



... 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 : SECOND FLOOR
System : WET
Contract : 1-05750-SP-18
Data File : 5750 55 SALEM ST 2ND FLOOR CALC.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 5750 55 SALEM STREET Date - 01/22/2018
Location - SECOND FLOOR
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'-0"
OCCUPANCY - LIGHT HAZARD - RESIDENTIAL

S Type of Calculation: ()NFPA 13 Residential (X)NFPA 13R ()NFPA 13D
Y Number of Sprinklers Flowing: (X)1 ()2 ()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 - 129.13Feet Size 1/2" K-Factor 4.4
G Note: Temperature Rating 175
N

Calculation Gpm Required 16.046 Psi Required 39.243 At Test
Summary C-Factor Used: Overhead 120 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 07/07/2017 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

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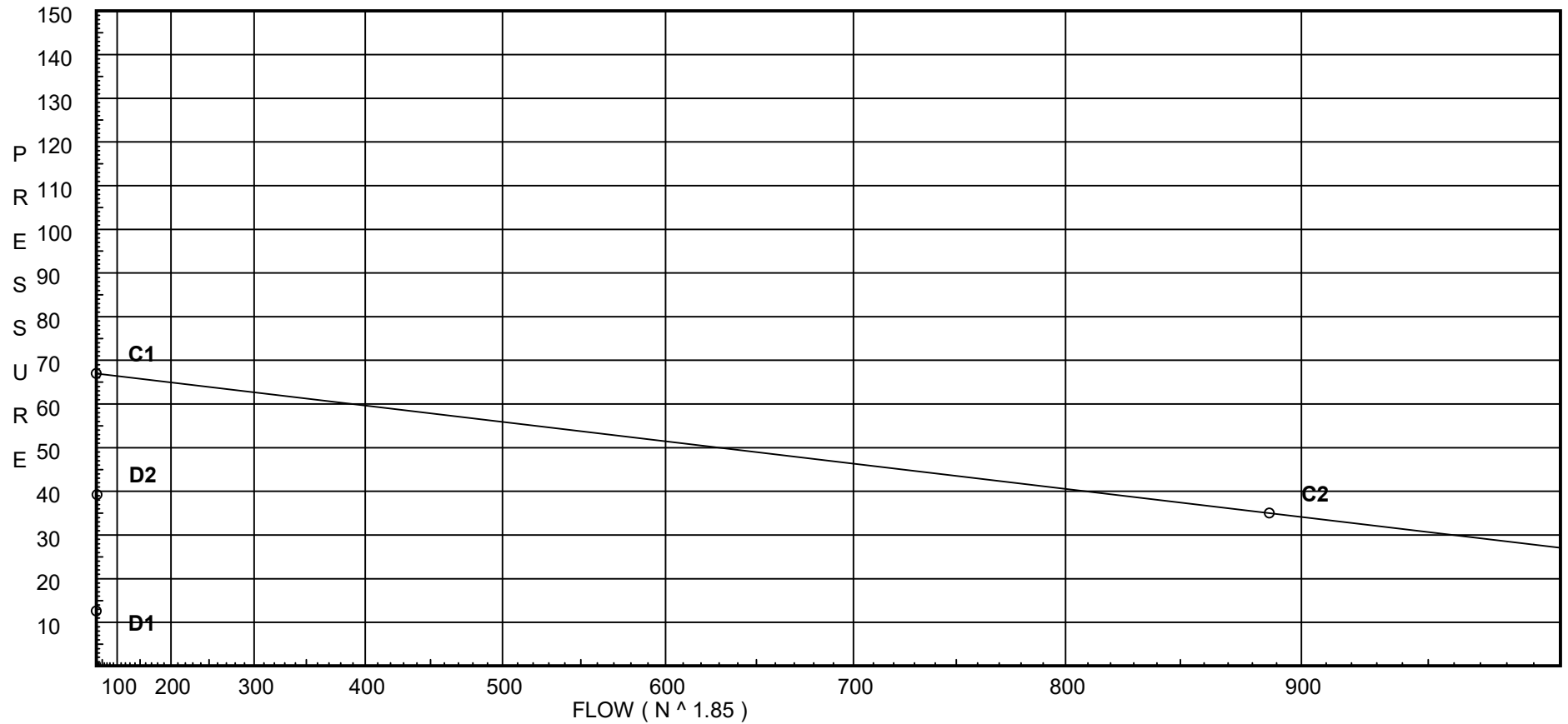
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City Water Supply:

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

Demand:

D1 - Elevation : 12.616
D2 - System Flow : 16.046
D2 - System Pressure : 39.243
Hose (Demand) :
D3 - System Demand : 16.046
Safety Margin : 27.738



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.
1	129.13	4.4	13.3	na	16.05	0.001	0.001	13.3
2	129.13		13.8	na				
3	129.13		14.83	na				
4	119.17		19.99	na				
5	108.92		25.49	na				
6	108.92		26.48	na				
7	108.92		27.13	na				
TOR	108.92		27.21	na				
BFP	104.92		32.03	na				
BASE	102.5		37.87	na				
T1	100.0		39.24	na				
TEST	100.0		39.24	na				

The maximum velocity is 5.96 and it occurs in the pipe between nodes 1 and 2

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	*****
1 to 2	129.130 129.130	4.40	16.05	1	T	5.0 0.0	0.750 5.000	120	13.300 0.0			
			16.05	1.049		0.0	5.750	0.0866	0.498	Vel =	5.96	
2 to 3	129.130 129.130		0.0	1	T	5.0 0.0	6.920 5.000	120	13.798 0.0			
			16.05	1.049		0.0	11.920	0.0866	1.032	Vel =	5.96	
3 to 4	129.130 119.170		0.0	1		0.0 0.0	9.750 0.0	120	14.830 4.314			
			16.05	1.049		0.0	9.750	0.0866	0.844	Vel =	5.96	
4 to 5	119.170 108.920		0.0	1	E	2.0 0.0	10.330 2.000	120	19.988 4.439			
			16.05	1.049		0.0	12.330	0.0866	1.068	Vel =	5.96	
5 to 6	108.920 108.920		0.0	1	T	5.0 0.0	6.330 5.000	120	25.495 0.0			
			16.05	1.049		0.0	11.330	0.0866	0.981	Vel =	5.96	
6 to 7	108.920 108.920		0.0	1.25	T	6.0 0.0	22.750 6.000	120	26.476 0.0			
			16.05	1.38		0.0	28.750	0.0227	0.654	Vel =	3.44	
7 to TOR	108.920 108.920		0.0	1.25	E	3.0 0.0	0.330 3.000	120	27.130 0.0			
			16.05	1.38		0.0	3.330	0.0228	0.076	Vel =	3.44	
TOR to BFP	108.920 104.920		0.0	1.25	Fsp	0.0 0.0	4.000 0.0	120	27.206 4.732		* Fixed Loss = 3	
			16.05	1.38		0.0	4.000	0.0230	0.092	Vel =	3.44	
BFP to BASE	104.920 102.500		0.0	1.25	Zaa	0.0 0.0	2.420 0.0	120	32.030 5.781		* Fixed Loss = 4.733	
			16.05	1.38		0.0	2.420	0.0227	0.055	Vel =	3.44	
BASE to T1	102.500 100		0.0	2	G T	0.617 6.174	50.000 6.792	150	37.866 1.083			
			16.05	1.72		0.0	56.792	0.0052	0.293	Vel =	2.22	
T1 to TEST	100 100		0.0	6	T	43.037 0.0	50.000 43.037	140	39.242 0.0			
			16.05	6.16		0.0	93.037	0	0.001	Vel =	0.17	
TEST			0.0 16.05						39.243	K Factor =	2.56	