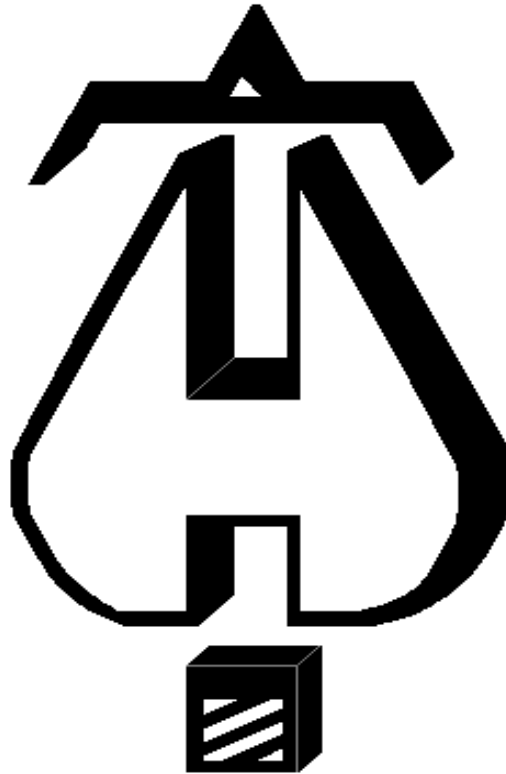




. . . Fire Protection by Computer Design

GEA, PLLC
545 Eight Avenue
New York, NY 10018
212-643-8006



Roof Penthouse_Unit 140_11-06A 45th Ave_440265534
OCCUPANCY CLASSIFICATION: GROUP R-3 LIGHT HAZARD
DENSITY: 0.05 GPM/SQ.FT.
AREA OF APPLICATION: 2 MOST REMOTE SPRINKLERS
SPRINKLER TYPE: RELIABLE MODEL RFC49
SYSTEM DEMAND: 34.481 GPM @ 44.583 PSI

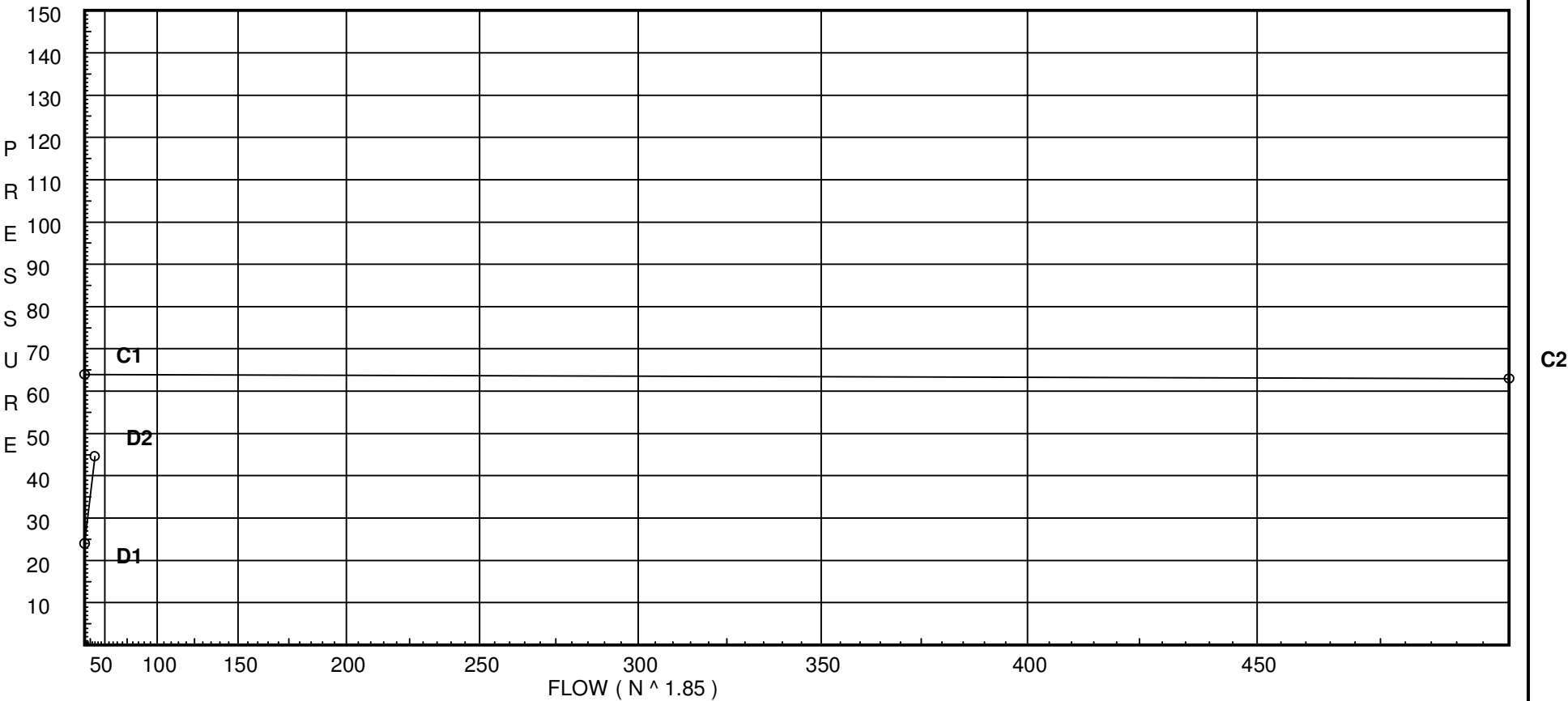
Water Supply Curve C

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City Water Supply:
C1 - Static Pressure : 64
C2 - Residual Pressure: 63
C2 - Residual Flow : 500

Demand:
D1 - Elevation : 24.037
D2 - System Flow : 34.481
D2 - System Pressure : 44.583
Hose (Demand) :
D3 - System Demand : 34.481
Safety Margin : 19.410



Fittings Used Summary

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Roof Penthouse_Unit 140_11-06A 45th Ave_440265534

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	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Zwa	Watts 007	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

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Roof Penthouse_Unit 140_11-06A 45th Ave_440265534

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
8	55.5	4.9	12.0	na	16.97	0.05	130	12.0
9	56.5		11.86	na				
10	56.5		13.27	na				
12	56.0		13.71	na				
13	56.0		13.78	na				
7	56.0		13.79	na				
CONN	8.5		34.5	na				
6	8.5	4.9	34.98	na	17.51	0.05	130	12.0
5	3.5		37.2	na				
4	3.5		42.63	na				
3	2.0		43.3	na				
2	2.0		43.47	na				
1	-4.0		46.13	na				
TEST	0.0		44.58	na				
11	55.5		12.77	na				
14	56.5		12.64	na				

The maximum velocity is 6.5 and it occurs in the pipe between nodes 11 and 14

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	*****
8 to 9	16.97	1.049 120.0 0.0960	E	2.0 0.0 0.0	1.000 2.000 3.000	12.000 -0.433 0.288			K Factor = 4.90	
9 to 10	0.0	1.049 120.0 0.0961	T	5.0 0.0 0.0	9.700 5.000 14.700	11.855 0.0 1.412			Vel = 6.30	
10 to 12	17.51	1.61 120.0 0.0442	E	4.0 0.0 0.0	1.000 4.000 5.000	13.267 0.217 0.221			Vel = 5.43	
12 to 13	0.0	2.157 120.0 0.0106		0.0 0.0 0.0	6.700 0.0 6.700	13.705 0.0 0.071			Vel = 3.03	
13 to 7	0.0	2.157 120.0 0.0110		0.0 0.0 0.0	1.000 0.0 1.000	13.776 0.0 0.011			Vel = 3.03	
7 to CONN	0.0	2.157 120.0 0.0106	2E	12.307 0.0 0.0	0.940 12.307 13.247	13.787 20.572 0.141			Vel = 3.03	
CONN to 6	0.0	2.157 120.0 0.0107	4E	24.613 0.0 0.0	20.530 24.613 45.143	34.500 0.0 0.481			Vel = 3.03	
6 to 5	0.0	2.157 120.0 0.0106		0.0 0.0 0.0	5.000 0.0 5.000	34.981 2.166 0.053			Vel = 3.03	
5 to 4	0.0	2.157 120.0 0.0106	2E Zwa	12.307 0.0 0.0	4.700 12.307 17.007	37.200 5.252 0.181			** Fixed Loss = 5.252 Vel = 3.03	
4 to 3	0.0	2.157 120.0 0.0107		0.0 0.0 0.0	1.500 0.0 1.500	42.633 0.650 0.016			Vel = 3.03	
3 to 2	0.0	2.157 120.0 0.0106	2E	12.307 0.0 0.0	3.700 12.307 16.007	43.299 0.0 0.170			Vel = 3.03	
2 to 1	0.0	2.157 120.0 0.0107		0.0 0.0 0.0	6.000 0.0 6.000	43.469 2.599 0.064			Vel = 3.03	
1 to TEST	0.0	2.067 140.0 0.0098	E	6.65 0.0 0.0	12.000 6.650 18.650	46.132 -1.732 0.183			Vel = 3.30	
	0.0 34.48					44.583			K Factor = 5.16	
11 to 14	17.51	1.049 120.0 0.1017	E	2.0 0.0 0.0	1.000 2.000 3.000	12.766 -0.433 0.305			K Factor = 4.90 Vel = 6.50	
14 to 10	0.0	1.049 120.0 0.1016	T	5.0 0.0 0.0	1.190 5.000 6.190	12.638 0.0 0.629			Vel = 6.50	
	0.0									

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	*****
17.51				13.267		K Factor = 4.81			