



**. . . Fire Protection by Computer Design**

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

Job Name : BETHANY HOUSE PARISH HC1  
Building : 10 ALTON STREET  
Location : PORTLAND, MAINE 04103  
System : #1 AREA #1  
Contract :  
Data File : BETHANY HOUSE PARISH HC1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - BETHANY HOUSE PARISH OFFICE Date - 6/14/12  
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: ( )NFPA 13 Residential ( )NFPA 13R ( )NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )2 ( )4 (X)3  
S (X)Other MAINE LIFE SAFETY 2012  
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 44.388 Psi Required 41.441 At Test  
Summary C-Factor Used: Overhead 120 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - Rated Cap. 50 Cap.  
T Time of Test - @ Psi 50 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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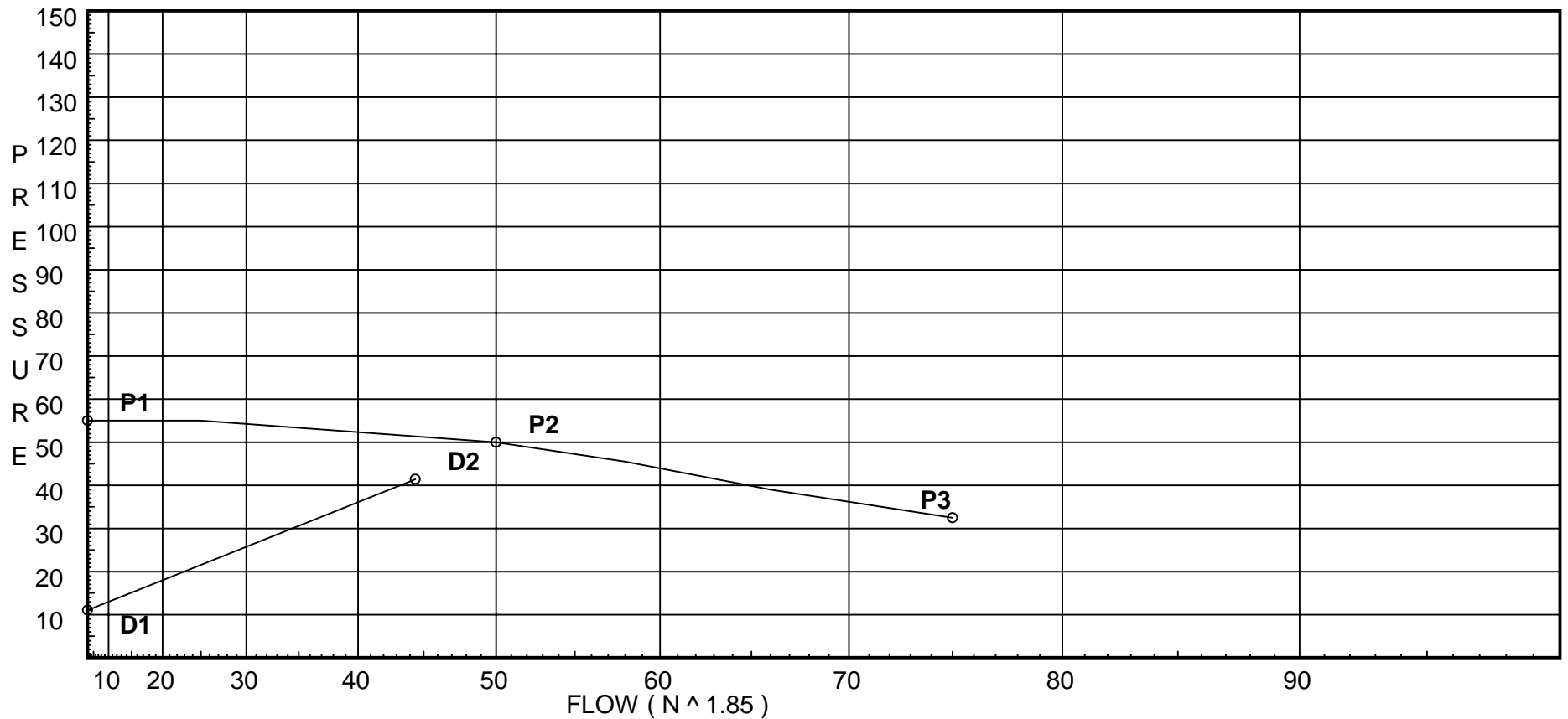
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### Pump Data:

P1 - Pump Churn Pressure : 55  
P2 - Pump Rated Pressure : 50  
P2 - Pump Rated Flow : 50  
P3 - Pump Pressure @ Max Flow : 32.5  
P3 - Pump Max Flow : 75

### Demand:

D1 - Elevation : 11.044  
D2 - System Flow : 44.3884  
D2 - System Pressure : 41.441  
Hose ( Adj City ) : \_\_\_\_\_  
Hose ( Demand ) : \_\_\_\_\_  
D3 - System Demand : 44.3884  
Safety Margin : 9.924



# Fittings Used Summary

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Fitting Legend		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
Abbrev.	Name																				
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.
103	25.5	4.4	10.1	na	13.98	0.05	0.001	10.1
102	25.5	4.4	10.47	na	14.24	0.05	0.001	10.1
101	25.5	4.4	13.5	na	16.17	0.05	0.001	10.1
7	25.5		15.4	na				
6	25.5		19.93	na				
5	25.5		21.95	na				
4	6.66		33.38	na				
3	6.66		34.48	na				
2	6.66		36.06	na				
1	0.0		40.84	na				
TEST	0.0		41.44	na				

The maximum velocity is 16.48 and it occurs in the pipe between nodes 101 and 7

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	*****
103 to 102	13.98	1.049 120	1T 0.0	5.0 5.000	0.500 0.0	10.100 0.0		K Factor = 4.40	
102 to 101	13.98	0.0671 1.049 120	0.0 1F 1T	0.0 1.0 5.0	5.500 6.330 6.000	0.369 10.469 0.0		Vel = 5.19	
101 to 7	28.22	0.2461 1.049 120	0.0 1F 0.0	0.0 1.0 2.330	12.330 2.330 1.000	3.034 13.503 0.0		Vel = 10.48	
7 to 6	16.17	0.5688 1.38 120	0.0 1F 0.0	0.0 1.0 2.330	3.330 2.330 1.000	1.894 13.503 0.0		Vel = 16.48	
6 to 5	0.0	0.1496 1.38 120	0.0 2E 0.0	0.0 6.0 6.000	30.330 7.458 6.000	15.397 19.934 0.0		Vel = 9.52	
5 to 4	44.39	0.1496 1.38 120	0.0 1E 0.0	0.0 3.0 3.000	13.458 18.916 3.000	2.013 21.947 8.160		Vel = 9.52	
4 to 3	0.0	0.1496 1.38 120	0.0 1E 0.0	0.0 3.0 3.000	21.916 18.916 3.000	3.278 21.947 8.160		Vel = 9.52	
3 to 2	0.0	0.1496 1.38 120	0.0 1T 0.0	0.0 6.0 6.000	7.330 1.330 6.000	1.096 33.385 0.0		Vel = 9.52	
2 to 1	0.0	0.1496 1.38 120	0.0 1E 0.0	0.0 3.0 3.000	10.583 7.583 3.000	1.583 34.481 0.0		Vel = 9.52	
1 to TEST	0.0	0.1496 1.38 120	0.0 1S 0.0	0.0 7.0 7.000	12.660 5.660 7.000	1.894 36.064 2.884		Vel = 9.52	
TEST	44.39	0.1498 1.38 120	0.0 1E 0.0	0.0 3.0 3.000	4.000 1.000 3.000	0.599 40.842 0.0		Vel = 9.52	
	0.0 44.39					41.441		K Factor = 6.90	