



. . . Fire Protection by Computer Design

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

Job Name : 191 PINE STREET CARRIAGE HOUSE HC
Building : 191 PINE STREET
Location : PORTLAND, MAINE 04104
System : #2 -AREA#1
Contract :
Data File : 191 PINE STREET HC5.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 191 PINE STREET CARRIAGE HOUSE Date - 9/14/12
 Location - PORTLAND, MAINE 04104
 Building - 191 PINE STREET System No. - #2 -AREA#1
 Contractor - Contract No. -
 Calculated By - MIKE NOBLIT Drawing No. - FP-5
 Construction: (X) Combustible () Non-Combustible Ceiling Height VARIES
 OCCUPANCY - LOFT APARTMENT

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 - 13 Gpm System Type
 Listed Pres. at Start Point - 7 Psi (X) Wet () Dry
 D MAXIMUM LISTED SPACING 16' x 16' () Deluge () PreAction
 E Domestic Flow Added - Gpm Sprinkler or Nozzle
 S Additional Flow Added - Gpm Make TYCO Model LFII
 I Elevation at Highest Outlet - 14'-6"Feet Size 1/2" K-Factor 4.9
 G Note: Temperature Rating 155
 N

Calculation Gpm Required 26.283 Psi Required 38.688 At Test
 Summary C-Factor Used: Overhead 120 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
 A Date of Test - 7/31/2012 Rated Cap. Cap.
 T Time of Test - @ Psi Elev.
 E Static (Psi) - 46 Elev.
 R Residual (Psi) - 24 Other Well
 Flow (Gpm) - 780 Proof Flow Gpm
 S Elevation -

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

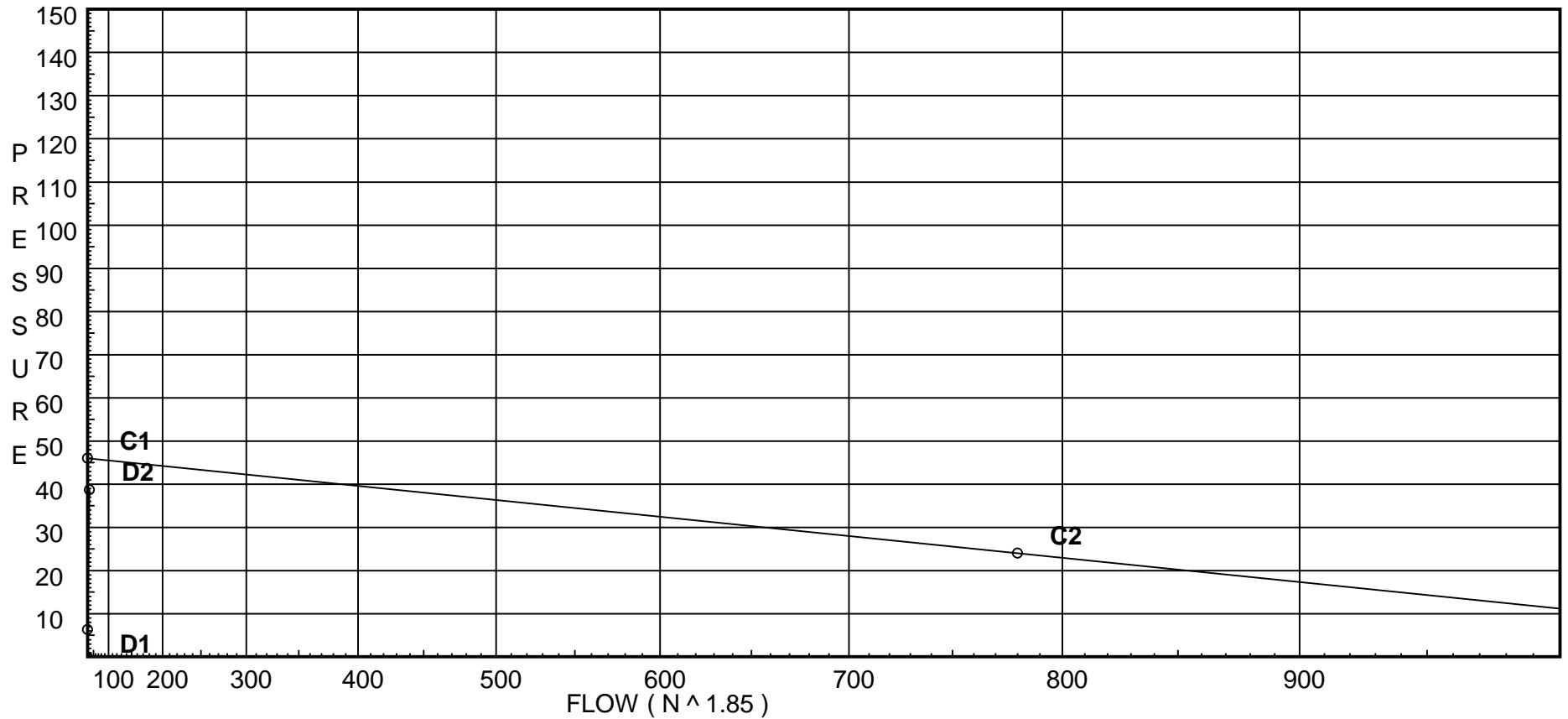
Water Supply Curve (C)

FREEDOM FIRE PROTECTION INC.
191 PINE STREET CARRIAGE HOUSE HC

Page 2
Date 9/14/12

City Water Supply:
C1 - Static Pressure : 46
C2 - Residual Pressure: 24
C2 - Residual Flow : 780

Demand:
D1 - Elevation : 6.316
D2 - System Flow : 26.2834
D2 - System Pressure : 38.688
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 26.2834
Safety Margin : 7.270



Fittings Used Summary

FREEDOM FIRE PROTECTION INC.
191 PINE STREET CARRIAGE HOUSE HC

Page 3
Date 9/14/12

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

FREEDOM FIRE PROTECTION INC.
191 PINE STREET CARRIAGE HOUSE HC

Page 4
Date 9/14/12

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
502	14.583	4.9	7.0	na	12.96	0.05	256	7.0
501	14.583	4.9	7.39	na	13.32	0.05	256	7.0
59	14.583		7.93	na				
58	14.583		11.27	na				
57	12.083		13.99	na				
56	12.083		14.67	na				
55	6.458		18.75	na				
54	6.458		23.41	na				
53	6.458		25.12	na				
52	6.458		26.63	na				
51	0.0		34.82	na				
50	0.0		38.68	na				
TEST	0.0		38.69	na				

The maximum velocity is 9.76 and it occurs in the pipe between nodes 501 and 59

Final Calculations - Hazen-Williams

FREEDOM FIRE PROTECTION INC.
191 PINE STREET CARRIAGE HOUSE HC

Page 5
Date 9/14/12

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
502	12.96	1.049		6.660	7.000		K Factor = 4.90
to		120		0.0	0.0		
501	12.96	0.0584		6.660	0.389		Vel = 4.81
501	13.32	1.049	1E 2.0	0.500	7.389		K Factor = 4.90
to		120		2.000	0.0		
59	26.28	0.2156		2.500	0.539		Vel = 9.76
59	0.0	1.049	2E 4.0	11.500	7.928		
to		120		4.000	0.0		
58	26.28	0.2157		15.500	3.344		Vel = 9.76
58	0.0	1.049	1E 2.0	5.583	11.272		
to		120		2.000	1.083		
57	26.28	0.2156		7.583	1.635		Vel = 9.76
57	0.0	1.049	1E 2.0	1.166	13.990		
to		120		2.000	0.0		
56	26.28	0.2157		3.166	0.683		Vel = 9.76
56	0.0	1.049	1E 2.0	5.625	14.673		
to		120		2.000	2.436		
55	26.28	0.2157		7.625	1.645		Vel = 9.76
55	0.0	1.049	1T 5.0	16.583	18.754		
to		120		5.000	0.0		
54	26.28	0.2157		21.583	4.656		Vel = 9.76
54	0.0	1.049	1E 2.0	5.916	23.410		
to		120		2.000	0.0		
53	26.28	0.2158		7.916	1.708		Vel = 9.76
53	0.0	1.049	1E 2.0	5.000	25.118		
to		120		2.000	0.0		
52	26.28	0.2157		7.000	1.510		Vel = 9.76
52	0.0	1.049	1Zaa 0.0	6.458	26.628		
to		120		0.0	6.797		* Fixed loss = 4
51	26.28	0.2157		6.458	1.393		Vel = 9.76
51	0.0	1.653	1E 2.544	48.000	34.818		
to		150	1T 5.088	7.632	3.000		* Fixed loss = 3
50	26.28	0.0156		55.632	0.867		Vel = 3.93
50	0.0	8.27	1T 55.354	400.000	38.685		
to		140		55.354	0.0		
TEST	26.28	0.0		455.354	0.003		Vel = 0.16
	0.0						
	26.28				38.688		K Factor = 4.23