



. . . Fire Protection by Computer Design

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

Job Name : 191 PINE STREET PORTLAND HC 1
Building : 191 PINE STREET
Location : PORTLAND, MAINE 04104
System : #1 AREA#1
Contract :
Data File : 191 PINE STREET PORTLAND HC1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 191 PINE STREET PORTLAND Date - 9/14/12
Location - PORTLAND, MAINE 04104
Building - 191 PINE STREET System No. - #1 AREA#1
Contractor - Contract No. -
Calculated By - MIKE NOBLIT Drawing No. - FP-4
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 ()2 (X)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 - 50'-0"Feet Size 1/2" K-Factor 4.9
G Note: Temperature Rating 155
N

Calculation Gpm Required 53.561 Psi Required 39.741 At Test
Summary C-Factor Used: Overhead 120 Underground 140

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 PORTLAND HC 1

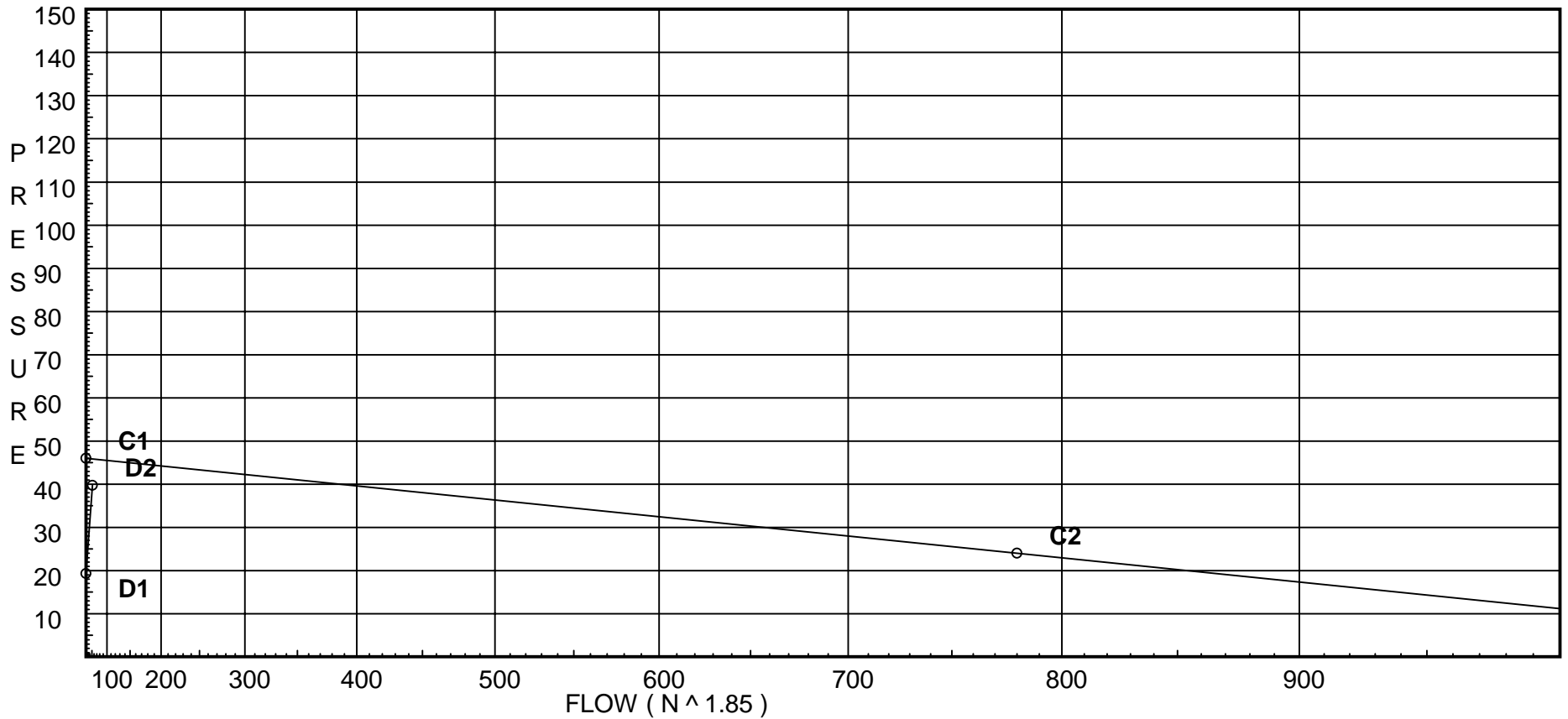
Page 2
Date 9/14/12

City Water Supply:

C1 - Static Pressure : 46
C2 - Residual Pressure: 24
C2 - Residual Flow : 780

Demand:

D1 - Elevation : 19.342
D2 - System Flow : 53.5615
D2 - System Pressure : 39.741
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 53.5615
Safety Margin : 6.104



Fittings Used Summary

FREEDOM FIRE PROTECTION INC.
191 PINE STREET PORTLAND HC 1

Page 3
Date 9/14/12

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

Pressure / Flow Summary - STANDARD

FREEDOM FIRE PROTECTION INC.
191 PINE STREET PORTLAND HC 1

Page 4
Date 9/14/12

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
102	44.66	4.9	7.0	na	12.96	0.05	256	7.0
101	44.66	4.9	7.59	na	13.5	0.05	256	7.0
104	44.66	4.9	7.26	na	13.21	0.05	256	7.0
103	44.66	4.9	8.04	na	13.89	0.05	256	7.0
9	44.66		8.36	na				
8	50.0		7.63	na				
7	50.0		8.09	na				
6	50.0		9.59	na				
5	4.5		30.63	na				
4	4.5		31.86	na				
3	4.5		31.96	na				
2	4.5		32.26	na				
1	0.0		38.39	na				
0	0.0		39.73	na				
TEST	0.0		39.74	na				

The maximum velocity is 8.44 and it occurs in the pipe between nodes 9 and 8

Final Calculations - Hazen-Williams

FREEDOM FIRE PROTECTION INC.
191 PINE STREET PORTLAND HC 1

Page 5
Date 9/14/12

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftnng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
102 to 101	12.96	1.049 120	1E	2.0 0.0	8.083 2.000	7.000 0.0		K Factor = 4.90	
101 to 9	12.96	0.0583 120		0.0	10.083	0.588		Vel = 4.81	
101 to 9	13.50	1.38 120	1T	6.0 0.0	7.500 6.000	7.588 0.0		K Factor = 4.90	
9	26.46	0.0575		0.0	13.500	0.776		Vel = 5.68	
	0.0 26.46					8.364		K Factor = 9.15	
104 to 103	13.21	1.049 120		0.0 0.0	12.830 0.0	7.264 0.0		K Factor = 4.90	
103 to 9	13.21	0.0604 120		0.0 0.0	12.830 0.0	0.775 0.0		Vel = 4.90	
103 to 9	13.89	1.38 120		0.0 0.0	5.416 0.0	8.039 0.0		K Factor = 4.90	
9 to 8	27.1	0.0600 120		0.0 0.0	5.416 4.000	0.325 -2.313		Vel = 5.81	
9 to 8	26.46	1.61 120	1E	4.0 0.0	11.830 4.000	8.364 -2.313			
8 to 7	53.56	0.0999 120		0.0	15.830	1.582		Vel = 8.44	
8 to 7	0.0	1.61 120	1E	4.0 0.0	0.583 4.000	7.633 0.0			
7 to 6	53.56	0.1002 120		0.0	4.583	0.459		Vel = 8.44	
7 to 6	0.0	1.61 120	1E	4.0 0.0	11.000 4.000	8.092 0.0			
6 to 5	53.56	0.0999 150		0.0	15.000	1.499		Vel = 8.44	
6 to 5	0.0	2.003 150	1T	12.965 0.0	45.500 12.965	9.591 19.706			
5 to 4	53.56	0.0228 120		0.0	58.465	1.335		Vel = 5.45	
5 to 4	0.0	2.157 120	1E	6.153 12.307	32.458 18.460	30.632 0.0			
4 to 3	53.56	0.0240 120		0.0	50.918	1.224		Vel = 4.70	
4 to 3	0.0	2.157 120		0.0 0.0	4.330 0.0	31.856 0.0			
3 to 2	53.56	0.0242 120		0.0	4.330	0.105		Vel = 4.70	
3 to 2	0.0	2.157 120	1E	6.153 0.0	6.330 6.153	31.961 0.0			
2 to 1	53.56	0.0240 120		0.0	12.483	0.300		Vel = 4.70	
2 to 1	0.0	2.157 120		0.0 0.0	7.500 0.0	32.261 5.949		* Fixed loss = 4	
1 to 0	53.56	0.0240 140		0.0	7.500	0.180		Vel = 4.70	
1 to 0	0.0	2.009 140	3E	17.368 0.0	35.000 17.368	38.390 0.0			
0 to TEST	53.56	0.0256 140		0.0	52.368	1.339		Vel = 5.42	
0 to TEST	0.0	8.27 140	1T	55.354 0.0	400.000 55.354	39.729 0.0			
TEST	53.56	0.0		0.0	455.354	0.012		Vel = 0.32	

Final Calculations - Standard

FREEDOM FIRE PROTECTION INC.
 191 PINE STREET PORTLAND HC 1

Page 6
 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	*****
	0.0 53.56				39.741			K Factor = 8.50	