

. . . Fire Protection by Computer Design

Eastern Fire Protection
170 Kitty Hawk Ave.
P.O. Box 1390
Auburn, Maine, 04211
207-784-1507

Job Name : 118 MUNJOY HILL MANUAL STANDPIPE
Drawing : STEEL FRAME, CONCRETE, AND WOOD
Location : 118 CONGRESS ST., PORTLAND, MAINE
Remote Area : STANDPIPE
Contract : 5174
Data File : 118 MUNJOY STANDPIPE.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 118 MUNJOY HILL STANDPIPE Date - 8-14-14
Location - 118 CONGRESS ST., PORTLAND, MAINE
Building - STEEL FRAME, CONCRETE, AND WOOD System No. - STANDPIPE
Contractor - EASTERN FIRE PROTECTION Contract No. - 5174
Calculated By - WAF Drawing No. - 1&2 OF 2
Occupancy - APARTMENTS (RESIDENTIAL)

S (X)NFPA 14 Number of Standpipes ()1 (X)2 ()3 ()4 ()

Y ()Other

S ()Specific Ruling Made by Date

E Flow at Top Most Outlet - 250 Gpm System Type
M Pres. at Top Most Outlet - 100 Psi (X) Wet () Dry
Flow For Ea. Additional Standpipe - 250 Gpm
D Total Additional Flow - 250 Gpm
E Elevation at Highest Outlet - 188.54 Feet
S Hose Valve Connection ()1 1/2" (XX)2 1/2"
I Class Service (X)I ()II ()III
G Note:
N

Calculation Gpm Required 750 Psi Required 153 At FDC
Summary C-Factor Used: Overhead 120 Underground NA

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - NA Cap.
T Time of Test - NA Rated Cap. Elev.
E Static (Psi) - 170 @ Psi
R Residual (Psi) - 169 Elev. Well
Flow (Gpm) - 1500 Proof Flow Gpm
S Elevation - 150.5

U
P Location: PORTLAND FIRE DEPARTMENT PUMPER

P
L Source of Information: PORTLAND FIRE DEPARTMENT
Y

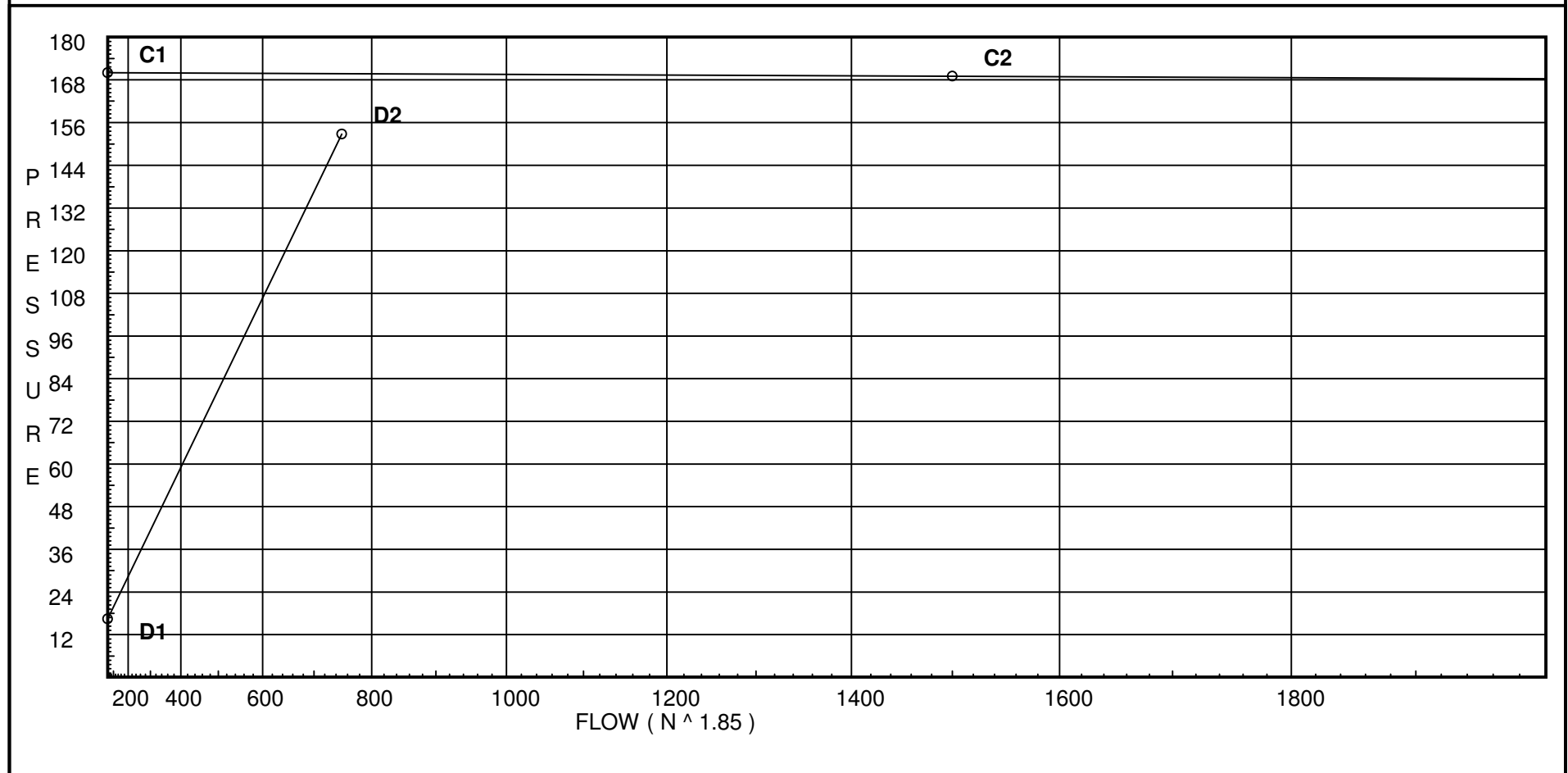
Water Supply Curve C

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City Water Supply:
C1 - Static Pressure : 170
C2 - Residual Pressure: 169
C2 - Residual Flow : 1500

Demand:
D1 - Elevation : 16.475
D2 - System Flow : 750
D2 - System Pressure : 152.772
Hose (Demand) : _____
D3 - System Demand : 750
Safety Margin : 16.951



Fittings Used Summary

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Fitting Legend		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
Abbrev.	Name																				
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
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

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.

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
FDC	170.0	169	1500.0	169.723	750.0	152.772

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>
H1	188.54		100.0	250.0	
H2	176.54		105.38	250.0	
H3	188.54		107.98	250.0	
H4	164.71		118.66		
FDC	150.5		152.77		

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	*****
H1 to H2	188.540 176.540	250.00	250.00	4		0.0	12.000	120	100.000			
						0.0	0.0		5.197			
			250.0	4.26		0.0	12.000	0.0152	0.182		Vel = 5.63	
H2 to H4	176.540 164.710	250.00	250.00	4	3L B T	23.701 15.8 26.334	83.830 65.835 149.665	120	105.379 5.124 8.158			Vel = 11.25
			0.0									
H4			500.00						118.661		K Factor = 45.90	
H3 to H4	188.540 164.710	250.00	250.00	4		0.0	24.000	120	107.978			
						0.0	0.0		10.321			
			250.0	4.26		0.0	24.000	0.0151	0.362		Vel = 5.63	
H4 to FDC	164.710 150.5	500.00	750.0	4	7L 2B S T	55.302 31.601 28.968 26.334	100.000 142.205 242.205	120	118.661 6.154 27.957			Vel = 16.88
			0.0									
FDC			750.00						152.772		K Factor = 60.68	