

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

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

Job Name : 767 CONGRESS STREET HC1  
Building : 767 CONGRESS STREET  
Location : PORTLAND, MAINE 04102  
System : #1 AREA#1  
Contract :  
Data File : 767 CONGRESS STREET HC1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 767 CONGRESS STREET Date - 5/13/14  
Location - PORTLAND, MAINE 04102  
Building - 767 CONGRESS STREET System No. - #1 AREA#1  
Contractor - Contract No. -  
Calculated By - MIKE NOBLIT Drawing No. - FP-3  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height VARIES  
OCCUPANCY - APARTMENT

S Type of Calculation: (X)NFPA 13 Residential (X)NFPA 13R ( )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 - 20 Gpm System Type  
Listed Pres. at Start Point - 16.7 Psi (X) Wet ( ) Dry  
D MAXIMUM LISTED SPACING 20' x 20' ( ) Deluge ( ) PreAction  
E Domestic Flow Added - Gpm Sprinkler or Nozzle  
S Additional Flow Added - Gpm Make TYCO Model LFII  
I Elevation at Highest Outlet - 40.5 Feet Size 1/2" K-Factor 4.9  
G Note: Temperature Rating 155  
N

Calculation Gpm Required 40.171 Psi Required 42.469 At Test  
Summary C-Factor Used: Overhead 120 Underground 140

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

P Location:  
P  
L Source of Information: PORTLAND WATER DISTRICT  
Y

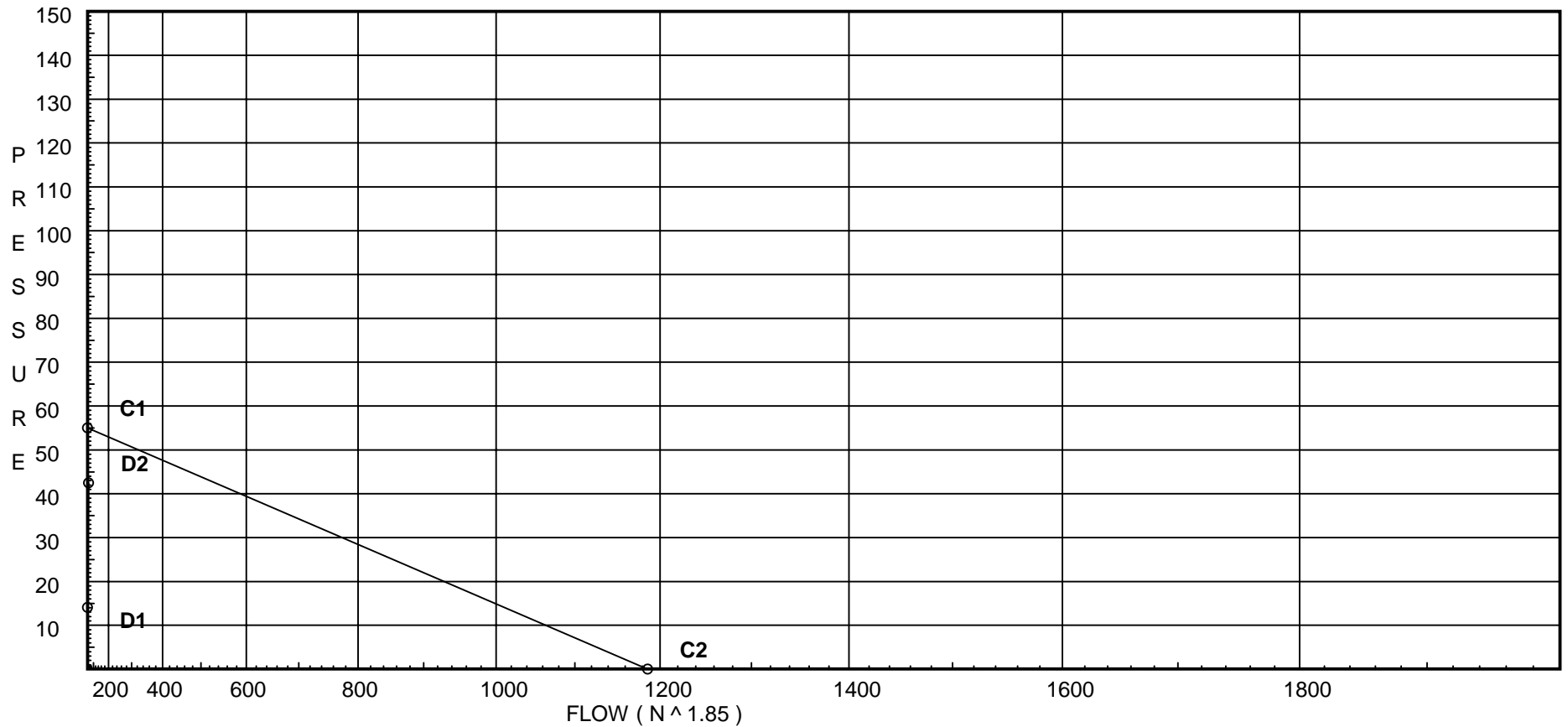
# Water Supply Curve (C)

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

Demand:  
D1 - Elevation : 14.076  
D2 - System Flow : 40.1708  
D2 - System Pressure : 42.470  
Hose ( Adj City ) : \_\_\_\_\_  
Hose ( Demand ) : \_\_\_\_\_  
D3 - System Demand : 40.1708  
Safety Margin : 12.426



# 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.
101	42.5	4.9	16.9	na	20.15	0.05	400	16.7
102	42.5	4.9	16.7	na	20.02	0.05	400	16.7
14	42.5		17.98	na				
13	42.5		19.13	na				
12	42.5		20.47	na				
11	42.5		21.2	na				
10	42.5		22.06	na				
9	40.5		23.02	na				
8	30.75		27.94	na				
7	30.75		28.31	na				
6	20.0		33.2	na				
5	20.0		33.61	na				
4	8.33		38.91	na				
3	8.33		38.97	na				
2	8.33		39.3	na				
1	0.0		46.72	na				
TEST	10.0		42.47	na				

The maximum velocity is 8.62 and it occurs in the pipe between nodes 14 and 13

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
101	16.905	4.90	20.15	20.15	7.48	1.049	3.166	1T	5.0	8.166	120	0.1319	1.077	0.0	0.0	17.982	14
14	17.982	4.75	0.0	20.15													
102	16.700	4.90	20.02	20.02	7.43	1.049	9.830		0.0	9.830	120	0.1304	1.282	0.0	0.0	17.982	14
14	17.982		20.15	40.17	8.62	1.38	9.250		0.0	9.250	120	0.1243	1.150	0.0	0.0	19.132	13
13	19.132		0.0	40.17	8.62	1.38	4.750	1T	6.0	10.750	120	0.1244	1.337	0.0	0.0	20.469	12
12	20.469		0.0	40.17	6.33	1.61	4.500	1T	8.0	12.500	120	0.0587	0.734	0.0	0.0	21.203	11
11	21.203		0.0	40.17	6.33	1.61	2.660	1E1T	12.0	14.660	120	0.0587	0.861	0.0	0.0	22.064	10
10	22.064		0.0	40.17	5.80	1.682	2.000		0.0	2.000	120	0.0475	0.095	0.866	0.0	23.025	9
9	23.025		0.0	40.17	5.80	1.682	9.750	1E	4.95	14.700	120	0.0474	0.697	4.223	0.0	27.945	8
8	27.945		0.0	40.17	6.33	1.61	2.166	1E	4.0	6.166	120	0.0587	0.362	0.0	0.0	28.307	7
7	28.307		0.0	40.17	3.53	2.157	10.750	1E	6.153	16.903	120	0.0141	0.238	4.656	0.0	33.201	6
6	33.201		0.0	40.17	3.53	2.157	10.166	1E1T	18.46	28.626	120	0.0141	0.405	0.0	0.0	33.606	5
5	33.606		0.0	40.17	3.53	2.157	11.660	1E	6.153	17.813	120	0.0141	0.252	5.054	0.0	38.912	4
4	38.912		0.0	40.17	2.36	2.635	3.000	1E	8.237	11.237	120	0.0053	0.059	0.0	0.0	38.971	3
3	38.971		0.0	40.17	2.36	2.635	45.500	2E	16.474	61.974	120	0.0053	0.331	0.0	0.0	39.302	2
2	39.302		0.0	40.17	0.90	4.26	8.330	1Zac	0.0	8.330	120	0.0005	0.004	3.608	3.803	46.717	1
1	46.717		0.0	40.17	0.98	4.1	150.000	2E	29.067	179.067	140	0.0005	0.084	-4.331	0.0	42.470	TEST
TEST	42.470	6.16	0.0	40.17													