



. . . Fire Protection by Computer Design

FREEDOM FIRE PROTECTION INC.
209 QUAKER RIDGE ROAD
CASCO, MAINE 04015
207-627-4109

Job Name : 106 PARK STREET HC1
Building : 106 PARK STREET
Location : PORTLAND, MAINE 04104
System : #1 AREA#1
Contract :
Data File : 106 Park Street HC.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 106 PARK STREET Date - 11/19/12
Location - PORTLAND, MAINE 04104
Building - 106 PARK STREET System No. - #1 AREA#1
Contractor - Contract No. -
Calculated By - MIKE NOBLIT Drawing No. -
Construction: (X) Combustible () Non-Combustible Ceiling Height VARIES
OCCUPANCY - APARTMENT ATTIC STORAGE

S Type of Calculation: (X)NFPA 13 Residential (X)NFPA 13R ()NFPA 13D
Y Number of Sprinklers Flowing: ()1 ()2 (X)4 ()
S ()Other
T ()Specific Ruling Made by Date
E
M Listed Flow at Start Point - 13 Gpm System Type
Listed Pres. at Start Point - 7 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 15' x 15' () Deluge () PreAction
E Domestic Flow Added - Gpm Sprinkler or Nozzle
S Additional Flow Added - Gpm Make TYCO Model TY-FRB
I Elevation at Highest Outlet - 62'-6"Feet Size 1/2" K-Factor 5.6
G Note: Temperature Rating 155
N

Calculation Gpm Required 64.246 Psi Required 52.511 At Test
Summary C-Factor Used: Overhead 120 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - Rated Cap. 80 Cap.
T Time of Test - @ Psi 58 Elev.
E Static (Psi) - Elev.
R Residual (Psi) - Other Well
Flow (Gpm) - Proof Flow Gpm
S Elevation -

P Location:
P
L Source of Information:
Y

Water Supply Curve (C)

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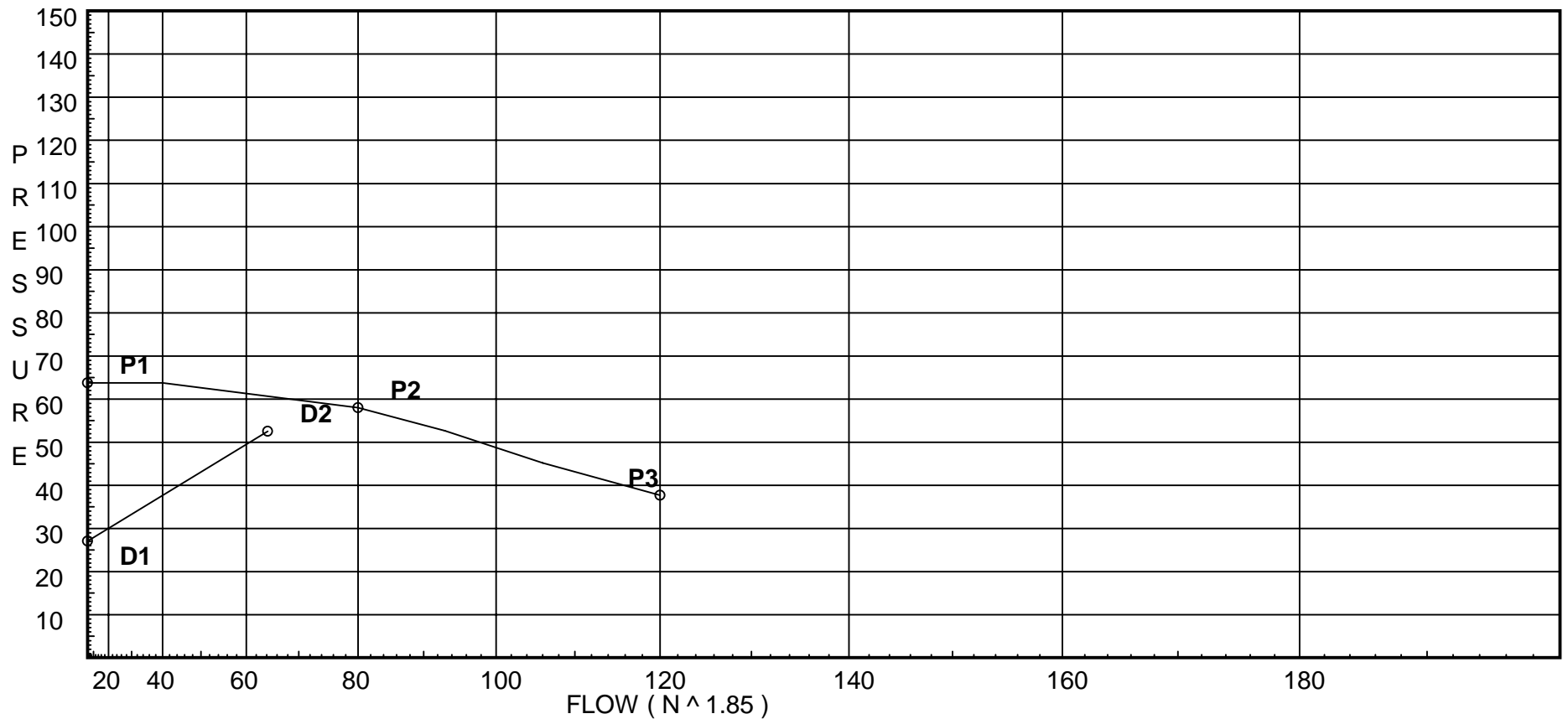
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Pump Data:

P1 - Pump Churn Pressure : 63.8
P2 - Pump Rated Pressure : 58
P2 - Pump Rated Flow : 80
P3 - Pump Pressure @ Max Flow : 37.7
P3 - Pump Max Flow : 120

Demand:

D1 - Elevation : 27.069
D2 - System Flow : 64.2457
D2 - System Pressure : 52.511
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 64.2457
Safety Margin : 8.161



Fittings Used Summary

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Fitting Legend																					
Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
S	Generic Swing Check Vlv	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
T	90' Flow Thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
102	62.5	5.6	7.0	na	14.82	0.05	130	7.0
101	62.5	5.6	7.97	na	15.81	0.05	130	7.0
15	62.5		8.65	na				
104	58.083	5.6	8.44	na	16.27	0.05	130	7.0
103	58.083	5.6	9.6	na	17.35	0.05	130	7.0
14	58.083		10.4	na				
13	55.66		12.2	na				
12	55.66		12.58	na				
11	55.66		14.37	na				
10	51.66		17.22	na				
9	51.66		18.86	na				
8	51.66		20.99	na				
7	51.66		21.71	na				
6	39.5		29.8	na				
5	39.5		31.04	na				
4	6.5		46.48	na				
3	6.5		46.73	na				
2	6.5		49.0	na				
1	0.0		52.49	na				
TEST	0.0		52.51	na				

The maximum velocity is 10.28 and it occurs in the pipe between nodes 10 and 9

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
102	14.82	1.049		13.000	7.000			K Factor = 5.60	
to		120		0.0	0.0				
101	14.82	0.0747		13.000	0.971			Vel = 5.50	
101	15.81	1.38	1E	3.0	6.000	7.971		K Factor = 5.60	
to		120		0.0	3.000	0.0			
15	30.63	0.0753		0.0	9.000	0.678		Vel = 6.57	
15	0.0	1.38	1T	6.0	6.830	8.649			
to		120		0.0	6.000	2.962			
12	30.63	0.0753		0.0	12.830	0.966		Vel = 6.57	
	0.0								
	30.63					12.577		K Factor = 8.64	
104	16.27	1.049		13.000	8.442			K Factor = 5.60	
to		120		0.0	0.0				
103	16.27	0.0888		13.000	1.155			Vel = 6.04	
103	17.35	1.38	1E	3.0	6.000	9.597		K Factor = 5.60	
to		120		0.0	3.000	0.0			
14	33.62	0.0894		0.0	9.000	0.805		Vel = 7.21	
14	0.0	1.38	1T	6.0	2.416	10.402			
to		120		0.0	6.000	1.049			
13	33.62	0.0895		0.0	8.416	0.753		Vel = 7.21	
13	0.0	1.61		0.0	8.830	12.204			
to		120		0.0	0.0	0.0			
12	33.62	0.0422		0.0	8.830	0.373		Vel = 5.30	
12	30.63	1.61	1T	8.0	4.830	12.577			
to		120		0.0	8.000	0.0			
11	64.25	0.1399		0.0	12.830	1.795		Vel = 10.13	
11	0.0	1.61	1E	4.0	4.000	14.372			
to		120		0.0	4.000	1.732			
10	64.25	0.1400		0.0	8.000	1.120		Vel = 10.13	
10	0.0	1.598	1T	11.656	5.330	17.224			
to		150		0.0	11.656	0.0			
9	64.25	0.0961		0.0	16.986	1.632		Vel = 10.28	
9	0.0	1.598	1T	11.656	10.583	18.856			
to		150		0.0	11.656	0.0			
8	64.25	0.0960		0.0	22.239	2.136		Vel = 10.28	
8	0.0	1.598	1E	5.828	1.660	20.992			
to		150		0.0	5.828	0.0			
7	64.25	0.0960		0.0	7.488	0.719		Vel = 10.28	
7	0.0	1.61	1T	8.0	12.166	21.711			
to		120		0.0	8.000	5.266			
6	64.25	0.1399		0.0	20.166	2.822		Vel = 10.13	
6	0.0	2.157		0.0	36.783	29.799			
to		120		0.0	0.0	0.0			
5	64.25	0.0337		0.0	36.783	1.239		Vel = 5.64	

Final Calculations - Standard

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
5 to 4	0.0 64.25	2.157 150 0.0223	1T 0.0 0.0	18.596 18.597 51.597	33.000 14.292 1.150	31.038		Vel = 5.64	
4 to 3	0.0 64.25	2.157 120 0.0336	1E 0.0 0.0	6.153 6.153 7.319	1.166 0.0 0.246	46.480		Vel = 5.64	
3 to 2	0.0 64.25	2.157 120 0.0337	1E 0.0 0.0	6.153 6.153 67.483	61.330 0.0 2.273	46.726		Vel = 5.64	
2 to 1	0.0 64.25	2.157 120 0.0337	1S 0.0 0.0	13.537 13.537 20.037	6.500 2.815 0.675	48.999		Vel = 5.64	
1 to TEST	0.0 64.25	2.157 150 0.0220	0.0 0.0 0.0	1.000 0.0 1.000	52.489 0.0 0.022			Vel = 5.64	
	0.0 64.25					52.511		K Factor = 8.87	