

Table 8.6.5.2.2 Suspended or Floor-Mounted Obstructions in Light Hazard Occupancies Only (SSU/SSP)

Horizontal Distance (A) [in. (mm)]	Minimum Vertical Distance Below Deflector (B) [in. (mm)]
6 in. (150 mm) or less	3 (75)
More than 6 in. (150 mm) to 9 in. (225 mm)	4 (100)
More than 9 in. (225 mm) to 12 in. (300 mm)	6 (150)
More than 12 in. (300 mm) to 15 in. (375 mm)	8 (200)
More than 15 in. (375 mm) to 18 in. (450 mm)	9 1/2 (240)
More than 18 in. (450 mm) to 24 in. (600 mm)	12 1/2 (315)
More than 24 in. (600 mm) to 30 in. (750 mm)	15 1/2 (395)
More than 30 in. (750 mm)	18 (450)

For SI units, 1 in. = 25.4 mm.
Note: For A and B, refer to Figure 8.6.5.2.2.

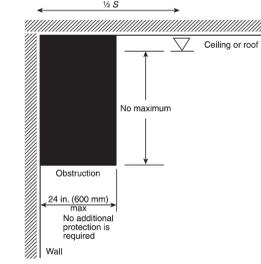


FIGURE 8.6.5.1.2(a) Obstruction Against Wall (SSU/SSP).

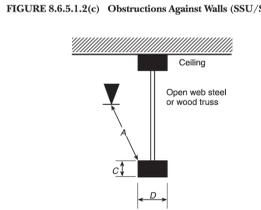
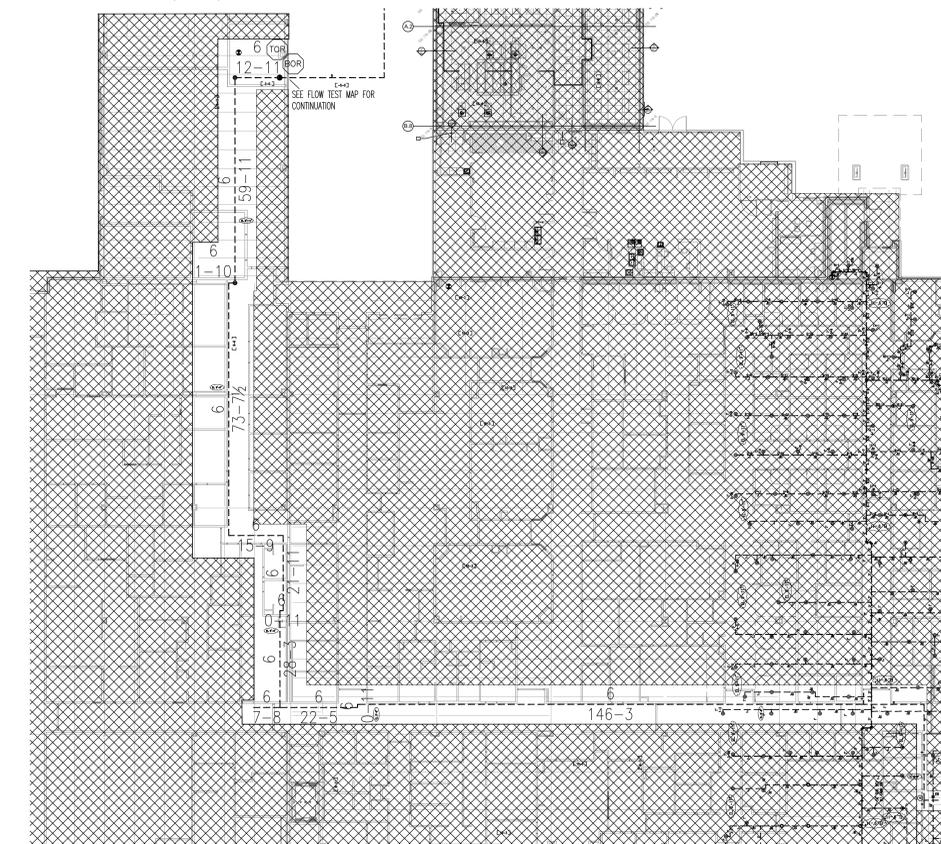
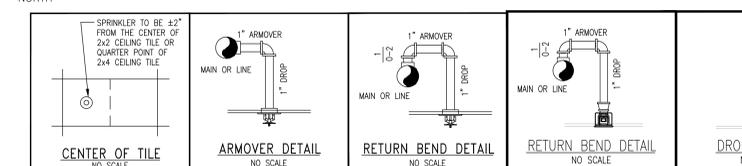


FIGURE 8.6.5.1.2(b) Positioning of Sprinkler to Avoid Obstruction to Discharge (SSU/SSP).

FIGURE 8.6.5.2.1.3(b) Minimum Distance from an Obstruction in the Horizontal Orientation (SSU/SSP).



1ST FLOOR PARTIAL PLAN - HYDRAULIC NODES
N.T.S.



8.6.6 Clearance to Storage (Standard Pendent and Upright Spray Sprinklers).

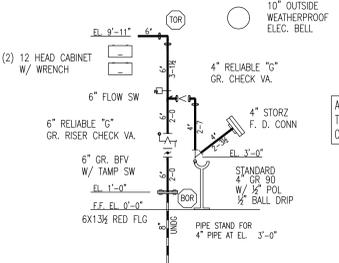
8.6.6.1 The clearance between the deflector and the top of storage shall be 18 in. (450 mm) or greater.
8.6.6.2 The 18 in. (450 mm) dimension shall not limit the height of shelving on a wall or shelving against a wall in accordance with 8.6.6, 8.7.6, 8.8.6, and Section 8.9.
8.6.6.2.1 Where shelving is installed on a wall and is not directly below sprinklers, the shelves, including storage thereon, shall be permitted to extend above the level of a plane located 18 in. (450 mm) below ceiling sprinkler deflectors.
8.6.6.2.2 Shelving, and any storage thereon, directly below the sprinklers shall not extend above a plane located 18 in. (450 mm) below the ceiling sprinkler deflectors.
8.6.6.3 Where other standards specify greater clearance to storage minimums, they shall be followed.

Table 8.6.5.1.2 Positioning of Sprinklers to Avoid Obstructions to Discharge (Standard Spray Upright/Standard Spray Pendent (SSU/SSP))

Distance from Sprinklers to Side of Obstruction (A) [in. (mm)]	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B) [in. (mm)]
Less than 1 ft (300 mm)	0 (0)
1 ft (300 mm) to less than 1 ft 6 in. (450 mm)	2 1/4 (65)
1 ft 6 in. (450 mm) to less than 2 ft (600 mm)	3 1/4 (90)
2 ft (600 mm) to less than 2 ft 6 in. (750 mm)	5 1/4 (140)
2 ft 6 in. (750 mm) in. to less than 3 ft (900 mm)	7 1/4 (190)
3 ft (900 mm) to less than 3 ft 6 in. (1.1 m)	9 1/4 (240)
3 ft 6 in. (1.1 m) to less than 4 ft (1.2 m)	11 (280)
4 ft (1.2 m) to less than 4 ft 6 in. (1.4 m)	14 (350)
4 ft 6 in. (1.4 m) to less than 5 ft (1.5 m)	16 1/4 (420)
5 ft (1.5 m) to less than 5 ft 6 in. (1.7 m)	18 (450)
5 ft 6 in. (1.7 m) to less than 6 ft (1.8 m)	20 (510)
6 ft (1.8 m) to less than 6 ft 6 in. (2.0 m)	24 (600)
6 ft 6 in. (2.0 m) to less than 7 ft (2.1 m)	30 (750)
7 ft (2.1 m) to less than 7 ft 6 in. (2.3 m)	35 (875)

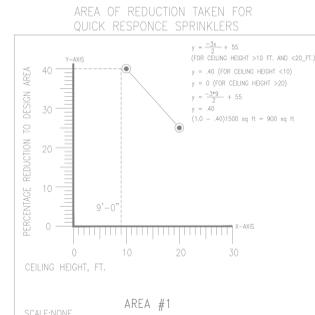
For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.
Note: For A and B, refer to Figure 8.6.5.1.2(a).

EXISTING RISER DETAIL



ALL RISER COMPONENTS ARE EXISTING TO REMAIN. THE RISER IS SHOWN FOR CALCULATION PURPOSES ONLY.

SCALE 1/4"=1'-0"



HYDRAULIC SYSTEM
THIS BUILDING IS PROTECTED BY A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM

DESIGN AREA: AREA #1
LOCATION: ED EXPANSION
NO. OF SPRINKLERS: 10
SPRINKLER TYPE: V2708 & V3802
ORIFICE: 1/2" K-FACTOR: 5.6

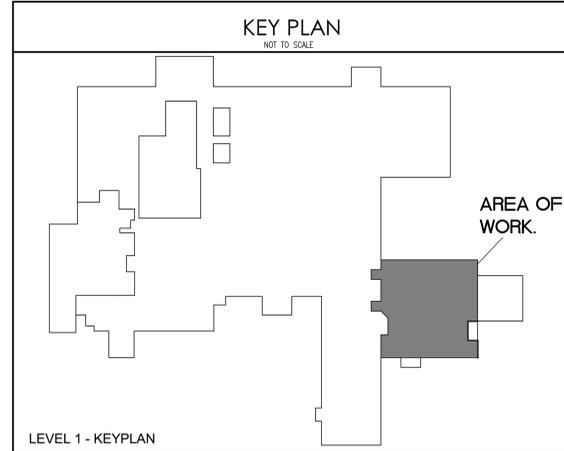
BASIS FOR DESIGN:
1. DENSITY: .10
2. DEFEND AREA OF DISCHARGE: 1163 SQ.FT.
SYSTEM DEMAND: 319.105 GPM
3. GPM DISCHARGE: 47.80 PSI
4. RESIDUAL PRESSURE AT THE BASE OF THE RISER: 150 GPM
5. HOSE STREAM: 53.432 PSI
6. RESIDUAL PRESSURE AT POINT CONNECTION

SCOPE OF WORK:

- PROJECT IS TO BE PHASED WITH 3 TOTAL PHASES
- J.F.S. WILL CUT AND CAP THE OLD VESTIBULE FOR DEMO. (DEMO AND REMOVAL BY OTHERS)
- J.F.S. WILL PROVIDE TEMPORARY FIRE SPRINKLER PROTECTION WITHIN EACH PHASE BY TURNING THE EXISTING FIRE SPRINKLER HEADS TO UPRIGHTS DURING CONSTRUCTION.
- J.F.S. WILL MODIFY SPRINKLER HEADS IN NEW TENANT IMPROVEMENT AREA FOR EACH PHASE PER DRAWING AE181 (WHERE NEW WALLS AND CEILING ARE BEING INSTALLED ONLY).
- WITHIN PHASE 1, J.F.S. WILL TIE INTO EXISTING 4" SPRINKLER MAIN AND EXTEND SYSTEM INTO NEW ADDITION AND INSTALL A NEW SPRINKLER SYSTEM.



PHASING PLAN
N.T.S.



KEY PLAN
NOT TO SCALE
LEVEL 1 - KEYPLAN
AREA OF WORK.

SPRINKLERS ARE PERMITTED TO BE RELOCATED AND RE-INSTALLED WHEN THE SPRINKLER BEING REMOVED FROM THE SYSTEM REMAINS ATTACHED TO THE ORIGINAL FITTING OR WELDED OUTLET, PROVIDED CARE HAS BEEN TAKEN TO ENSURE THE SPRINKLER HAS NOT BEEN DAMAGED. PER NFPA 13, WHEN A SPRINKLER HAS BEEN REMOVED FROM A FITTING OR WELDED OUTLET, IT SHALL NOT BE RE-INSTALLED. PROVIDE NEW SPRINKLERS AS REQUIRED.

NOTE:
THE DRAWING INDICATES A "SCHEMATIC LAYOUT" OF THE SPRINKLER HEADS AND SHOWS THE INTENT OF THE DESIGN. EXACT LOCATIONS SHALL BE COORDINATED WITH OTHER TRADES, FIELD VERIFIED, AND INSTALLED TO MEET NFPA 13 COVERAGE REQUIREMENTS FOR THE SPACE.

SPRINKLER RELOCATION LEGEND

SYMBOL	DESCRIPTION
SPRINKLER-R	RELOCATED SPRINKLER FROM EXISTING OUTLET
SPRINKLER-C	CHANGED EXISTING SPRINKLER FROM S.A. TO S.U.L.
SPRINKLER-X	ADDED SPRINKLER FROM EXISTING SPRINKLER SYSTEM
SPRINKLER-N	NEW SPRINKLER BEING INSTALLED FROM NEW SYSTEM

LEGEND

SYMBOL	DESCRIPTION
SPRINKLER	FIRE SPRINKLER STANDPIPE
PC	POINT OF CONNECTION
NS	NEW SPRINKLER LINE
ES	EXISTING SPRINKLER LINE
HL	HANGER LOCATION
EC	PIPE END CAP

SPRINKLER LEGEND

SYMBOL	SPRINKLER TYPE	FINISH	TEMP.	ORIFICE	K-FACTOR	COUNT
○	VICTAULIC Q.R. SEMI-RECESSED PENDENT	V2708	CHROME	155"	1/2"	5.6 K 76
●	VICTAULIC Q.R. CONCEALED PENDENT	V3802	WHITE	155"	1/2"	5.6 K 10
⊗	VICTAULIC Q.R. UPRIGHT	V2708	CHROME	155"	1/2"	5.6 K 01

TOTAL THIS SHEET: 87
TOTAL THIS JOB: 87

GENERAL NOTES:

- ALL FITTINGS CONFORM TO SECTION 2-4 OF NFPA PAMPHLET 13.
- VALVES ON CONNECTIONS TO WATER SUPPLIES, SECTIONAL CONTROL VALVES AND OTHER VALVES IN SUPPLY PIPES TO SPRINKLERS SHALL BE SUPERVISED OPEN BY AN APPROVED METHOD.
- IT IS THE OWNERS RESPONSIBILITY TO PROVIDE ADEQUATE HEAT TO KEEP THE SPRINKLER SYSTEM FROM FREEZING.
- ALL ELECTRICAL WIRING OF ALARM BELLS, FLOW SWITCHES AND TAMPER SWITCHES (IF REQUIRED) TO BE DONE BY OTHERS.
- THE SPRINKLER SYSTEM TO BE INSTALLED IN ACCORDANCE WITH NFPA 13.
- HANGERS TO BE SPACED TO MEET NFPA REQUIREMENTS
- PER NFPA 13, SECTION 8.6.3.2.4, WITHIN SMALL ROOMS AS DEFINED IN SECTION 3.3.20, SPRINKLERS SHALL BE PERMITTED TO BE LOCATED NOT MORE THAN 9 FT. FROM ANY SINGLE WALL, AND SPRINKLER SPACING LIMITATIONS OF SECTION 8.6.3 AND AREA LIMITATIONS OF TABLE 8.6.2.2.1(a) SHALL NOT BE EXCEEDED. JFS MAY MODIFY HEADS SHOWN ON THIS DRAWING TO COMPLY WITH THIS RULE.
- CL = CENTER LINE OF PIPE BELOW TOP OF STEEL
- EL = CENTER LINE OF PIPE ABOVE FINISHED FLOOR

DESIGN CRITERIA:

- BUILDING CODE: SEE PROJECT DATA
- OCCUPANCY: SEE PROJECT DATA
- TYPE OF CONSTRUCTION: SEE PROJECT DATA
- AREA OF ADDITION: SEE PROJECT DATA
- PER NFPA 13, 2016 EDITION:
- SYSTEM TYPE: WET (EXISTING)
- EXAM ROOMS, CORRIDOR, NURSES STATION
- LIGHT HAZARD
- 0.10 GPM/FOOT FOR 1500 SQ.FT. (REDUCED TO 1163 SQ.FT. - AREA REDUCTION FOR Q.R.)
- MAXIMUM 225 S.F. SPRINKLER SPACING
- 100 GPM HOSE ALLOWANCE
- +50 GPM HOSE FOR HYDRANT AFTER BACKFLOW

WATER FLOW DATA:

- DATE: 08-29-25
- STATIC: 82 PSI
- RESIDUAL: 60 PSI W/2100 GPM FLOWING
- LOCATION: 2100 SE BLUE PARKWAY
LEE'S SUMMIT, MO 64063
- INFO FROM: LEE'S SUMMIT WATER UTILITIES

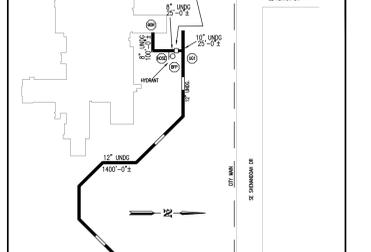
CONSTRUCTION:

- STEEL BEAM CONSTRUCTION

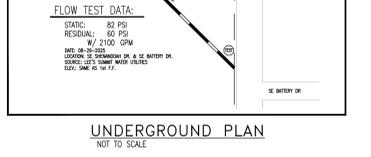
PLAN NOTES:

- ALL CEILING HEIGHTS TO BE 9'-0" UNLESS NOTED OTHERWISE. ALL ALL SOFFITS TO BE 8'-0" UNLESS NOTED OTHERWISE.
- SPRINKLERS WILL BE CENTERED IN CEILING TILES WHERE POSSIBLE YET NEVER ANY CLOSER THAN 6 INCHES FROM THE EDGE OF CEILING GRID.
- ALL GROOVED PIPING IS TO BE SCH. 40 PIPE, ASTM A-795 WITH ROLLED GROOVED ENDS. FITTINGS ARE TO BE IRON GROOVED OR WELDED STEEL OUTLETS.
- ALL THREADED PIPING IS TO BE "SCHEDULE 40" PIPE, WITH THREADED DUCTILE IRON FITTINGS.

VICINITY MAP



UNDERGROUND PLAN



UNDERGROUND PLAN
NOT TO SCALE

REVISIONS:

NO.	DATE	DESCRIPTION

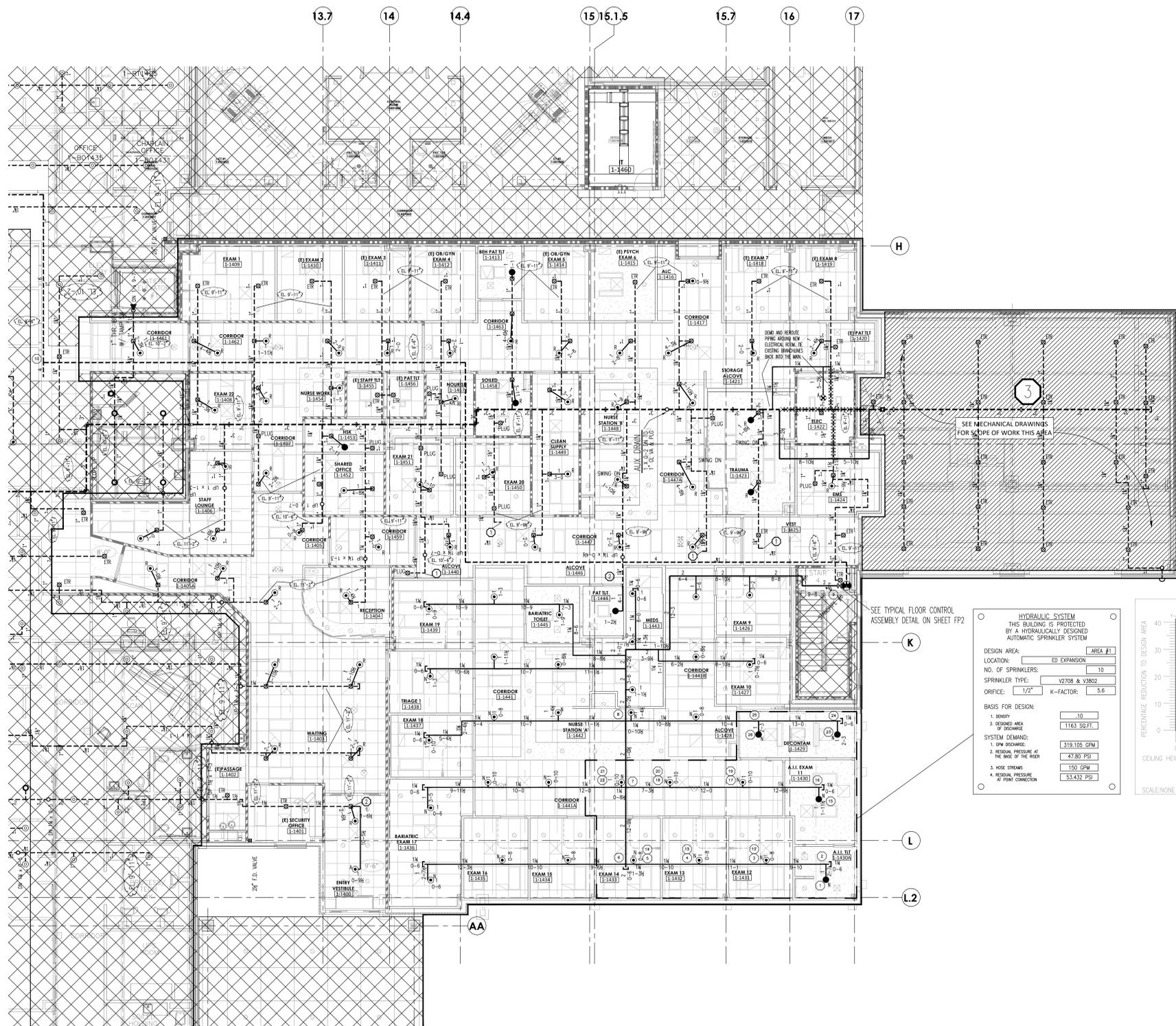
JAYHAWK
2200 S. Hedge Lane, Terrace
P.O. Box 945, Lees Summit, MO 64063
Phone: 816-945-6665
Fax: 816-945-7777

JEFFREY CONSTRUCTION
1001 LOCUST STREET
KANSAAS CITY, MISSOURI 64108

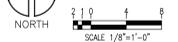
HCA LEES SUMMIT MEDICAL CENTER
EMERGENCY DEPARTMENT EXPANSION
2100 SE BLUE PARKWAY
LEES SUMMIT, MISSOURI 64063

PROFESSIONAL SEAL
WALTER A. WARREN
REGISTERED PROFESSIONAL ENGINEER
NO. 12,052,025
WARREN KTD, LLC

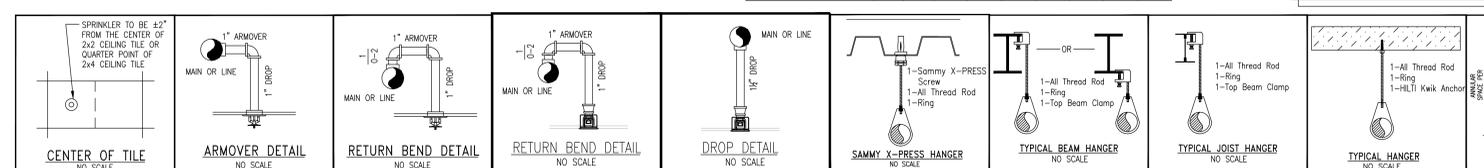
JFS CONTRACT NO. 20935M
DRAWN BY: TJA CHECKED BY: SB
PROJECT MANAGER: CA
APPROVAL
ISSUE DATE: 12/29/2025
ISSUE DATE: 12/01/2025
DRAWING NUMBER
FP-1
FIRE PROTECTION
NOTES AND DETAILS
COVER SHEET
1 OF 2



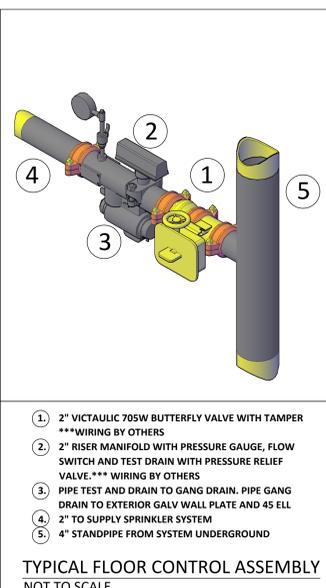
1ST FIRST FLOOR PARTIAL PLAN



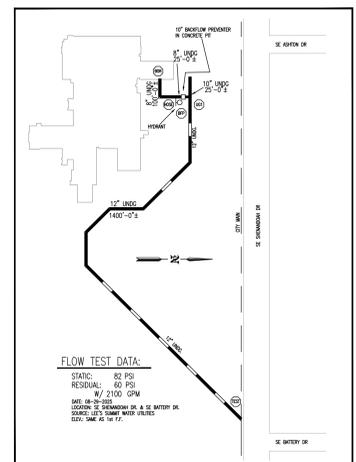
NOMINAL PIPE SIZE	3/8"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
STEEL PIPE EXCEPT THREADED LIGHTWALL	N/A	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0



SPRINKLERS ARE PERMITTED TO BE RELOCATED AND RE-INSTALLED WHEN THE SPRINKLER BEING REMOVED FROM THE SYSTEM REMAINS ATTACHED TO THE ORIGINAL FITTING OR WELDED OUTLET, PROVIDED CARE HAS BEEN TAKEN TO ENSURE THE SPRINKLER HAS NOT BEEN DAMAGED. PER NFPA 13, WHEN A SPRINKLER HAS BEEN REMOVED FROM A FITTING OR WELDED OUTLET, IT SHALL NOT BE RE-INSTALLED. PROVIDE NEW SPRINKLERS AS REQUIRED.



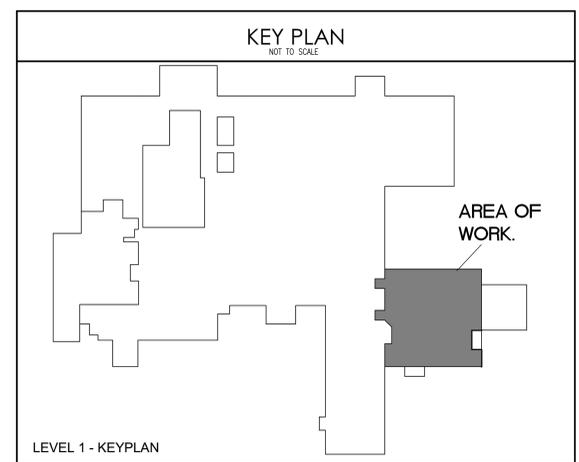
- 1 2" VICTALIC 705W BUTTERFLY VALVE WITH TAMPER
***WIRING BY OTHERS
 - 2 2" RISER MANIFOLD WITH PRESSURE GAUGE, FLOW SWITCH AND TEST DRAIN WITH PRESSURE RELIEF VALVE.*** WIRING BY OTHERS
 - 3 PIPE TEST AND DRAIN TO GANG DRAIN. PIPE GANG DRAIN TO EXTERIOR GALV WALL PLATE AND 45 ELL
 - 4 2" TO SUPPLY SPRINKLER SYSTEM
 - 5 4" STANDPIPE FROM SYSTEM UNDERGROUND
- TYPICAL FLOOR CONTROL ASSEMBLY**
NOT TO SCALE



UNDERGROUND PLAN
NOT TO SCALE

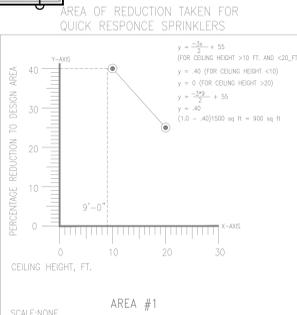


VICINITY MAP
NOT TO SCALE



KEY PLAN
NOT TO SCALE

HYDRAULIC SYSTEM	
DESIGN AREA:	AREA #1
LOCATION:	ED EXPANSION
NO. OF SPRINKLERS:	10
SPRINKLER TYPE:	V2708 & V3802
ORIFICE:	1/2" K-FACTOR: 5.6
BASIS FOR DESIGN:	
1. RISKY:	10
2. DESIGN AREA OF DISCHARGE:	1163 SQ.FT.
SYSTEM DEMAND:	
1. GPM DISCHARGE:	319.105 GPM
2. RESIDUAL PRESSURE AT THE BASE OF THE RISER:	47.80 PSI
3. HOSE STREAMS:	150 GPM
4. RESIDUAL PRESSURE AT POINT CONNECTION:	53.432 PSI



SCOPE OF WORK:

- PROJECT IS TO BE PHASED WITH 3 TOTAL PHASES
- J.F.S. WILL CUT AND CAP THE OLD VESTIBULE FOR DEMO. (DEMO AND REMOVAL BY OTHERS)
- J.F.S. WILL PROVIDE TEMPORARY FIRE SPRINKLER PROTECTION WITHIN EACH PHASE BY TURNING THE EXISTING FIRE SPRINKLER HEADS TO UPRIGHTS DURING CONSTRUCTION.
- J.F.S. WILL MODIFY SPRINKLER HEADS IN NEW TENANT IMPROVEMENT AREA FOR EACH PHASE PER DRAWING AE181 (WHERE NEW WALLS AND CEILINGS ARE BEING INSTALLED ONLY).
- WITHIN PHASE 1, J.F.S. WILL TIE INTO EXISTING 4" SPRINKLER MAIN AND EXTEND SYSTEM INTO NEW ADDITION AND INSTALL A NEW SPRINKLER SYSTEM.

NOTE:

THE DRAWING INDICATES A "SCHEMATIC LAYOUT" OF THE SPRINKLER HEADS AND SHOWS THE INTENT OF THE DESIGN. EXACT LOCATIONS SHALL BE COORDINATED WITH OTHER TRADES, FIELD VERIFIED, AND INSTALLED TO MEET NFPA 13 COVERAGE REQUIREMENTS FOR THE SPACE.

SYMBOL	DESCRIPTION
SPRINKLER	RELOCATED SPRINKLER FROM EXISTING OUTLET
SPRINKLER	CHANGED EXISTING SPRINKLER FROM 5.6 TO 5.0 K
SPRINKLER	RELOCATED SPRINKLER FROM EXISTING SPRINKLER SYSTEM
SPRINKLER	NEW SPRINKLER BEING INSTALLED FROM NEW SYSTEM

SYMBOL	DESCRIPTION	SPRINKLER TYPE	SIZE	FINISH	TEMP.	ORIFICE	K-FACTOR	COUNT
SPRINKLER	VICTALIC Q.R. SEMI-RECESSED PENDENT	V2708	CHROME	155°	1/2"	5.6	K	76
SPRINKLER	VICTALIC Q.R. CONCEALED PENDENT	V3802	WHITE	155°	1/2"	5.6	K	10
SPRINKLER	VICTALIC Q.R. UPRIGHT (TO BE USED FOR TEMP. PROTECTION)	V2708	CHROME	155°	1/2"	5.6	K	01

*****SEE SHEET FP1 FOR GENERAL NOTES*****

INSTALLATION NOTES:

- 1 REMOVE BRANCHLINE TO THIS FITTING AND PLUG THE FITTING. THIS WILL ALLOW FOR A MORE IDENTIFIABLE AREA OF SYSTEM SEPARATION FOR SERVICING OF THE SYSTEM.
- 2 REMOVE BRANCHLINE TO THIS FITTING AND USE THE REMAINING FITTING TO CONNECT NEW PIPE FOR RELOCATION OF SPRINKLER. THIS WILL ALLOW FOR A MORE IDENTIFIABLE AREA OF SYSTEM SEPARATION.
- 3 SPRINKLERS TO BE ADDED FOR ALL NEW DUCTWORK OVER 48" THAT REQUIRE SPRINKLER PROTECTION BENEATH THEM.

PLAN NOTES:

- 1 ALL CEILING HEIGHTS TO BE 9'-0" UNLESS NOTED OTHERWISE. ALL ALL SOFFITS TO BE 8'-0" UNLESS NOTED OTHERWISE.
- 2 SPRINKLERS WILL BE CENTERED IN CEILING TILES WHERE POSSIBLE YET NEVER ANY CLOSER THAN 6 INCHES FROM THE EDGE OF CEILING GRID.
- 3 ALL GROOVED PIPING IS TO BE SCH. 10 PIPE, ASTM A-796 WITH ROLLED GROOVED ENDS. FITTINGS ARE TO BE IRON GROOVED OR WELDED STEEL OUTLETS.
- 4 ALL THREADED PIPING IS TO BE SCHEDULE 40" PIPE, WITH THREADED DUCTILE IRON FITTINGS.

JAYHAWK
 2200 S. Hedge Lane, Topeka, KS 66605
 Phone: 785-233-6665
 Fax: 785-233-6665
 Email: jayhawk@jayhawk.com

REVISIONS:
 NO. DATE DESCRIPTION

JAYHAWK
 2200 S. Hedge Lane, Topeka, KS 66605
 Phone: 785-233-6665
 Fax: 785-233-6665
 Email: jayhawk@jayhawk.com

GENIUM CONSTRUCTION
 1001 LOCUST STREET
 KANSAS CITY, MISSOURI 64106

HCA LEES SUMMIT MEDICAL CENTER
EMERGENCY DEPARTMENT EXPANSION
 2100 SE BLUE PARKWAY
 LEES SUMMIT, MISSOURI 64063

WALTER A. WARREN
 E-24557
 PROFESSIONAL ENGINEER
 12/05/2025
 Warren KTD, LLC

ISS CONTRACT NO. 20935M
 DRAWN BY: TJA CHECKED BY: SB
 PROJECT NUMBER: CA
 APPROVAL
 ISSUE DATE: 10/29/2025 REVISION DATE: 12/01/2025
FP-2
 FIRE PROTECTION
 PARTIAL FIRST FLOOR
 SPRINKLER LAYOUT

TOTAL THIS SHEET	87
TOTAL THIS JOB	87

DATE: 2 OF 2



Hydraulic Calculations by HydraCALC

JAYHAWK FIRE SPRINKLER CO. INC
12030 S. HEDGE LANE TERRACE
OLATHE, KS 66061
913-422-3770
785-232-0975

Job Name : 20935M - HCA Lee's Summit ER Expansion
Drawing : FP1 & FP2
Location : 2100 SE Blue Parkway
Remote Area : 1
Contract : 20935M
Data File : 20935M - HCA Lee's Summit ER Expansion Area 1.WXF

HYDRAULIC CALCULATIONS
for

JOB NAME 20935M - HCA Lee's Summit ER Expansion
Location 2100 SE Blue Parkway
Drawing # FP1 & FP2
Contract # 20935M
Date 10/30/2025

DESIGN

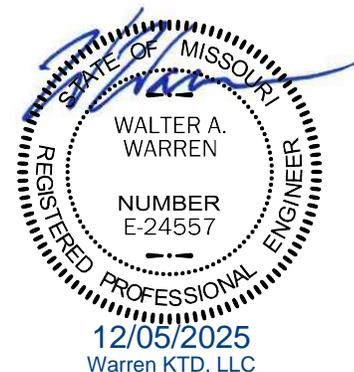
Remote area # 1
Remote area location EXAM ROOM, CORRIDOR, NURSES STATION
Occupancy classification LIGHT HAZARD
Density .10 - Gpm/SqFt
Area of application 1163 - SqFt
Coverage/sprinkler VARIES - SqFt
Type of sprinkler calculated V2708 & V3802
Sprinklers calculated 10
In-rack demand NA - GPM
Hose streams 150 - GPM
Total water required (including hose streams) 319.105 - GPM @ 53.4321 - Psi
Type of system WET
Volume of system (dry or pre-action) NA - Gal

WATER SUPPLY INFORMATION

Test date 08-29-2025
Location ONSITE
Source of info LEE'S SUMMIT WATER DEPT.

CONTRACTOR INFO

JAYHAWK FIRE SPRINKLER CO. INC
Address 12030 S. HEDGE LANE TERRACE / OLATHE, KS 66061 / 913-422-377
Phone # 785-232-0975
Name of designer TJA
Authority having jurisdiction CITY OF LEE'S SUMMIT
NOTES: NA



text1(35) - invisible

Water Supply Curve

JAYHAWK FIRE SPRINKLER CO. INC
20935M - HCA Lee's Summit ER Expansion

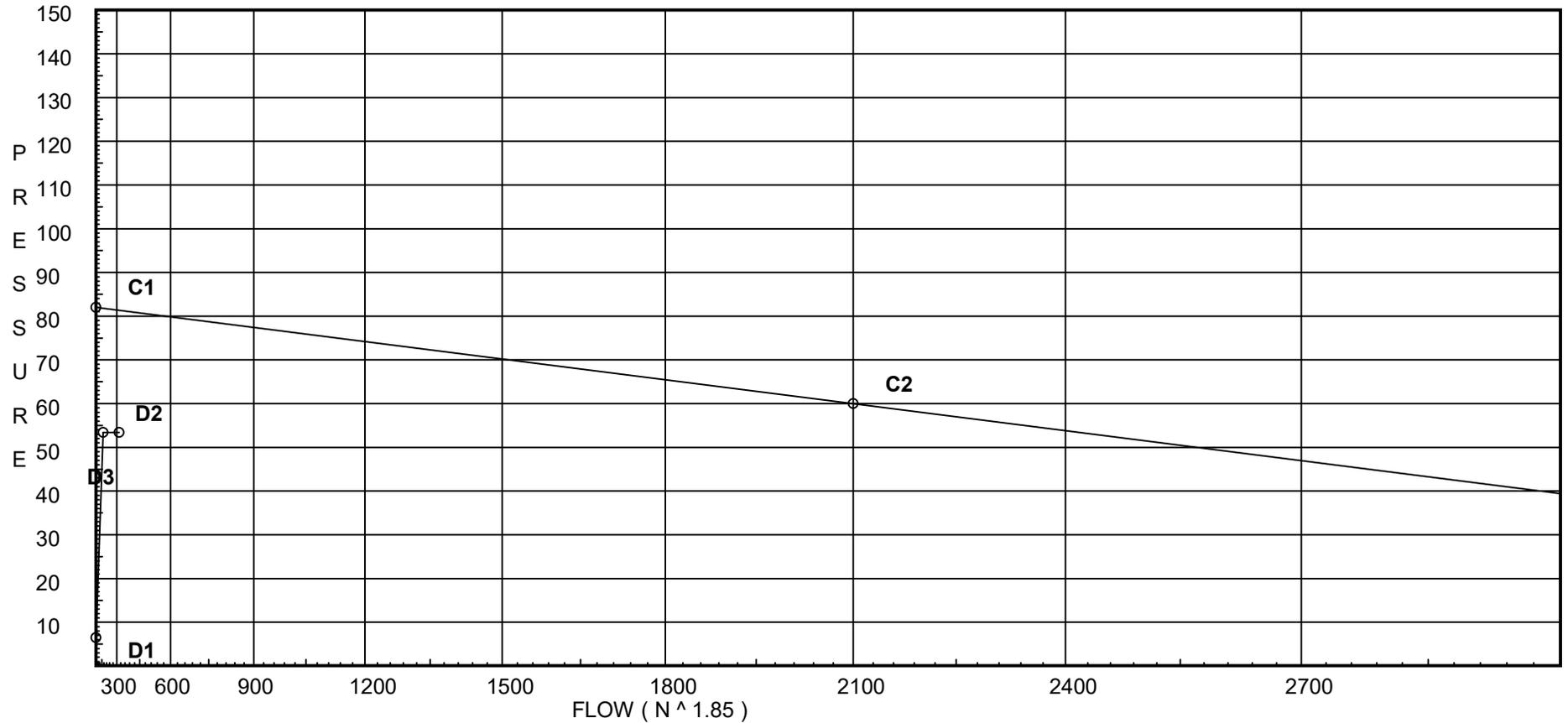
Page 2
Date

City Water Supply:

C1 - Static Pressure : 82
C2 - Residual Pressure: 60
C2 - Residual Flow : 2100

Demand:

D1 - Elevation : 6.496
D2 - System Flow : 169.105
D2 - System Pressure : 53.432
Hose (Demand) : 150
D3 - System Demand : 319.105
Safety Margin : 27.894



Fittings Used Summary

JAYHAWK FIRE SPRINKLER CO. INC
 20935M - HCA Lee's Summit ER Expansion

Page 3
 Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24	
A	Alarm Rel E1 & E3							7.7	21.5		17		27	29								
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61	
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																				
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13	
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121	
Zca	Colt C200 Horz Butt	Fitting generates a Fixed Loss Based on Flow																				

Units Summary

Diameter Units Inches
 Length Units Feet
 Flow Units US Gallons per Minute
 Pressure Units Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

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SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
TEST	82.0	60	2100.0	81.326	319.1	53.432

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>
DP02	109.0	5.6	7.0	14.82	0.1 141
EQ02	110.0		6.79		
DP03	109.0	5.6	7.0	14.82	0.1 139
EQ03	110.0		6.79		
DP01	109.0	5.6	7.0	14.82	0.1 80
EQ01	110.0		6.79		
DP04	109.0	5.6	7.0	14.82	0.1 140
EQ04	110.0		6.79		
DP05	109.0	5.6	7.0	14.82	0.1 100
EQ05	110.0		6.79		
1	110.0	5.69	6.79	14.82	K=K @ EQ01
2	109.67		7.67		
3	109.67		7.87		
4	109.67		8.67		
5	109.67		10.39		
6	109.67		12.49		
7	109.67		12.91		
8	109.67		14.34		
9	109.67		38.83		
10	109.5		40.73		
TOR	101.0		45.16		
BOR	95.0		47.8	150.0	
HOSE	95.0		47.91		
BFP	95.0		47.93		
UG1	95.0		53.26		
TEST	95.0		53.43		
12	110.0	5.69	7.1	15.15	K=K @ EQ02
13	110.0	5.69	7.84	15.92	K=K @ EQ02
14	110.0	5.69	9.44	17.46	K=K @ EQ02
15	110.0	5.69	8.13	16.21	K=K @ EQ03
16	109.67		9.09		
17	109.67		9.39		
18	109.67		10.41		
19	110.0	5.69	8.49	16.57	K=K @ EQ04
20	110.0	5.69	9.44	17.47	K=K @ EQ04
21	110.0	5.69	11.56	19.33	K=K @ EQ04
22	109.67		12.7		
23	110.0	5.69	9.95	17.94	K=K @ EQ05
24	109.67		11.12		
25	109.67		11.48		
26	110.0	5.69	10.29	18.23	K=K @ EQ05

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
DP02 to EQ02	109 110	5.60	14.82 14.82	1 1.049	E	2.0	1.000 2.000 3.000	120	7.000 -0.433 0.224		Vel = 5.50	
EQ02			0.0 14.82						6.791		K Factor = 5.69	
DP03 to EQ03	109 110	5.60	14.82 14.82	1 1.049	E	2.0	1.000 2.000 3.000	120	7.000 -0.433 0.224		Vel = 5.50	
EQ03			0.0 14.82						6.791		K Factor = 5.69	
DP01 to EQ01	109 110	5.60	14.82 14.82	1 1.049	E	2.0	1.000 2.000 3.000	120	7.000 -0.433 0.224		Vel = 5.50	
EQ01			0.0 14.82						6.791		K Factor = 5.69	
DP04 to EQ04	109 110	5.60	14.82 14.82	1 1.049	E	2.0	1.000 2.000 3.000	120	7.000 -0.433 0.224		Vel = 5.50	
EQ04			0.0 14.82						6.791		K Factor = 5.69	
DP05 to EQ05	109 110	5.60	14.82 14.82	1 1.049	E	2.0	1.000 2.000 3.000	120	7.000 -0.433 0.224		Vel = 5.50	
EQ05			0.0 14.82						6.791		K Factor = 5.69	
1 to 2	110 109.67	5.69	14.82 14.82	1 1.049	E T	2.0 5.0	2.910 7.000 9.910	120	6.791 0.143 0.740		K = K @ EQ01 Vel = 5.50	
2 to 3	109.67 109.67		0.0 14.82	1.25 1.38			9.840 9.840	120	7.674 0.0 0.194		Vel = 3.18	
3 to 4	109.67 109.67		15.15 29.97	1.25 1.38			11.060 11.060	120	7.868 0.0 0.799		Vel = 6.43	
4 to 5	109.67 109.67		15.92 45.89	1.25 1.38			10.820 10.820	120	8.667 0.0 1.722		Vel = 9.84	
5 to 6	109.67 109.67		17.46 63.35	1.25 1.38	T	6.0	1.280 6.000 7.280	120	10.389 0.0 2.103		Vel = 13.59	
6 to 7	109.67 109.67		0.0 63.35	2 2.157			12.800 12.800	120	12.492 0.0 0.420		Vel = 5.56	
7 to 8	109.67 109.67		69.58 132.93	2 2.157			11.050 11.050	120	12.912 0.0 1.428		Vel = 11.67	
8 to 9	109.67 109.67		36.17 169.1	2 2.157	6E B Fsp	36.92 7.384 0.0	62.190 44.304 106.494	120	14.340 3.000 21.489		** Fixed Loss = 3 Vel = 14.85	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
9 to 10	109.67 109.5		0.0 169.1	4 4.26	4E T	52.668 26.334	169.770 79.002 248.772	120 0.0073	38.829 0.074 1.825		Vel = 3.81	
10 to TOR	109.5 101		0.0 169.1	6 6.357	13E T B	228.836 37.72 12.573	438.430 279.129 717.559	120 0.0010	40.728 3.681 0.750		Vel = 1.71	
TOR to BOR	101 95		0.0 169.1	6 6.357	A	33.948	9.000 33.948 42.948	120 0.0010	45.159 2.599 0.044		Vel = 1.71	
BOR to HOSE	95 95	H150	150.00 319.1	8 8.27	2E	56.936	100.000 56.936 156.936	140 0.0007	47.802 0.0 0.111		Vel = 1.91	
HOSE to BFP	95 95		0.0 319.1	8 8.27			25.000 25.000	140 0.0007	47.913 0.0 0.018		Vel = 1.91	
BFP to UG1	95 95		0.0 319.1	10 10.28	T Zca G	75.336 0.0 7.534	25.000 82.870 107.870	140 0.0003	47.931 5.302 0.027		** Fixed Loss = 5.302 Vel = 1.23	
UG1 to TEST	95 95		0.0 319.1	12 12.34	T G 5E	93.767 9.377 210.976	1400.000 314.120 1714.120	140 0.0001	53.260 0.0 0.172		Vel = 0.86	
TEST			0.0 319.10						53.432		K Factor = 43.65	
12 to 3	110 109.67	5.69	15.15 15.15	1 1.049	E T	2.0 5.0	1.000 7.000 8.000	120 0.0779	7.102 0.143 0.623		K = K @ EQ02 Vel = 5.62	
3			0.0 15.15						7.868		K Factor = 5.40	
13 to 4	110 109.67	5.69	15.92 15.92	1 1.049	E T	2.0 5.0	1.000 7.000 8.000	120 0.0853	7.842 0.143 0.682		K = K @ EQ02 Vel = 5.91	
4			0.0 15.92						8.667		K Factor = 5.41	
14 to 5	110 109.67	5.69	17.46 17.46	1 1.049	E T	2.0 5.0	1.000 7.000 8.000	120 0.1013	9.436 0.143 0.810		K = K @ EQ02 Vel = 6.48	
5			0.0 17.46						10.389		K Factor = 5.42	
15 to 16	110 109.67	5.69	16.21 16.21	1 1.049	E T	2.0 5.0	2.300 7.000 9.300	120 0.0883	8.131 0.143 0.821		K = K @ EQ03 Vel = 6.02	
16 to 17	109.67 109.67		0.0 16.21	1.25 1.38			12.550 12.550	120 0.0232	9.095 0.0 0.291		Vel = 3.48	
17 to 18	109.67 109.67		16.57 32.78	1.25 1.38			12.000 12.000	120 0.0854	9.386 0.0 1.025		Vel = 7.03	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
18 to 7	109.67 109.67		17.47 50.25	1.25 1.38	T	6.0 7.290 6.000 13.290	120 0.1882	10.411 0.0 2.501		Vel = 10.78	
7			0.0 50.25					12.912		K Factor = 13.98	
19 to 17	110 109.67	5.69	16.57 16.57	1 1.049	E T	2.0 5.0 1.160 7.000 8.160	120 0.0918	8.494 0.143 0.749		K = K @ EQ04 Vel = 6.15	
17			0.0 16.57					9.386		K Factor = 5.41	
20 to 18	110 109.67	5.69	17.47 17.47	1 1.049	E T	2.0 5.0 1.160 7.000 8.160	120 0.1013	9.441 0.143 0.827		K = K @ EQ04 Vel = 6.49	
18			0.0 17.47					10.411		K Factor = 5.41	
21 to 22	110 109.67	5.69	19.33 19.33	1 1.049	E T	2.0 5.0 1.160 7.000 8.160	120 0.1222	11.556 0.143 0.997		K = K @ EQ04 Vel = 7.18	
22 to 7	109.67 109.67		0.0 19.33	1.25 1.38	T	6.0 0.710 6.000 6.710	120 0.0322	12.696 0.0 0.216		Vel = 4.15	
7			0.0 19.33					12.912		K Factor = 5.38	
23 to 24	110 109.67	5.69	17.94 17.94	1 1.049	E T	2.0 5.0 2.600 7.000 9.600	120 0.1064	9.954 0.143 1.021		K = K @ EQ05 Vel = 6.66	
24 to 25	109.67 109.67		0.0 17.94	1.25 1.38		13.000 13.000	120 0.0280	11.118 0.0 0.364		Vel = 3.85	
25 to 8	109.67 109.67		18.23 36.17	1.25 1.38	T	6.0 21.900 6.000 27.900	120 0.1024	11.482 0.0 2.858		Vel = 7.76	
8			0.0 36.17					14.340		K Factor = 9.55	
26 to 25	110 109.67	5.69	18.23 18.23	1 1.049	E T	2.0 5.0 2.600 7.000 9.600	120 0.1097	10.286 0.143 1.053		K = K @ EQ05 Vel = 6.77	
25			0.0 18.23					11.482		K Factor = 5.38	