

. . . Fire Protection by Computer Design

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

Job Name : EAST END LOFTS HC1
Building : 273 CONGRESS STREET
Location : PORTLAND, MAINE 04101
System : #1 AREA #1
Contract :
Data File : EAST END LOFTS HC1.WXF

Hydraulic Design Information Sheet

Name - EAST END LOFTS Date - 5/6/16
Location - PORTLAND, MAINE 04101
Building - 273 CONGRESS STREET System No. - #1 AREA #1
Contractor - Contract No. -
Calculated By - MIKE NOBLIT Drawing No. - FP-2
Construction: (X) Combustible () Non-Combustible Ceiling Height - 10'-0"
Occupancy - BUSINESS

S (X) NFPA 13 () Lt. Haz. Ord.Haz.Gp. () 1 (X) 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 - .20 (X) Wet Make TYCO
D Area Per Sprinkler - 130 () Dry Model TY-FRB
E Elevation at Highest Outlet - 14.420 () Deluge Size 1/2"
S Hose Allowance - Inside - () Preaction K-Factor 5.6
I Rack Sprinkler Allowance - () Temp.Rat.155
G Hose Allowance - Outside - 250

N Note

Calculation Flow Required - 502.248 Press Required - 72.524 At Test
Summary C-Factor Used: 120 Overhead 140 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 8/4/2012 Cap. -
T Time of Test - Rated Cap.- Elev.-
E Static Press - 86 @ Press -
R Residual Press - 85 Elev. - Well
Flow - 1528 Proof Flow
S Elevation - 0

U Location -

P Source of Information - PORTLAND WATER DISTRICT
L
Y

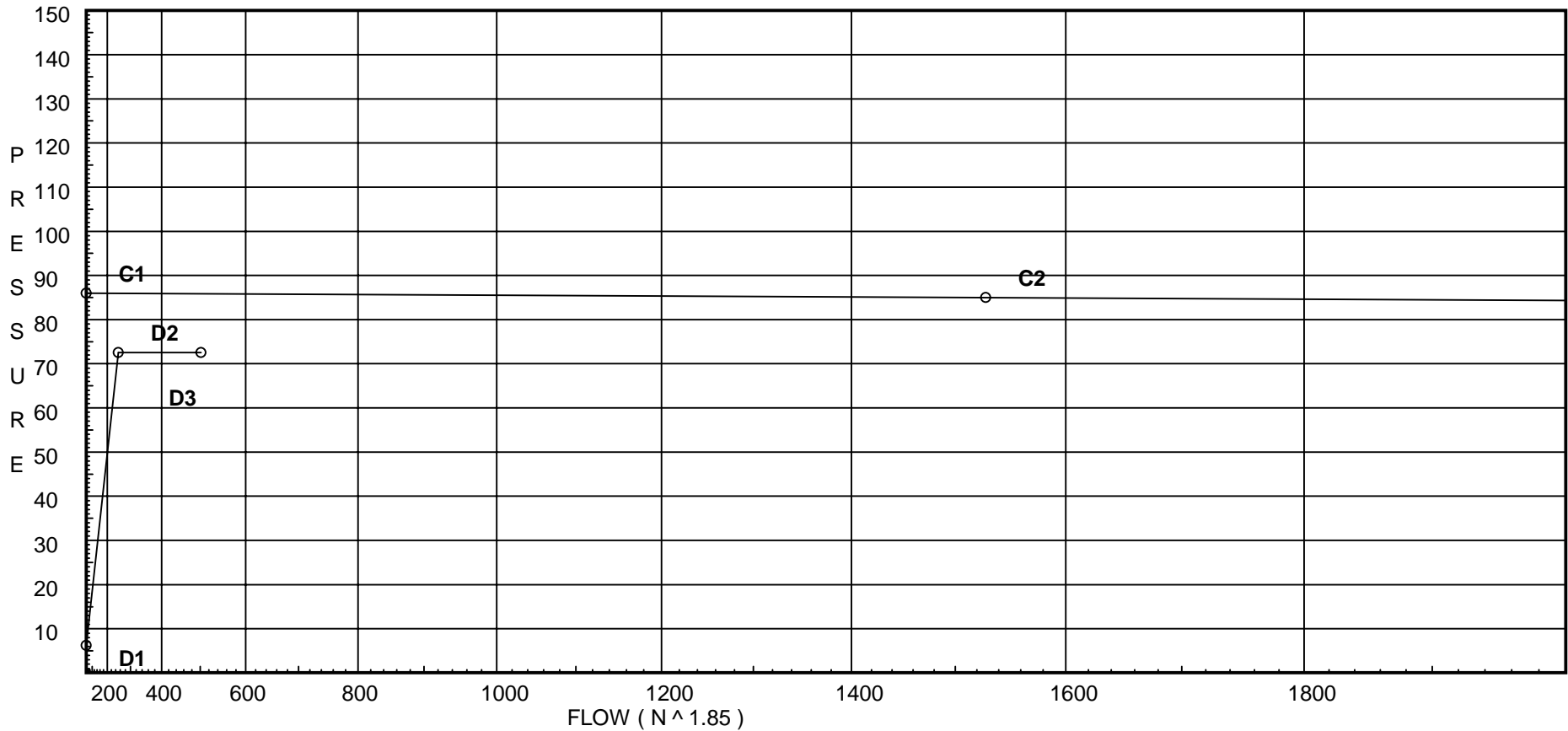
Water Supply Curve (C)

FREEDOM FIRE PROTECTION INC.
EAST END LOFTS HC1

Page 2
Date 5/6/16

City Water Supply:
C1 - Static Pressure : 86
C2 - Residual Pressure: 85
C2 - Residual Flow : 1528

Demand:
D1 - Elevation : 6.245
D2 - System Flow : 252.248
D2 - System Pressure : 72.524
Hose (Adj City) : _____
Hose (Demand) : 250
D3 - System Demand : 502.248
Safety Margin : 13.349



Fittings Used Summary

FREEDOM FIRE PROTECTION INC.
EAST END LOFTS HC1

Page 3
Date 5/6/16

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
B	Generic Butterfly Valve	0	0	0	0	7	7	7	10	0	12	9	10	12	19	21	0	0	0	0	0
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

FREEDOM FIRE PROTECTION INC.
EAST END LOFTS HC1

Page 4
Date 5/6/16

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
101	14.42	5.6	37.83	na	34.44	0.2	130	7.0
102	14.42	5.6	23.44	na	27.11	0.2	130	7.0
103	14.42	5.6	21.63	na	26.05	0.2	130	7.0
11	14.42		24.82	na				
104	14.42	5.6	25.87	na	28.48	0.2	130	7.0
12	14.42		27.41	na				
105	14.42	5.6	24.76	na	27.87	0.2	130	7.0
106	14.42	5.6	22.86	na	26.77	0.2	130	7.0
13	14.42		26.24	na				
107	14.42	5.6	26.25	na	28.69	0.2	130	7.0
14	14.42		27.77	na				
108	14.42	5.6	22.96	na	26.83	0.2	130	7.0
109	14.42	5.6	21.56	na	26.0	0.2	130	7.0
10	14.42		24.3	na				
9	14.42		29.8	na				
8	14.42		30.42	na				
7	14.42		32.76	na				
6	14.42		36.88	na				
5	14.42		39.78	na				
4	14.42		46.96	na				
3	3.0		55.27	na				
2	3.0		60.53	na				
1	0.0		72.37	na				
TEST	0.0		72.52	na	250.0			

The maximum velocity is 22.15 and it occurs in the pipe between nodes 5 and 4

Final Calculations - One-Line

FREEDOM FIRE PROTECTION INC.
EAST END LOFTS HC1

Page 5
Date 5/6/16

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	37.827	5.60	34.44	34.44	12.79	1.049	0.500	1T	5.0	5.500	120	0.3556	1.956	0.0	0.0	39.783	5
5	39.783	5.46	0.0	34.44													
102	23.444	5.60	27.11	27.11	10.06	1.049	1.000	1T	5.0	6.000	120	0.2285	1.371	0.0	0.0	24.815	11
11	24.815	5.44	0.0	27.11													
103	21.633	5.60	26.05	26.05	9.67	1.049	13.000	1E	2.0	15.000	120	0.2121	3.182	0.0	0.0	24.815	11
11	24.815		27.11	53.16	19.73	1.049	5.000	1T	5.0	10.000	120	0.7940	7.940	0.0	0.0	32.755	7
7	32.755	9.29	0.0	53.16													
104	25.871	5.60	28.48	28.48	10.57	1.049	1.166	1T	5.0	6.166	120	0.2504	1.544	0.0	0.0	27.415	12
12	27.415		0.0	28.48	10.57	1.049	7.000	1T	5.0	12.000	120	0.2503	3.004	0.0	0.0	30.419	8
8	30.419	5.16	0.0	28.48													
105	24.760	5.60	27.87	27.87	10.35	1.049	1.166	1T	5.0	6.166	120	0.2404	1.482	0.0	0.0	26.242	13
13	26.242	5.44	0.0	27.87													
106	22.857	5.60	26.77	26.77	9.94	1.049	13.166	1E	2.0	15.166	120	0.2232	3.385	0.0	0.0	26.242	13
13	26.242		27.87	54.64	20.28	1.049	5.000		0.0	5.000	120	0.8354	4.177	0.0	0.0	30.419	8
8	30.419	9.91	0.0	54.64													
107	26.248	5.60	28.69	28.69	10.65	1.049	1.000	1T	5.0	6.000	120	0.2537	1.522	0.0	0.0	27.770	14
14	27.770		0.0	28.69	10.65	1.049	3.000	1T	5.0	8.000	120	0.2537	2.030	0.0	0.0	29.800	9
9	29.800	5.26	0.0	28.69													
108	22.960	5.60	26.83	26.83	9.96	1.049	1.000	1T	5.0	6.000	120	0.2242	1.345	0.0	0.0	24.305	10
10	24.305	5.44	0.0	26.83													
109	21.556	5.60	26.00	26.0	9.65	1.049	11.000	1E	2.0	13.000	120	0.2115	2.749	0.0	0.0	24.305	10
10	24.305		26.83	52.83	19.61	1.049	7.000		0.0	7.000	120	0.7850	5.495	0.0	0.0	29.800	9
9	29.800		28.69	81.52	7.16	2.157	11.830		0.0	11.830	120	0.0523	0.619	0.0	0.0	30.419	8
8	30.419		83.13	164.65	14.46	2.157	12.166		0.0	12.166	120	0.1920	2.336	0.0	0.0	32.755	7
7	32.755		53.16	217.81	19.12	2.157	0.500	1T	12.307	12.807	120	0.3222	4.127	0.0	0.0	36.882	6
6	36.882		0.0	217.81	19.12	2.157	9.000		0.0	9.000	120	0.3223	2.901	0.0	0.0	39.783	5
5	39.783		34.44	252.25	22.15	2.157	10.830	1E	6.153	16.983	120	0.4228	7.181	0.0	0.0	46.964	4
4	46.964		0.0	252.25	14.84	2.635	11.420	1B	9.61	21.030	120	0.1595	3.355	4.946	0.0	55.265	3
3	55.265		0.0	252.25	14.84	2.635	5.750	1Zac1E	8.237	13.987	120	0.1595	2.231	0.0	3.034	60.530	2
2	60.530		0.0	252.25	14.84	2.635	31.750	1B3E	34.321	66.071	120	0.1595	10.541	1.299	0.0	72.370	1
1	72.370		0.0	252.25	2.72	6.16	40.000	2E	40.168	80.168	140	0.0019	0.154	0.0	0.0	72.524	TEST
TEST	72.524	58.98	250.00	502.25													