

Hydraulic Summary

Job Number: NC-1429
Report Description:

Job

Job Number
NC-1429
Job Name:
Residences at Blackwell
Address 1
2840 SE Blue Pkwy
Address 2
Lee's Summit, MO 64063
Address 3

System

Most Demanding Sprinkler Data
K-Factor at
Hose Allowance At Source
0.00
Additional Hose Supplies
Node
Hose At Node 31
Hose At Node 32
Hose At Node 81

Flow(gpm)
250.00
250.00
250.00

Total Hose Streams
750.00
System Flow Demand
750.00
Maximum Pressure Unbalance In Loops
0.000
Maximum Velocity Above Ground
16.49 between nodes 1 and 8
Maximum Velocity Under Ground

Total Water Required (Including Hose Allowance)
750.00

Volume capacity of Wet Pipes
275.19 gal
Volume capacity of Dry Pipes

Supplies

Node	Name	Hose Flow (gpm)	Static (psi)	Residual (psi)	@	Flow (gpm)	Available (psi)	@	Total Demand (gpm)	Required (psi)	Safety Margin (psi)
1	Manual - Fire Truck		175.000	175.000		750.00	175.000		750.00	154.205	20.795

Contractor

Contractor Number
01
Name of Contractor:
Alliance Fire Protection
Address 1
130 W 9th Ave #101
Address 2
North Kansas City, MO 64116
City

State Zip Code

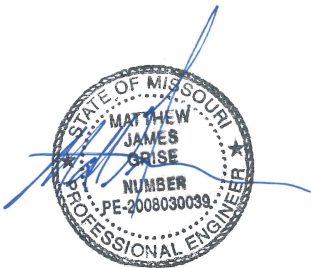
Designer

State Certification/License Number

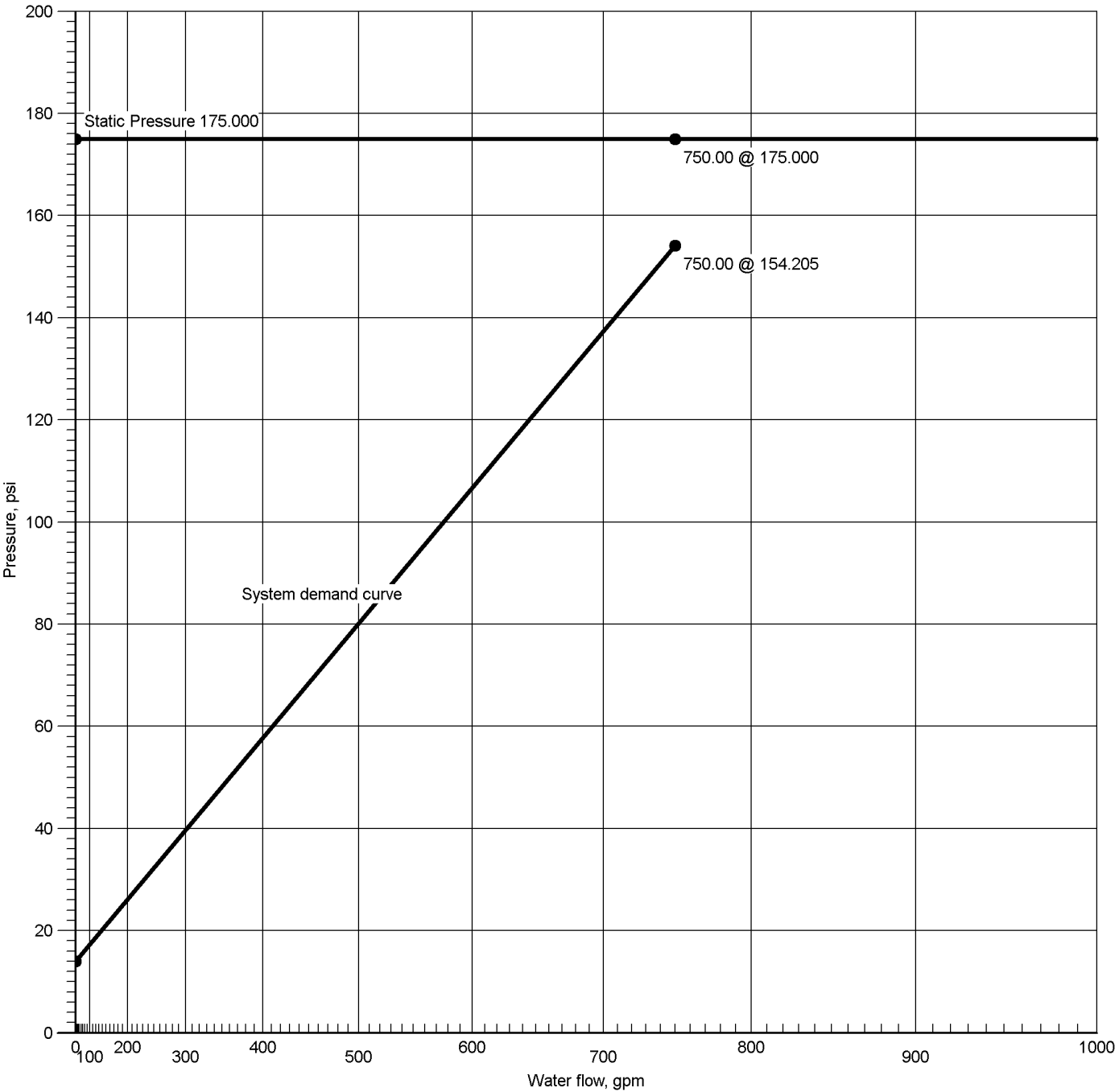
AHJ
LS Codes
Job Site/Building
Standpipe - Class I - Wet - Manual
Drawing Name
RB-ST-Calc-03-27-2024

Remote Area(s)

Occupancy
NA
Density
NA
Number Of Sprinklers Calculated
0
Number Of Nozzles Calculated
0
Area of Application
NA
Coverage Per Sprinkler
NA



Manual - Fire Truck at Node 1



Hydraulic Graph
Manual - Fire Truck at Node 1
Static: Pressure
175.000
Residual: Pressure
175.000 @ 750.00
Available Pressure at {?}lbTestTime
175.000 @ 750.00
System Demand
154.205 @ 750.00
System Demand (Including Hose Allowance at Source)
154.205 @ 750.00

Summary Of Outflowing Devices

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Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)
Hose	31	250.00	250.00	24.63	107.804
Hose	32	250.00	250.00	24.63	103.027
Hose	81	250.00	250.00	24.63	117.734

➡ Most Demanding Sprinkler Data

Node Analysis

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Node	Elevation(Foot)	Fittings	Pressure(psi)	Discharge(gpm)
1	3'-0½	S	154.205	750.00
31	24'-11	Hose(-103.027)	107.804	250.00
32	35'-7	Hose(-103.027)	103.027	250.00
81	35'-7	Hose(-103.027)	117.734	250.00
8	8'-11	fT(22'-3½)	133.597	
23	24'-11	PO(16'-5½)	110.493	
25	35'-7	PO(16'-5½)	105.717	
97	35'-7	PO(16'-5½)	120.424	

Hydraulic Analysis

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Pipe Type Downstream Upstream	Diameter Elevation	Flow Discharge	Velocity K-Factor	HWC Pt	Pn	Friction Loss Fittings	Length Eq. Length Total Length	Pressure Summary
..... Route 1								
FM	2.6350	250.00	14.71	120		0.156906	0'-8	Pf 2.690
32	35'-7	250.00		103.027		Hose(-103.027)	16'-5½	Pe
25	35'-7			105.717		PO(16'-5½)	17'-1½	Pv
FM	4.3100	250.00	5.50	120		0.014287	10'-8	Pf 0.152
25	35'-7			105.717				Pe 4.624
23	24'-11			110.493			10'-8	Pv
FM	4.3100	500.00	11.00	120		0.051504	218'-7	Pf 16.168
23	24'-11	250.00		110.493		Flow (q) from Route 2	95'-4	Pe 6.936
8	8'-11			133.597		PO(27'-10½), BV(16'-8½), 3fE(9'-5½), fT(22'-3½)	313'-11	Pv
FM	4.3100	750.00	16.49	120		0.109047	52'-5½	Pf 18.063
8	8'-11	250.00		133.597		Flow (q) from Route 3	113'-2	Pe 2.545
1	3'-0½			154.205		4fE(9'-5½), BV(16'-8½), PO(27'-10½), sCV(30'-8), S	165'-7½	Pv
..... Route 2								
FM	2.6350	250.00	14.71	120		0.156906	0'-8	Pf 2.690
31	24'-11	250.00		107.804		Hose(-103.027)	16'-5½	Pe
23	24'-11			110.493		PO(16'-5½)	17'-1½	Pv
..... Route 3								
FM	2.6350	250.00	14.71	120		0.156906	0'-8	Pf 2.690
81	35'-7	250.00		117.734		Hose(-103.027)	16'-5½	Pe
97	35'-7			120.424		PO(16'-5½)	17'-1½	Pv
FM	4.3100	250.00	5.50	120		0.014287	36'-6	Pf 1.613
97	35'-7			120.424			76'-4½	Pe 11.561
8	8'-11			133.597		PO(27'-10½), BV(16'-8½), fE(9'-5½), fT(22'-3½)	112'-10½	Pv

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)

C Value Multiplier

Actual Inside Diameter

Schedule 40 Steel Pipe Inside Diameter

4.87

= Factor

Value Of C	100	130	140	150
Multiplying Factor	0.713	1.16	1.33	1.51

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Pipe Type Downstream Upstream	Diameter Elevation	Flow Discharge	Velocity K-Factor	HWC Pt	Pn	Friction Loss Fittings	Length Eq. Length Total Length	Pressure Summary
Pipe Type Legend			Units Legend			Fittings Legend		
AO	Arm-Over	Diameter	Inch			ALV	Alarm Valve	
BL	Branch Line	Elevation	Foot			AngV	Angle Valve	
CM	Cross Main	Flow	gpm			b	Bushing	
DN	Drain	Discharge	gpm			BaIV	Ball Valve	
DR	Drop	Velocity	fps			BFP	Backflow Preventer	
DY	Dynamic	Pressure	psi			BV	Butterfly Valve	
FM	Feed Main	Length	Foot			C	Cross Flow Turn 90°	
FR	Feed Riser	Friction Loss	psi/Foot			cplg	Coupling	
MS	Miscellaneous	HWC	Hazen-Williams Constant			Cr	Cross Run	
OR	Outrigger	Pt	Total pressure at a point in a pipe			CV	Check Valve	
RN	Riser Nipple	Pn	Normal pressure at a point in a pipe			DeIV	Deluge Valve	
SN	Swing Nipple	Pf	Pressure loss due to friction between points			DPV	Dry Pipe Valve	
SP	Sprig	Pe	Pressure due to elevation difference between indicated points			E	90° Elbow	
ST	Stand Pipe	Pv	Velocity pressure at a point in a pipe			EE	45° Elbow	
UG	Underground					Ee1	11¼° Elbow	
						Ee2	22½° Elbow	
						f	Flow Device	
						fd	Flex Drop	
						FDC	Fire Department Connection	
						fE	90° FireLock(TM) Elbow	
						fEE	45° FireLock(TM) Elbow	
						flg	Flange	
						FN	Floating Node	
						fT	FireLock(TM) Tee	
						g	Gauge	
						GloV	Globe Valve	
						GV	Gate Valve	
						Ho	Hose	
						Hose	Hose	
						HV	Hose Valve	
						Hyd	Hydrant	
						LtE	Long Turn Elbow	
						mecT	Mechanical Tee	
						Noz	Nozzle	
						P1	Pump In	
						P2	Pump Out	
						PIV	Post Indicating Valve	
						PO	Pipe Outlet	
						PrV	Pressure Relief Valve	
						PRV	Pressure Reducing Valve	
						red	Reducer/Adapter	
						S	Supply	
						sCV	Swing Check Valve	
						SFx	Seismic Flex	
						Spr	Sprinkler	
						St	Strainer	
						T	Tee Flow Turn 90°	
						Tr	Tee Run	
						U	Union	
						WirF	Wirsbo	
						WMV	Water Meter Valve	
						Z	Cap	

