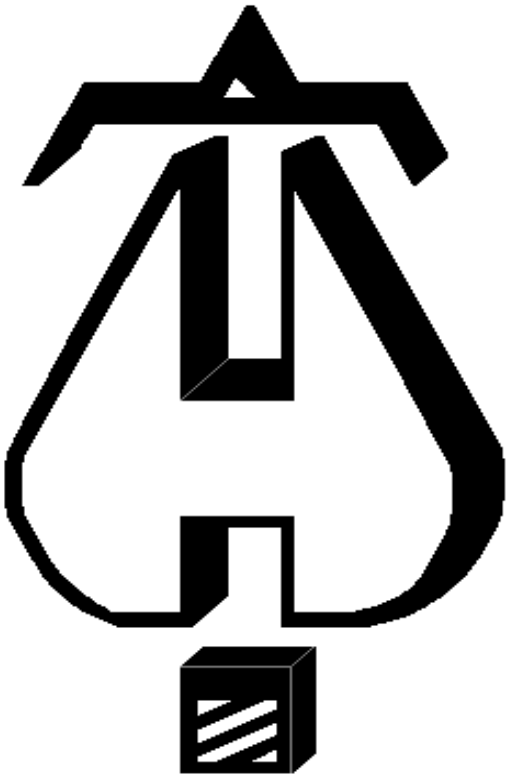


. . . Fire Protection by Computer Design

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

Job Name	:	229 CONGRESS STREET HC1
Building	:	229 CONGRESS STREET
Location	:	PORTLAND, MAINE 04101
System	:	#1 AREA #1
Contract	:	
Data File	:	229 Congress Street HC1.WXF

Hydraulic Design Information Sheet

Name - 229 CONGRESS STREET Date - 12/27/13
Location - PORTLAND, MAINE 04101
Building - 229 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 - 8'-0"
Occupancy - BUSINESS

SYSTEM

(X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. ( ) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling Made By Date

DESIGN

Area of Sprinkler Operation	- ROOM	System Type	Sprinkler/Nozzle
Density	- 0.10	(X) Wet	Make TYCO
Area Per Sprinkler	- 196	( ) Dry	Model TY-FRB
Elevation at Highest Outlet	-	( ) Deluge	Size 1/2"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.155
Hose Allowance - Outside	- 100		

Note

Calculation Summary: Flow Required - 201.695 Press Required - 69.406 At Test
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:	Pump Data:	Tank or Reservoir:
Date of Test - 9/13/2011		Cap. -
Time of Test -	Rated Cap.-	Elev.-
Static Press - 80	@ Press -	
Residual Press - 75	Elev. -	Well
Flow - 1162		Proof Flow
Elevation -		

Location -

Source of Information - PORTLAND WATER DISTRICT

Water Supply Curve (C)

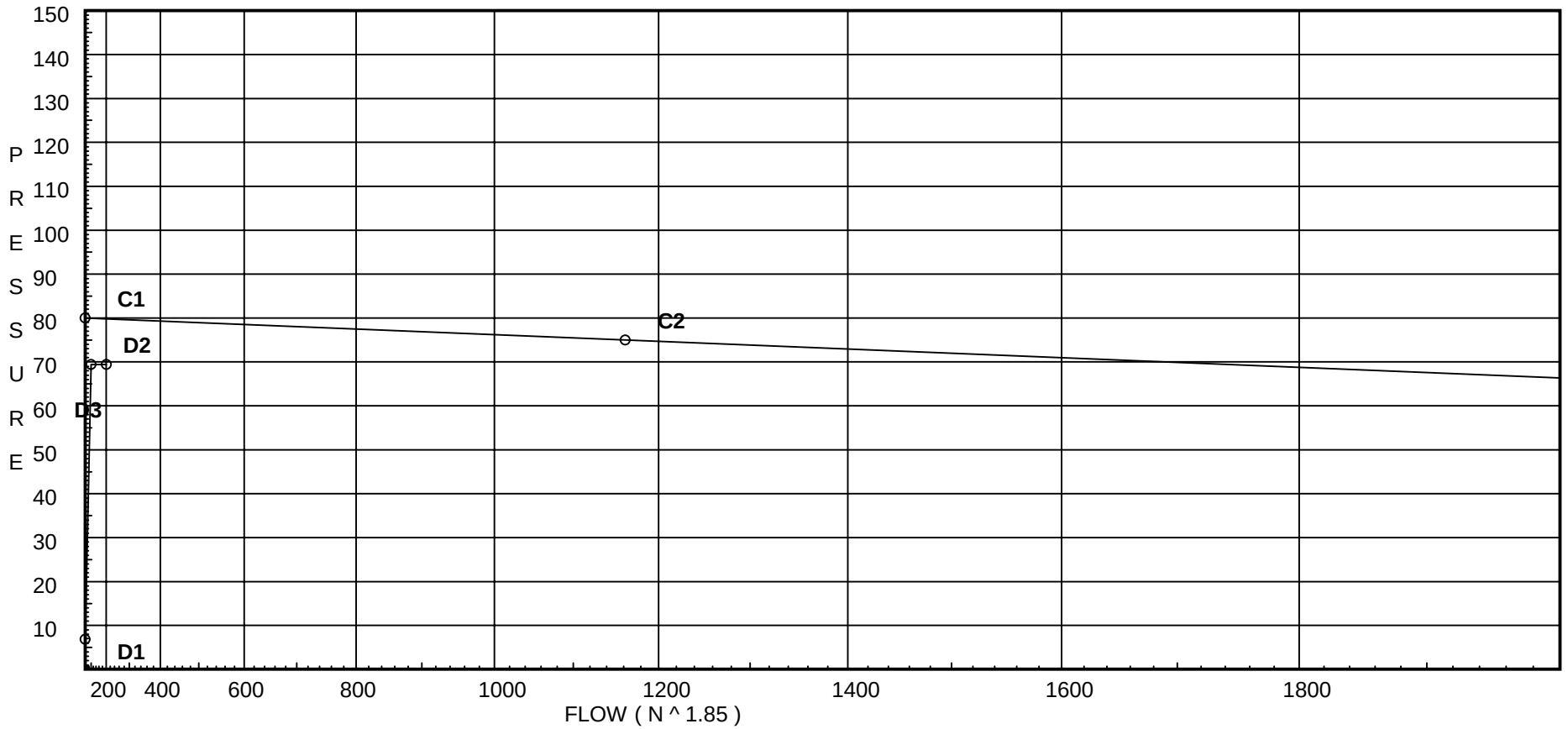
FREEDOM FIRE PROTECTION INC.
229 CONGRESS STREET HC1

Date 12/27/13

City Water Supply:
- C1 - Static Pressure : 80
- C2 - Residual Pressure: 75
- C2 - Residual Flow : 1162

Demand:

D1 - Elevation	:	6.856
D2 - System Flow	:	101.695
D2 - System Pressure	:	69.406
Hose (Adj City)	:	
Hose (Demand)	:	100
D3 - System Demand	:	201.695
Safety Margin	:	10.398



Fittings Used Summary

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
Zac	Ames 2000SS	Fitting generates a Fixed Loss Based on Flow																			

Pressure / Flow Summary - STANDARD

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
103	15.83	5.6	7.0	na	14.82	0.1	0.001	7.0
102	15.83	5.6	8.49	na	16.32	0.1	0.001	7.0
101	15.83	5.6	13.81	na	20.81	0.1	0.001	7.0
12	15.83		20.14	na				
11	15.83		24.18	na				
104	15.83	5.6	20.13	na	25.12	0.1	196	7.0
105	15.83	5.6	19.34	na	24.63	0.1	196	7.0
15	15.83		19.82	na				
14	15.83		21.22	na				
13	15.83		24.83	na				
10	15.83		26.76	na				
9	15.83		30.2	na				
8	15.83		35.25	na				
7	15.83		43.22	na				
6	5.83		51.11	na				
5	5.83		56.43	na				
4	5.83		62.38	na				
3	5.83		64.17	na				
2	0.0		68.76	na				
1	0.0		68.89	na				
0	0.0		69.33	na				
TEST	0.0		69.41	na	100.0			

The maximum velocity is 19.29 and it occurs in the pipe between nodes 101 and 12

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
103	7.000	5.60	14.82	14.82	5.50	1.049	13.000	1E1T	7.0	20.000	120	0.0747	1.494	0.0	0.0	8.494	102
102	8.494	5.60	16.32	31.14	11.56	1.049	13.000	1T	5.0	18.000	120	0.2952	5.313	0.0	0.0	13.807	101
101	13.807	5.60	20.81	51.95	19.29	1.049	6.330	1E	2.0	8.330	120	0.7607	6.337	0.0	0.0	20.144	12
12	20.144		0.0	51.95	11.14	1.38	14.166	2E	6.0	20.166	120	0.2001	4.035	0.0	0.0	24.179	11
11	24.179		0.0	51.95	11.14	1.38	3.916	1E1T	9.0	12.916	120	0.2001	2.584	0.0	0.0	26.763	10
10	26.763	10.04	0.0	51.95													
104	20.126	5.60	25.12	25.12	8.47	1.101	1.000	1T	9.563	10.563	150	0.1038	1.096	0.0	0.0	21.222	14
14	21.222	5.45	0.0	25.12													
105	19.339	5.60	24.63	24.63	8.30	1.101	1.000	1E	3.825	4.825	150	0.1001	0.483	0.0	0.0	19.822	15
15	19.822		0.0	24.63	8.30	1.101	14.000		0.0	14.000	150	0.1000	1.400	0.0	0.0	21.222	14
14	21.222		25.12	49.75	16.77	1.101	9.830		0.0	9.830	150	0.3671	3.609	0.0	0.0	24.831	13
13	24.831		0.0	49.75	18.47	1.049	2.750		0.0	2.750	120	0.7025	1.932	0.0	0.0	26.763	10
10	26.763		51.95	101.7	16.03	1.61	2.500	1T	8.0	10.500	120	0.3272	3.436	0.0	0.0	30.199	9
9	30.199		0.0	101.7	16.27	1.598	10.830	1T	11.656	22.486	150	0.2246	5.051	0.0	0.0	35.250	8
8	35.250		0.0	101.7	16.27	1.598	23.830	2E	11.656	35.486	150	0.2246	7.971	0.0	0.0	43.221	7
7	43.221		0.0	101.7	16.27	1.598	10.000	1E	5.828	15.828	150	0.2246	3.555	4.331	0.0	51.107	6
6	51.107		0.0	101.7	16.03	1.61	8.250	1T	8.0	16.250	120	0.3273	5.319	0.0	0.0	56.426	5
5	56.426		0.0	101.7	8.93	2.157	63.330	1T	12.307	75.637	120	0.0788	5.957	0.0	0.0	62.383	4
4	62.383		0.0	101.7	8.93	2.157	16.500	1E	6.153	22.653	120	0.0788	1.784	0.0	0.0	64.167	3
3	64.167		0.0	101.7	2.56	4.026	5.830	1E1Zac	10.0	15.830	120	0.0038	0.060	2.525	2.010	68.762	2
2	68.762		0.0	101.7	2.47	4.1	15.000	1T	21.855	36.855	120	0.0034	0.127	0.0	0.0	68.889	1
1	68.889		0.0	101.7	2.47	4.1	140.000	1T	29.067	169.067	140	0.0026	0.439	0.0	0.0	69.328	0
0	69.328		0.0	101.7	1.09	6.16	220.000		0.0	220.000	140	0.0004	0.078	0.0	0.0	69.406	TEST
TEST	69.406	24.21	100.00	201.70													