

**. . . Fire Protection by Computer Design**

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

Job Name : KEON RESIDENCE  
Building : 44 OAK STREET  
Location : PORTLAND, MAINE 04101  
System : #1 AREA #1  
Contract :  
Data File : KEON RESIDENCE HC.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - KEON RESIDENCE Date - 9/1/15  
Location - PORTLAND, MAINE 04101  
Building - 44 OAK STREET System No. - #1 AREA #1  
Contractor - FREEDOM FIRE PROTECTION Contract No. -  
Calculated By - MICHAEL NOBLIT Drawing No. - FP-3  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 9'-0"  
OCCUPANCY - RESIDENCE

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 15' x 15' ( ) Deluge ( ) PreAction  
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle  
S Additional Flow Added - 0 Gpm Make TYCO Model TY-FRB  
I Elevation at Highest Outlet - 56.25Feet Size 1/2" K-Factor 5.6  
G Note: Temperature Rating 155  
N

Calculation Gpm Required 61.822 Psi Required 50.822 At Test  
Summary C-Factor Used: Overhead 120 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 5/8/2011 Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 71 Elev.  
R Residual (Psi) - 0 Other Well  
Flow (Gpm) - 992 Proof Flow Gpm  
S Elevation -

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

# Water Supply Curve (C)

FREEDOM FIRE PROTECTION INC.  
KEON RESIDENCE

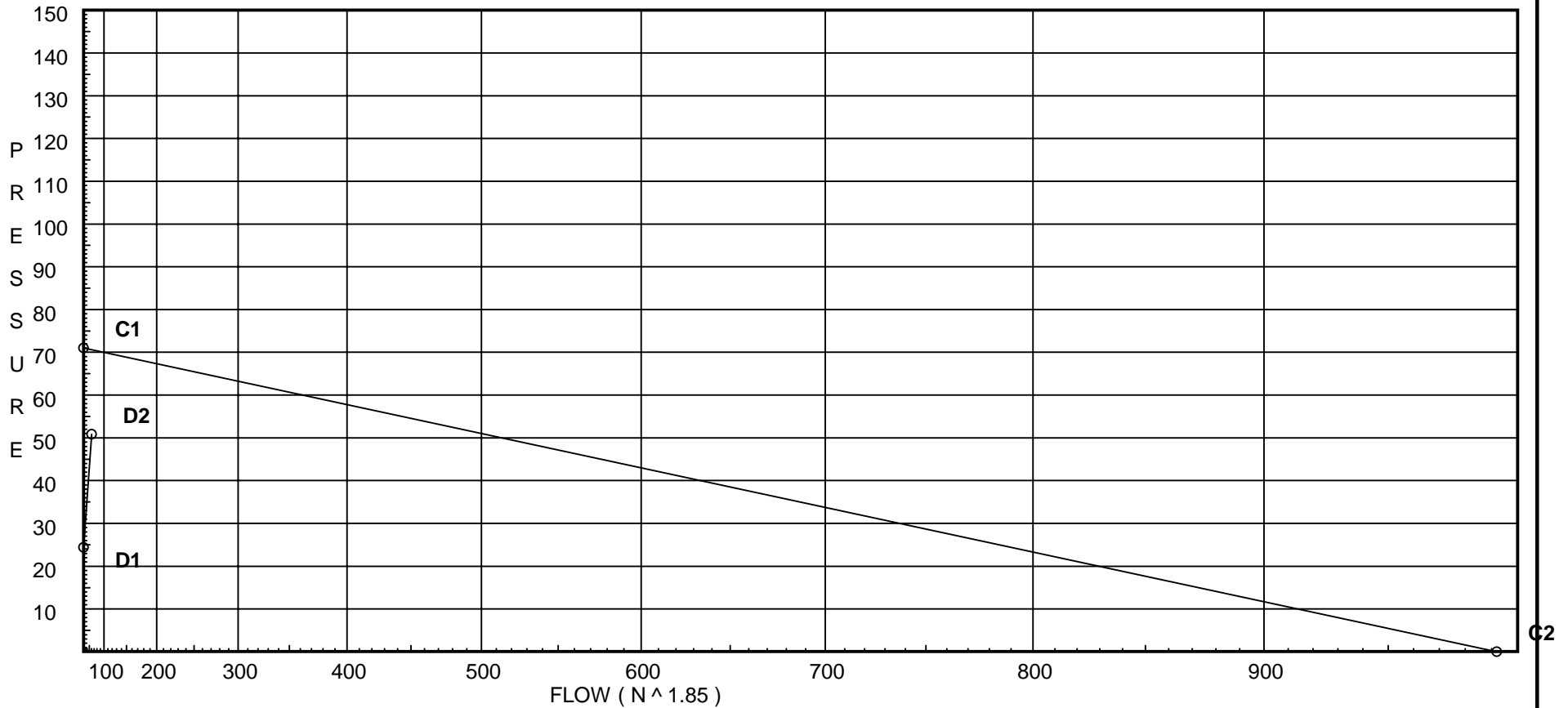
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### City Water Supply:

C1 - Static Pressure : 71  
C2 - Residual Pressure: 0  
C2 - Residual Flow : 992

### Demand:

D1 - Elevation : 24.362  
D2 - System Flow : 61.2877  
D2 - System Pressure : 50.822  
Hose ( Adj City ) : \_\_\_\_\_  
Hose ( Demand ) : \_\_\_\_\_  
D3 - System Demand : 61.2877  
Safety Margin : 19.766



# Fittings Used Summary

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## 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
Zac	Ames 2000SS	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.
101	56.25	5.6	7.63	na	15.47	0.05	225	7.0
102	56.25	5.6	7.0	na	14.82	0.05	225	7.0
19	56.25		7.31	na				
18	56.25		8.29	na				
17	56.25		10.76	na				
16	56.25		13.57	na				
15	46.25		21.26	na				
14	46.25		23.74	na				
13	36.25		31.43	na				
12	5.33		44.86	na				
103	56.25	5.6	8.05	na	15.88	0.05	225	7.0
104	56.25	5.6	7.29	na	15.12	0.05	225	7.0
11	56.25		7.94	na				
10	56.25		9.01	na				
9	56.25		11.59	na				
8	56.25		14.52	na				
7	46.25		22.37	na				
6	46.25		23.59	na				
5	36.33		31.4	na				
4	5.33		44.86	na				
3	5.33		44.87	na				
2	5.33		44.94	na				
1	0.0		50.82	na				
TEST	0.0		50.82	na				

The maximum velocity is 11.51 and it occurs in the pipe between nodes 10 and 9

Final Calculations - One-Line

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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	7.628	5.60	15.47	15.47	5.74	1.049	3.166	1T	5.0	8.166	120	0.0809	0.661	0.0	0.0	8.289	18
18	8.289	5.37	0.0	15.47													
102	7.000	5.60	14.82	14.82	5.50	1.049	2.166	1E	2.0	4.166	120	0.0747	0.311	0.0	0.0	7.311	19
19	7.311		0.0	14.82	5.50	1.049	13.083		0.0	13.083	120	0.0748	0.978	0.0	0.0	8.289	18
18	8.289		15.46	30.28	11.24	1.049	8.830		0.0	8.830	120	0.2803	2.475	0.0	0.0	10.764	17
17	10.764		0.0	30.28	11.24	1.049	5.000	1T	5.0	10.000	120	0.2803	2.803	0.0	0.0	13.567	16
16	13.567		0.0	30.28	11.24	1.049	10.000	1E	2.0	12.000	120	0.2803	3.364	4.331	0.0	21.262	15
15	21.262		0.0	30.28	11.24	1.049	6.830	1E	2.0	8.830	120	0.2804	2.476	0.0	0.0	23.738	14
14	23.738		0.0	30.28	11.24	1.049	10.000	1E	2.0	12.000	120	0.2803	3.364	4.331	0.0	31.433	13
13	31.433		0.0	30.28	1.16	3.26	30.916		0.0	30.916	120	0.0011	0.034	13.392	0.0	44.859	12
12	44.859		0.0	30.28	0.68	4.26	4.660	1T	26.334	30.994	120	0.0003	0.010	0.0	0.0	44.869	3
3	44.869	4.52	0.0	30.28													
103	8.046	5.60	15.88	15.88	5.90	1.049	6.330	1T	5.0	11.330	120	0.0850	0.963	0.0	0.0	9.009	10
10	9.009	5.29	0.0	15.88													
104	7.290	5.60	15.12	15.12	5.61	1.049	6.330	1E	2.0	8.330	120	0.0776	0.646	0.0	0.0	7.936	11
11	7.936		0.0	15.12	5.61	1.049	13.830		0.0	13.830	120	0.0776	1.073	0.0	0.0	9.009	10
10	9.009		15.88	31.0	11.51	1.049	8.830		0.0	8.830	120	0.2929	2.586	0.0	0.0	11.595	9
9	11.595		0.0	31.0	11.51	1.049	5.000	1T	5.0	10.000	120	0.2928	2.928	0.0	0.0	14.523	8
8	14.523		0.0	31.0	11.51	1.049	10.000	1E	2.0	12.000	120	0.2928	3.514	4.331	0.0	22.368	7
7	22.368		0.0	31.0	11.51	1.049	2.166	1E	2.0	4.166	120	0.2928	1.220	0.0	0.0	23.588	6
6	23.588		0.0	31.0	11.51	1.049	10.000	1E	2.0	12.000	120	0.2928	3.514	4.296	0.0	31.398	5
5	31.398		0.0	31.0	1.19	3.26	30.916		0.0	30.916	120	0.0012	0.037	13.426	0.0	44.861	4
4	44.861		0.0	31.0	0.70	4.26	25.330		0.0	25.330	120	0.0003	0.008	0.0	0.0	44.869	3
3	44.869		30.29	61.29	1.38	4.26	49.500	1E	13.167	62.667	120	0.0011	0.070	0.0	0.0	44.939	2
2	44.939		0.0	61.29	1.38	4.26	5.330	1Zac1E	13.167	18.497	120	0.0011	0.021	2.309	3.548	50.817	1
1	50.817		0.0	61.29	0.66	6.16	40.000		0.0	40.000	140	0.0001	0.005	0.0	0.0	50.822	TEST
TEST	50.822	8.60	0.0	61.29													