

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

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

Job Name : 767 CONGRESS STREET HC4  
Building : 767 CONGRESS STREET  
Location : PORTLAND, MAINE 04102  
System : #1AREA#4  
Contract :  
Data File : 767 CONGRESS STREET HC4.WXF

Hydraulic Design Information Sheet

Name - 767 CONGRESS STREET Date - 5/13/14  
Location - PORTLAND, MAINE 04102  
Building - 767 CONGRESS STREET System No. - #1AREA#4  
Contractor - Contract No. -  
Calculated By - MIKE NOBLIT Drawing No. - FP-2  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height - 9'-5"  
Occupancy - KITCHEN

S (X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. (X) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.  
Y ( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve

S Other

T Specific Ruling Made By Date

E  
M Area of Sprinkler Operation - AREA System Type Sprinkler/Nozzle  
Density - .15 (X) Wet Make TYCO  
D Area Per Sprinkler - 130 ( ) Dry Model TY-FRB  
E Elevation at Highest Outlet - 20 ( ) Deluge Size 1/2"  
S Hose Allowance - Inside - ( ) Preaction K-Factor 5.6  
I Rack Sprinkler Allowance - ( ) Other Temp.Rat.155  
G Hose Allowance - Outside - 250

N Note

Calculation Flow Required - 355.650 Press Required - 40.670 At Test  
Summary C-Factor Used: 120 Overhead 140 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 8/16/2010 Cap. -  
T Time of Test - Rated Cap.- Elev.-  
E Static Press - 55 @ Press -  
R Residual Press - 0 Elev. - Well  
Flow - 1186 Proof Flow  
S Elevation - 0

U Location -

P  
L Source of Information - PORTLAND WATER DISTRICT

Y

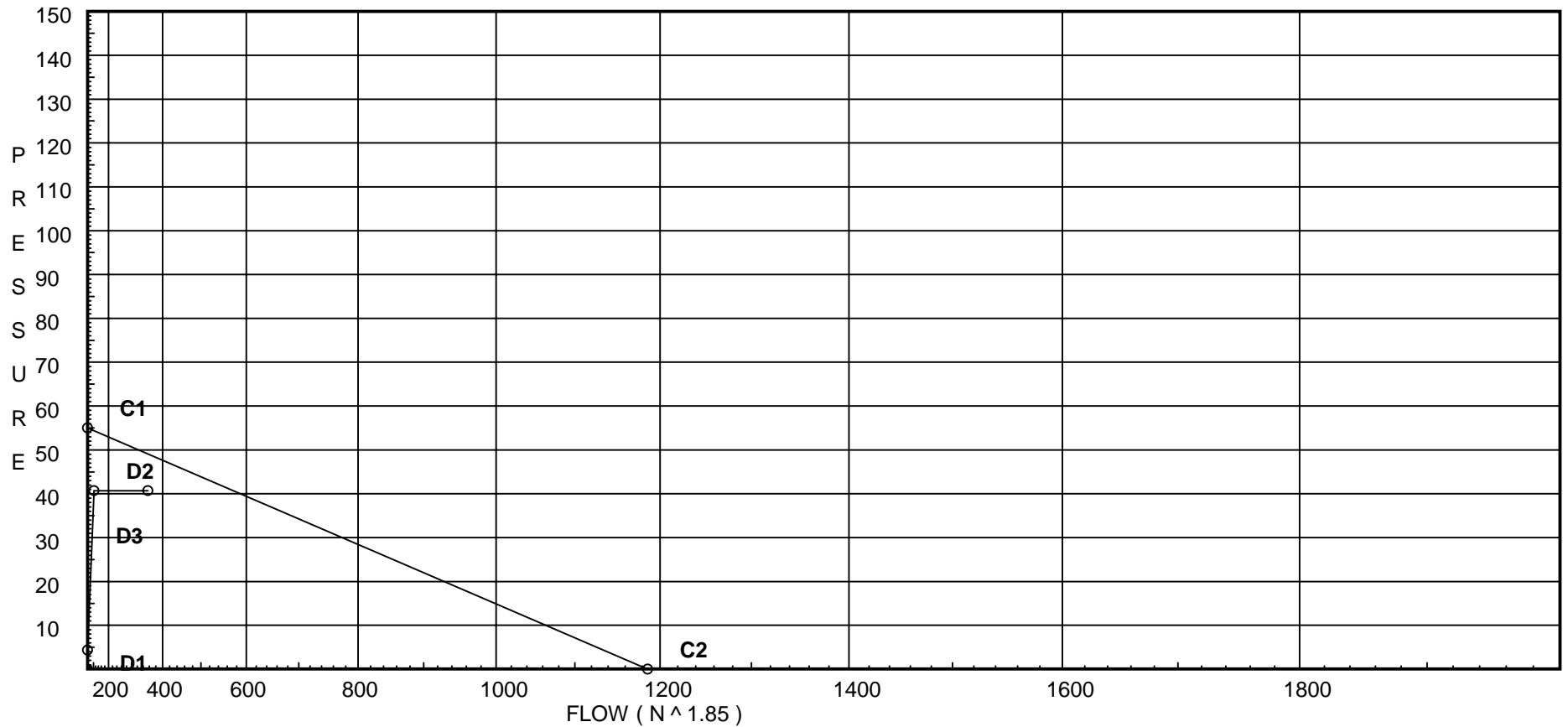
# Water Supply Curve (C)

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City Water Supply:  
C1 - Static Pressure : 55  
C2 - Residual Pressure: 0  
C2 - Residual Flow : 1186

Demand:  
D1 - Elevation : 4.331  
D2 - System Flow : 105.65  
D2 - System Pressure : 40.670  
Hose ( Adj City ) : \_\_\_\_\_  
Hose ( Demand ) : 250  
D3 - System Demand : 355.65  
Safety Margin : 8.405



# Fittings Used Summary

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## Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	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
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
Zac	Ames 2000SS	Fitting generates a Fixed Loss Based on Flow																			

# Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
402	20.0	5.6	12.71	na	19.97	0.15	130	7.0
403	20.0	5.6	12.13	na	19.5	0.15	130	7.0
43	30.75		8.84	na				
401	20.0	5.6	16.69	na	22.88	0.15	130	7.0
42	30.75		17.27	na				
405	20.0	5.6	14.23	na	21.12	0.15	130	7.0
404	20.0	5.6	15.69	na	22.18	0.15	130	7.0
45	20.0		21.66	na				
44	20.0		23.69	na				
41	20.0		24.5	na				
40	20.0		28.27	na				
5	20.0		29.94	na				
4	8.33		36.5	na				
3	8.33		36.86	na				
2	8.33		38.84	na				
1	0.0		44.5	na				
TEST	10.0		40.67	na	250.0			

The maximum velocity is 16.65 and it occurs in the pipe between nodes 41 and 40

Final Calculations - One-Line

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Ref Pt.	Press Total	K Fact.	Flow Added	Flow Total	Vel	Pipe Diam.	Pipe Length	Fit Sum.	Fit Length	Tot Len	C Fac	Pf perUL	Tot Pf	Elev Press	Fixed Loss	Next Press	Next Ref
402	12.713	5.60	19.97	19.97	7.41	1.049	1.000	1T	5.0	6.000	120	0.1297	0.778	-4.656	0.0	8.835	43
43	8.835	6.72	0.0	19.97													
403	12.125	5.60	19.50	19.5	7.24	1.049	9.000	1E	2.0	11.000	120	0.1242	1.366	-4.656	0.0	8.835	43
43	8.835		19.97	39.47	14.65	1.049	7.000		0.0	7.000	120	0.4577	3.204	4.656	0.0	16.695	401
401	16.695	5.60	22.88	62.35	13.37	1.38	9.660	1E1T	9.0	18.660	120	0.2804	5.233	-4.656	0.0	17.272	42
42	17.272		0.0	62.35	9.83	1.61	11.416	1T	8.0	19.416	120	0.1324	2.570	4.656	0.0	24.498	41
41	24.498	12.60	0.0	62.35													
405	14.225	5.60	21.12	21.12	7.84	1.049	10.166		0.0	10.166	120	0.1440	1.464	0.0	0.0	15.689	404
404	15.689	5.60	22.18	43.3	16.07	1.049	11.000		0.0	11.000	120	0.5433	5.976	0.0	0.0	21.665	45
45	21.665		0.0	43.3	9.29	1.38	8.166	1T	6.0	14.166	120	0.1429	2.024	0.0	0.0	23.689	44
44	23.689		0.0	43.3	6.82	1.61	12.000		0.0	12.000	120	0.0674	0.809	0.0	0.0	24.498	41
41	24.498		62.35	105.65	16.65	1.61	2.750	1T	8.0	10.750	120	0.3513	3.776	0.0	0.0	28.274	40
40	28.274		0.0	105.65	9.28	2.157	7.416	1T	12.307	19.723	120	0.0845	1.667	0.0	0.0	29.941	5
5	29.941		0.0	105.65	9.28	2.157	11.660	1E	6.153	17.813	120	0.0845	1.506	5.054	0.0	36.501	4
4	36.501		0.0	105.65	6.22	2.635	3.000	1E	8.237	11.237	120	0.0319	0.358	0.0	0.0	36.859	3
3	36.859		0.0	105.65	6.22	2.635	45.500	2E	16.474	61.974	120	0.0319	1.976	0.0	0.0	38.835	2
2	38.835		0.0	105.65	2.38	4.26	8.330	1Zac	0.0	8.330	120	0.0030	0.025	3.608	2.034	44.502	1
1	44.502		0.0	105.65	2.57	4.1	150.000	2E	29.067	179.067	140	0.0028	0.499	-4.331	0.0	40.670	TEST
TEST	40.670	55.77	250.00	355.65													