

. . . Fire Protection by Computer Design

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

Job Name : RICK HOLDEN RESIDENCE HC2
Building : 20 BALLPARK LANE
Location : PORTLAND, MAINE 04103
System : #1 AREA #2
Contract :
Data File : Rick Holden Residence HC2.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - RICK HOLDEN RESIDENCE Date - 4/20/12
Location - PORTLAND, MAINE 04103
Building - 20 BALLPARK LANE System No. - #1 AREA #2
Contractor - FREEDOM FIRE PROTECTION Contract No. -
Calculated By - MICHAEL NOBLIT Drawing No. - FP-2
Construction: (X) Combustible () Non-Combustible Ceiling Height 7'-7"
OCCUPANCY - HOUSE

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 - 17 Gpm System Type
Listed Pres. at Start Point - 12 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 18 x 18 () Deluge () PreAction
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
S Additional Flow Added - 0 Gpm Make TYCO Model LFII
I Elevation at Highest Outlet - 7'-2"Feet Size 1/2" K-Factor 4.9
G Note: Temperature Rating 155
N

Calculation Gpm Required 34.745 Psi Required 58.157 At Test
Summary C-Factor Used: Overhead 120 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 1/24/2012 Rated Cap. Cap.
T Time of Test - @ Psi Elev.
E Static (Psi) - 63 Elev.
R Residual (Psi) - 0 Other Well
Flow (Gpm) - 838 Proof Flow Gpm
S Elevation -

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

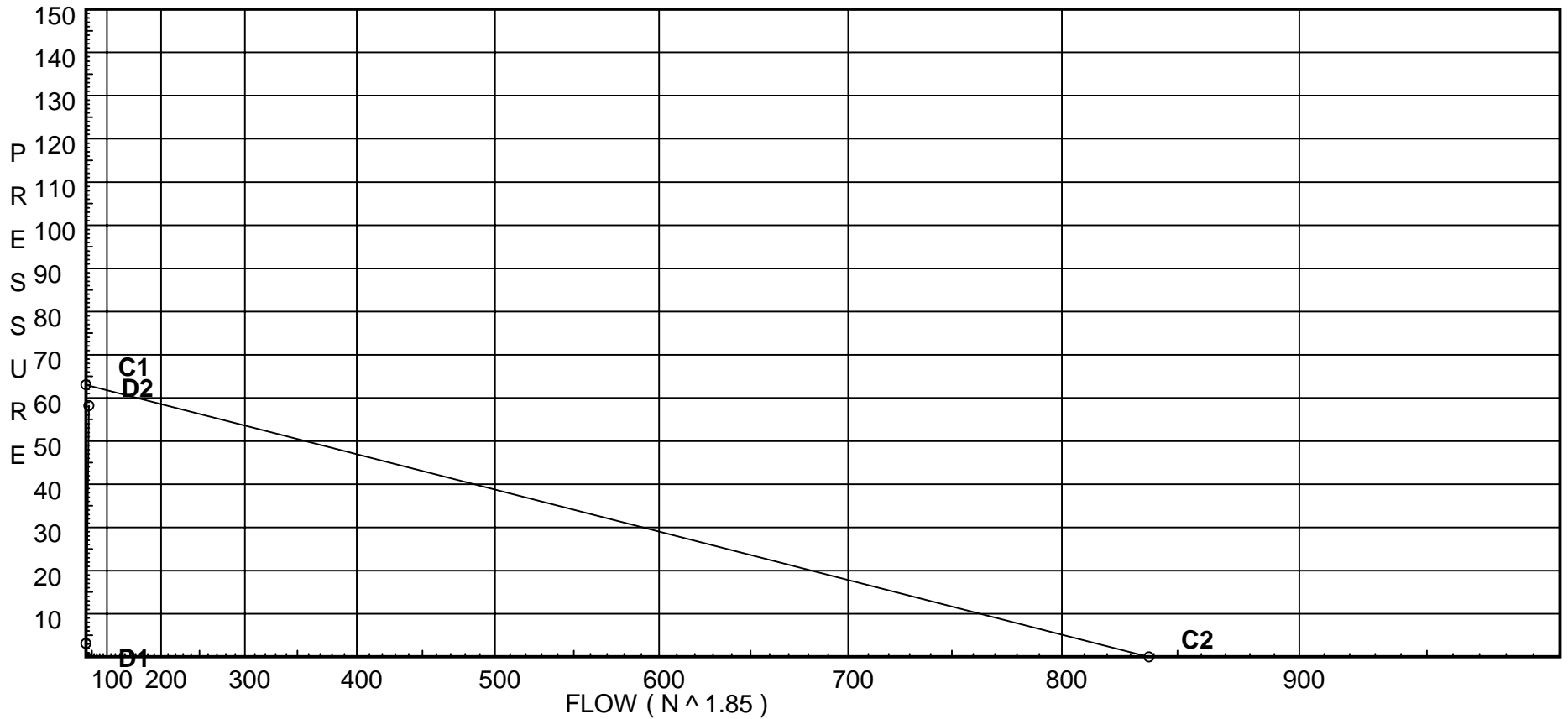
Water Supply Curve (C)

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City Water Supply:
C1 - Static Pressure : 63
C2 - Residual Pressure: 0
C2 - Residual Flow : 838

Demand:
D1 - Elevation : 3.104
D2 - System Flow : 34.7448
D2 - System Pressure : 58.157
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 34.7448
Safety Margin : 4.668



Fittings Used Summary

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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

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
202	7.166	4.9	12.0	na	16.97	0.05	0.001	12.0
201	7.166	4.9	13.15	na	17.77	0.05	0.001	12.0
10	7.166		18.27	na				
4	7.166		23.03	na				
3	7.166		28.21	na				
2	7.166		36.17	na				
1	0.0		44.54	na				
0	0.0		58.15	na				
TEST	0.0		58.16	na				

The maximum velocity is 12.9 and it occurs in the pipe between nodes 201 and 10

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
202 to 201	16.97	1.049 120	1E 2.0	10.000 2.000	12.000 0.0		K Factor = 4.90
201 to 10	16.97	0.0961	0.0	12.000	1.153		Vel = 6.30
201 to 10	17.77	1.049 120	1T 5.0	9.166 5.000	13.153 0.0		K Factor = 4.90
10 to 4	34.74	0.3615	0.0	14.166	5.121		Vel = 12.90
10 to 4	0.0	1.049 120	0.0	13.166 0.0	18.274 0.0		
4 to 3	34.74	0.3615	0.0	13.166	4.760		Vel = 12.90
4 to 3	0.0	1.049 120	1T 5.0	9.330 5.000	23.034 0.0		
3 to 2	34.74	0.3615	0.0	14.330	5.180		Vel = 12.90
3 to 2	0.0	1.049 120	1E 2.0	20.000 2.000	28.214 0.0		
2 to 1	34.74	0.3615	0.0	22.000	7.953		Vel = 12.90
2 to 1	0.0	1.38 120	1Zaa 0.0	6.166 0.0	36.167 7.791		* Fixed loss = 4.688
1 to 0	34.74	0.0952	0.0	6.166	0.587		Vel = 7.45
1 to 0	0.0	1.329 150	1E 2.375	120.000 7.125	44.545 4.000		* Fixed loss = 4
0 to TEST	34.74	0.0756	0.0	127.125	9.609		Vel = 8.03
0 to TEST	0.0	8.27 140	1T 55.354	250.000 55.354	58.154 0.0		
TEST	34.74	0.0	0.0	305.354	0.003		Vel = 0.21
	0.0 34.74				58.157		K Factor = 4.56