

... **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 : 1 OF 1
Location : 55 SALEM STREET, PORTLAND MAINE
System : BASEMENT
Contract : 1-05750-SP-17
Data File : 5750 55 SALEM ST BASE CALC.WXF

HYDRAULIC CALCULATIONS
for

Project name: 5750 55 SALEM STREET
Location: 55 SALEM STREET, PORTLAND MAINE
Drawing no: 1 OF 1
Date: 01/22/2018

Design

Remote area number: BASEMENT
Remote area location: BASEMENT
Occupancy classification: ORDINARY HAZARD I
Density: .1 - Gpm/SqFt
Area of application: 3 HEADS - SqFt
Coverage per sprinkler: 127.500 - SqFt
Type of sprinklers calculated: RELIABLE F1FR42 UPRIGHT
No. of sprinklers calculated: 3
In-rack demand: - GPM
Hose streams: 0 - GPM
Total water required (including hose streams): 39.615 - GPM @ 27.878 - Psi
Type of system: WET
Volume of dry or preaction system: N/A - Gal

Water supply information

Date: 07/07/2015
Location: SALEM STREET
Source: PORTLAND WATER DISTRICT

Name of contractor: EASTERN FIRE PROTECTION
Address: 170 KITTYHAWK AVE / P.O. BOX 1390 / AUBURN MAINE, 04210
Phone number: 207-784-1507
Name of designer: JML
Authority having jurisdiction: STATE FIRE MARSHALS OFFICE
Notes: (Include peaking information or gridded systems here.)

Water Supply Curve C

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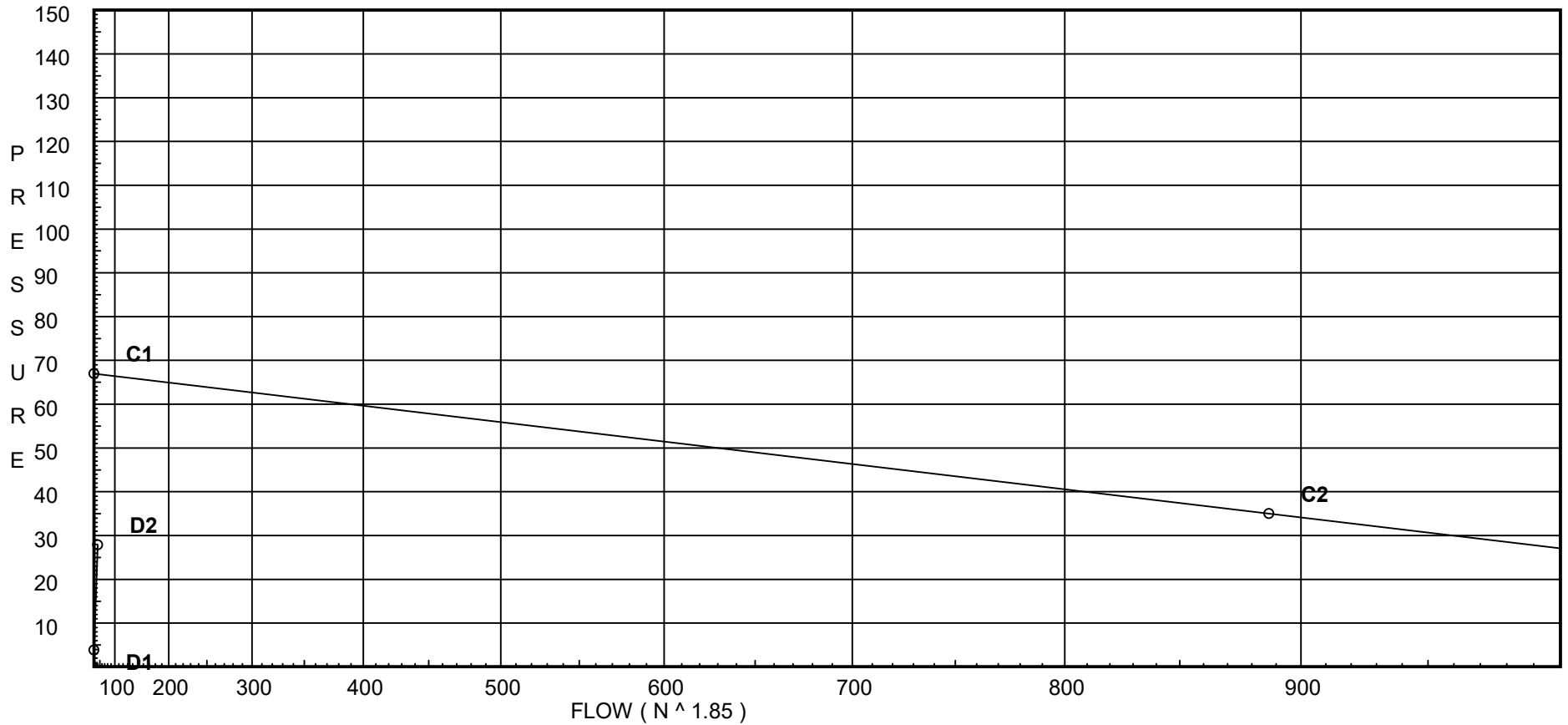
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City Water Supply:

C1 - Static Pressure : 67
C2 - Residual Pressure: 35
C2 - Residual Flow : 887

Demand:

D1 - Elevation : 3.863
D2 - System Flow : 39.615
D2 - System Pressure : 27.878
Hose (Demand) : _____
D3 - System Demand : 39.615
Safety Margin : 39.020



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	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

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
16	108.92	4.2	9.22	na	12.75	0.1	127.5	7.0
17	108.92		9.71	na				
18	108.92	4.2	9.51	na	12.95	0.1	120.971	7.0
15	108.92		10.3	na				
19	108.92	4.2	10.97	na	13.91	0.1	120.971	7.0
20	108.92		11.51	na				
7	108.92		13.39	na				
TOR	108.92		13.8	na				
BFP	104.92		19.01	na				
BASE	102.5		25.23	na				
T1	100.0		27.87	na				
TEST	100.0		27.88	na				

The maximum velocity is 14.71 and it occurs in the pipe between nodes 20 and 7

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	*****
16 to 17	108.920 108.920	4.20	12.75	1	T 5.0 0.0	3.790 5.000 8.790	120	9.216 0.0 0.497		Vel = 4.73	
17 to 15	108.920 108.920		0.0	1	T 5.0 0.0	5.330 5.000 10.330	120	9.713 0.0 0.584		Vel = 4.73	
15			0.0 12.75					10.297		K Factor = 3.97	
18 to 15	108.920 108.920	4.20	12.95	1	T 5.0 0.0	8.460 5.000 13.460	120	9.513 0.0 0.784		Vel = 4.81	
15 to 20	108.920 108.920		12.75	1	0.0 0.0 0.0	5.875 0.0 5.875	120	10.297 0.0 1.217		Vel = 9.54	
20			0.0 25.70					11.514		K Factor = 7.57	
19 to 20	108.920 108.920	4.20	13.91	1	T 5.0 0.0	3.170 5.000 8.170	120	10.970 0.0 0.544		Vel = 5.16	
20 to 7	108.920 108.920		25.71	1	0.0 0.0 0.0	4.080 0.0 4.080	120	11.514 0.0 1.880		Vel = 14.71	
7 to TOR	108.920 108.920		0.0	1.25	E 3.0 0.0	0.330 3.000 3.330	120	13.394 0.0 0.403		Vel = 8.50	
TOR to BFP	108.920 104.920		0.0	1.25	Fsp 0.0 0.0	4.000 0.0 4.000	120	13.797 4.732 0.485		* Fixed Loss = 3 Vel = 8.50	
BFP to BASE	104.920 102.500		0.0	1.25	Zaa 0.0 0.0	2.420 0.0 2.420	120	19.014 5.923 0.294		* Fixed Loss = 4.875 Vel = 8.50	
BASE to T1	102.500 100		0.0	2	G T 0.617 6.174	50.000 6.792 56.792	150	25.231 1.083 1.558		Vel = 5.47	
T1 to TEST	100 100		0.0	6	T 43.037 0.0	50.000 43.037 93.037	140	27.872 0.0 0.006		Vel = 0.43	
TEST			0.0 39.62					27.878		K Factor = 7.50	