

. . . Fire Protection by Computer Design

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

Job Name : 65 Munjoy Street
Building : WOOD STRUCTURE
Location : 3RD FLOOR STAIRWAY
System : WET
Contract : 16038
Data File : 65 Munjoy St-3rd Flr Stair 16 x 18-Hyd Calc.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 65 MUNJOY STREET Date - 1/9/16
Location - 3RD FLOOR STAIRWAY
Building - WOOD STRUCTURE System No. - WET
Contractor - RESIDENTIAL FIRE PROTECTION Contract No. - 16038
Calculated By - T. PRAY Drawing No. - 1 OF 1
Construction: (X) Combustible () Non-Combustible Ceiling Height 8'-8.5"
OCCUPANCY - RESIDENTIAL

S Type of Calculation: ()NFPA 13 Residential (X)NFPA 13R ()NFPA 13D
Y Number of Sprinklers Flowing: (1)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 - 16 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 16 x 18 () Deluge () PreAction
E Domestic Flow Added - Gpm Sprinkler or Nozzle
S Additional Flow Added - Gpm Make VIKING Model VK486
I Elevation at Highest Outlet - 31.25Feet Size 7/16" K-Factor 4.9
G Note: Temperature Rating 155
N

Calculation Gpm Required 16.13 Psi Required 39.13 At Test
Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 7/15/1991 Rated Cap. Cap.
T Time of Test - @ Psi Elev.
E Static (Psi) - 44 Elev.
R Residual (Psi) - 37 Other Well
Flow (Gpm) - 503 Proof Flow Gpm
S Elevation - 1

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

L Source of Information: PORTLAND WATER DISTRICT
Y

Water Supply Curve (C)

Residential Fire Protection
65 Munjoy Street

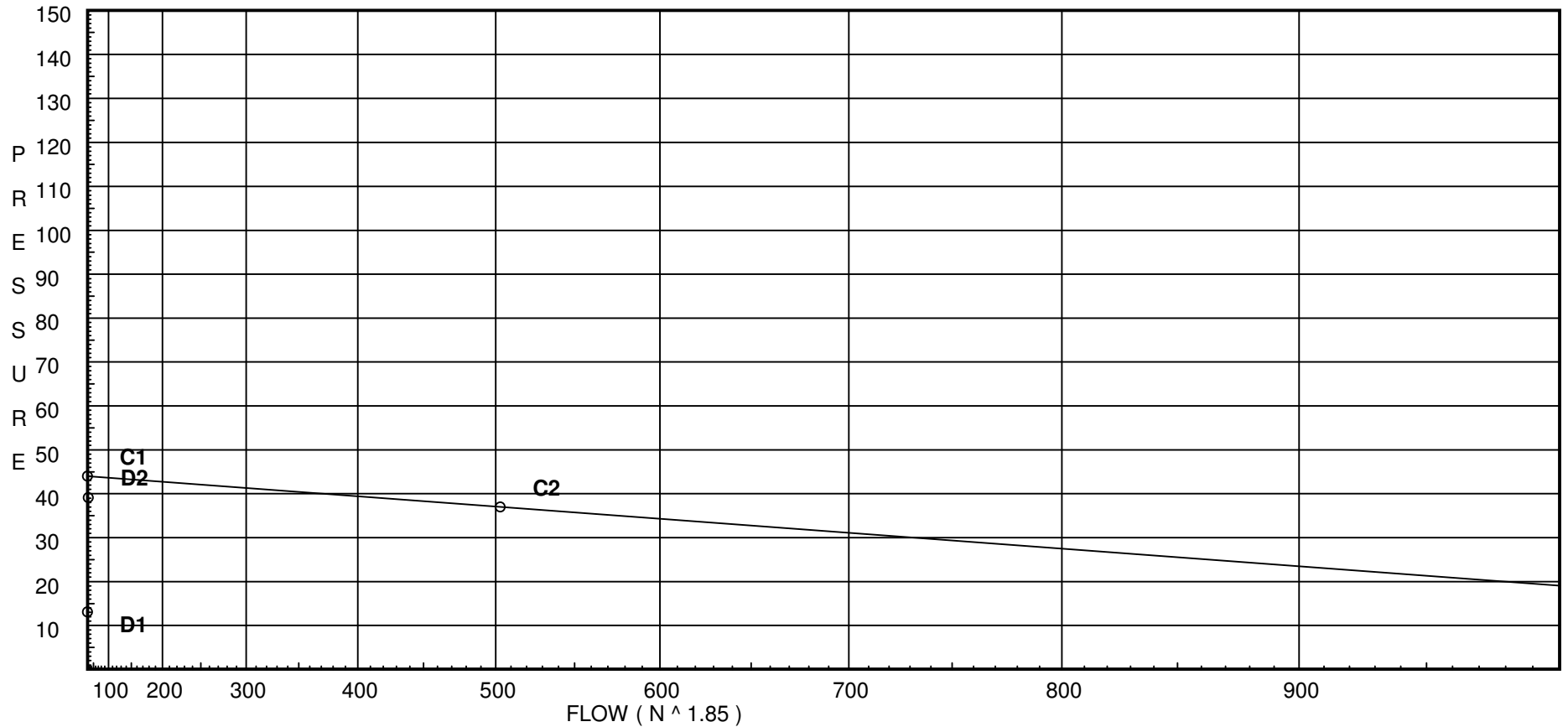
Page 2
Date 1/5/17

City Water Supply:

C1 - Static Pressure : 44
C2 - Residual Pressure: 37
C2 - Residual Flow : 503

Demand:

D1 - Elevation : 13.101
D2 - System Flow : 16.128
D2 - System Pressure : 39.131
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 16.128
Safety Margin : 4.857



Fittings Used Summary

Residential Fire Protection
65 Munjoy Street

Page 3
Date 1/5/17

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
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
I	90' Grvd-Vic Elbow #10	0	0	2	3	4	3.5	6	5	8	7	8.5	10	13	17	20	23	25	33	36	40
L	Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
N	CPVC 90'El 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
S	Generic Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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

Residential Fire Protection
65 Munjoy Street

Page 4
Date 1/5/17

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
100	31.25	4	16.26	na	16.13	0.056	288	16.0
101	31.25		17.55	na				
23	20.71		22.59	na				
24	20.71		23.3	na				
25	20.71		24.09	na				
26	20.71		24.28	na				
27	9.79		29.07	na				
28	9.79		29.15	na				
TOR	9.79		29.2	na				
HDR	2.0		32.68	na				
6UG	1.0		39.12	na				
TEST	1.0		39.13	na				

The maximum velocity is 8.63 and it occurs in the pipe between nodes 100 and 101

Final Calculations - Hazen-Williams

Residential Fire Protection
65 Munjoy Street

Page 5
Date 1/5/17

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
100 to 101	16.13	0.874 150	1O	3.0 0.0	6.170 3.000	16.257 0.0			K Factor = 4.00	
101 to 23	16.13	0.1407		0.0	9.170	1.290			Vel = 8.63	
101 to 23	0.0	1.101 150	1O	5.0 0.0	5.375 5.000	17.547 4.565				
23 to 24	16.13	0.0457		0.0	10.375	0.474			Vel = 5.44	
23 to 24	0.0	1.101 150	1O	5.0 0.0	10.580 5.000	22.586 0.0				
24 to 25	16.13	0.0457		0.0	15.580	0.712			Vel = 5.44	
24 to 25	0.0	1.101 150	1O	5.0 0.0	12.250 5.000	23.298 0.0				
25 to 26	16.13	0.0457		0.0	17.250	0.788			Vel = 5.44	
25 to 26	0.0	2.003 150	3O 1N	30.0 11.0	38.090 41.000	24.086 0.0				
26 to 27	16.13	0.0025		0.0	79.090	0.196			Vel = 1.64	
26 to 27	0.0	2.003 150	1T	12.965 0.0	10.875 12.965	24.282 4.729				
27 to 28	16.13	0.0025		0.0	23.840	0.060			Vel = 1.64	
27 to 28	0.0	2.003 150	1O	10.0 0.0	23.620 10.000	29.071 0.0				
28 to TOR	16.13	0.0025		0.0	33.620	0.083			Vel = 1.64	
28 to TOR	0.0	2.067 120	1N	11.0 0.0	2.125 11.000	29.154 0.0				
TOR to HDR	16.13	0.0032		0.0	13.125	0.042			Vel = 1.54	
TOR to HDR	0.0	2.067 120	1Z 1S	5.0 11.0	7.790 27.000	29.196 3.374				
HDR to 6UG	16.13	0.0032		1.0	34.790	0.112			Vel = 1.54	
HDR to 6UG	0.0	3.26 120	3I	20.159 0.0	5.000 20.159	32.682 6.433			* Fixed loss = 6	
6UG to TEST	16.13	0.0004		0.0	25.159	0.009			Vel = 0.62	
6UG to TEST	0.0	4.1 140	1L 1G	8.72 2.907	40.000 40.694	39.124 0.0				
TEST 0.0 16.13	16.13	0.0001		1.0	29.067	0.007			Vel = 0.39	
	0.0 16.13					39.131			K Factor = 2.58	