



**. . . Fire Protection by Computer Design**

Residential Fire Protection  
64 Daggett Hill Rd.  
Greene, ME 04236  
946-3473

Job Name : 52 WILMOT STREET APT  
Building : WOOD STRUCTURE  
Location : LOFT BEDROOM  
System : 1  
Contract : C16032  
Data File : 52 WILMOT ST APT-LOFT FLOOR.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 52 WILMOT STREET APARTMENTS Date - 6/27/2017  
Location - LOFT BEDROOM  
Building - WOOD STRUCTURE System No. - 1  
Contractor - RESIDENTIAL FIRE PROTECTION Contract No. - C16032  
Calculated By - Drawing No. - 1 OF 1  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height VARIES  
OCCUPANCY - RESIDENTIAL / APARTMENT

S Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )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 - Gpm Sprinkler or Nozzle  
S Additional Flow Added - Gpm Make VIKING Model VK468  
I Elevation at Highest Outlet - 115.96Feet Size 7/16" K-Factor 4.9  
G Note: Temperature Rating 155  
N

Calculation Gpm Required 26.12 Psi Required 41.43 AT TEST  
Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 9/16/2016 Rated Cap. Cap.  
T Time of Test - N/A @ Psi Elev.  
E Static (Psi) - 82 Elev.  
R Residual (Psi) - 74 Other Well  
Flow (Gpm) - 1453 Proof Flow Gpm  
S Elevation - 108.0'

P Location: HYDRANTS ARE LOCATED ON WILMOT STREET, SEE PLOT PLAN

L Source of Information: PORTLAND WATER DISTRICT  
Y

# Water Supply Curve (C)

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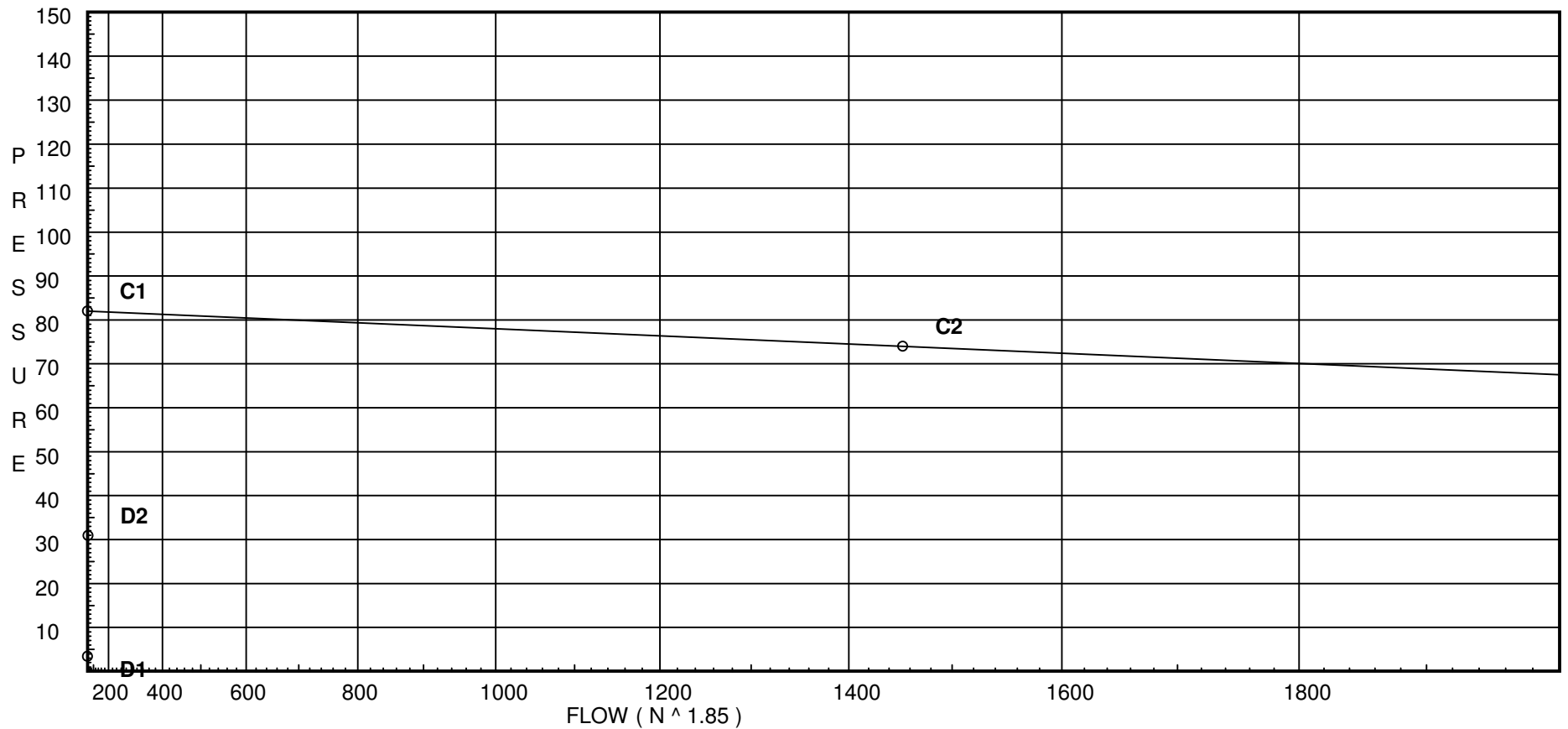
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### City Water Supply:

C1 - Static Pressure : 82  
C2 - Residual Pressure: 74  
C2 - Residual Flow : 1453

### Demand:

D1 - Elevation : 3.447  
D2 - System Flow : 26.1241  
D2 - System Pressure : 30.906  
Hose ( Adj City ) : \_\_\_\_\_  
Hose ( Demand ) : \_\_\_\_\_  
D3 - System Demand : 26.1241  
Safety Margin : 51.089



# 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	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
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'Elbow Harvel-Spears	7	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	90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Z	Generic Flow Switch	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61

# Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
DO01	0.0	4.9	7.1	na	13.06	256.0	0.051	7.0
DO02	0.0	4.9	7.1	na	13.06	256.0	0.051	7.0
1	115.96	K = K @ EQ01	7.86	na	13.06			
2	115.96	K = K @ EQ01	7.88	na	13.07			
10	111.17		11.46	na				
11	108.21		13.66	na				
22	108.21		14.05	na				
13	108.21		15.62	na				
14	91.0		28.72	na				
52	89.54		30.92	na				
53	89.54		31.52	na				
37	88.12		32.24	na				
54	88.67		32.61	na				
55	88.67		32.68	na				
TOR	88.67		32.91	na				
BOR	83.05		41.43	na				
CITY	83.05		41.69	na				
TEST	108.0		30.91	na				

The maximum velocity is 9.7 and it occurs in the pipe between nodes 10 and 11

# 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	*****
DO01 to EQ01	13.06 13.06	0.874 150 0.0951	1N	7.0 0.0 0.0	1.000 7.000 8.000	7.100 0.0 0.761			K Factor = 4.90 Vel = 6.98	
	0.0 13.06					7.861			K Factor = 4.66	
DO02 to EQ02	13.06 13.06	0.874 150 0.0950	1O	3.0 0.0 0.0	1.000 3.000 4.000	7.100 0.0 0.380			K Factor = 4.90 Vel = 6.98	
	0.0 13.06					7.480			K Factor = 4.78	
1 to 10	13.06 13.06	1.049 120 0.0591	2E 1T	4.0 5.0 0.0	16.710 9.000 25.710	7.861 2.075 1.519			K Factor @ node EQ01 Vel = 4.85	
	0.0 13.06					11.455			K Factor = 3.86	
2 to 10	13.07 13.07	1.049 120 0.0592	2E 1T	4.0 5.0 0.0	16.420 9.000 25.420	7.875 2.075 1.505			K Factor @ node EQ01 Vel = 4.85	
10 to 11	13.05 26.12	1.049 120 0.2134	1E	2.0 0.0 0.0	2.330 2.000 4.330	11.455 1.282 0.924			Vel = 9.70	
11 to 22	0.0 26.12	1.101 120 0.1687		0.0 0.0 0.0	2.330 0.0 2.330	13.661 0.0 0.393			Vel = 8.80	
22 to 13	0.0 26.12	1.101 150 0.1115	1O	5.0 0.0 0.0	9.080 5.000 14.080	14.054 0.0 1.570			Vel = 8.80	
13 to 14	0.0 26.12	1.101 150 0.1115	2N 2O	14.0 10.0 0.0	26.590 24.000 50.590	15.624 7.454 5.642			Vel = 8.80	
14 to 52	0.0 26.12	1.049 120 0.2134	1T	5.0 0.0 0.0	2.330 5.000 7.330	28.720 0.632 1.564			Vel = 9.70	
52 to 53	0.0 26.12	1.38 120 0.0560	1E 1T	3.0 6.0 0.0	1.830 9.000 10.830	30.916 0.0 0.607			Vel = 5.60	
53 to 37	0.0 26.12	1.61 120 0.0266		0.0 0.0 0.0	3.830 0.0 3.830	31.523 0.615 0.102			Vel = 4.12	
37 to 54	0.0 26.12	1.61 120 0.0265	3E	12.0 0.0 0.0	11.090 12.000 23.090	32.240 -0.238 0.611			Vel = 4.12	
54 to 55	0.0 26.12	2.067 120 0.0079		0.0 0.0 0.0	9.000 0.0 9.000	32.613 0.0 0.071			Vel = 2.50	
55 to TOR	0.0 26.12	2.067 120 0.0078	1E	5.0 0.0 0.0	24.250 5.000 29.250	32.684 0.0 0.229			Vel = 2.50	

# Final Calculations - Standard

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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	*****
TOR	0.0	2.067	1Z 5.0	5.625	32.913				
to BOR	26.12	120 0.0078	0.0	5.000 10.625	8.434 0.083		* Fixed loss = 6 Vel = 2.50		
BOR	0.0	1.959	1G 1.164	25.000	41.430				
to CITY	26.12	150 0.0067	1T 11.635	12.799 37.799	0.0 0.255		Vel = 2.78		
CITY	0.0	4.1	0.0	130.000	41.685				
to TEST	26.12	140 0.0002	0.0	0.0 130.000	-10.806 0.027		Vel = 0.63		
	0.0 26.12					30.906	K Factor = 4.70		