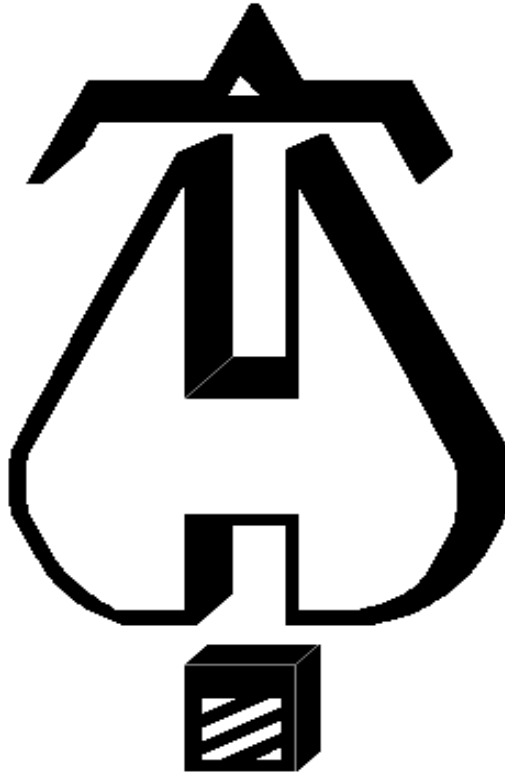




. . . Fire Protection by Computer Design

Sprinkler Systems, Inc.
2-4 Avon Street
P.O. Box 1285
Lewiston, Maine 04240
207-782-0104

Job Name : 55 CHESTNUT STREET
Building :
Location : 55 CHESTNUT STREET, PORTLAND, MAINE 04101
System : 1 OF 1
Contract : 11078
Data File : 55CHESTNUTST2A11078.wxf

HYDRAULIC DESIGN INFORMATION SHEET

Name - 55 CHESTNUT STREET Date - 1-6-2012
Location - 55 CHESTNUT STREET, PORTLAND, MAINE 04101
Building - System No. - 1 OF 1
Contractor - OWNER Contract No. - 11078
Calculated By - SCOTT E. GARLAND Drawing No. - 1 OF 1
Construction: (X) Combustible () Non-Combustible Ceiling Height 8-1
OCCUPANCY - APARTMENTS - RESIDENTIAL

S Type of Calculation: () 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 - 16 Gpm System Type
Listed Pres. at Start Point - 13.3 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 16 x 16 () Deluge () PreAction
E Domestic Flow Added - Gpm Sprinkler or Nozzle
S Additional Flow Added - Gpm Make RELIABLE Model F1RES44
I Elevation at Highest Outlet - 125.91 Feet Size 1/2 X 1/2 K-Factor 4.4
G Note: Temperature Rating 155 DEG
N DESIGN AREA #2 - THIRD FLOOR BEDROOMS

Calculation Gpm Required 69.430 Psi Required 89.088 AT BASE OF RISER
Summary C-Factor Used: Overhead 120 Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 7-19-2006 Rated Cap. Cap.
T Time of Test - @ Psi Elev.
E Static (Psi) - 88 Elev.
R Residual (Psi) - 81 Other Well
Flow (Gpm) - 1953 Proof Flow Gpm
S Elevation - 125.0

P Location: ON CUMBERLAND AVENUE, 425'-0" FROM THE BUILDING

P
L Source of Information: PORTLAND WATER DISTRICT
Y

Pressure / Flow Summary - STANDARD

Sprinkler Systems, Inc.
55 CHESTNUT STREET

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	4.4	10.2	na	14.05	0.05	280	10.2
21	125.917	4.4	12.96	na	15.84	0.05	280	10.2
22	125.917	4.4	13.3	na	16.05	0.05	320	13.3
23	125.917	4.4	16.95	na	18.11	0.05	280	10.2
E	125.917		17.01	na				
24	125.917	K = K @ DROP	20.24	na	19.43			
F	125.917		23.06	na				
N	117.083		51.03	na				
G	117.083		53.47	na				
H	108.25		63.74	na				
DT	108.25		68.71	na				
CC	98.709		76.83	na				
8	98.709		77.07	na				
C	98.709		79.53	na				
D	98.709		80.09	na				
RT	98.709		80.54	na				
RB	94.5		89.09	na				
X1	94.5		90.77	na				
X2	94.5		90.84	na				
TEST	125.0		77.63	na				

The maximum velocity is 14.89 and it occurs in the pipe between nodes 24 and F

Final Calculations - Hazen-Williams

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55 CHESTNUT STREET

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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	*****
TYP to DROP	14.05 14.05	1.049 120 0.0678	1T 5.0 0.0 0.0	0.709 5.000 5.709	10.200 0.0 0.387			K Factor = 4.40	
	0.0 14.05					10.587		K Factor = 4.32	
21 to 22	15.84 15.84	1.049 120 0.0845	1E 2.0 0.0 0.0	2.000 2.000 4.000	12.962 0.0 0.338			K Factor = 4.40	
								Vel = 5.88	
22 to E	16.05 31.89	1.049 120 0.3084	1T 5.0 0.0 0.0	7.042 5.000 12.042	13.300 0.0 3.714			K Factor = 4.40	
	0.0 31.89							Vel = 11.84	
						17.014		K Factor = 7.73	
23 to E	18.11 18.11	1.049 120 0.1072	0.0 0.0 0.0	0.625 0.0 0.625	16.947 0.0 0.067			K Factor = 4.40	
	0.0 18.11							Vel = 6.72	
						17.014		K Factor = 4.39	
E to 24	50.00 50.0	1.380 120 0.1864	2E 6.0 0.0 0.0	11.292 6.000 17.292	17.014 0.0 3.224				
								Vel = 10.73	
24 to F	19.43 69.43	1.380 120 0.3423	1T 6.0 0.0 0.0	2.250 6.000 8.250	20.238 0.0 2.824			K Factor @ node DROP	
								Vel = 14.89	
F to N	0.0 69.43	1.380 120 0.3422	6E 18.0 1T 6.0 0.0	46.542 24.000 70.542	23.062 3.826 24.140				
								Vel = 14.89	
N to G	0.0 69.43	1.380 120 0.3423	1T 6.0 0.0 0.0	1.125 6.000 7.125	51.028 0.0 2.439				
								Vel = 14.89	
G to H	0.0 69.43	1.380 120 0.3422	1E 3.0 1T 6.0 0.0	9.833 9.000 18.833	53.467 3.826 6.444				
								Vel = 14.89	
H to DT	0.0 69.43	1.380 120 0.3423	2T 12.0 0.0 0.0	2.542 12.000 14.542	63.737 0.0 4.977				
								Vel = 14.89	
DT to CC	0.0 69.43	1.610 120 0.1616	1E 4.0 1T 8.0 0.0	12.667 12.000 24.667	68.714 4.132 3.985				
								Vel = 10.94	
CC to 8	0.0 69.43	1.610 120 0.1613	0.0 0.0 0.0	1.500 0.0 1.500	76.831 0.0 0.242				
								Vel = 10.94	

Final Calculations - Standard

Sprinkler Systems, Inc.
55 CHESTNUT STREET

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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 C	0.0 69.43	1.610 120 0.1615	1T	8.0 0.0 0.0	7.209 8.000 15.209	77.073 0.0 2.457		Vel = 10.94	
C to D	0.0 69.43	2.157 120 0.0389		0.0 0.0 0.0	14.458 0.0 14.458	79.530 0.0 0.562		Vel = 6.10	
D to RT	0.0 69.43	2.157 120 0.0388	1E	6.153 0.0 0.0	5.250 6.153 11.403	80.092 0.0 0.443		Vel = 6.10	
RT to RB	0.0 69.43	2.067 120 0.0479	1Z 1E	5.0 5.0 0.0	5.250 10.000 15.250	80.535 7.823 0.730		* Fixed loss = 6 Vel = 6.64	
RB to X1	0.0 69.43	1.985 150 0.0386	1G 1T	1.241 12.407 0.0	30.000 13.648 43.648	89.088 0.0 1.683		Vel = 7.20	
X1 to X2	0.0 69.43	6.16 140 0.0002	1T	43.037 0.0 0.0	350.000 43.037 393.037	90.771 0.0 0.069		Vel = 0.75	
X2 to TEST	0.0 69.43	8.27 140 0.0001		0.0 0.0 0.0	75.000 0.0 75.000	90.840 -13.210 0.004		Vel = 0.41	
	0.0 69.43					77.634		K Factor = 7.88	

Water Supply Curve (C)

Sprinkler Systems, Inc.
55 CHESTNUT STREET

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City Water Supply:
C1 - Static Pressure : 88
C2 - Residual Pressure: 81
C2 - Residual Flow : 1953

Demand:
D1 - Elevation : 0.397
D2 - System Flow : 69.4301
D2 - System Pressure : 77.634
Hose (Adj City) :
Hose (Demand) :
D3 - System Demand : 69.4301
Safety Margin : 10.352

