



... Fire Protection by Computer Design

HIGH TECH FIRE PROTECTION
84 HACKETT MILLS ROAD
P.O. BOX 156
POLAND, ME 04274
207-998-2551

Job Name : Purtell House Peaks Island 2nd floor calc
Drawing :
Location :
Remote Area :
Contract :
Data File : 2ND FLOOR HSW CALC.WXF

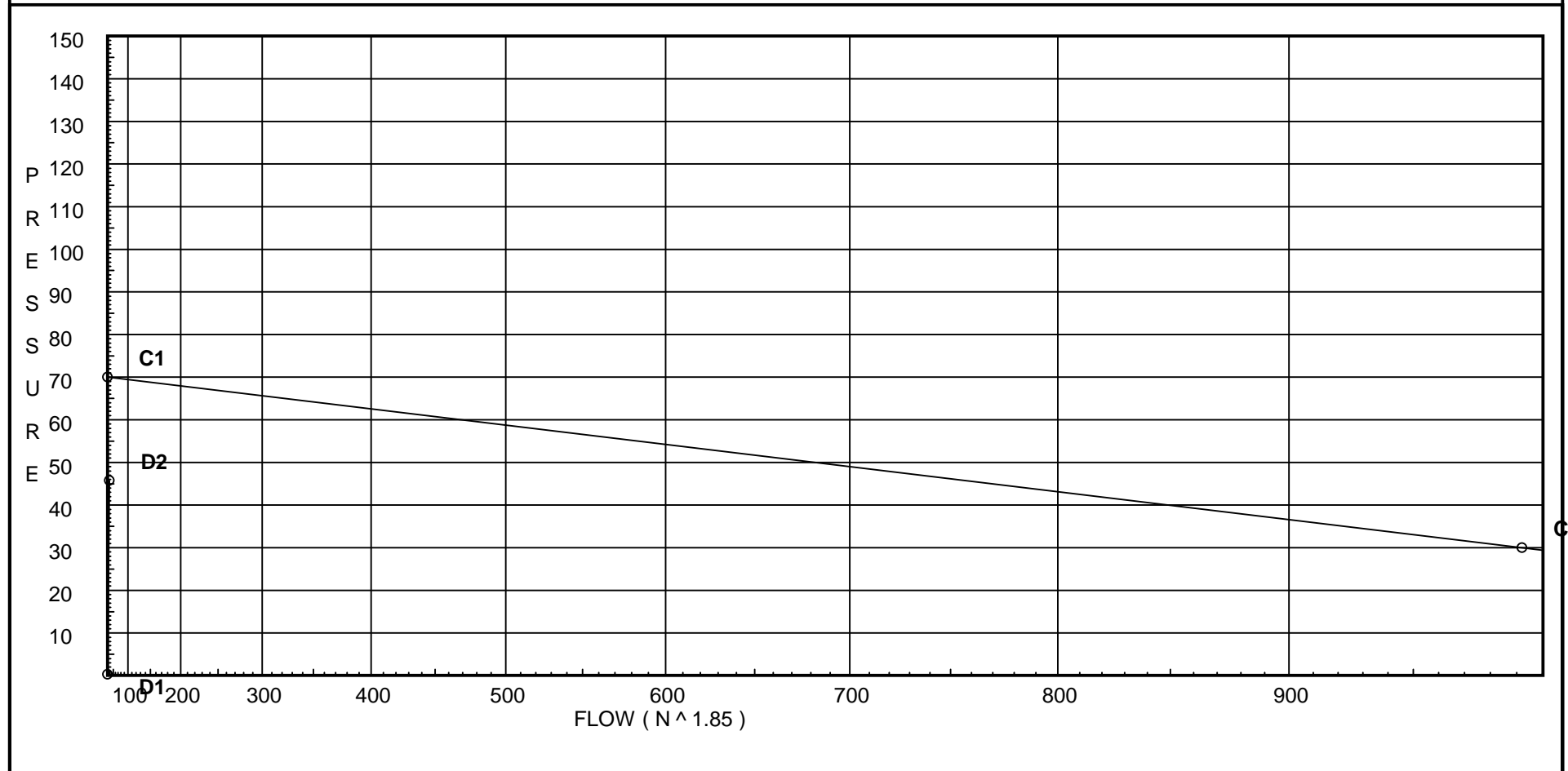
Water Supply Curve (C)

HIGH TECH FIRE PROTECTION
Purtell House Peaks Island 2nd floor calc

Page 1
Date 8/30/16

City Water Supply:
C1 - Static Pressure : 70
C2 - Residual Pressure: 30
C2 - Residual Flow : 992

Demand:
D1 - Elevation : 0.325
D2 - System Flow : 28.109
D2 - System Pressure : 45.790
Hose (Demand) : _____
D3 - System Demand : 28.109
Safety Margin : 24.155



Fittings Used Summary

HIGH TECH FIRE PROTECTION
Purtell House Peaks Island 2nd floor calc

Page 2
Date 8/30/16

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
Bvt	Ball Vic 728 Thrd	0	0	0.5	1	1.7	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
N *	CPVC 90'EII Harvel-Spears		7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O *	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
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
Zik	Wilkins 950XL	Fitting generates a Fixed Loss Based on Flow																			

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.

Pressure / Flow Summary - STANDARD

HIGH TECH FIRE PROTECTION
 Purtell House Peaks Island 2nd floor calc

Page 3
 Date 8/30/16

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
10	25.75	4.4	10.2	na	14.05	0.05	196	10.2
11	17.25		14.43	na				
12	17.25		14.91	na				
13	8.0		19.46	na				
14	8.0		19.77	na				
15	7.0		20.42	na				
20	25.75	4.4	10.21	na	14.06	0.05	196	10.2
21	17.25		14.44	na				
22	17.25		16.26	na				
23	8.0		20.82	na				
24	8.0		21.28	na				
25	7.0		21.92	na				
TOR	7.0		22.44	na				
FLW	3.0		28.15	na				
BOR	1.0		35.34	na				
WTM	1.0		36.98	na				
H1	1.0		46.75	na				
H2	1.0		56.18	na				
TEST	25.0		45.79	na				

The maximum velocity is 11.6 and it occurs in the pipe between nodes BOR and WTM

Final Calculations - Hazen-Williams

HIGH TECH FIRE PROTECTION
Purtell House Peaks Island 2nd floor calc

Page 4
Date 8/30/16

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
10 to 11	14.05	1.101 150.0 0.0354	1N	7.0 0.0 0.0	8.500 7.000 15.500	10.200 3.681 0.549			K Factor = 4.40	
11 to 12	0.0 14.05	1.101 150.0 0.0354	1O	5.0 0.0 0.0	8.500 5.000 13.500	14.430 0.0 0.478			Vel = 4.73	
12 to 13	0.0 14.05	1.101 150.0 0.0355	1N	7.0 0.0 0.0	8.500 7.000 15.500	14.908 4.006 0.550			Vel = 4.73	
13 to 14	0.0 14.05	1.101 150.0 0.0354	1N	7.0 0.0 0.0	1.750 7.000 8.750	19.464 0.0 0.310			Vel = 4.73	
14 to 15	0.0 14.05	1.101 150.0 0.0353	1O	5.0 0.0 0.0	1.000 5.000 6.000	19.774 0.433 0.212			Vel = 4.73	
15 to TOR	0.0 14.05	1.101 150.0 0.0354	2N 1O	14.0 5.0 0.0	38.000 19.000 57.000	20.419 0.0 2.019			Vel = 4.73	
	0.0 14.05					22.438			K Factor = 2.97	
20 to 21	14.06	1.101 150.0 0.0355	1N	7.0 0.0 0.0	8.500 7.000 15.500	10.206 3.681 0.550			K Factor = 4.40	
21 to 22	0.0 14.06	1.101 150.0 0.0354	3N	21.0 0.0 0.0	30.500 21.000 51.500	14.437 0.0 1.825			Vel = 4.74	
22 to 23	0.0 14.06	1.101 150.0 0.0355	1N	7.0 0.0 0.0	8.500 7.000 15.500	16.262 4.006 0.550			Vel = 4.74	
23 to 24	0.0 14.06	1.101 150.0 0.0354	1O 1N	5.0 7.0 0.0	1.000 12.000 13.000	20.818 0.0 0.460			Vel = 4.74	
24 to 25	0.0 14.06	1.101 150.0 0.0355	1O	5.0 0.0 0.0	1.000 5.000 6.000	21.278 0.433 0.213			Vel = 4.74	
25 to TOR	0.0 14.06	1.101 150.0 0.0354	1O	5.0 0.0 0.0	9.500 5.000 14.500	21.924 0.0 0.514			Vel = 4.74	
TOR to FLW	14.05 28.11	1.049 120.0 0.2442	1Fsp	0.0 0.0 0.0	4.000 0.0 4.000	22.438 4.732 0.977			* Fixed loss = 3 Vel = 10.44	
FLW to BOR	0.0 28.11	1.049 120.0 0.2440	1Zik	0.0 0.0 0.0	1.000 0.0 1.000	28.147 6.952 0.244			* Fixed loss = 6.086 Vel = 10.44	
BOR to WTM	0.0 28.11	0.995 150.0 0.2092	1T	5.841 0.0 0.0	2.000 5.841 7.841	35.343 0.0 1.640			Vel = 11.60	
WTM to H1	0.0 28.11	1.051 150.0 0.1602	2Bvt 4T	1.525 30.503 0.0	30.000 9.150 39.150	36.983 3.500 6.270			* Fixed loss = 3.5 Vel = 10.40	

Final Calculations - Hazen-Williams

HIGH TECH FIRE PROTECTION
 Purtell House Peaks Island 2nd floor calc

Page 5
 Date 8/30/16

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
H1	0.0	2.067	1T	10.0	1040.000	46.753				
to		120.0		0.0	10.000	0.0				
H2	28.11	0.0090		0.0	1050.000	9.430		Vel =	2.69	
H2	0.0	6.28	1G	2.537	10.000	56.183				
to		100.0	1E	11.839	14.376	-10.394				
TEST	28.11	0.0		0.0	24.376	0.001		Vel =	0.29	
	0.0									
	28.11					45.790		K Factor =	4.15	