

**BASEMENT FLOOR PLAN
FIRE PROTECTION**

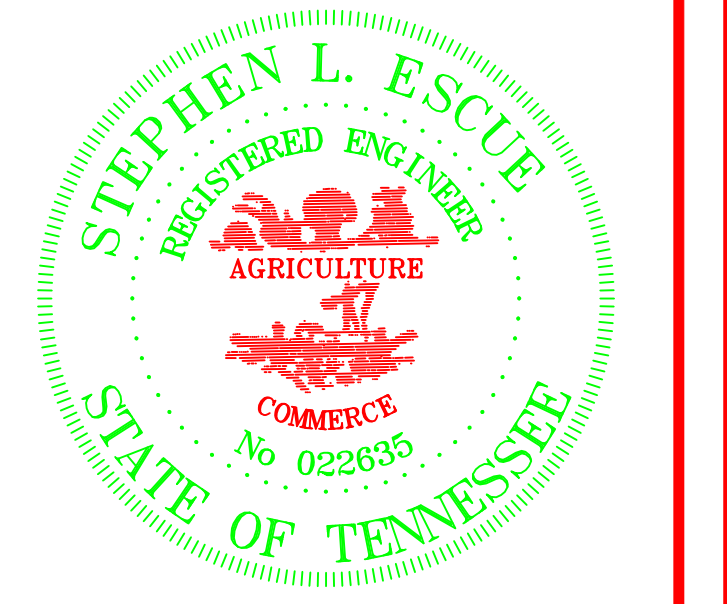
SCALE: 1/8"=1'-0"

*WHITE POLYESTER SPRINKLER HEADS ARE CORROSION RESISTANT

THIS FLOOR									
SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#
☒	70	UPRIGHT	WHITE POLY	155	5.6	1/2"	TY3131	Tyco	TY-FRB
●	6	CONC PEND	WHITE	155	5.6	1/2"	TY3531	Tyco	RFII
<	2	HOR SW	WHITE	155	5.6	1/2"	TY3331	Tyco	TY-FRB

General Notes

TK Engineering PLLC
P.O. Box 1731
White House, TN 37188
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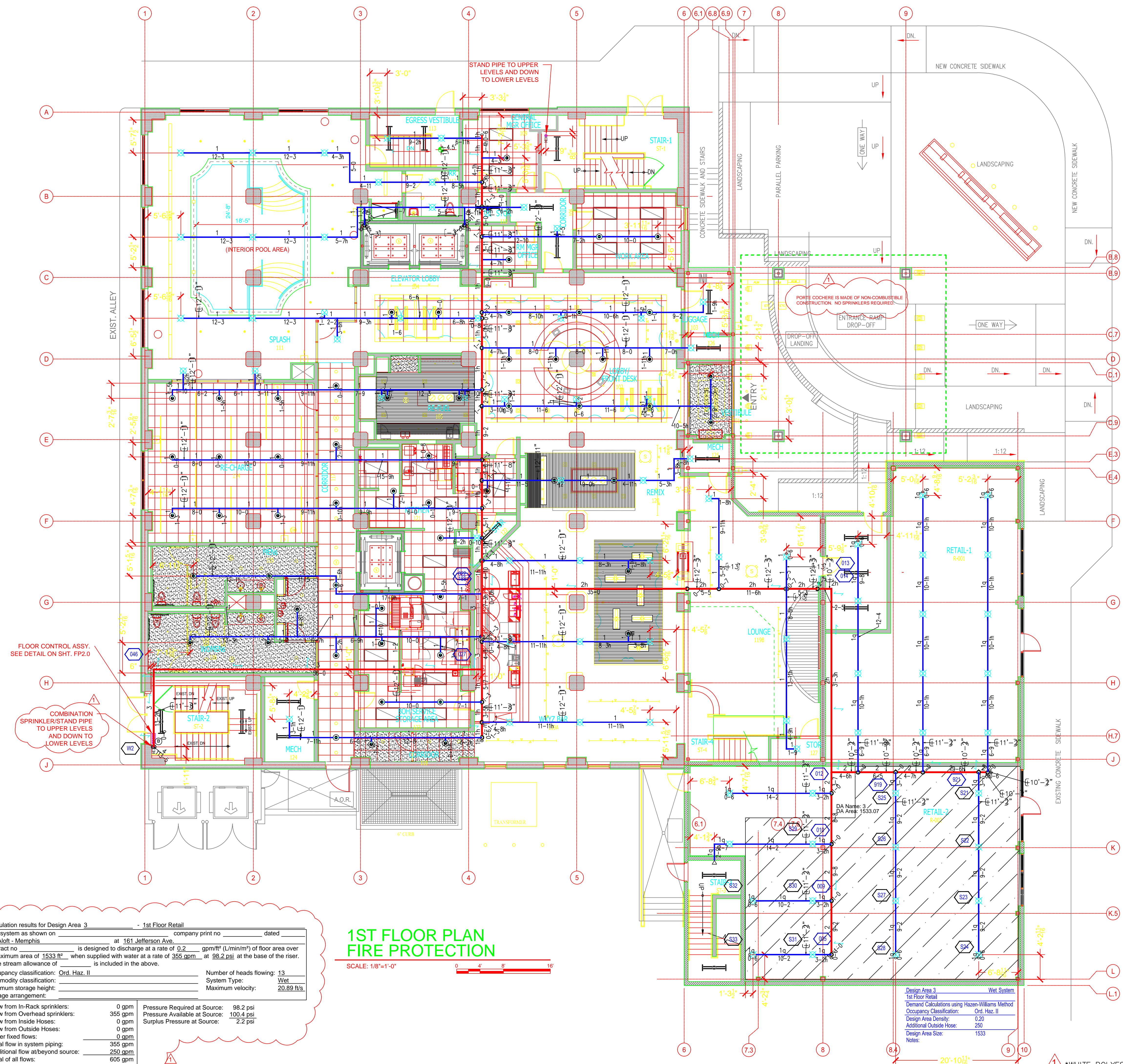


1	REVISED PER OWNER REVIEW	9/22/17
No.	Revision/Issue	Date

Firm Name and Address
JJI CONSTRUCTION, LLC
220 Goodman Road East
Southhaven, MS 38671
Baldevsingh Rava
TN RME #937

Project Name and Address
**ALOFT MEMPHIS
DOWNTOWN**
161 JEFFERSON AVE.
MEMPHIS, TN 38103

Project	Sheet
Date	FP-1.0
August 30, 2017	
Scale	1/8" = 1'-0"



Calculation results for Design Area 3 - 1st Floor Retail

This system as shown on _____ company print no _____ dated _____
 for Aloft - Memphis at 161 Jefferson Ave.
 contract no _____ is designed to discharge at a rate of 0.2 _____ gpm/ft² (L/min/m²) of floor area over
 a maximum area of 1533 ft² when supplied with water at a rate of 355 gpm at 98.2 psi at the base of the riser.
 Hose stream allowance of _____ is included in the above.

Occupancy classification: Ord. Haz. II Number of heads flowing: 13
 Commodity classification: _____ System Type: Wet
 Maximum storage height: _____ Maximum velocity: 20.89 ft/s
 Storage arrangement: _____

Flow from In-Rack sprinklers: 0 gpm Pressure Required at Source: 98.2 psi
 Flow from Overhead sprinklers: 355 gpm Pressure Available at Source: 100.4 psi
 Flow from Inside Hoses: 0 gpm Surplus Pressure at Source: 2.2 psi
 Flow from Outside Hoses: 0 gpm
 Other fixed flows: 0 gpm
 Total flow in system piping: 355 gpm
 Additional flow at beyond source: 290 gpm
 Total of all flows: 605 gpm

**1ST FLOOR PLAN
FIRE PROTECTION**

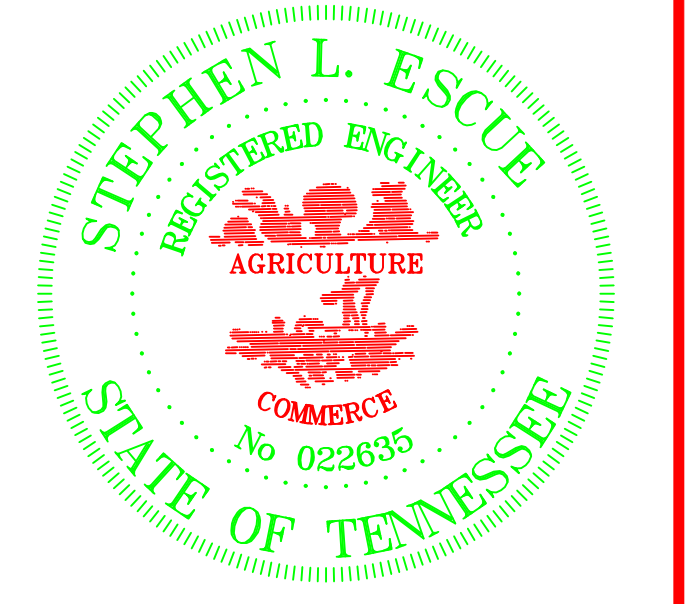
SCALE: 1/8"=1'-0"

Design Area 3
1st Floor Retail
Wet System
Demand Calculations using Hazen-Williams Method
Occupancy Classification: Ord. Haz. II
Design Area Density: 1.20
Additional Outside Hose: 250
Design Area Size: 1533
Notes:

*WHITE POLYESTER SPRINKLER HEADS ARE CORROSION RESISTANT

THIS FLOOR									
SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#
⊗	81	UPRIGHT	WHITE POLY	155	5.6	1/2"	TY3131	Tyco	TY-FRB
●	57	CONC. PEND	WHITE	155	5.6	1/2"	TY3531	Tyco	RFII
◁	3	HOR SW	WHITE	155	5.6	1/2"	TY3331	Tyco	TY-FRB

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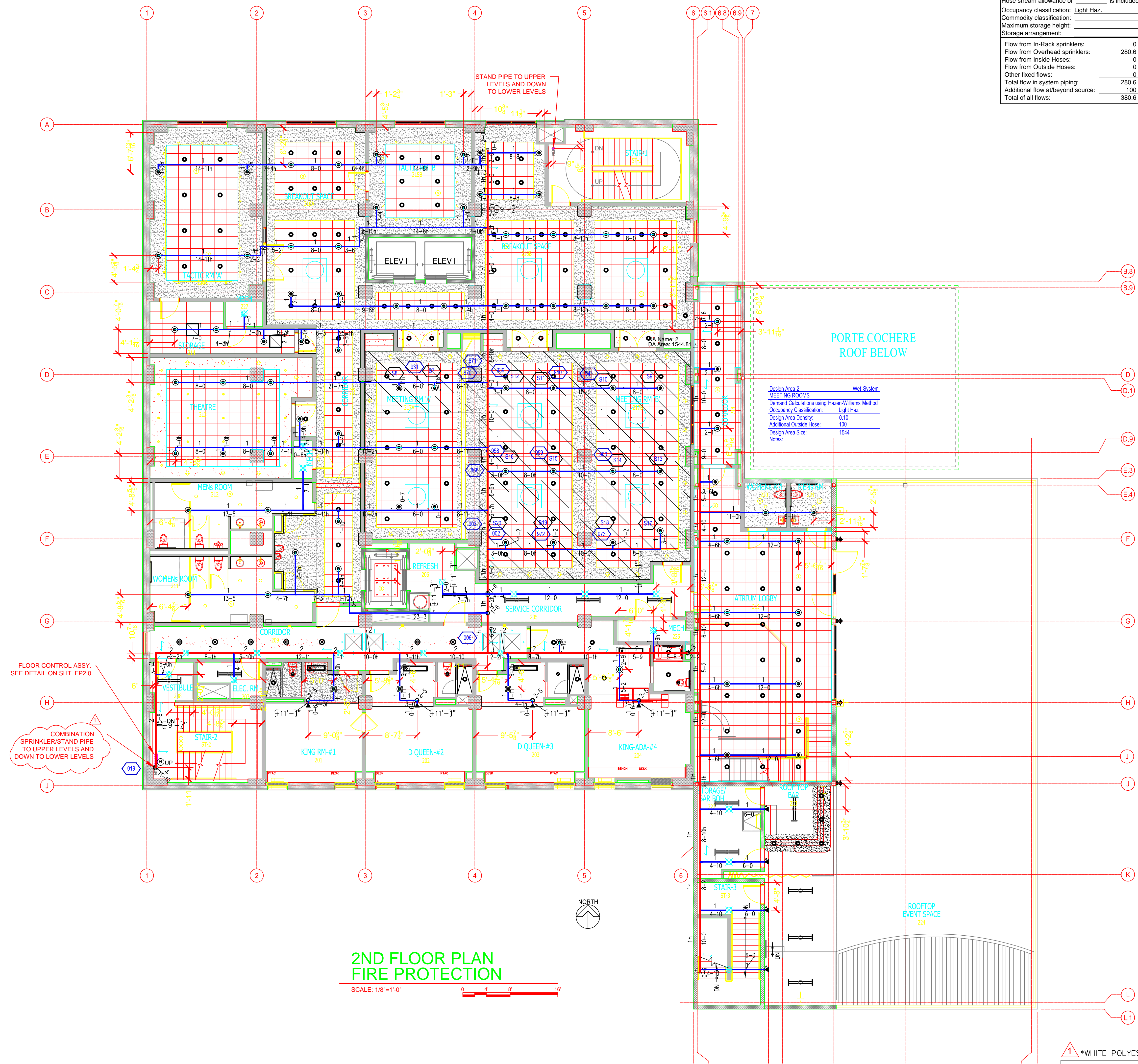
Project	Sheet
Date August 30, 2017	FP-1.1
Scale 1/8" = 1'-0"	

Calculation results for Design Area 2 - MEETING ROOMS

This system as shown on _____ company print no _____ dated _____
 for Aloft - Memphis _____ at 161 Jefferson Ave.
 contract no _____ is designed to discharge at a rate of 0.1 _____ gpm/ft² (L/min/m²) of floor area over
 a maximum area of 1544 ft² when supplied with water at a rate of 280.6 gpm at 153.2 psig at the base of the riser.
 Hose stream allowance of _____ is included in the above.

Occupancy classification: Light Haz. Number of heads flowing: 14
 Commodity classification: _____ System Type: Wet
 Maximum storage height: _____ Maximum velocity: 40.62 ft/s
 Storage arrangement: _____

Flow from In-Rack sprinklers: 0 gpm Pressure Required at Source: 153.2 psi
 Flow from Overhead sprinklers: 280.6 gpm Pressure Available at Source: 177.2 psi
 Flow from Inside Hoses: 0 gpm Surplus Pressure at Source: 23.9 psi
 Flow from Outside Hoses: 0 gpm
 Other fixed flows: 0 gpm
 Total flow in system piping: 280.6 gpm
 Additional flow at beyond source: 100 gpm
 Total of all flows: 380.6 gpm



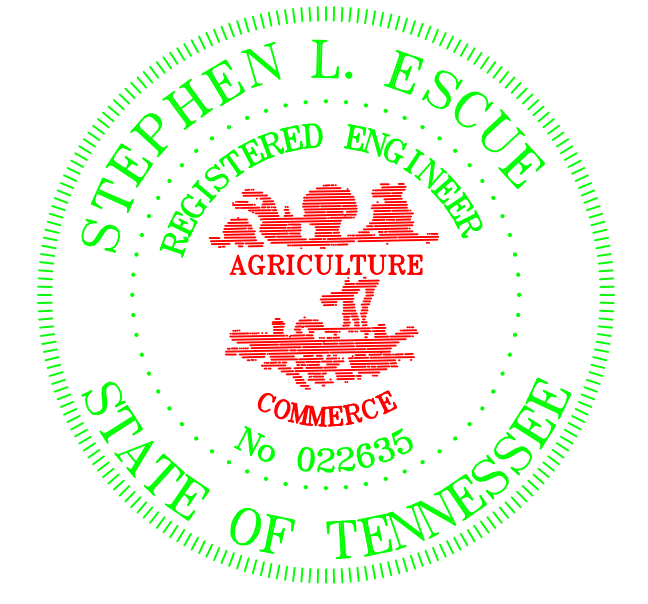
2ND FLOOR PLAN
FIRE PROTECTION

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

*WHITE POLYESTER SPRINKLER HEADS ARE CORROSION RESISTANT

		THIS FLOOR							
SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#
☒	9	UPRIGHT	WHITE POLY	155	5.6	1/2"	TY3131	Tyco	TY-FRB
☒	11	UPRIGHT	BRASS	155	5.6	1/2"	TY3131	Tyco	TY-FRB
☒	80	CONC PEND	WHITE	155	5.6	1/2"	TY3531	Tyco	RFII
☒	5	CONC PEND	WHITE	155	11.2	3/4"	TY5522	Tyco	ELOC
☒	4	HOR SW	WHITE	155	4.4	1/2"	TY2334	Tyco	LFII
☒	4	DRY HOR SW	WHITE	155	5.6	1"	TY3338	Tyco	DS-1

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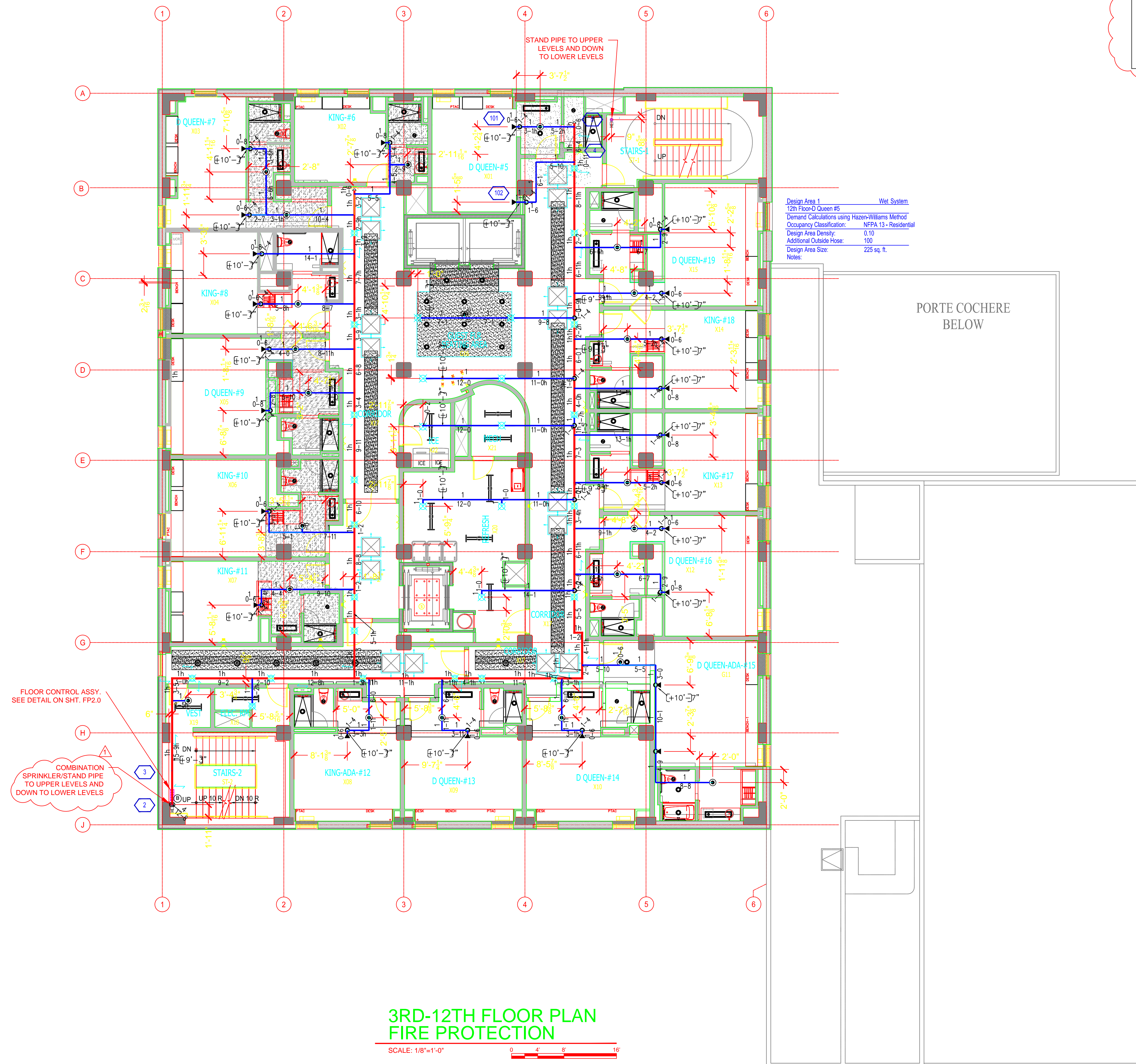
Project	Sheet
Date August 30, 2017	FP-1.2
Scale 1/8" = 1'-0"	

Calculation results for Design Area 1 - 12th Floor-D Queen #5

This system as shown on _____ company print no _____ dated _____
 for ALOFT - Memphis _____ at 161 Jefferson Ave.
 contract no _____ is designed to discharge at a rate of 0.1 _____ gpm/ft² (L/min/m²) of floor area over
 a maximum area of 225 ft² when supplied with water at a rate of 152.6 gpm at 124.2 psig at the base of the riser.
 Hose stream allowance of 100 gpm _____ is included in the above.

Occupancy classification: NFPA 13 - Residential Number of heads flowing: 4 Wet
 Commodity classification: _____ System Type: _____
 Maximum storage height: _____ Maximum velocity: 9.9 ft/s
 Storage arrangement: _____

Flow from In-Rack sprinklers:	0 gpm	Pressure Required at Source:	124.2 psi
Flow from Overhead sprinklers:	52.6 gpm	Pressure Available at Source:	162.7 psi
Flow from Inside Hoses:	0 gpm	Surplus Pressure at Source:	55.5 psi
Flow from Outside Hoses:	0 gpm		
Other fixed flows:	0 gpm		
Total flow in system piping:	52.6 gpm		
Additional flow at/beyond source:	100 gpm		
Total of all flows:	152.6 gpm		



**3RD-12TH FLOOR PLAN
FIRE PROTECTION**
SCALE: 1/8" = 1'-0"

Design Area 1
 12th Floor-D Queen #5
 Demand Calculations using Hazen-Williams Method
 Occupancy Classification: NFPA 13 - Residential
 Design Area Density: 0.10
 Additional Outside Hose: 100
 Design Area Size: 225 sq. ft.
 Notes:

FLOOR CONTROL ASSY.
SEE DETAIL ON SHT. FP2.0

COMBINATION
SPRINKLER-STAND PIPE
TO UPPER LEVELS AND
DOWN TO LOWER LEVELS

▲ *WHITE POLYESTER SPRINKLER HEADS ARE CORROSION RESISTANT

FLOORS 3-12/1 FLOOR SHOWN

SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#
☒	9	UPRIGHT	WHITE POLY	155	5.6	1/2"	TY3131	Tyco	TY-FRB
☒	20	UPRIGHT	BRASS	155	5.6	1/2"	TY3131	Tyco	TY-FRB
●	22	CONC PEND	WHITE	155	5.6	1/2"	TY3531	Tyco	RFII
○	0	CONC PEND	WHITE	155	11.2	3/4"	TY5522	Tyco	ELOC
◀	24	HOR SW	WHITE	155	4.4	1/2"	TY2334	Tyco	LFII

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DOWNTOWN**
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 MEMPHIS, TN 38103

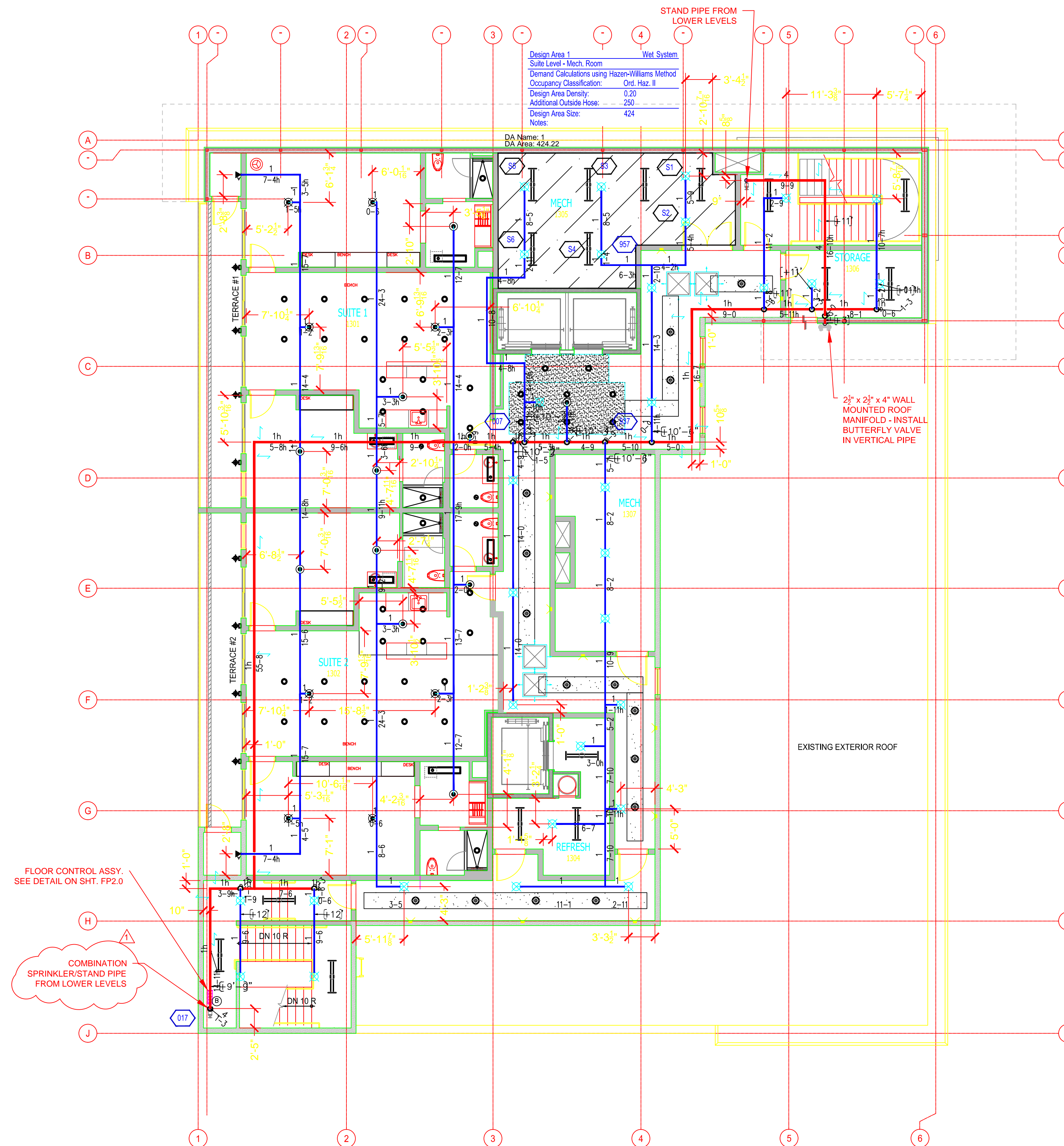
Project	Sheet
Date August 30, 2017	FP-1.3
Scale 1/8" = 1'-0"	

Calculation results for Design Area 1 - Suite Level - Mech. Room

This system as shown on _____ company print no _____ dated _____
 for ALOFT - Memphis at 161 Jefferson Ave _____
 contract no _____ is designed to discharge at a rate of 0.2 gpm/ft² (L/min/m²) of floor area over
 a maximum area of 424 ft² when supplied with water at a rate of 106.6 gpm at 153.4 psia at the base of the riser.
 Hose stream allowance of _____ is included in the above.

Occupancy classification: Ord. Haz. II Number of heads flowing: 6
 Commodity classification: _____ System Type: Wet
 Maximum storage height: _____ Maximum velocity: 22.83 ft/s
 Storage arrangement: _____

Flow from In-Rack sprinklers:	0 gpm	Pressure Required at Source:	153.4 psi
Flow from Overhead sprinklers:	106.6 gpm	Pressure Available at Source:	177.9 psi
Flow from Inside Hoses:	0 gpm	Surplus Pressure at Source:	24.5 psi
Flow from Outside Hoses:	0 gpm		
Other fixed flows:	0 gpm		
Total flow in system piping:	106.6 gpm		
Additional flow at/beyond source:	250 gpm		
Total of all flows:	356.6 gpm		



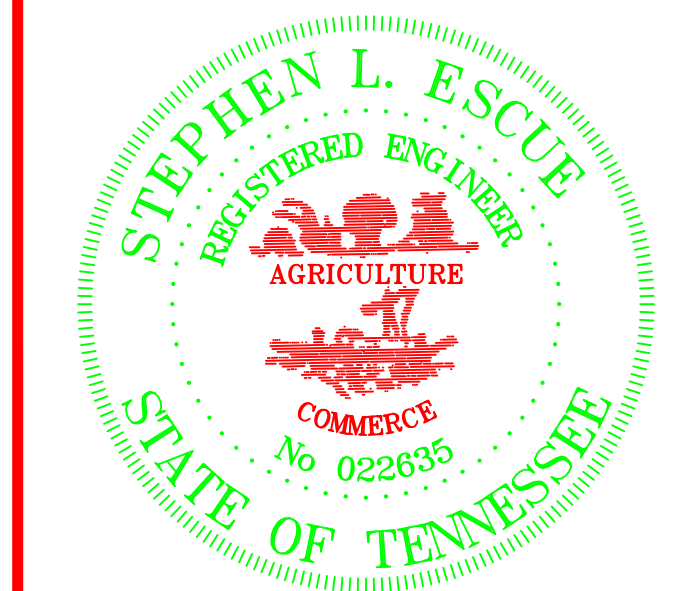
**SUITE LEVEL FLOOR PLAN
 FIRE PROTECTION**

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

▲ WHITE POLYESTER SPRINKLER HEADS ARE CORROSION RESISTANT

		THIS FLOOR							
SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#
☒	31	UPRIGHT	WHITE POLY	155	5.6	1/2"	TY3131	Tyco	TY-FRB
●	11	CONC PEND	WHITE	155	5.6	1/2"	TY3531	Tyco	RFII
⊙	8	CONC PEND	WHITE	155	11.2	3/4"	TY5522	Tyco	ELOC
▲	2	DRY HOR SW	WHITE	155	5.6	1"	TY3338	Tyco	DS-1

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Scale 1/8" = 1'-0"	

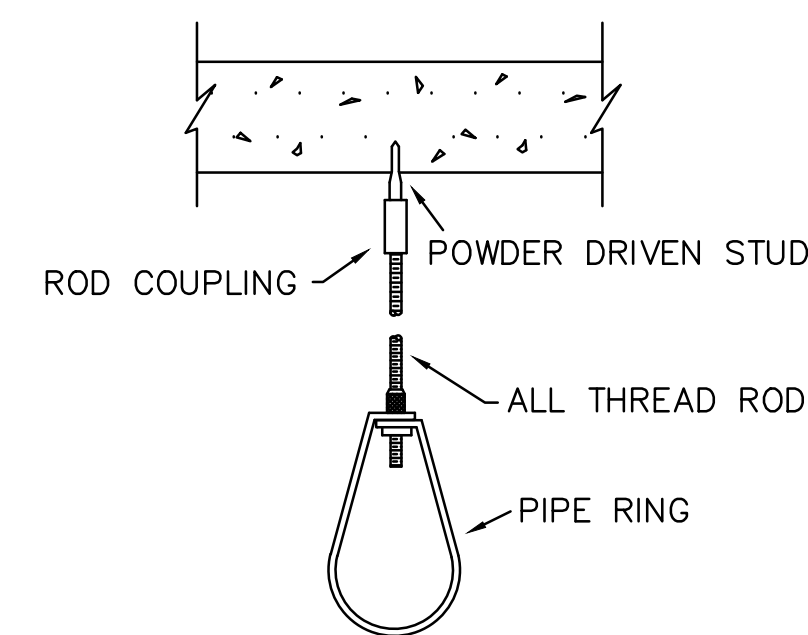
FIRE PROTECTION NOTES

1. FIRE PROTECTION SYSTEM TO COMPLY WITH NFPA 13, AND ALL APPLICABLE STATE AND LOCAL CODES. THIS PLAN INDICATES THE INTENT OF THE DESIGN. CONTRACTOR HAS THE OPTION TO REDESIGN PIPING PROVIDED THE INTENT OF THE DESIGN IS NOT ALTERED.
2. ADHERE TO AND OBTAIN ALL PERMITS, LICENSES AND GOVERNMENT REQUIREMENTS.
3. FINAL INSPECTION AND APPROVAL BY LOCAL FIRE DEPARTMENT AND ARCHITECT/ENGINEER.
4. CUTTING OF STRUCTURAL AND/OR ARCHITECTURAL MEMBERS TO BE DONE ONLY WITH THE WRITTEN APPROVAL OF THE ARCHITECT.
5. FIRE PUMP INDICATES 184 P.S.I. STATIC PRESSURE WITH RESIDUAL PRESSURE OF 160 P.S.I. @ 750 G.P.M. ON 08/28/2017.
6. PIPE ROUTING SHOWN CAN BE USED OR EQUIVALENT AND ANY ADDITIONAL OFFSETS OR FITTINGS REQUIRED FOR PROPER INSTALLATION, COORDINATION WITH OTHER TRADES AND/OR TO MAINTAIN PROPER CLEARANCES SHALL BE PROVIDED. VERIFY EXISTING STRUCTURAL, MECHANICAL AND ELECTRICAL INSTALLATIONS AND AVOID ANY/OVERLAP OBSTRUCTIONS OR INTERFERENCES WITH FIRE PROTECTION PIPE ROUTING.
7. FIRE STOP ALL PENETRATIONS OF SMOKE/FIRE WALLS, CEILINGS, FLOORS, ROOFS ETC. FLASH AND COUNTER FLASH ROOF PENETRATIONS.
8. PROVIDE ACCESS PANELS TO ALL VALVES ABOVE NON-ACCESSIBLE CEILINGS AND CHASES.
9. SPRINKLER HEADS ARE TO BE COORDINATED WITH ALL EXISTING/NEW DIFFUSERS, SPEAKERS, LIGHTING FIXTURES AND CEILING SYSTEMS.
10. PROVIDE STOCK OF EXTRA SPRINKLERS IN ACCORDANCE WITH NFPA 13 6.2.9.
11. METHODS OF HANGING PIPES, HEADERS AND BRANCHES SHALL BE IN ACCORDANCE WITH NFPA 13.
12. AUTOMATIC SPRINKLER TEMPERATURE RATINGS OF FUSIBLE ELEMENTS TO BE IN ACCORDANCE WITH NFPA 13.
13. ALL VALVES FOR FIRE SERVICE SHALL BE LISTED BY THE UNDERWRITERS LABORATORIES, INC. AND THE FACTORY MUTUAL LABORATORIES. VALVES SHALL BE FACTORY MARKED "UL" AND "FM", 175 WORKING PRESSURE.
14. ALL VALVES ON THE FIRE PROTECTION SYSTEM SHALL BE ELECTRICALLY SUPERVISED, TYPE AND EXACT LOCATION OF FLOW, PRESSURE AND SUPERVISORY SWITCHES SHALL BE ACCOMPLISHED BETWEEN THE DIFFERENT RESPONSIBLE TRADES.
15. ALL POWER WIRING AND INTERLOCK WIRING WILL BE ACCOMPLISHED UNDER THE ELECTRICAL DIVISION. COORDINATE ALL ELECTRICAL ITEMS WITH ELECTRICAL CONTRACTOR TO ASSURE PROPER OPERATION.
16. SEE ARCHITECTURAL PLANS FOR UL FLOOR/CEILING ASSEMBLIES FOR PENETRATIONS.
17. PROVIDE A PERMANENTLY ATTACHED NAME TAG STATING THE REQUIRED DESIGN CRITERIA FOR EACH HYDRAULICALLY DESIGNED SYSTEM.
18. SPRINKLERS SHALL COVER THE ENTIRE AREA OF THE ROOM INCLUDING ALCOVES. SPRAY SHALL NOT BE BLOCKED BY WALLS OR PARTITIONS.
19. ALL SPRINKLER HEADS MOUNTED IN CEILING SHALL BE LOCATED A MINIMUM OF 4" AWAY FROM ANY WALLS, CEILING HEIGHT CHANGES OR ANY OTHER VERTICAL INTERSECTING SURFACE.
20. PIPE SHALL BE REAMED AND CLEANED BEFORE ASSEMBLY.
21. MAINTAIN A MINIMUM OF 18 INCHES FROM THE BOTTOM OF THE SPRINKLER DEFLECTOR TO THE TOP OF STORAGE/FILE STORAGE.
22. PROVIDE SYSTEM(S) WITH FLUSHING CONNECTION(S).
23. PROVIDE SPRINKLERS ABOVE AND BELOW EXPOSED DUCTWORK 4 FEET AND WIDER.
24. PROVIDE HEAD GUARDS ON SPRINKLER HEADS IN ELECTRIC AND TELEPHONE ROOMS.
25. ALL PIPE, VALVES, FITTINGS, HANGERS AND APPURTENANCES SHALL BE PROVIDED AND INSTALLED ACCORDING TO NFPA 13. PIPING TO BE BLACK STEEL ACCORDING TO NFPA 13 TABLE 6.3.1.1 AND ALL FITTINGS ACCORDING TO TABLE 6.4.1. CPVC PIPING ACCORDING TO NFPA 13 TABLE 6.3.6.1 AND CPVC FITTINGS ACCORDING TO TABLE 6.4.3.

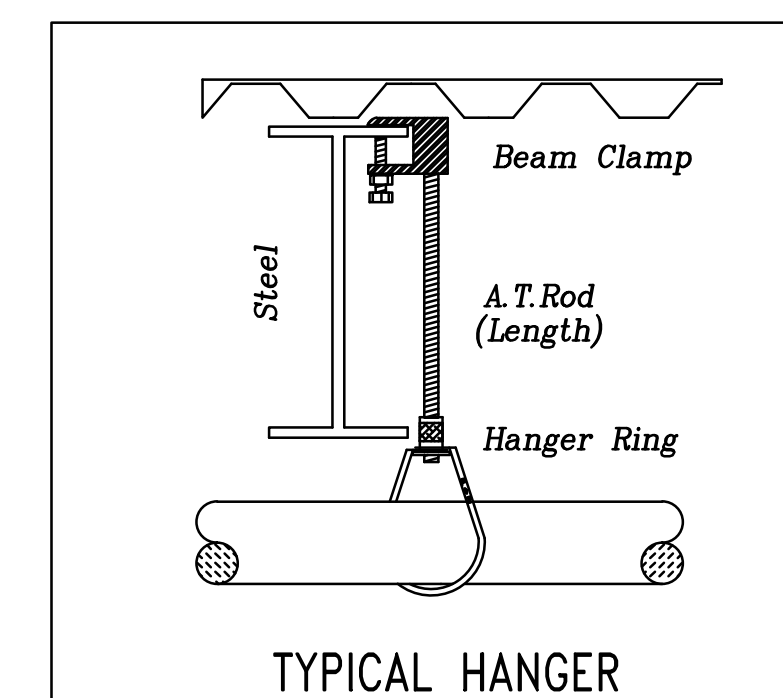
SEISMIC PROTECTION NOTES

PARAGRAPH AND SECTION REFERENCES ARE TO NFPA 13 2007 EDITION

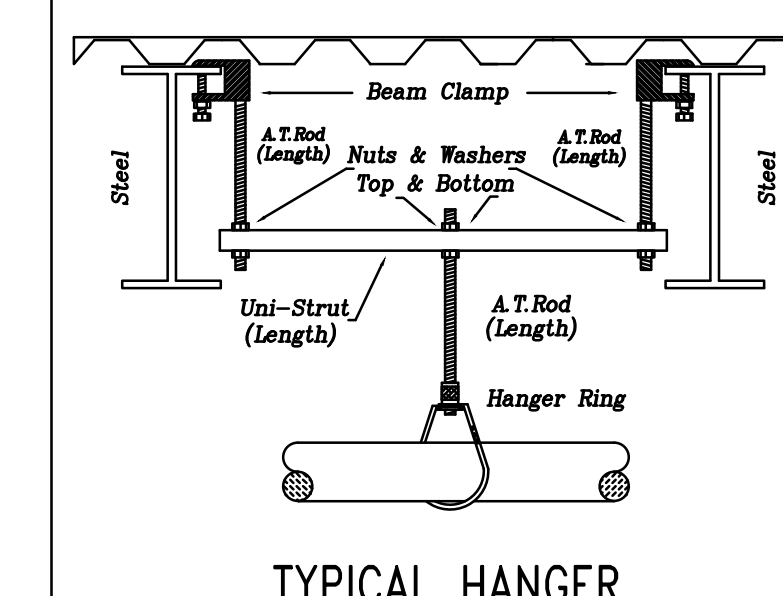
1. LISTED FLEXIBLE COUPLINGS SHALL BE PROVIDED ACCORDING TO SECTION 9.3.2 INCLUDING BUT NOT LIMITED TO AREAS OF STRUCTURAL SEPARATIONS, AT THE TOP AND BOTTOM OF RISERS, ABOVE AND BELOW FLOOR PENETRATIONS, ON BOTH SIDES OF MASONRY WALL PENETRATIONS UNLESS CLEARANCE IS PROVIDED IN ACCORDANCE WITH 9.3.4 AND AT THE TOP OF DROPS EXCEEDING 15 FT. IN LENGTH.
2. SEISMIC SEPARATION ASSEMBLIES SHALL BE INSTALLED WHERE PIPING CROSSES SEISMIC SEPARATION JOINTS ABOVE GROUND LEVEL. SECTION 9.3.3
3. CLEARANCE SHALL BE PROVIDED AROUND PIPES ACCORDING TO SECTION 9.3.4
4. LATERAL SWAY BRACING SHALL BE INSTALLED ACCORDING TO SECTION 9.3.5.4 AT A MAXIMUM CENTER TO CENTER DIMENSION OF 80 FT.
5. LONGITUDINAL SWAY BRACING SHALL BE INSTALLED ACCORDING TO SECTION 9.3.5.4 AT A MAXIMUM CENTER TO CENTER DIMENSION OF 80 FT.
6. RISERS OVER 3 FT. IN LENGTH SHALL BE EQUIPPED WITH 4 WAY BRACES ACCORDING TO SECTION 9.3.5.5.



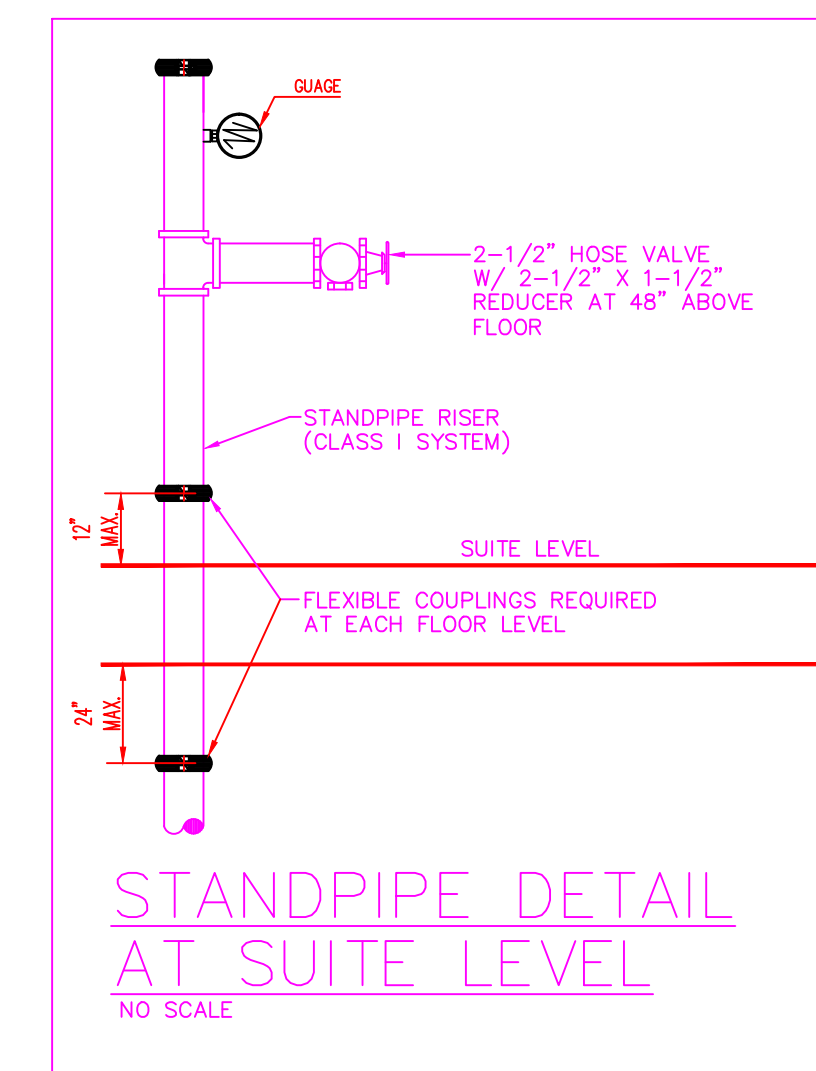
POWDER DRIVEN STUD HANGER



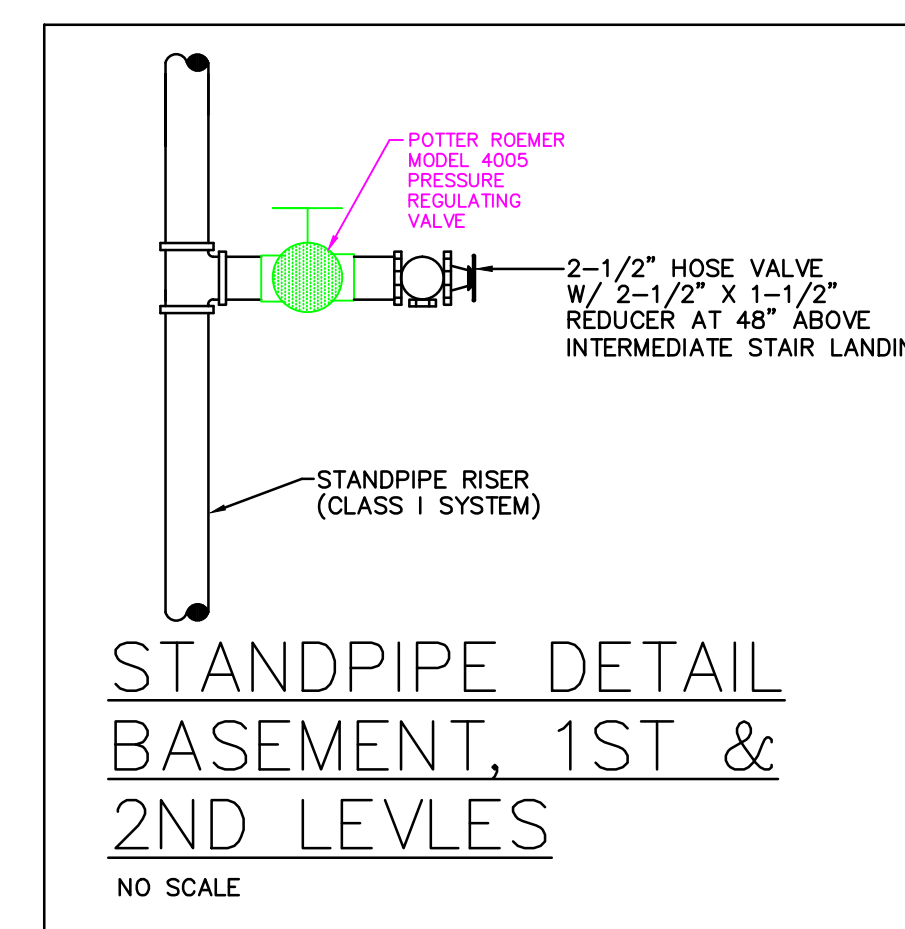
TYPICAL HANGER



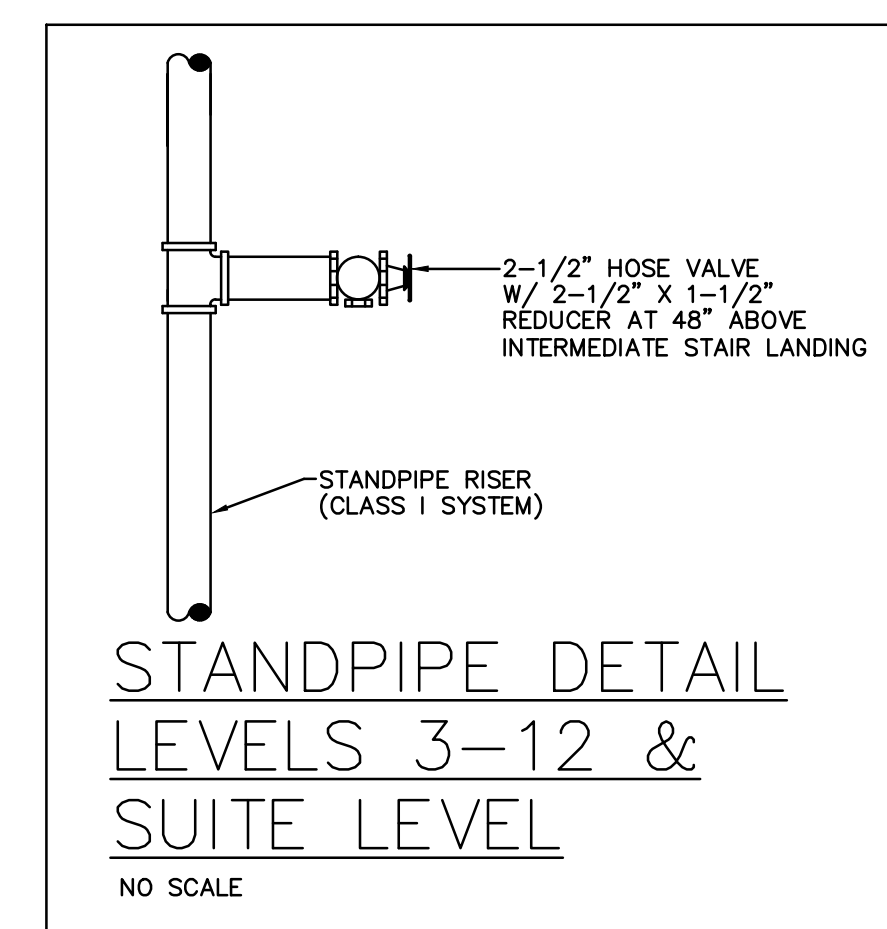
TYPICAL HANGER



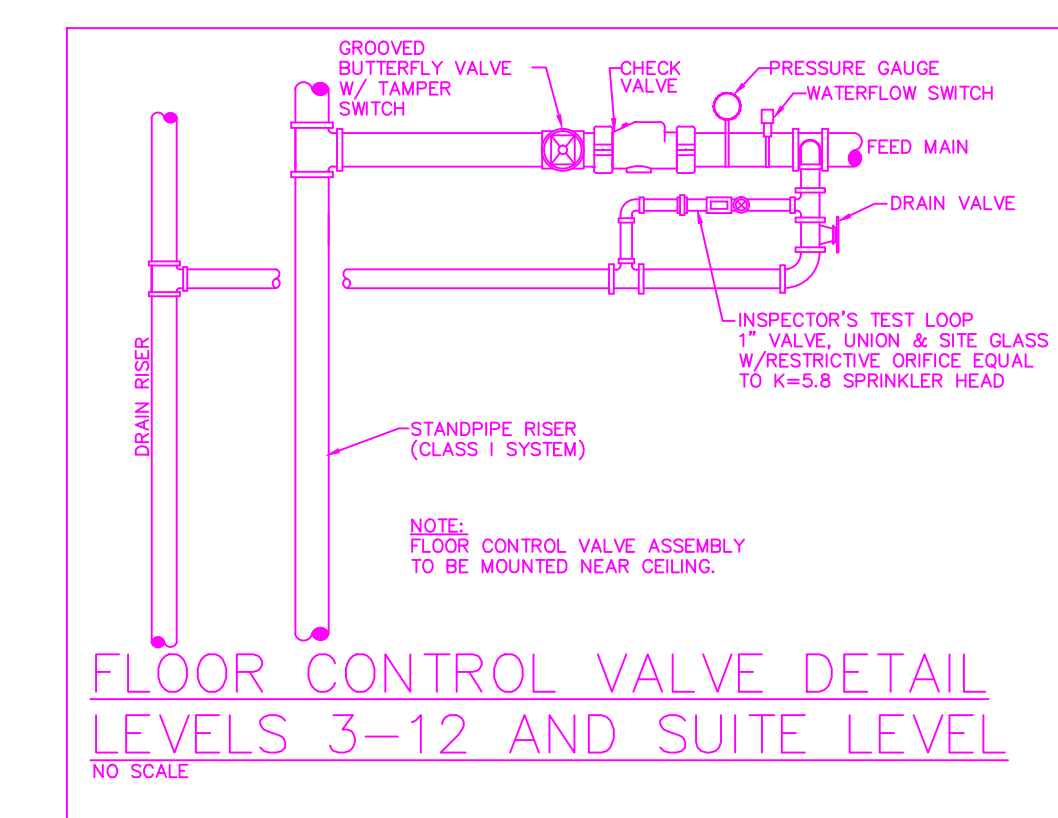
STANDPIPE DETAIL AT SUITE LEVEL
NO SCALE



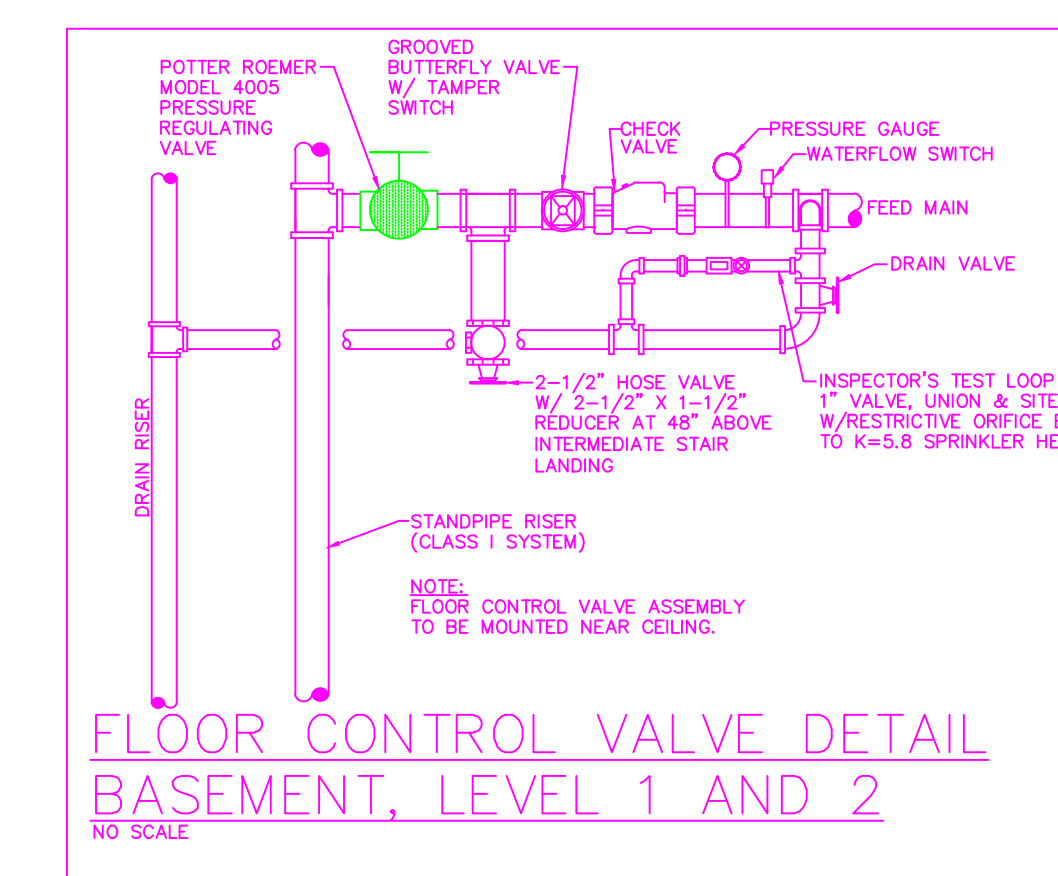
STANDPIPE DETAIL BASEMENT, 1ST & 2ND LEVELS
NO SCALE



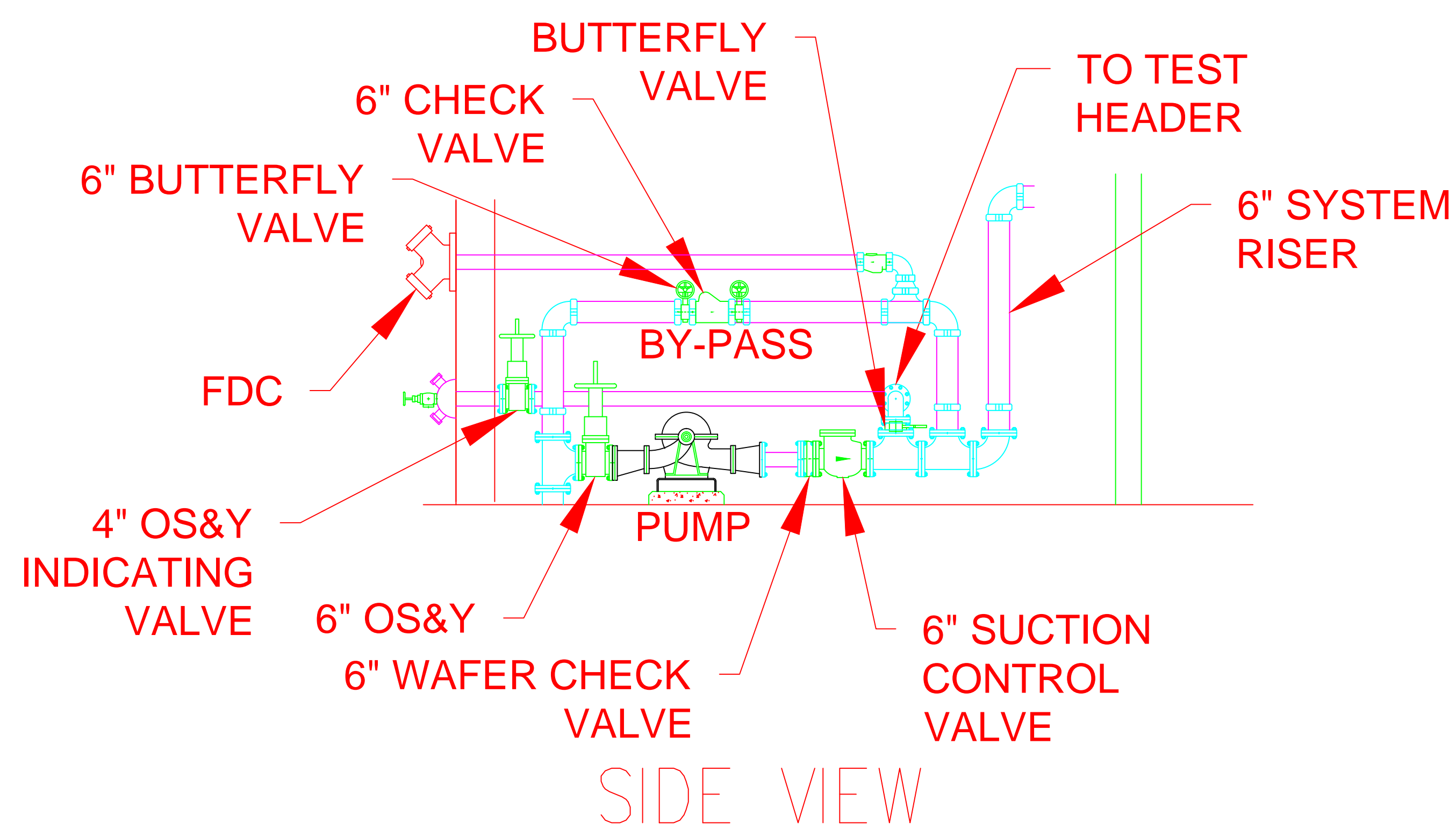
STANDPIPE DETAIL LEVELS 3-12 & SUITE LEVEL
NO SCALE



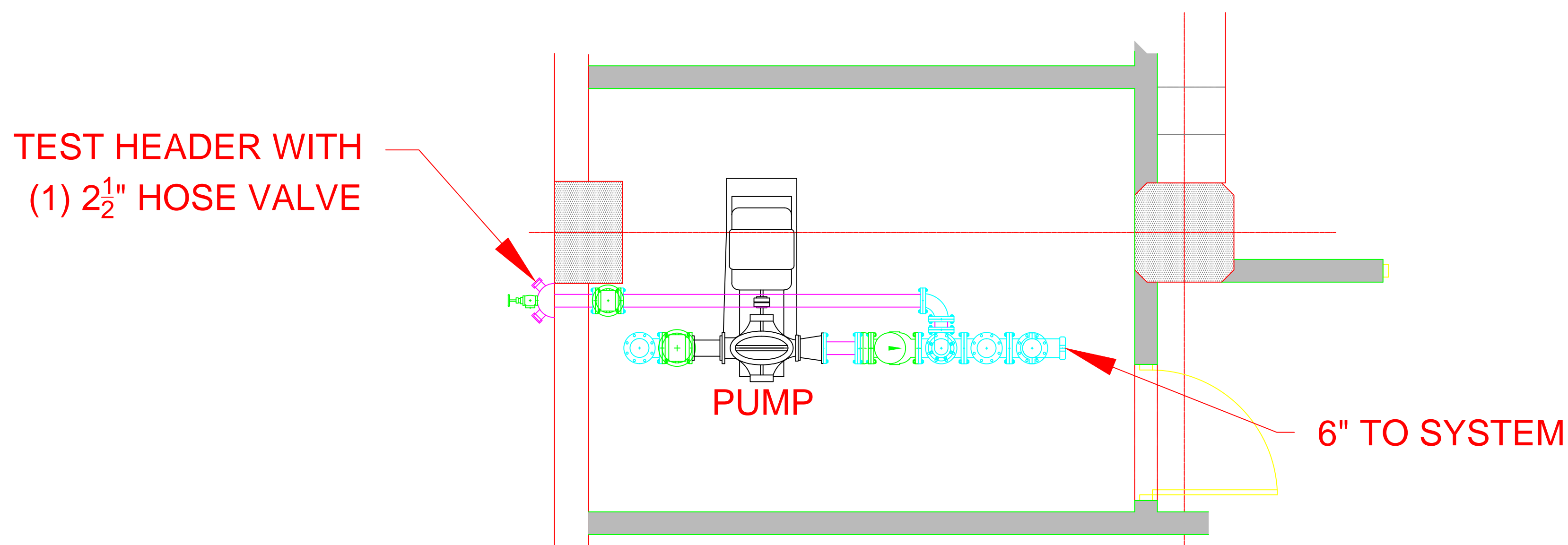
FLOOR CONTROL VALVE DETAIL LEVELS 3-12 AND SUITE LEVEL
NO SCALE



FLOOR CONTROL VALVE DETAIL BASEMENT, LEVEL 1 AND 2
NO SCALE



SIDE VIEW

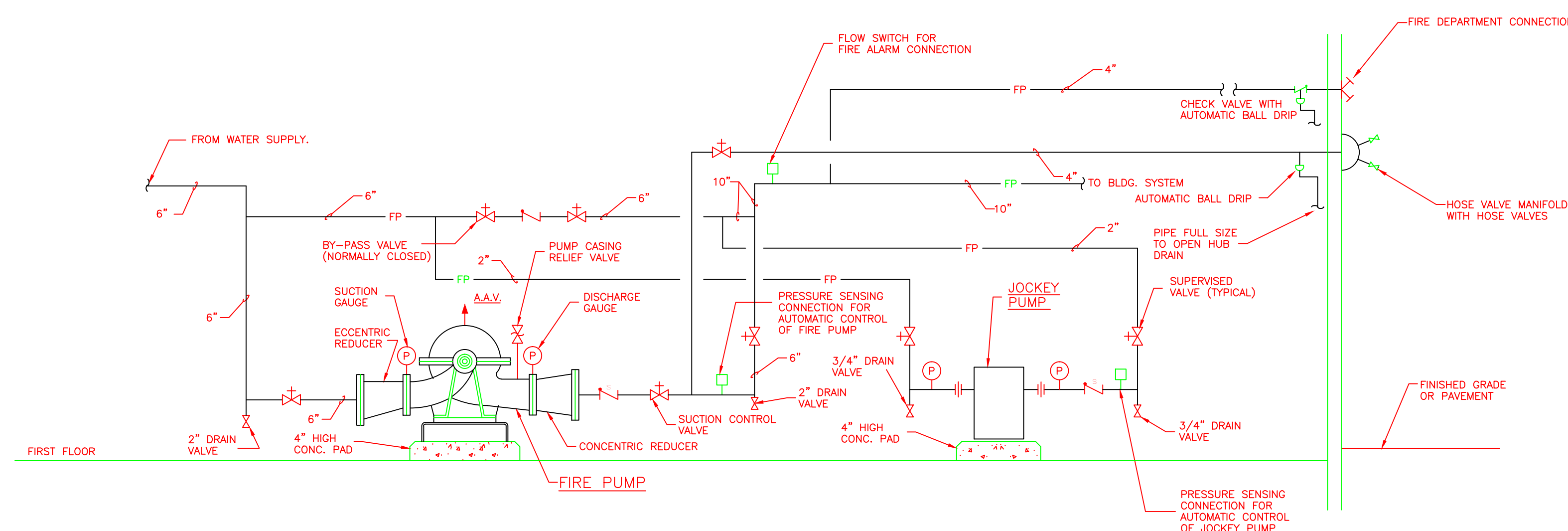


PUMP ROOM FIRE PROTECTION

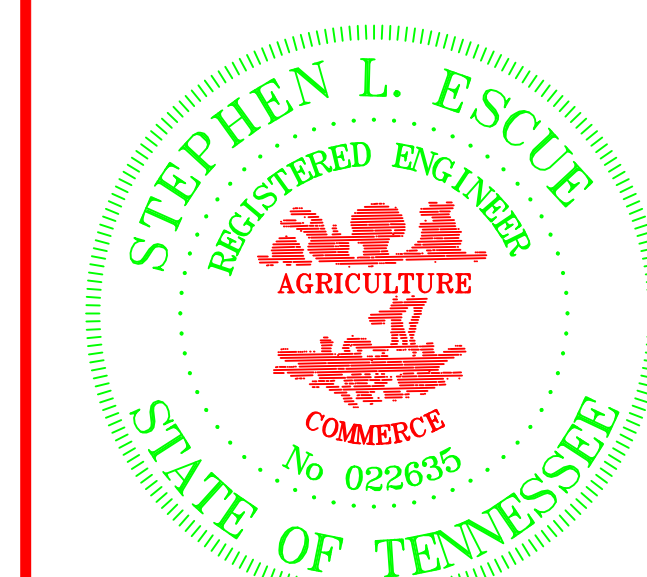
NOT TO SCALE

STANDPIPE CALCULATIONS

LOCATION	PIPE SIZE	GPM	PIPE/FITT	FRICT/FT	ELEV	TOTAL PSI
TOP S.P. D		500			psi	100
Top S.P. D to Bottom 135' + 1 Ell	4	500	145	0.055		7.97
Delta Elevation 145 Ft	4				62.8	62.78
Horizontal from bottom S.P 1 to tee at pump 129' + 4 Ell-1 Tee	6	500	215	0.008		1.72
Join S.P. 1 & S.P. 2 17' + 4 Ells 1 GV	6	750	76	0.023		1.75
TOTAL DEMAND AT PUMP		750				174.22
City Supply at pump		750				81
Pressure Boost Required from Pump						93.22
Pump Designed for 750 GPM @ 95 Psi						



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