

Standpipe Riser Size	Size of Drain Connection
Up to 2 in. (50 mm)	3/4 in. (20 mm) or larger
2 1/2 in. (65 mm), 3 in. (80 mm), or 3 1/2 in. (90 mm)	1 1/4 in. (32 mm) or larger
4 in. (100 mm) or larger	2 in. (50 mm) or larger

**Sizing for Standpipe Drains**

Standpipe Size	Size of Drain Connection
Up to 2 in. (50 mm)	3/4 in. (20 mm) or larger
2 1/2 in. (65 mm), 3 in. (80 mm), or 3 1/2 in. (90 mm)	1 1/4 in. (32 mm) or larger
4 in. (100 mm) or larger	2 in. (50 mm) or larger

**DESIGN CRITERIA**

STANDPIPE TYPE: AUTOMATIC / WET  
 STANDPIPE CLASSIFICATION: CLASS I  
 REQUIRED FLOW: 750 GPM  
 (500 GPM FOR 1ST STANDPIPE / 250 GPM FOR 2ND)  
 REQUIRED PRESSURE: 100 PSI

DEMAND AT CONTROL VALVE:  
 HYDRAULIC AREA 3 (BOR3) = 230.83 GPM @ 141.98 PSI  
 HYDRAULIC AREA 4 (BOR4) = 160.88 GPM @ 21.89 PSI

**FIRE PUMP & SOUTH STAIRS 4" STANDPIPE ISOMETRIC**  
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**NORTH STAIRS 4" STANDPIPE ISOMETRIC**  
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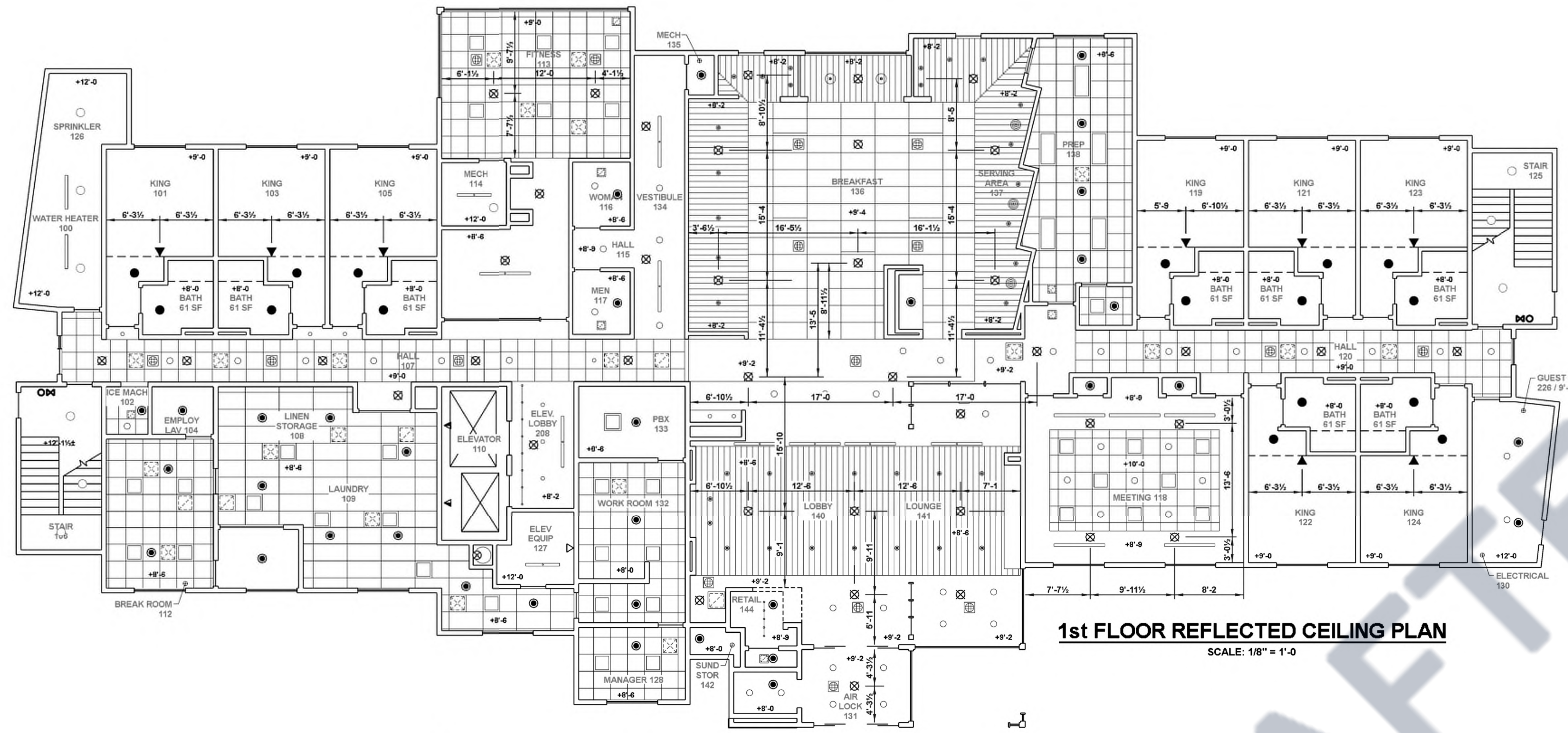
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 FA - RISER DIAGRAM I

**FAIRFIELD INN & SUITES**  
 by **MARRIOTT #9282007**  
 WOODBURY HIGHWAY 53 & I-24  
 MANCHESTER, TN 37355

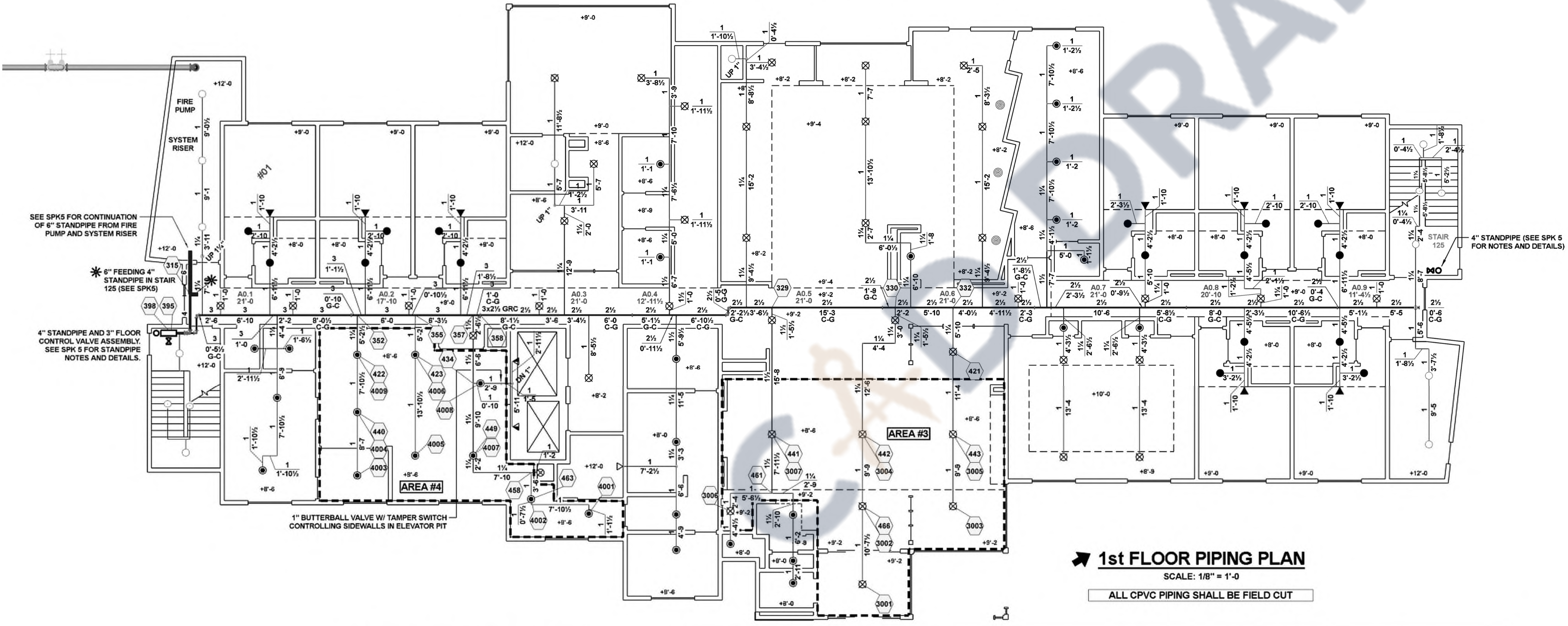
**REVISION NOTES**

NO	DESCRIPTION	DATE

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 PREPARED BY:  
 GPS FIRE SAFETY SYSTEMS  
 CONTACT INFORMATION:  
 4116 WALNEY RD, SUITE A  
 CHANTILLY, VA 20151  
 PHONE: (571) 548-2185



**1st FLOOR REFLECTED CEILING PLAN**  
SCALE: 1/8" = 1'-0"



**1st FLOOR PIPING PLAN**  
SCALE: 1/8" = 1'-0"  
ALL CPVC PIPING SHALL BE FIELD CUT

Hydraulic Information	
Remote Area 4	
OCCUPANCY CLASSIFICATION	Ordinary Group I
DENSITY (gpm/ft <sup>2</sup> )	0.15 for 1500ft <sup>2</sup> (Actual 688ft <sup>2</sup> )
QUICK RESPONSE REDUCTION	9'-6" Ceiling (40.0%) 900ft <sup>2</sup>
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	3
K-FACTOR	5.6
TOTAL WATER REQUIRED	410.68
TOTAL PRESSURE REQUIRED	-92.77
BASE OF RISER (gpm)	160.88
BASE OF RISER (psi)	21.69
SAFETY MARGIN (psi)	+147.87 (268.4%)
VIKING, VK302 STANDARD COVERAGE PENDENT 130 SF MAXIMUM SPACING 12" NPT, K5.6, 175°F LISTED FLOW AT START POINT = 14.81 GPM LISTED PRESSURE AT START POINT = 7 PSI	

Hydraulic Information	
Remote Area 3	
OCCUPANCY CLASSIFICATION	Light Hazard
DENSITY (gpm/ft <sup>2</sup> )	0.10 for 1500ft <sup>2</sup> (Actual 988ft <sup>2</sup> )
QUICK RESPONSE REDUCTION	9'-2" Ceiling (40.0%) 900ft <sup>2</sup>
TOTAL HOSE STREAMS	100.00
TOTAL HEADS FLOWING	7
K-FACTOR	5.6
TOTAL WATER REQUIRED	430.83
TOTAL PRESSURE REQUIRED	36.30
BASE OF RISER (gpm)	330.83
BASE OF RISER (psi)	141.98
SAFETY MARGIN (psi)	+19.53 (35.6%)
VIKING, VK600 EXTENDED COVERAGE PENDENT 20'x20' MAX SPACING (10 FEET MAX OFF WALLS) 12" NPT, K5.6, 175°F LISTED FLOW AT START POINT = 40 GPM LISTED PRESSURE AT START POINT = 51.0 PSI	

1st FLOOR SPRINKLER LEGEND											
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
⊗	Viking	VK600	Microfast Ext. Coverage	40	5.6	Pendent	1/2"	Quick	White	175°F	
⊙	Viking	VK468	Freedom Residential	16	4.9	Pendent	1/2"	Fast	White	175°F	
⊕	Viking	VK302	Microfast Std. Coverage	32	5.6	Pendent	1/2"	Quick	White	175°F	
⊖	Viking	VK305	Microfast Std. Coverage	2	5.6	Sidewall	1/2"	Quick	Brass	200°F	ELEVATOR PIT
⊗	Viking	VK468	Freedom Residential	8	4.9	Sidewall	1/2"	Fast	White	175°F	
⊕	Viking	VK302	Microfast Std. Coverage	1	5.6	Pendent	1/2"	Quick	Brass	175°F	LAUNDRY CHUTE
⊖	Viking	VK300	Microfast Std. Coverage	15	5.6	Upright	1/2"	Quick	Brass	175°F	
⊗	Viking	VK305	Microfast Std. Coverage	1	5.6	Sidewall	1/2"	Quick	White	175°F	ELEV EQUIP 127
				<b>Total = 115</b>							

DRAWING BY: SA  
DATE: 10/17/2023  
REVISION: FA-05  
SHEET NUMBER: FA - RISER DIAGRAM I

# FAIRFIELD INN & SUITES by MARRIOTT #9282007

WOODBURY HIGHWAY 53 & I-24  
MANCHESTER, TN 37355

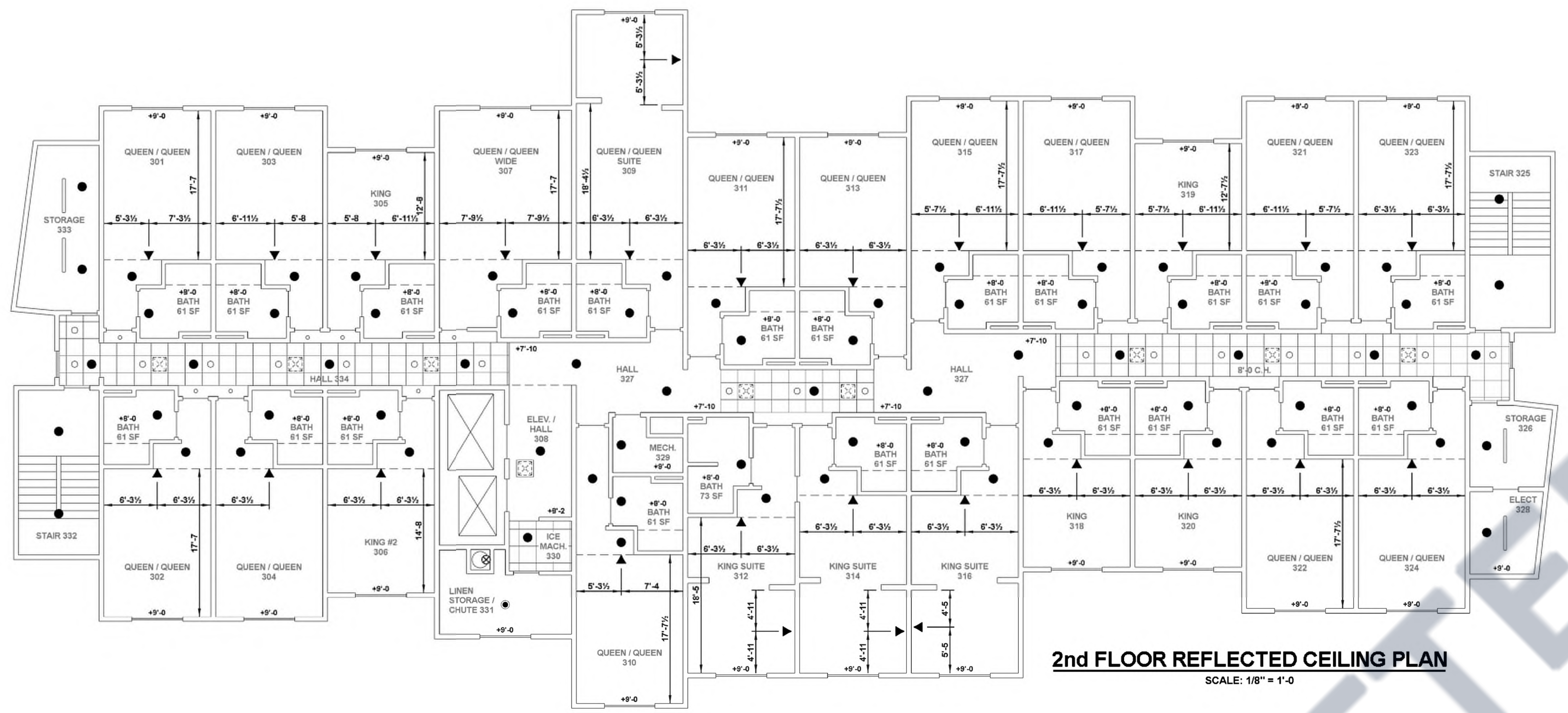
REVISION NOTES	DESCRIPTION	DATE
NO		

**FIRE SAFETY SYSTEMS**

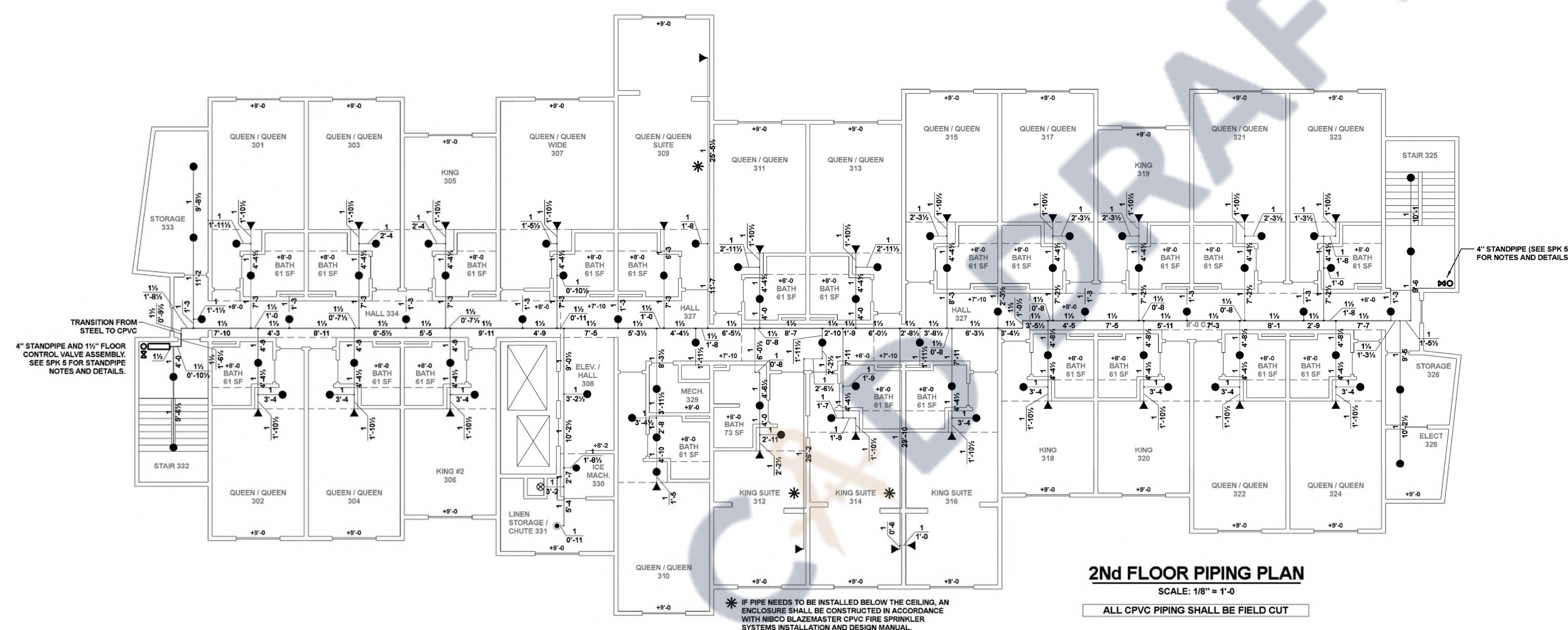
PREPARED BY:  
GPS FIRE SAFETY SYSTEMS  
CONTACT INFORMATION:  
4116 WALNEY RD. SUITE A  
CHANTILLY, VA 20151  
PHONE: (571) 548-2185

**FAIRFIELD INN & SUITES**  
**by MARRIOTT #9282007**  
WOODBURY HIGHWAY 53 & I-24  
MANCHESTER, TN 37355

REVISION NOTES	DESCRIPTION	DATE
NO		



**2nd FLOOR REFLECTED CEILING PLAN**  
SCALE: 1/8" = 1'-0"

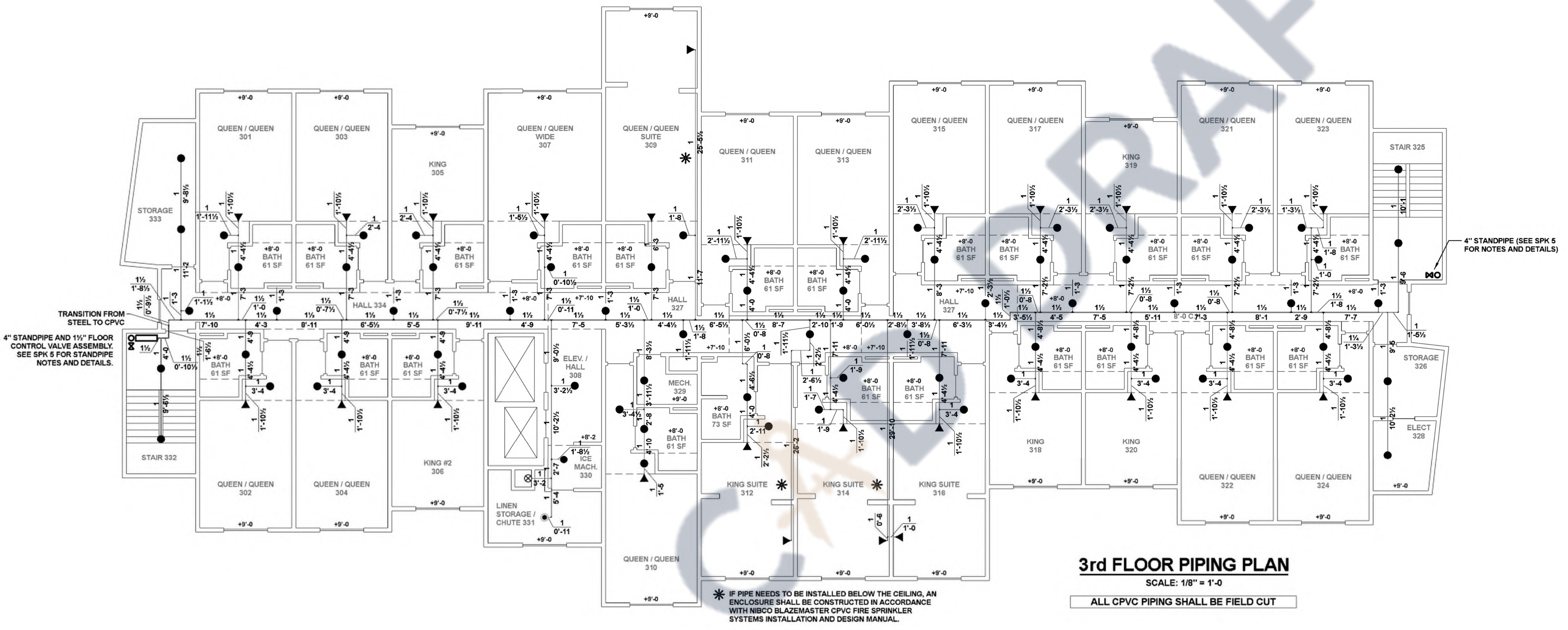
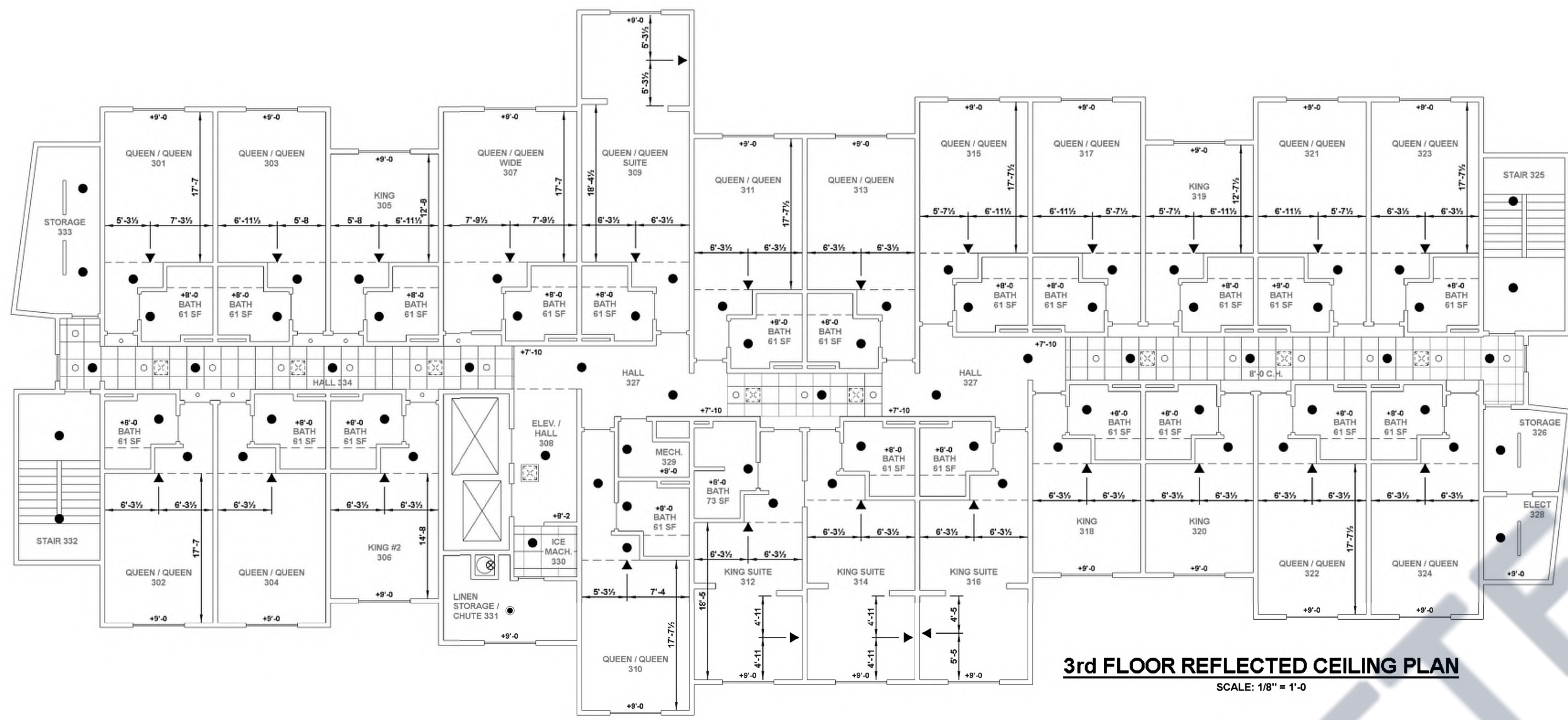


**2nd FLOOR PIPING PLAN**  
SCALE: 1/8" = 1'-0"  
ALL CPVC PIPING SHALL BE FIELD CUT

**2nd FLOOR SPRINKLER LEGEND**

Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
●	Wiking	VK468	Freedom Residential	71	4.3	Pendent	1/2"	Fast	White	175°F	
●	Wiking	VK486	Freedom Residential	27	4	Sidewall	1/2"	Fast	White	175°F	
●	Wiking	VK302	Microfast Std. Coverage	1	5.6	Pendent	1/2"	Quick	White	175°F	LINEN STORAGE 331
●	Wiking	VK302	Microfast Std. Coverage	1	5.6	Pendent	1/2"	Quick	Brass	200°F	LAUNDRY CHUTE
				Total = 100							

\* IF PIPE NEEDS TO BE INSTALLED BELOW THE CEILING, AN ENCLOSURE SHALL BE CONSTRUCTED IN ACCORDANCE WITH NIBCO BLAZEMASTER CPVC FIRE SPRINKLER SYSTEMS INSTALLATION AND DESIGN MANUAL.



**3rd FLOOR SPRINKLER LEGEND**

Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
●	Wiking	VK468	Freedom Residential	71	4.8	Pendent	1/2"	Fast	White	175°F	
●	Wiking	VK486	Freedom Residential	27	4	Sidewall	1/2"	Fast	White	175°F	
●	Wiking	VK302	Microfast Std. Coverage	1	5.6	Pendent	1/2"	Quick	White	175°F	LINEN STORAGE 331
●	Wiking	VK302	Microfast Std. Coverage	1	5.6	Pendent	1/2"	Quick	Brass	200°F	LAUNDRY CHUTE
				Total = 100							

DRAWING BY: SA  
DATE: 10/17/2023  
REVISION:  
SHEET NUMBER: **FA-07**  
FA - RISER DIAGRAM I

**FAIRFIELD INN & SUITES**  
**by MARRIOTT #9282007**  
WOODBURY HIGHWAY 53 & I-24  
MANCHESTER, TN 37355

REVISION NOTES

NO	DESCRIPTION	DATE

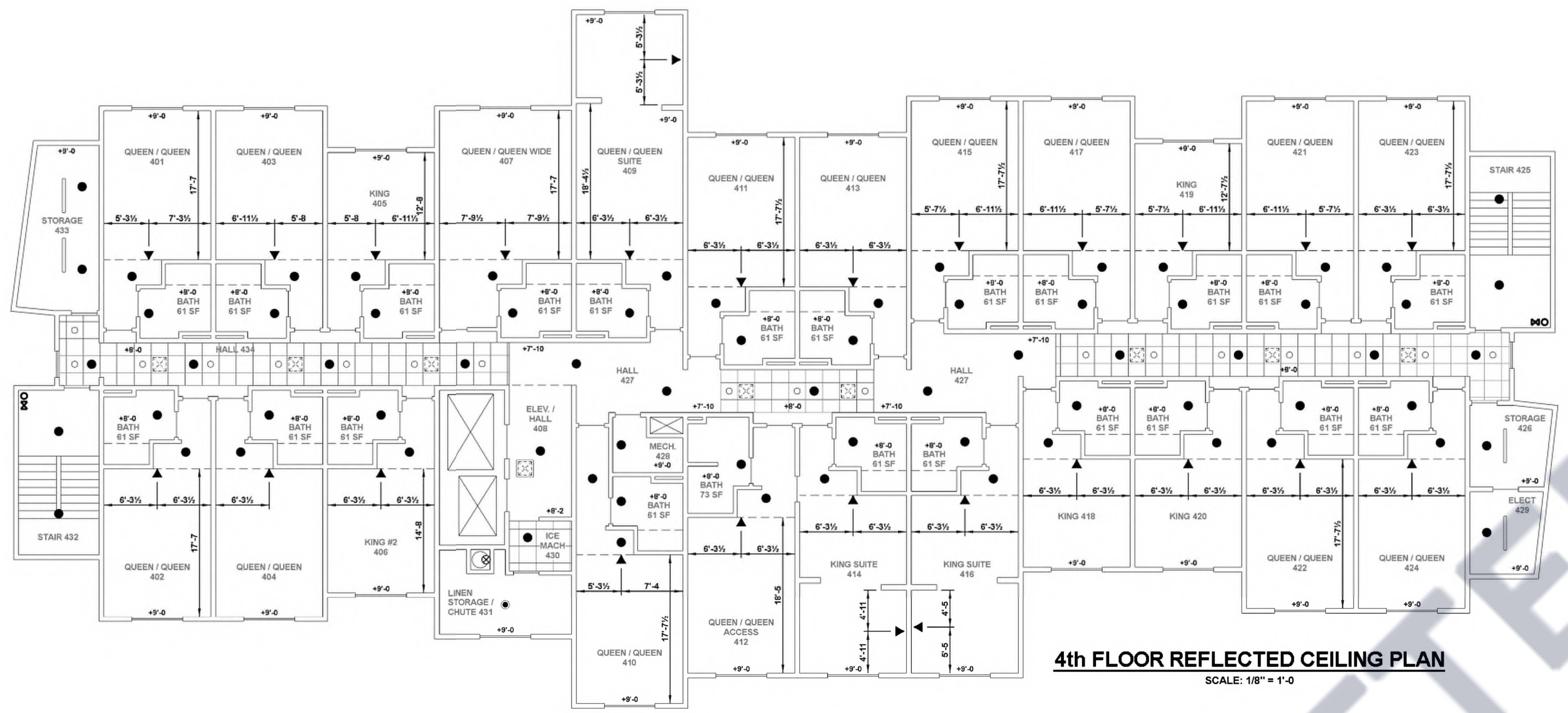
**FIRE SAFETY SYSTEMS**

PREPARED BY:  
GPS FIRE SAFETY SYSTEMS  
CONTACT INFORMATION:  
4116 WALNEY RD, SUITE A  
CHANTILLY, VA 20151  
PHONE: (571) 548-2185

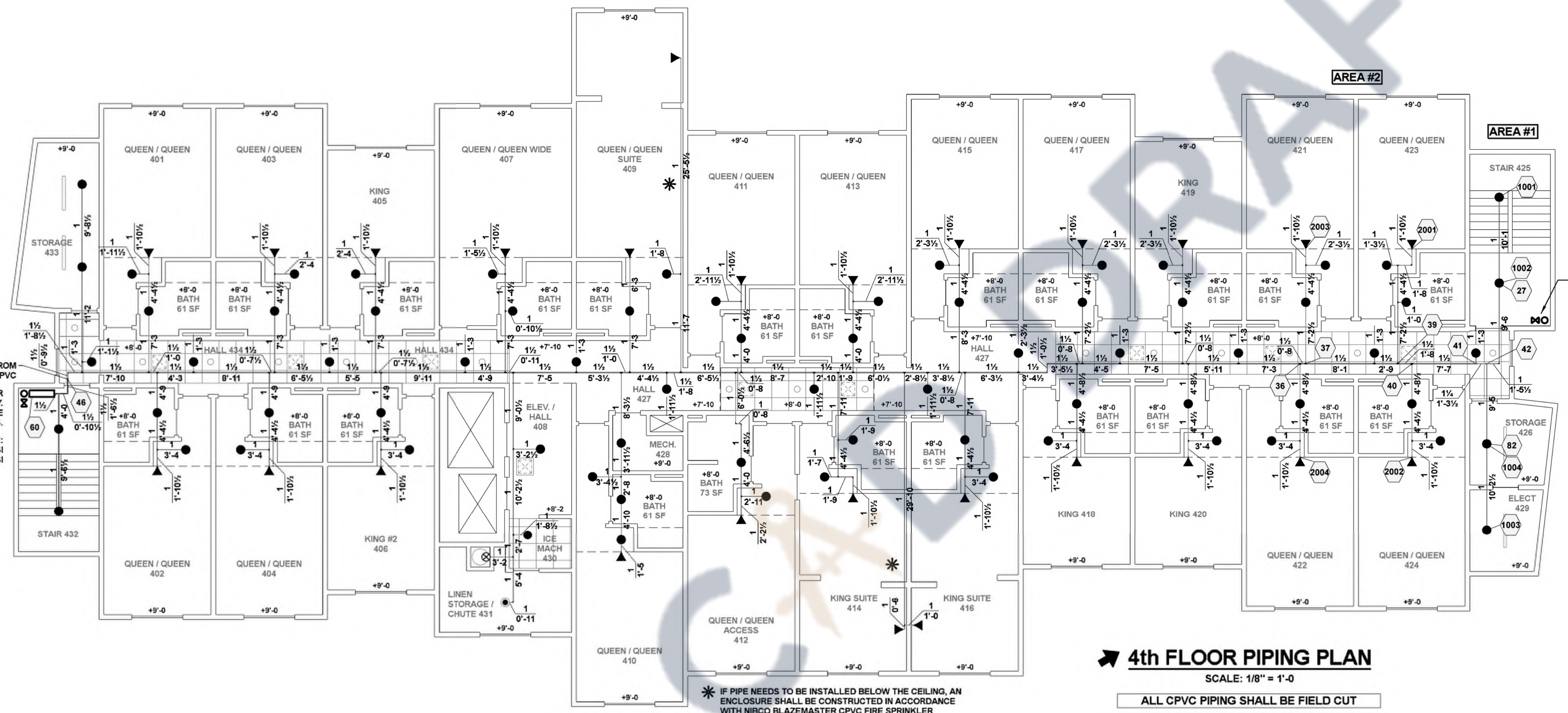


**FAIRFIELD INN & SUITES**  
**by MARRIOTT #9282007**  
WOODBURY HIGHWAY 53 & I-24  
MANCHESTER, TN 37355

REVISION	NO.	DESCRIPTION	DATE



**4th FLOOR REFLECTED CEILING PLAN**  
SCALE: 1/8" = 1'-0"



**4th FLOOR PIPING PLAN**  
SCALE: 1/8" = 1'-0"

\* IF PIPE NEEDS TO BE INSTALLED BELOW THE CEILING, AN ENCLOSURE SHALL BE CONSTRUCTED IN ACCORDANCE WITH NIBCO BLAZEMASTER CPVC FIRE SPRINKLER SYSTEMS INSTALLATION AND DESIGN MANUAL.

ALL CPVC PIPING SHALL BE FIELD CUT

4" STANDPIPE AND 1 1/2" FLOOR CONTROL VALVE ASSEMBLY. SEE SPK 5 FOR STANDPIPE NOTES AND DETAILS.  
DEMAND AT CONTROL VALVE:  
BOR1 = 82.20 GPM @ 62.78 PSI  
BOR2 = 93.79 GPM @ 81.52 PSI

Hydraulic Information	
Remote Area 1	
OCCUPANCY CLASSIFICATION	Residential
DENSITY (gpm/ft <sup>2</sup> )	0.10 for 909ft <sup>2</sup> (Actual 364ft <sup>2</sup> )
TOTAL HEADS FLOWING	4
K-FACTOR	4.8
TOTAL WATER REQUIRED	82.20
TOTAL PRESSURE REQUIRED	-38.23
BASE OF RISER (gpm)	82.20
BASE OF RISER (psi)	62.78
SAFETY MARGIN (psi)	+96.08 (166.1%)

VIKING, VK488 PENDENT SPRINKLER  
18" MAX SPACING (10 FEET MAX OFF WALLS)  
1/2" NPT, K4.8, 175°F  
LISTED FLOW AT START POINT = 20 GPM  
LISTED PRESSURE AT START POINT = 16.7 PSI

Hydraulic Information	
Remote Area 2	
OCCUPANCY CLASSIFICATION	Residential
DENSITY (gpm/ft <sup>2</sup> )	0.10 for 909ft <sup>2</sup> (Actual 909ft <sup>2</sup> )
TOTAL HEADS FLOWING	4
K-FACTOR	4
TOTAL WATER REQUIRED	93.79
TOTAL PRESSURE REQUIRED	-19.44
BASE OF RISER (gpm)	93.79
BASE OF RISER (psi)	81.52
SAFETY MARGIN (psi)	+76.25 (131.9%)

VIKING, VK488 HORIZONTAL SIDEWALL SPRINKLER  
18" MAX SPACING (8 FEET MAX OFF WALLS)  
1/2" NPT, K4.0, 175°F  
LISTED FLOW AT START POINT = 23 GPM  
LISTED PRESSURE AT START POINT = 33.1 PSI  
FOR INSTALLATION 6 TO 12 INCHES BELOW CLG

4th FLOOR SPRINKLER LEGEND											
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
●	Viking	VK488	Freedom Residential	71	4.8	Pendent	1/2"	Fast	White	175°F	
●	Viking	VK488	Freedom Residential	26	4	Sidewall	1/2"	Fast	White	175°F	
●	Viking	VK302	Microfast Std. Coverage	1	5.6	Pendent	1/2"	Quick	White	175°F	LINEN STORAGE 431
●	Viking	VK302	Microfast Std. Coverage	1	5.6	Pendent	1/2"	Quick	Brass	200°F	LAUNDRY CHUTE
				Total = 99							