

ENGINEERS

ADDRESS :

LICENSE :

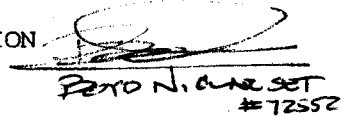
DESIGNER : ODI, NICET LVL IV #72552

DATE : 12-08-2006

FILE : 2NDF

JOB NAME : BUILDING 265 ADDITION

LOCATION :

  
Perry N. ... SET  
#72552

DESIGN DATA.

HAZARD : ORDINARY GRP 2

DENSITY : .2 Sq Ft

AREA PER SPRINKLER : 130 Sq Ft

TOTAL CALCULATED AREA : *Area* Sq Ft

TOTAL SPRINKLERS CALCULATED : 24 Heads

FLOW DATA.

TOTAL SPRINKLER FLOW : 667.5 Gpm

TOTAL HOSE STREAM : 500.0 Gpm

TOTAL WATER REQUIRED : 1167.5 Gpm

BASE OF RISER NODE: BOR

FLOW : 667.5 Gpm PRESSURE : 45.7 Psi

AUTHORITY HAVING JURISDICTION :  
PHONE :

HYDRONICS : EQUIVALENT K-FACTOR CALCULATOR

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EQUIVALENT K-FACTOR CALCULATION

Sprinkler K-Factor	:	8.0	Ft
Sprinkler Elevat'n	:	27.5	Ft
Branch-Ln Elevat'n	:	29.0	Ft
Pipe Diameter	:	1.049	In
Pipe Length	:	2.8	Ft
Fitting Length	:	7.0	Ft
Total Length	:	9.8	Ft
C-Factor	:	120	

Equivalent K-Factor : 7.595

HEADS BELOW DOORS

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SOURCE | STATIC : 70.0 Psi RESIDUAL : 63.0 Psi FLOW : 3082 Gpm

NODE NO.	ELEVATION Feet	K- FACTOR	PRESSURE Psi	DISCHARGE Gpm
1	29.0	8.0	12.1	27.8
2	29.0	8.0	12.2	27.9
3	29.0	8.0	13.6	29.5
4	29.0	8.0	11.6	27.2
5	29.0	8.0	10.7	26.1
6	29.0	8.0	10.8	26.2
7	29.0	8.0	11.5	27.1
8	29.0	8.0	13.1	29.0
9	29.0	8.0	13.4	29.3
10	29.0	8.0	11.6	27.3
11	29.0	7.6	11.7	26.0
12	29.0	7.6	12.0	26.3
13	29.0	7.6	12.6	27.0
14	29.0	8.0	13.4	29.2
15	29.0	8.0	12.1	27.8
16	29.0	7.6	12.2	26.5
17	29.0	7.6	12.5	26.8
18	29.0	7.6	13.1	27.5
19	29.0	8.0	13.9	29.8
20	29.0	8.0	12.9	28.7
21	29.0	7.6	13.0	27.4
22	29.0	7.6	13.3	27.7
23	29.0	7.6	14.0	28.4
24	29.0	8.0	14.8	30.8
25	29.0		14.5	
26	29.0		14.5	
27	29.0		15.0	
28	29.0		15.2	
29	29.0		15.8	
30	29.0		16.8	
31	29.0		24.7	
TOR	15.0		37.7	
BFP	2.0		43.6	
BOR	2.0		45.7	
CTY	2.0	SOURCE	46.2	1167.5

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SPRINKLERS FLOWING	: 24	Heads
AREA PER SPRINKLER	: 130	Sq Ft
REQUIRED DENSITY	: .2	Gpm/Sq Ft
COMPUTED DENSITY	: .2	Gpm/Sq Ft
TOTAL SPRINKLER FLOW	: 667.5	Gpm
INSIDE HOSE STREAM	:	Gpm
OUTSIDE HOSE STREAM	: 500	Gpm
TOTAL WATER REQUIRED	: 1167.5	Gpm
TOTAL SPRINKLER PRESS	: 44.2	Psi
VALVE FIXED LOSS	: 2	Psi
SUPPLY PRESS AVAILABLE	: 68.8	Psi
DEMAND PRESS REQUIRED	: 46.2	Psi
PRESSURE CUSHION	: 22.6	Psi
MAXIMUM VELOCITY	: 16.8	F/S

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PIPE NO.	BEG END	FLOW Gpm	K-FACTOR FITTING TYPE DIAMETER		LENGTH FTG TOTAL	C-FACTOR FR- LOSS (Psi/Ft)	PRESSURE Psi	
			K=	L=			Pt	Pv
1	1	q= 27.8	K= 8.0	L= 10.0	10.0	C= 120 .0088	Pt 12.1	Pt 12.1
		Q= 27.8	F=	F= .0			Pe .0	Pv .0
		Vel= 2.7	D= 2.067	TL= 10.0			Pf .1	Pn 12.0
	2						Pt 12.2	
2	2	q= 27.9	K= 8.0	L= 24.0	24.0	C= 120 .0318	Pt 12.2	Pt 12.2
		Q= 55.7	F= 4E	F= 20.0			Pe .0	Pv -.2
		Vel= 5.3	D= 2.067	TL= 44.0			Pf 1.4	Pn 12.0
	3						Pt 13.6	
3	3	q= 29.5	K= 8.0	L= 3.0	3.0	C= 120 .0699	Pt 13.6	Pt 13.6
		Q= 85.2	F= T	F= 10.0			Pe .0	Pv -.4
		Vel= 8.1	D= 2.067	TL= 13.0			Pf .9	Pn 13.1
	25						Pt 14.5	
4	4	q= 27.2	K= 8.0	L= 5.5	5.5	C= 120 .2306	Pt 11.6	Pt 11.6
		Q= 27.2	F= TE	F= 7.0			Pe .0	Pv -.7
		Vel= 10.1	D= 1.049	TL= 12.5			Pf 2.9	Pn 10.9
	25						Pt 14.5	
5	5	q= 26.1	K= 8.0	L= 10.0	10.0	C= 120 .0079	Pt 10.7	Pt 10.7
		Q= 26.1	F=	F= .0			Pe .0	Pv .0
		Vel= 2.5	D= 2.067	TL= 10.0			Pf .1	Pn 10.6
	6						Pt 10.8	
6	6	q= 26.2	K= 8.0	L= 16.0	16.0	C= 120 .0284	Pt 10.8	Pt 10.8
		Q= 52.4	F= EE	F= 10.0			Pe .0	Pv -.2
		Vel= 5.0	D= 2.067	TL= 26.0			Pf .7	Pn 10.6
	7						Pt 11.5	
7	7	q= 27.1	K= 8.0	L= 16.0	16.0	C= 120 .0615	Pt 11.5	Pt 11.5
		Q= 79.5	F= EE	F= 10.0			Pe .0	Pv -.4
		Vel= 7.6	D= 2.067	TL= 26.0			Pf 1.6	Pn 11.1
	8						Pt 13.1	
8	8	q= 29.0	K= 8.0	L= 3.0	3.0	C= 120 .1092	Pt 13.1	Pt 13.1
		Q= 108.5	F= T	F= 10.0			Pe .0	Pv -.7
		Vel= 10.4	D= 2.067	TL= 13.0			Pf 1.4	Pn 12.4
	26						Pt 14.5	
9	9	q= 29.3	K= 8.0	L= .9	.9	C= 120 .264	Pt 13.4	Pt 13.4
		Q= 29.3	F= T	F= 5.0			Pe .0	Pv -.8
		Vel= 10.9	D= 1.049	TL= 5.9			Pf 1.6	Pn 12.6
	27						Pt 15.0	

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PIPE NO.	BEG END	FLOW Gpm	K-FACTOR FITTING TYPE DIAMETER			LENGTH FTG TOTAL	C-FACTOR FR- LOSS (Psi/Ft)	PRESSURE Psi		
			K=	F=	D=			L=	F=	TL=
10	10	q= 26.0	K= 7.6	L=	10.0		Pt	11.6	Pt	11.6
		Q= 27.3	F=	F=	.0	C= 120	Pe	.0	Pv	.0
		Vel= 2.6	D= 2.067	TL=	10.0	.0085	Pf	.1	Pn	11.6
	11						Pt	11.7		
11	11	q= 26.0	K= 7.6	L=	10.0		Pt	11.7	Pt	11.7
		Q= 53.3	F=	F=	.0	C= 120	Pe	.0	Pv	-.2
		Vel= 5.1	D= 2.067	TL=	10.0	.0293	Pf	.3	Pn	11.5
	12						Pt	12.0		
12	12	q= 26.3	K= 7.6	L=	10.0		Pt	12.0	Pt	12.0
		Q= 79.6	F=	F=	.0	C= 120	Pe	.0	Pv	-.4
		Vel= 7.6	D= 2.067	TL=	10.0	.0616	Pf	.6	Pn	11.6
	13						Pt	12.6		
13	13	q= 27.0	K= 7.6	L=	6.9		Pt	12.6	Pt	12.6
		Q= 106.6	F=	F=	.0	C= 120	Pe	.0	Pv	-.7
		Vel= 10.2	D= 2.067	TL=	6.9	.1057	Pf	.7	Pn	11.9
	14						Pt	13.4		
14	14	q= 29.2	K= 8.0	L=	.9		Pt	13.4	Pt	13.4
		Q= 135.8	F= T	F=	10.0	C= 120	Pe	.0	Pv	-1.1
		Vel= 13.0	D= 2.067	TL=	10.9	.1655	Pf	1.8	Pn	12.2
	28						Pt	15.2		
15	15	q= 26.5	K= 7.6	L=	10.0		Pt	12.1	Pt	12.1
		Q= 27.8	F=	F=	.0	C= 120	Pe	.0	Pv	.0
		Vel= 2.7	D= 2.067	TL=	10.0	.0088	Pf	.1	Pn	12.0
	16						Pt	12.2		
16	16	q= 26.5	K= 7.6	L=	10.0		Pt	12.2	Pt	12.2
		Q= 54.3	F=	F=	.0	C= 120	Pe	.0	Pv	-.2
		Vel= 5.2	D= 2.067	TL=	10.0	.0304	Pf	.3	Pn	12.0
	17						Pt	12.5		
17	17	q= 26.8	K= 7.6	L=	10.0		Pt	12.5	Pt	12.5
		Q= 81.1	F=	F=	.0	C= 120	Pe	.0	Pv	-.4
		Vel= 7.8	D= 2.067	TL=	10.0	.0638	Pf	.6	Pn	12.1
	18						Pt	13.1		
18	18	q= 27.5	K= 7.6	L=	6.9		Pt	13.1	Pt	13.1
		Q= 108.7	F=	F=	.0	C= 120	Pe	.0	Pv	-.7
		Vel= 10.4	D= 2.067	TL=	6.9	.1095	Pf	.8	Pn	12.4
	19						Pt	13.9		

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PIPE NO.	BEG END	FLOW Gpm	K-FACTOR FITTING TYPE DIAMETER	LENGTH FTG TOTAL	C-FACTOR FR- LOSS (Psi/Ft)	PRESSURE Psi		
						Pt	Pv	Pn
19	19 29	q= 29.8	K= 8.0	L= .9		Pt 13.9	Pt 13.9	
		Q= 138.4	F= T	F=	10.0	C= 120	Pe .0	Pv -1.2
		Vel= 13.2	D= 2.067	TL=	10.9	.1715	Pf 1.9	Pn 12.7
							Pt 15.8	
20	20 21	q= 27.4	K= 7.6	L= 10.0		Pt 12.9	Pt 12.9	
		Q= 28.7	F=	F=	.0	C= 120	Pe .0	Pv -.1
		Vel= 2.7	D= 2.067	TL=	10.0	.0093	Pf .1	Pn 12.8
							Pt 13.0	
21	21 22	q= 27.4	K= 7.6	L= 10.0		Pt 13.0	Pt 13.0	
		Q= 56.1	F=	F=	.0	C= 120	Pe .0	Pv -.2
		Vel= 5.4	D= 2.067	TL=	10.0	.0322	Pf .3	Pn 12.8
							Pt 13.3	
22	22 23	q= 27.7	K= 7.6	L= 10.0		Pt 13.3	Pt 13.3	
		Q= 83.8	F=	F=	.0	C= 120	Pe .0	Pv -.4
		Vel= 8.0	D= 2.067	TL=	10.0	.0677	Pf .7	Pn 12.9
							Pt 14.0	
23	23 24	q= 28.4	K= 7.6	L= 6.9		Pt 14.0	Pt 14.0	
		Q= 112.2	F=	F=	.0	C= 120	Pe .0	Pv -.8
		Vel= 10.7	D= 2.067	TL=	6.9	.1163	Pf .8	Pn 13.2
							Pt 14.8	
24	24 30	q= 30.8	K= 8.0	L= .9		Pt 14.8	Pt 14.8	
		Q= 143.0	F= T	F=	10.0	C= 120	Pe .0	Pv -1.3
		Vel= 13.7	D= 2.067	TL=	10.9	.182	Pf 2.0	Pn 13.5
							Pt 16.8	
25	25 26	q= .0	K= .0	L= 10.0		Pt 14.5	Pt 14.5	
		Q= 112.5	F=	F=	.0	C= 120	Pe .0	Pv -.1
		Vel= 2.8	D= 4.026	TL=	10.0	.0045	Pf .0	Pn 14.4
							Pt 14.5	
26	26 27	q= .0	K= .0	L= 8.0		Pt 14.5	Pt 14.5	
		Q= 220.9	F= EE	F=	20.0	C= 120	Pe .0	Pv -.2
		Vel= 5.6	D= 4.026	TL=	28.0	.0158	Pf .4	Pn 14.3
							Pt 15.0	
27	27 28	q= .0	K= .0	L= 8.9		Pt 15.0	Pt 15.0	
		Q= 250.3	F=	F=	.0	C= 120	Pe .0	Pv -.3
		Vel= 6.3	D= 4.026	TL=	8.9	.0199	Pf .2	Pn 14.7
							Pt 15.2	

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PIPE NO.	BEG END	FLOW Gpm	K-FACTOR		LENGTH FTG TOTAL	C-FACTOR		PRESSURE Psi		
			FITTING DIAMETER	TYPE		FR-	LOSS (Psi/Ft)			
28	28	q= .0	K= .0	L= 13.0				Pt 15.2	Pt 15.2	
		Q= 386.1	F=	F=	.0	C= 120		Pe .0	Pv -.6	
		Vel= 9.7	D= 4.026	TL= 13.0		.0445		Pf .6	Pn 14.5	
	29						Pt 15.8			
29	29	q= .0	K= .0	L= 13.0				Pt 15.8	Pt 15.8	
		Q= 524.5	F=	F=	.0	C= 120		Pe .0	Pv -1.2	
		Vel= 13.2	D= 4.026	TL= 13.0		.0784		Pf 1.0	Pn 14.6	
	30						Pt 16.8			
30	30	q= .0	K= .0	L= 44.0				Pt 16.8	Pt 16.8	
		Q= 667.5	F= EE	F= 20.0		C= 120		Pe .0	Pv -1.9	
		Vel= 16.8	D= 4.026	TL= 64.0		.1225		Pf 7.8	Pn 14.9	
	31						Pt 24.7			
31	31	q= .0	K= .0	L= 16.0				Pt 24.7	Pt 24.7	
		Q= 667.5	F= EET	F= 40.0		C= 120		Pe 6.1	Pv -1.9	
		Vel= 16.8	D= 4.026	TL= 56.0		.1225		Pf 6.9	Pn 22.8	
	TOR						Pt 37.7			
32	TOR	q= .0	K= .0	L= 15.0				Pt 37.7	Pt 37.7	
		Q= 667.5	F= T	F= 35.0		C= 120		Pe 5.6	Pv -.1	
		Vel= 4.2	D= 8.071	TL= 50.0		.0041		Pf .2	Pn 37.6	
	BFP						Pt 43.6			
BFP	BOR	Q= 667.5						Pt 43.6		
		FIXED PRESSURE LOSS						Valve	2.0	
								Pt 45.7		
34	BOR	q= .0	K= .0	L= 100.0				Pt 45.7	Pt 45.7	
		Q= 667.5	F= EEETG	F= 124.0		C= 140		Pe .0	Pv -.1	
		Vel= 3.8	D= 8.51	TL= 224.0		.0024		Pf .5	Pn 45.6	
	CTY						Pt 46.2			
CTY	Q=1167.5		<<<	SOURCE	>>>		Pt 46.2			

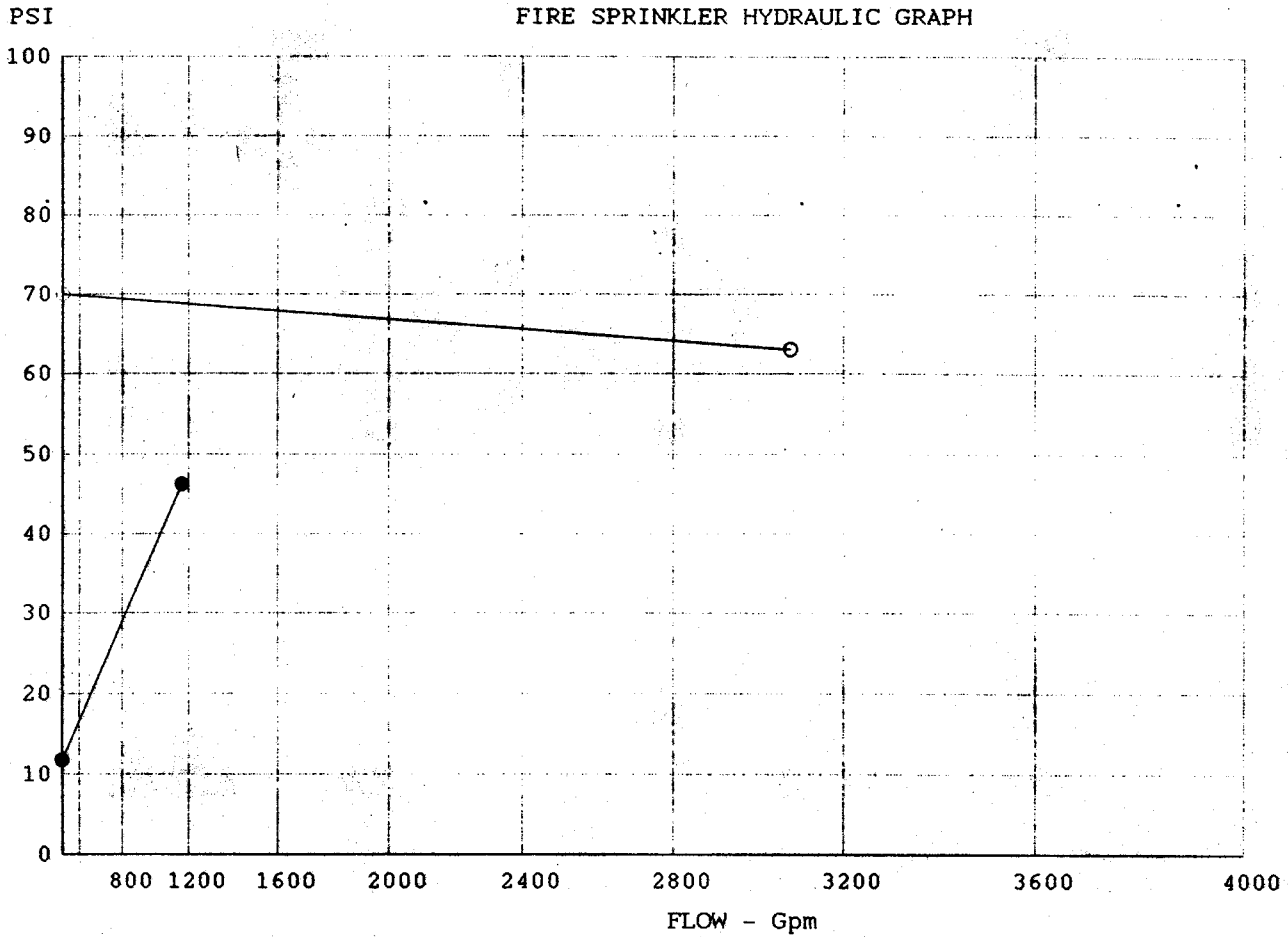
E=&gt;90-Elb T=&gt;TeeBch L=&gt;Lt-Elb C=&gt;ChkVlv B=&gt;BfyVlv G=&gt;GatVlv A=&gt;AlmChk



HYDRONICS: FIRE SPRINKLER HYDRAULICS 4.3 - SUBMITTAL.

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JOB : BUILDING 265 ADDITION



○ — ○ Supply Curve

● — ● Demand Curve

Static : 70.0  
Resid : 63.0  
Flow : 3082.0

Avl Pr : 68.8 @ 1167  
Req Pr : 46.2 @ 1167  
Pr Cush : 22.6