

. . . Fire Protection by Computer Design

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

Job Name : BETHANY HOUSE PARISH OFFICE
Building : 10 ALTON STREET
Location : PORTLAND, MAINE 04103
System : #1 AREA #1
Contract :
Data File : BETHANY HOUSE PARISH OFFICE HC.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - BETHANY HOUSE PARISH OFFICE Date - 4/25/12
Location - PORTLAND, MAINE 04103
Building - 10 ALTON STREET System No. - #1 AREA #1
Contractor - FREEDOM FIRE PROTECTION Contract No. -
Calculated By - MICHAEL NOBLIT Drawing No. - FP-1
Construction: (X) Combustible () Non-Combustible Ceiling Height 8'-6"
OCCUPANCY - HOUSE

S Type of Calculation: (X)NFPA 13 Residential ()NFPA 13R (X)NFPA 13D
Y Number of Sprinklers Flowing: ()1 (X)2 ()4 ()
S ()Other
T ()Specific Ruling Made by Date
E
M Listed Flow at Start Point - 14 Gpm System Type
Listed Pres. at Start Point - 10.1 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 14 x 14 () Deluge () PreAction
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
S Additional Flow Added - 0 Gpm Make TYCO Model LFII
I Elevation at Highest Outlet - 25'-6"Feet Size 1/2" K-Factor 4.4
G Note: Temperature Rating 155
N

Calculation Gpm Required 28.220 Psi Required 43.000 At Test
Summary C-Factor Used: Overhead 150 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - Rated Cap. 45 Cap.
T Time of Test - @ Psi 45 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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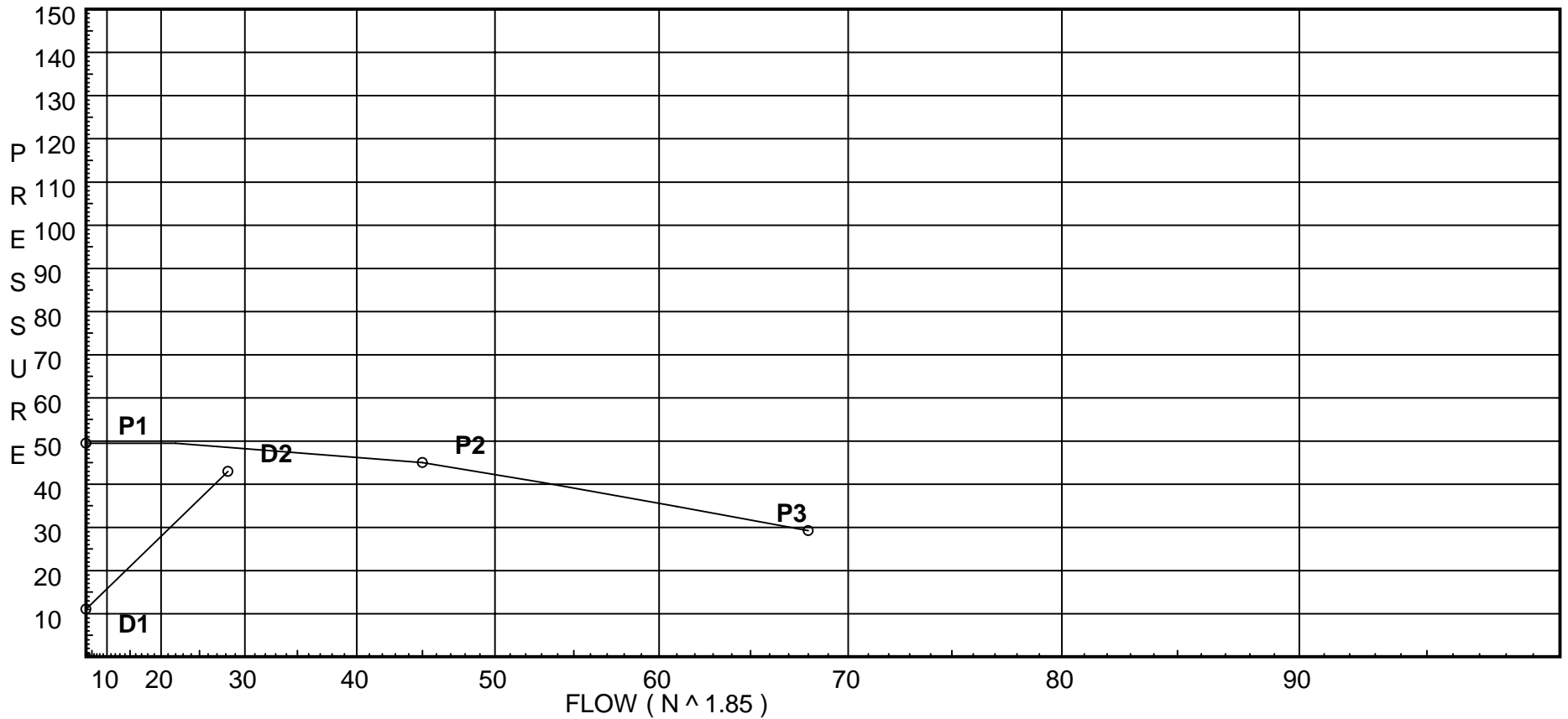
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Pump Data:

P1 - Pump Churn Pressure : 49.5
 P2 - Pump Rated Pressure : 45
 P2 - Pump Rated Flow : 45
 P3 - Pump Pressure @ Max Flow : 29.25
 P3 - Pump Max Flow : 68

Demand:

D1 - Elevation : 11.044
 D2 - System Flow : 28.2201
 D2 - System Pressure : 43.000
 Hose (Adj City) : _____
 Hose (Demand) : _____
 D3 - System Demand : 28.2201
 Safety Margin : 5.538



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
F	45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
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	25.5	4.4	10.1	na	13.98	0.05	0.001	10.1
101	25.5	4.4	10.47	na	14.24	0.05	0.001	10.1
6	25.5		13.09	na				
5	25.5		20.55	na				
4	25.5		23.37	na				
3	6.66		36.68	na				
2	6.66		39.04	na				
1	0.0		42.74	na				
TEST	0.0		43.0	na				

The maximum velocity is 10.48 and it occurs in the pipe between nodes 101 and 6

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 to 101	13.98	1.049 120	1T 5.0 0.0	0.500 5.000	10.100 0.0			K Factor = 4.40	
101 to 6	13.98	0.0671 1.049 120	0.0 2F 2.0 0.0	5.500 8.660 2.000	0.369 10.469 0.0			Vel = 5.19 K Factor = 4.40	
6 to 5	28.22	0.2461 1.049 120	0.0 0.0 0.0	10.660 30.330 0.0	2.623 13.092 0.0			Vel = 10.48	
5 to 4	28.22	0.2460 1.049 120	0.0 2E 4.0 0.0	30.330 7.458 4.000	7.462 20.554 0.0			Vel = 10.48	
4 to 3	28.22	0.2461 1.049 120	0.0 1E 2.0 0.0	11.458 18.916 2.000	2.820 23.374 8.160			Vel = 10.48	
3 to 2	28.22	0.2461 1.049 120	0.0 1E 2.0 0.0	20.916 7.583 2.000	5.145 36.679 0.0			Vel = 10.48	
2 to 1	28.22	0.0648 1.38 120	0.0 1S 7.0 0.0	12.660 5.660 7.000	0.820 39.037 2.884			Vel = 6.05	
1 to TEST	28.22	0.0648 1.38 120	0.0 1E 3.0 0.0	4.000 1.000 3.000	0.259 42.741 0.0			Vel = 6.05	
	0.0 28.22				43.000			K Factor = 4.30	