

... Fire Protection by Computer Design

EASTERN FIRE PROTECTION
170 KITTYHAWK AVE
P.O. BOX 1390
AUBURN MAINE, 04210
207-784-1507

Job Name : 5750 55 SALEM STREET
Building : 55 SALEM STREET
Location : BASEMENT APARTMENT
System : WET
Contract : 1-05750-SP-18
Data File : 5750 55 SALEM ST BASEMENT APT CALC.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 5750 55 SALEM STREET Date - 01/22/2018
Location - BASEMENT APARTMENT
Building - 55 SALEM STREET System No. - WET
Contractor - EASTERN FIRE Contract No. - 1-05750-SP-18
Calculated By - JML Drawing No. - 1 OF 1
Construction: (X) Combustible () Non-Combustible Ceiling Height 9'-5"
OCCUPANCY - LIGHT HAZARD 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 - 12 Gpm System Type
Listed Pres. at Start Point - 7.5 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 12 x 12 () Deluge () PreAction
E Domestic Flow Added - Gpm Sprinkler or Nozzle
S Additional Flow Added - Gpm Make RELIABLE Model F1RES44
I Elevation at Highest Outlet - 108.92Feet Size 1/2" K-Factor 4.4
G Note: Temperature Rating 175
N

Calculation Gpm Required 58.111 Psi Required 34.568 At Test
Summary C-Factor Used: Overhead 120 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 07/07/2015 Rated Cap. Cap.
T Time of Test - @ Psi Elev.
E Static (Psi) - 67 Elev.
R Residual (Psi) - 35 Other Well
Flow (Gpm) - 887 Proof Flow Gpm
S Elevation - 100

P Location: SALEM STREET

L Source of Information: PORTLAND WATER DISTRICT
Y

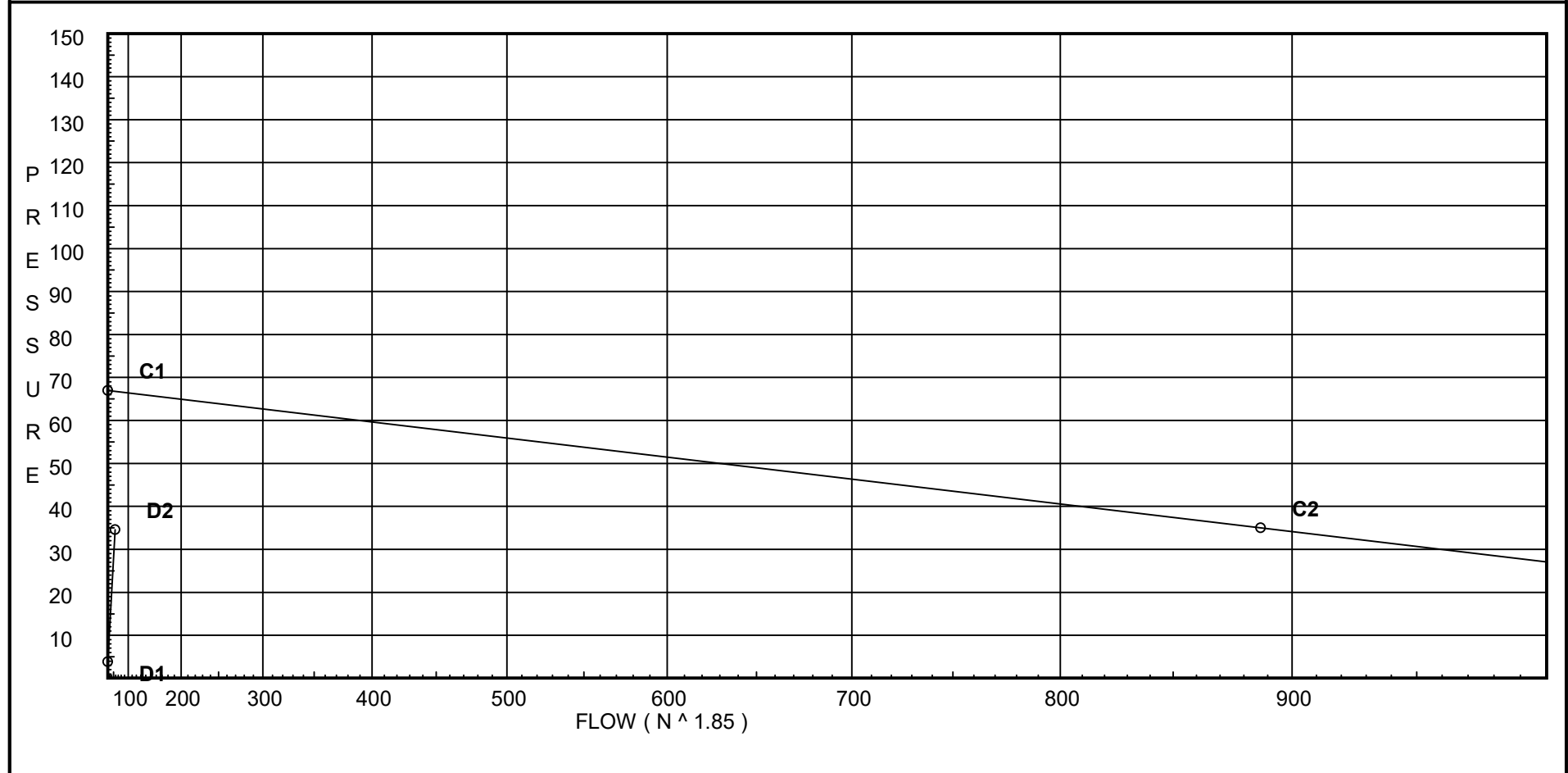
Water Supply Curve C

EASTERN FIRE PROTECTION
5750 55 SALEM STREET

Page 2
Date 01/22/2018

City Water Supply:
C1 - Static Pressure : 67
C2 - Residual Pressure: 35
C2 - Residual Flow : 887

Demand:
D1 - Elevation : 3.863
D2 - System Flow : 58.111
D2 - System Pressure : 34.568
Hose (Demand) : _____
D3 - System Demand : 58.111
Safety Margin : 32.225



Fittings Used Summary

EASTERN FIRE PROTECTION
5750 55 SALEM STREET

Page 3
Date 01/22/2018

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
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
Zaa	Ames 2000B	Fitting generates a Fixed Loss Based on Flow																			

Unit 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

EASTERN FIRE PROTECTION
5750 55 SALEM STREET

Page 4
Date 01/22/2018

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
11	108.92	4.4	14.4	na	16.7	0.001	0.001	7.5
6	108.92		14.5	na				
12	108.92	4.4	14.68	na	16.86	0.001	0.001	7.5
13	108.92	4.4	7.5	na	12.05	0.001	0.001	7.5
14	108.92	4.4	8.08	na	12.51	0.001	0.001	7.5
15	108.92		14.68	na				
7	108.92		16.58	na				
TOR	108.92		17.4	na				
BFP	104.92		23.11	na				
BASE	102.5		30.31	na				
T1	100.0		34.56	na				
TEST	100.0		34.57	na				

The maximum velocity is 12.46 and it occurs in the pipe between nodes 7 and TOR

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv. Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
11 to 6	108.920 108.920	4.40	16.70 16.7	1.25 1.38	0.0 0.0	3.920 0.0 3.920	120 0.0245	14.400 0.0 0.096		Vel = 3.58	
6 to 12	108.920 108.920		0.0 16.7	1.25 1.38	0.0 0.0	7.460 0.0 7.460	120 0.0245	14.496 0.0 0.183		Vel = 3.58	
12 to 7	108.920 108.920	4.40	16.85 33.55	1.25 1.38	T 0.0 0.0	6.0 15.290 6.000 21.290	120 0.0891	14.679 0.0 1.898		Vel = 7.20	
7			0.0 33.55					16.577		K Factor = 8.24	
13 to 14	108.920 108.920	4.40	12.05 12.05	1 1.049	0.0 0.0	11.375 0.0 11.375	120 0.0510	7.500 0.0 0.580		Vel = 4.47	
14 to 15	108.920 108.920	4.40	12.51 24.56	1 1.049	2E T 4.0 5.0 0.0	25.705 9.000 34.705	120 0.1902	8.080 0.0 6.602		Vel = 9.12	
15 to 7	108.920 108.920		0.0 24.56	1 1.049	0.0 0.0	9.960 0.0 9.960	120 0.1903	14.682 0.0 1.895		Vel = 9.12	
7 to TOR	108.920 108.920		33.55 58.11	1.25 1.38	E 0.0 0.0	3.0 0.330 3.000 3.330	120 0.2462	16.577 0.0 0.820		Vel = 12.46	
TOR to BFP	108.920 104.920		0.0 58.11	1.25 1.38	Fsp 0.0 0.0	4.000 0.0 4.000	120 0.2462	17.397 4.732 0.985		* Fixed Loss = 3 Vel = 12.46	
BFP to BASE	104.920 102.500		0.0 58.11	1.25 1.38	Zaa 0.0 0.0	2.420 0.0 2.420	120 0.2463	23.114 6.598 0.596		* Fixed Loss = 5.55 Vel = 12.46	
BASE to T1	102.500 100		0.0 58.11	2 1.72	G T 0.617 6.174 0.0	50.000 6.792 56.792	150 0.0557	30.308 1.083 3.166		Vel = 8.02	
T1 to TEST	100 100		0.0 58.11	6 6.16	T 43.037 0.0 0.0	50.000 43.037 93.037	140 0.0001	34.557 0.0 0.011		Vel = 0.63	
TEST			0.0 58.11					34.568		K Factor = 9.88	