

. . . Fire Protection by Computer Design

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

Job Name : EAST END LOFTS HC2
Building : 273 CONGRESS STREET
Location : PORTLAND, MAINE 04101
System : #1 AREA #2
Contract :
Data File : EAST END LOFTS HC2.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 #2
Contractor - Contract No. -
Calculated By - MIKE NOBLIT Drawing No. - FP-2
Construction: (X) Combustible () Non-Combustible Ceiling Height - VARIES
Occupancy - APARTMENT

S () NFPA 13 () Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.
Y () NFPA 231 () NFPA 231C () Figure Curve

S Other NFPA-13R

T Specific Ruling Made By Date

E
M Area of Sprinkler Operation - 4 SPRINKS System Type Sprinkler/Nozzle
Density - .10 (X) Wet Make TYCO
D Area Per Sprinkler - 225 () Dry Model LFII
E Elevation at Highest Outlet - 32.66 () Deluge Size 1/2"
S Hose Allowance - Inside - () Preaction K-Factor 4.4
I Rack Sprinkler Allowance - () Temp.Rat.155
G Hose Allowance - Outside -

N Note

Calculation Flow Required - 64.765 Press Required - 77.494 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
P Location -

P
L Source of Information - PORTLAND WATER DISTRICT
Y

Water Supply Curve (C)

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EAST END LOFTS HC2

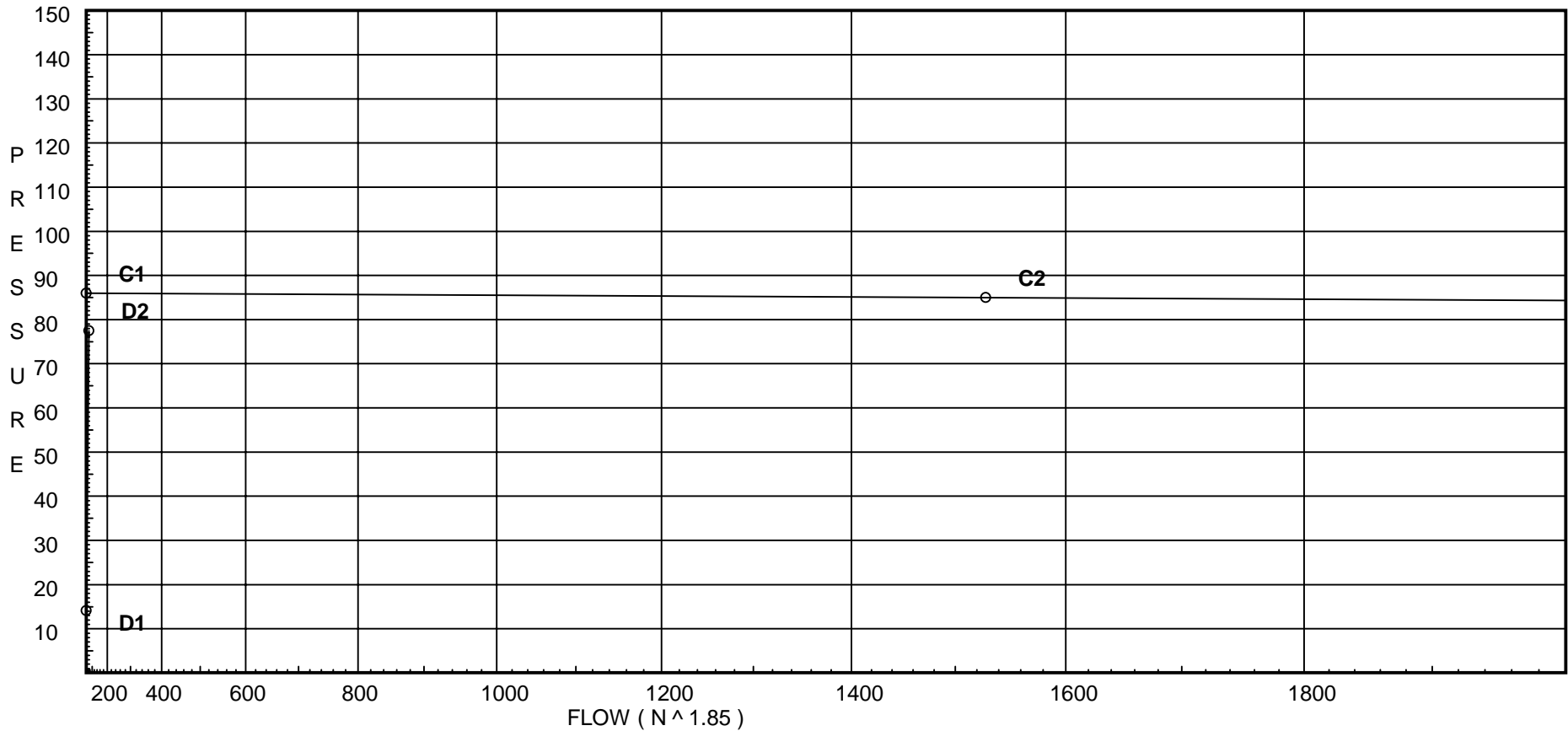
Page 2
Date 5/6/16

City Water Supply:

C1 - Static Pressure : 86
C2 - Residual Pressure: 85
C2 - Residual Flow : 1528

Demand:

D1 - Elevation : 14.145
D2 - System Flow : 64.7653
D2 - System Pressure : 77.494
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 64.7653
Safety Margin : 8.503



Fittings Used Summary

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EAST END LOFTS HC2

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 HC2

Page 4
Date 5/6/16

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
201	32.66	4.4	13.59	na	16.22	0.1	0.001	13.2
34	32.66		14.07	na				
202	32.66	4.4	13.95	na	16.44	0.1	0.001	13.2
33	32.66		14.45	na				
32	32.66		15.26	na				
31	32.66		20.26	na				
30	26.66		26.4	na				
29	26.66		42.81	na				
203	32.66	4.4	13.2	na	15.99	0.1	0.001	13.2
204	32.66	4.4	13.43	na	16.13	0.1	0.001	13.2
28	32.66		14.13	na				
27	26.66		20.17	na				
26	26.66		27.38	na				
25	26.66		36.78	na				
24	26.66		39.8	na				
23	26.66		50.76	na				
22	26.66		52.77	na				
21	14.42		60.37	na				
20	14.42		62.75	na				
9	14.42		62.91	na				
8	14.42		63.31	na				
7	14.42		63.73	na				
6	14.42		64.17	na				
5	14.42		64.47	na				
4	14.42		65.05	na				
3	3.0		70.27	na				
2	3.0		75.33	na				
1	0.0		77.48	na				
TEST	0.0		77.49	na				

The maximum velocity is 12.12 and it occurs in the pipe between nodes 32 and 31

Final Calculations - One-Line

FREEDOM FIRE PROTECTION INC.
EAST END LOFTS HC2

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
201	13.586	4.40	16.22	16.22	6.02	1.049	0.500	1T	5.0	5.500	120	0.0884	0.486	0.0	0.0	14.072	34
34	14.072		0.0	16.22	6.02	1.049	4.500	2E1T	9.0	13.500	120	0.0883	1.192	0.0	0.0	15.264	32
32	15.264	4.15	0.0	16.22													
202	13.952	4.40	16.43	16.43	6.10	1.049	0.500	1T	5.0	5.500	120	0.0905	0.498	0.0	0.0	14.450	33
33	14.450		0.0	16.43	6.10	1.049	7.000	1E	2.0	9.000	120	0.0904	0.814	0.0	0.0	15.264	32
32	15.264		16.22	32.65	12.12	1.049	13.500	1E	2.0	15.500	120	0.3223	4.996	0.0	0.0	20.260	31
31	20.260		0.0	32.65	12.12	1.049	6.000	1T	5.0	11.000	120	0.3223	3.545	2.599	0.0	26.404	30
30	26.404		0.0	32.65	12.12	1.049	48.916	1E	2.0	50.916	120	0.3223	16.409	0.0	0.0	42.813	29
29	42.813		0.0	32.65	12.12	1.049	19.660	1T	5.0	24.660	120	0.3223	7.948	0.0	0.0	50.761	23
23	50.761	4.58	0.0	32.65													
203	13.200	4.40	15.99	15.99	5.94	1.049	3.830	1E1T	7.0	10.830	120	0.0860	0.931	0.0	0.0	14.131	28
28	14.131	4.25	0.0	15.99													
204	13.432	4.40	16.13	16.13	5.99	1.049	8.000		0.0	8.000	120	0.0874	0.699	0.0	0.0	14.131	28
28	14.131		15.98	32.11	11.92	1.049	6.000	1T	5.0	11.000	120	0.3125	3.437	2.599	0.0	20.167	27
27	20.167		0.0	32.11	11.92	1.049	19.083	2E	4.0	23.083	120	0.3125	7.213	0.0	0.0	27.380	26
26	27.380		0.0	32.11	11.92	1.049	25.083	1T	5.0	30.083	120	0.3125	9.400	0.0	0.0	36.780	25
25	36.780		0.0	32.11	11.92	1.049	4.660	1T	5.0	9.660	120	0.3124	3.018	0.0	0.0	39.798	24
24	39.798		0.0	32.11	11.92	1.049	35.083		0.0	35.083	120	0.3125	10.963	0.0	0.0	50.761	23
23	50.761		32.66	64.77	10.21	1.61	2.166	1E1T	12.0	14.166	120	0.1420	2.012	0.0	0.0	52.773	22
22	52.773		0.0	64.77	10.21	1.61	12.166	1E	4.0	16.166	120	0.1420	2.296	5.301	0.0	60.370	21
21	60.370		0.0	64.77	5.69	2.157	20.500	4T	49.227	69.727	120	0.0342	2.383	0.0	0.0	62.753	20
20	62.753		0.0	64.77	5.69	2.157	4.500		0.0	4.500	120	0.0342	0.154	0.0	0.0	62.907	9
9	62.907		0.0	64.77	5.69	2.157	11.830		0.0	11.830	120	0.0342	0.405	0.0	0.0	63.312	8
8	63.312		0.0	64.77	5.69	2.157	12.166		0.0	12.166	120	0.0341	0.415	0.0	0.0	63.727	7
7	63.727		0.0	64.77	5.69	2.157	0.500	1T	12.307	12.807	120	0.0342	0.438	0.0	0.0	64.165	6
6	64.165		0.0	64.77	5.69	2.157	9.000		0.0	9.000	120	0.0342	0.308	0.0	0.0	64.473	5
5	64.473		0.0	64.77	5.69	2.157	10.830	1E	6.153	16.983	120	0.0342	0.580	0.0	0.0	65.053	4
4	65.053		0.0	64.77	3.81	2.635	11.420	1B	9.61	21.030	120	0.0129	0.271	4.946	0.0	70.270	3
3	70.270		0.0	64.77	3.81	2.635	5.750	1Zac1E	8.237	13.987	120	0.0129	0.181	0.0	4.879	75.330	2
2	75.330		0.0	64.77	3.81	2.635	31.750	1B3E	34.321	66.071	120	0.0129	0.852	1.299	0.0	77.481	1
1	77.481		0.0	64.77	0.70	6.16	40.000	2E	40.168	80.168	140	0.0002	0.013	0.0	0.0	77.494	TEST
TEST	77.494	7.36	0.0	64.77													