



... Fire Protection by Computer Design

HIGH TECH FIRE PROTECTION
P.O. BOX 156
MINOT, ME 04258-156
207-998-2551

Job Name : Anholt-White Cottage
Building : 66 Shore Road Cushing Island, Maine
Location : 2nd floor bedroom
System : 1
Contract : 062612-2
Data File : 2nd floor 13d.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - Anholt - White Cottage Date - 3/12/13
 Location - 2nd floor bedroom
 Building - 66 Shore Road Cushing Island, Maine System No. - 1
 Contractor - High Tech Fire Protection Contract No. - 062612-2
 Calculated By - Ed Poulin Drawing No. - FP-01
 Construction: () Combustible () Non-Combustible Ceiling Height 8'
 OCCUPANCY - Residential

S Type of Calculation: ()NFPA 13 Residential ()NFPA 13R (x)NFPA 13D
 Y Number of Sprinklers Flowing: ()1 (x)2 ()4 ()
 S ()Other
 T ()Specific Ruling Made by Date
 E
 M Listed Flow at Start Point - 13 Gpm System Type
 Listed Pres. at Start Point - 7 Psi (x) Wet () Dry
 D MAXIMUM LISTED SPACING 16 x 16 () Deluge () PreAction
 E Domestic Flow Added - n/a Gpm Sprinkler or Nozzle
 S Additional Flow Added - n/a Gpm Make Reliable Model RFC49
 I Elevation at Highest Outlet - 21 Feet Size 1/2 K-Factor 4.9
 G Note: Temperature Rating 165
 N

Calculation Gpm Required 27 Psi Required 46 At Test
 Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
 A Date of Test - 7-17-12 Rated Cap. Cap.
 T Time of Test - 7:00 AM @ Psi Elev.
 E Static (Psi) - 98 Elev.
 R Residual (Psi) - 30 Other Well
 Flow (Gpm) - 691 Proof Flow Gpm
 S Elevation - -12

P Location: Test Hydrant # POD-HYS00003 Shore road near site.

P
 L Source of Information: Portland Water District
 Y

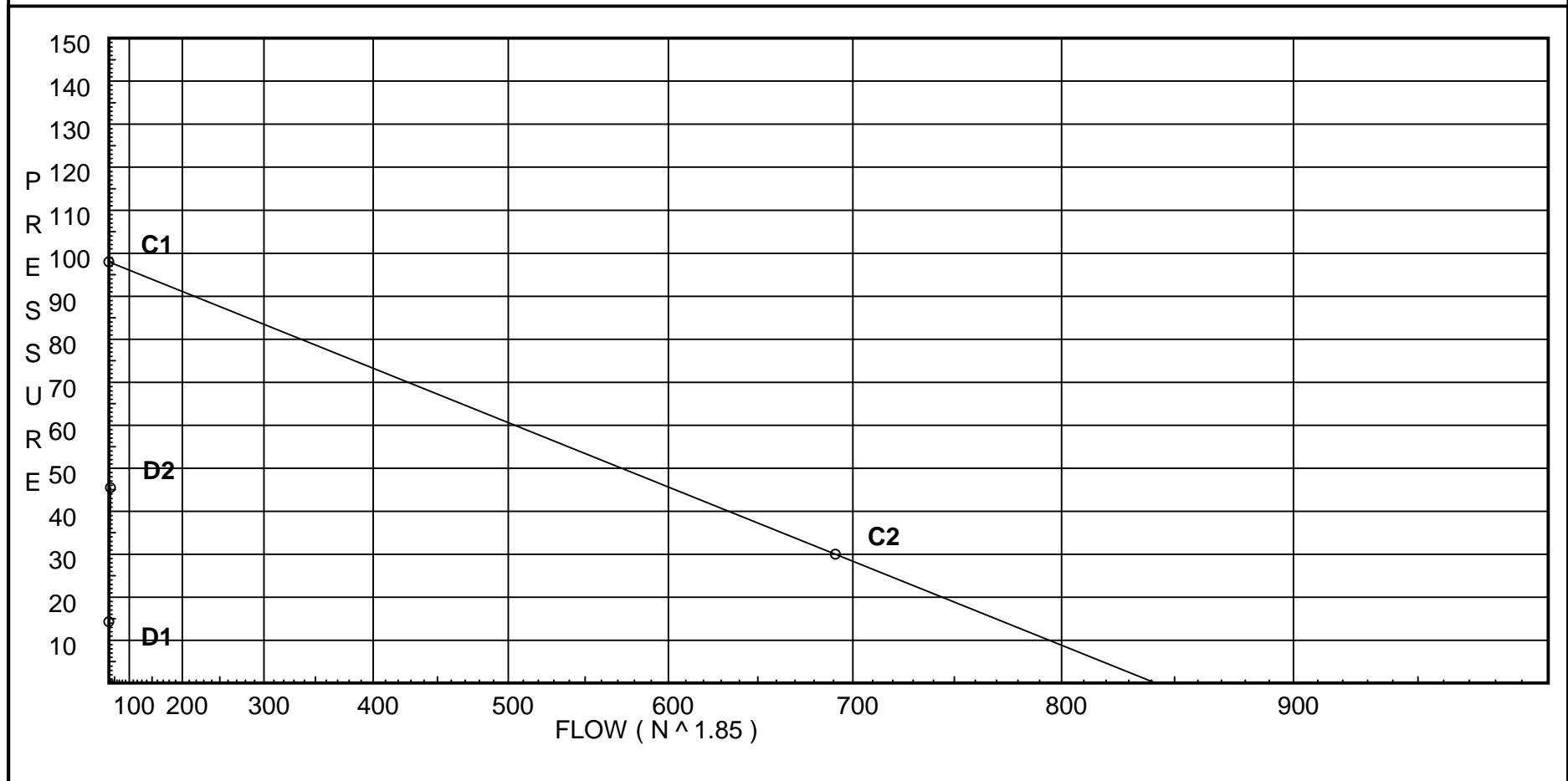
Water Supply Curve (C)

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City Water Supply:
C1 - Static Pressure : 98
C2 - Residual Pressure: 30
C2 - Residual Flow : 691

Demand:
D1 - Elevation : 14.292
D2 - System Flow : 26.2654
D2 - System Pressure : 45.427
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 26.2654
Safety Margin : 52.413



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
Abbrev. Name																				
24																				
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11
13																				
N *	CPVC 90'Ell Harvel-Spears	7	7	7	8	9	11	12	13	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
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

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
DP1	-0.5	4.9	7.0	na	12.96	0.05	256	7.0
DP2	-0.5	4.9	7.0	na	12.96	0.05	256	7.0
10	21.0	K = K @ EQ01	7.01	na	12.96			
11	21.0	K = K @ EQ02	7.32	na	13.3			
12	21.0		9.23	na				
13	21.0		11.28	na				
14	21.0		13.54	na				
15	21.0		14.63	na				
16	9.0		21.69	na				
17	9.0		23.65	na				
18	2.0		28.26	na				
TOR	0.0		31.83	na				
BOR	0.0		37.91	na				
HOSE	-12.0		45.42	na				
TEST	-12.0		45.43	na				

The maximum velocity is 9.75 and it occurs in the pipe between nodes TOR and BOR

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
DP1	12.96	1.101	1N 7.0	0.500	7.000		K Factor = 4.90
to		150.0	0.0	7.000	-0.217		
EQ01	12.96	0.0305	0.0	7.500	0.229		Vel = 4.37
	0.0						
	12.96				7.012		K Factor = 4.89
DP2	12.96	1.101	1O 5.0	0.500	7.000		K Factor = 4.90
to		150.0	0.0	5.000	-0.217		
EQ02	12.96	0.0305	0.0	5.500	0.168		Vel = 4.37
	0.0						
	12.96				6.951		K Factor = 4.92
10	12.96	1.101	0.0	10.000	7.012		K Factor @ node EQ01
to		150.0	0.0	0.0	0.0		
11	12.96	0.0305	0.0	10.000	0.305		Vel = 4.37
11	13.31	1.101	2N 14.0	3.000	7.317		K Factor @ node EQ02
to		150.0	0.0	14.000	0.0		
12	26.27	0.1126	0.0	17.000	1.915		Vel = 8.85
12	0.0	1.101	1O 5.0	13.200	9.232		
to		150.0	0.0	5.000	0.0		
13	26.27	0.1127	0.0	18.200	2.051		Vel = 8.85
13	0.0	1.101	2O 10.0	10.000	11.283		
to		150.0	0.0	10.000	0.0		
14	26.27	0.1126	0.0	20.000	2.253		Vel = 8.85
14	0.0	1.101	1N 7.0	2.750	13.536		
to		150.0	0.0	7.000	0.0		
15	26.27	0.1126	0.0	9.750	1.098		Vel = 8.85
15	0.0	1.101	1N 7.0	9.500	14.634		
to		150.0	0.0	7.000	5.197		
16	26.27	0.1127	0.0	16.500	1.859		Vel = 8.85
16	0.0	1.101	2N 14.0	3.400	21.690		
to		150.0	0.0	14.000	0.0		
17	26.27	0.1126	0.0	17.400	1.960		Vel = 8.85
17	0.0	1.101	1N 7.0	7.000	23.650		
to		150.0	0.0	7.000	3.032		
18	26.27	0.1126	0.0	14.000	1.577		Vel = 8.85
18	0.0	1.101	2N 14.0	10.000	28.259		
to		150.0	0.0	14.000	0.866		
TOR	26.27	0.1126	0.0	24.000	2.703		Vel = 8.85
TOR	0.0	1.049	1Zik 0.0	0.500	31.828		
to		120.0	0.0	0.0	5.971		* Fixed loss = 5.971
BOR	26.27	0.2180	0.0	0.500	0.109		Vel = 9.75

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
BOR	0.0	1.72	1G	0.617	180.000	37.908			
to		150.0		0.0	0.617	5.197			
HOSE	26.27	0.0128		0.0	180.617	2.317		Vel = 3.63	
HOSE	0.0	3.97	1G	2.823	20.000	45.422			
to		150.0		0.0	2.823	0.0			
TEST	26.27	0.0002		0.0	22.823	0.005		Vel = 0.68	
	0.0								
	26.27					45.427		K Factor = 3.90	