



. . . Fire Protection by Computer Design

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

Job Name : 171 & 169 NEAL STREET HC1
Building : 171 & 169 NEAL STREET
Location : PORTLAND, MAINE 04102
System : #1 AREA #1
Contract :
Data File : 171 & 169 NEAL STREET HC1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 171 & 169 NEAL STREET Date - 12/17/12
Location - PORTLAND, MAINE 04102
Building - 171 & 169 NEAL STREET System No. - #1 AREA #1
Contractor - FREEDOM FIRE PROTECTION Contract No. -
Calculated By - MICHAEL NOBLIT Drawing No. - FP-3
Construction: (X) Combustible () Non-Combustible Ceiling Height 7'-9"
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 - 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 - 36'-0"Feet Size 1/2" K-Factor 4.4
G Note: Temperature Rating 155
N

Calculation Gpm Required 28.547 Psi Required 45.165 At Test
Summary C-Factor Used: Overhead 120 Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 8/16/2008 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 -

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

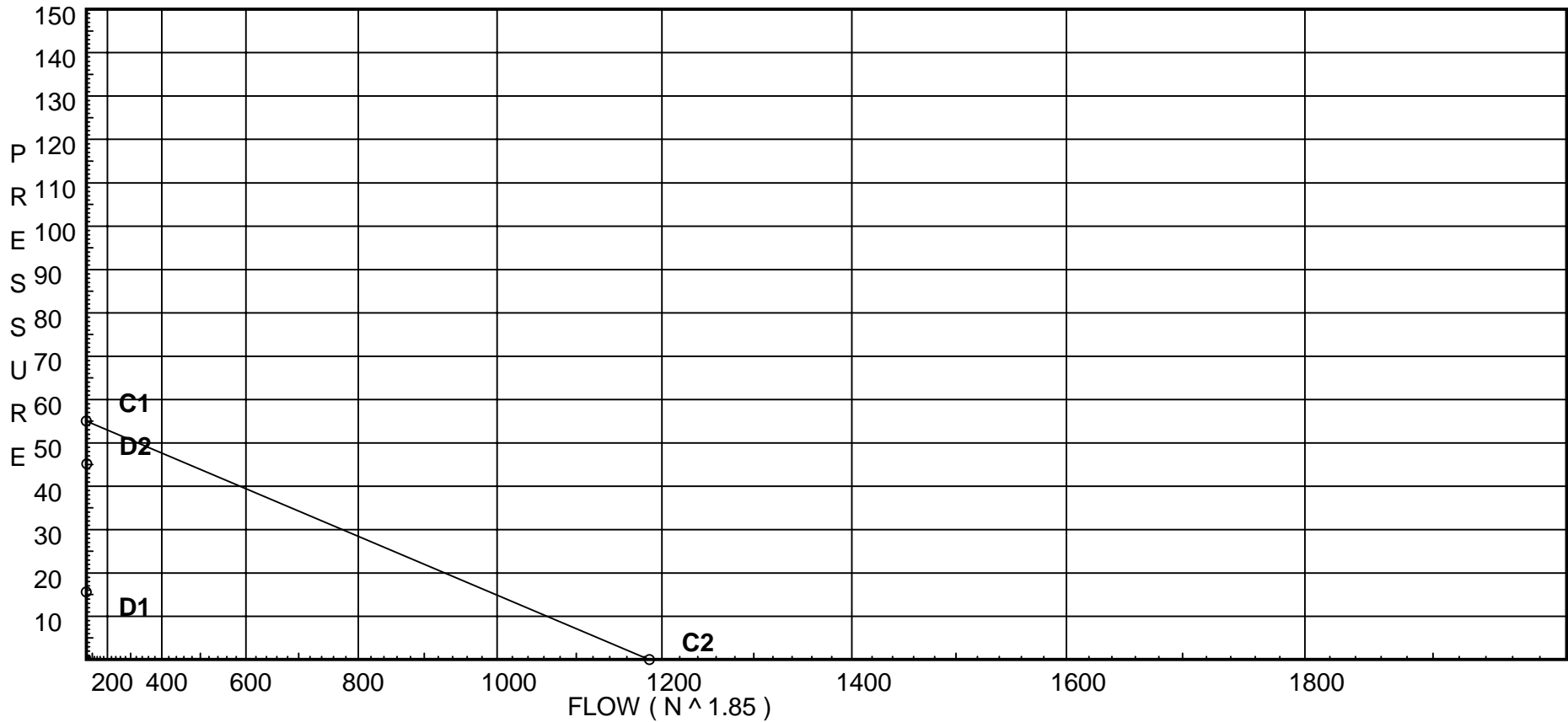
Water Supply Curve (C)

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

Demand:
D1 - Elevation : 15.592
D2 - System Flow : 28.5466
D2 - System Pressure : 45.165
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 28.5466
Safety Margin : 9.779



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
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
Zaa	Ames 2000B	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	36.0	4.4	10.95	na	14.56	0.05	0.001	10.1
102	36.0	4.4	10.1	na	13.98	0.05	0.001	10.1
10	36.0		10.47	na				
9	36.0		11.35	na				
8	36.0		17.3	na				
7	27.75		21.16	na				
6	16.66		26.4	na				
5	16.66		26.62	na				
4	6.166		31.61	na				
3	6.166		32.19	na				
2	6.166		32.66	na				
1	0.0		40.07	na				
0	0.0		45.17	na				
TEST	0.0		45.17	na				

The maximum velocity is 10.6 and it occurs in the pipe between nodes 9 and 8

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 *****
101 to 9	14.56	1.049 120 0.0724	1T 5.0 0.0 0.0	0.500 5.000 5.500	10.955 0.0 0.398		K Factor = 4.40 Vel = 5.41
	0.0 14.56					11.353	K Factor = 4.32
102 to 10	13.98	1.049 120 0.0671	1T 5.0 0.0 0.0	0.500 5.000 5.500	10.100 0.0 0.369		K Factor = 4.40 Vel = 5.19
10 to 9	0.0 13.98	1.049 120 0.0671	0.0 0.0 0.0	13.166 0.0 13.166	10.469 0.0 0.884		Vel = 5.19
9 to 8	14.57 28.55	1.049 120 0.2514	2E 4.0 0.0 0.0	19.660 4.000 23.660	11.353 0.0 5.947		Vel = 10.60
8 to 7	0.0 28.55	1.61 120 0.0311	0.0 0.0 0.0	9.250 0.0 9.250	17.300 3.573 0.288		Vel = 4.50
7 to 6	0.0 28.55	1.61 120 0.0312	1E 4.0 0.0 0.0	10.083 4.000 14.083	21.161 4.803 0.440		Vel = 4.50
6 to 5	0.0 28.55	1.61 120 0.0312	1E 4.0 0.0 0.0	2.830 4.000 6.830	26.404 0.0 0.213		Vel = 4.50
5 to 4	0.0 28.55	1.61 120 0.0312	1E 4.0 0.0 0.0	10.500 4.000 14.500	26.617 4.545 0.452		Vel = 4.50
4 to 3	0.0 28.55	1.61 120 0.0312	1T 8.0 0.0 0.0	10.416 8.000 18.416	31.614 0.0 0.575		Vel = 4.50
3 to 2	0.0 28.55	1.61 120 0.0312	1T 8.0 0.0 0.0	7.166 8.000 15.166	32.189 0.0 0.473		Vel = 4.50
2 to 1	0.0 28.55	1.61 120 0.0313	1Zaa 0.0 0.0 0.0	6.166 0.0 6.166	32.662 7.218 0.193		* Fixed loss = 4.548 Vel = 4.50
1 to 0	0.0 28.55	1.481 140 0.0352	0.0 0.0 0.0	31.000 0.0 31.000	40.073 4.000 1.092		* Fixed loss = 4 Vel = 5.32
0 to TEST	0.0 28.55	12.34 140 0.0	1T 93.767 0.0 0.0	150.000 93.767 243.767	45.165 0.0 0.0		Vel = 0.08
	0.0						

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	*****
	28.55				45.165			K Factor =	4.25
