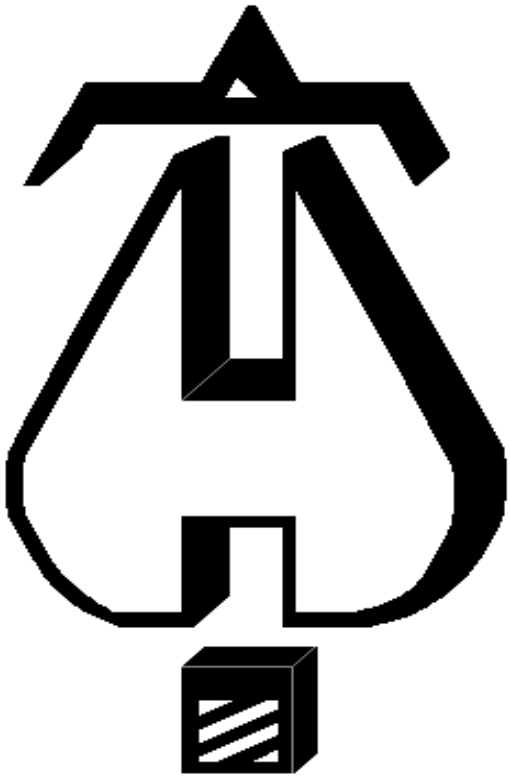


. . . Fire Protection by Computer Design

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

Job Name	:	65 Munjoy Street
Building	:	WOOD STRUCTURE
Location	:	CAR PARKING AREA (DRY SYSTEM)
System	:	DRY
Contract	:	16038
Data File	:	65 Munjoy St-Car Parking-Hyd Calc.WXF

Hydraulic Design Information Sheet

Name - 65 MUNJOY STREET APT'S — Date - 1/9/17
Location - CAR PARKING AREA (DRY SYSTEM)
Building - WOOD STRUCTURE — System No. - DRY
Contractor - RESIDENTIAL FIRE PROTECTION — Contract No. - 16038
Calculated By - T. PRAY — Drawing No. - 1 OF 1
Construction: (X) Combustible ( ) Non-Combustible — Ceiling Height - 9'-1"
Occupancy - CAR PARKING

SYSTEM DESIGN

(X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. (X) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling — Made By — Date

Area of Sprinkler Operation	- 1361	System Type	Sprinkler/Nozzle
Density	- .15	( ) Wet	Make VIKING
Area Per Sprinkler	- 125	(X) Dry	Model VK300
Elevation at Highest Outlet	- 8.58	( ) Deluge	Size 1/2"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.155
Hose Allowance - Outside	- 250		

Note

Calculation Summary — Flow Required - 516.12 Press Required - 32.92 AT TEST; C-Factor Used: 100 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 7/15/1991			Cap. -
Time of Test	-	Rated Cap.-		Elev.-
Static Press	- 44	@ Press	-	
Residual Press	- 37	Elev.	-	Well
Flow	- 503			Proof Flow
Elevation	- 1			

Location - HYDRANTS ARE LOCATED ON MUNJOY ST., SEE PLOT PLAN

Source of Information - PORTLAND WATER DISTRICT

COMMODITY

Commodity — Class — Location
Storage Ht. — Area — Aisle W.
Storage Method: Solid Piled % Palletized % Rack

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

STORAGE

Flue Spacing — Clearance:Storage to Ceiling
Longitudinal — Transverse

Horizontal Barriers Provided:

Water Supply Curve (C)

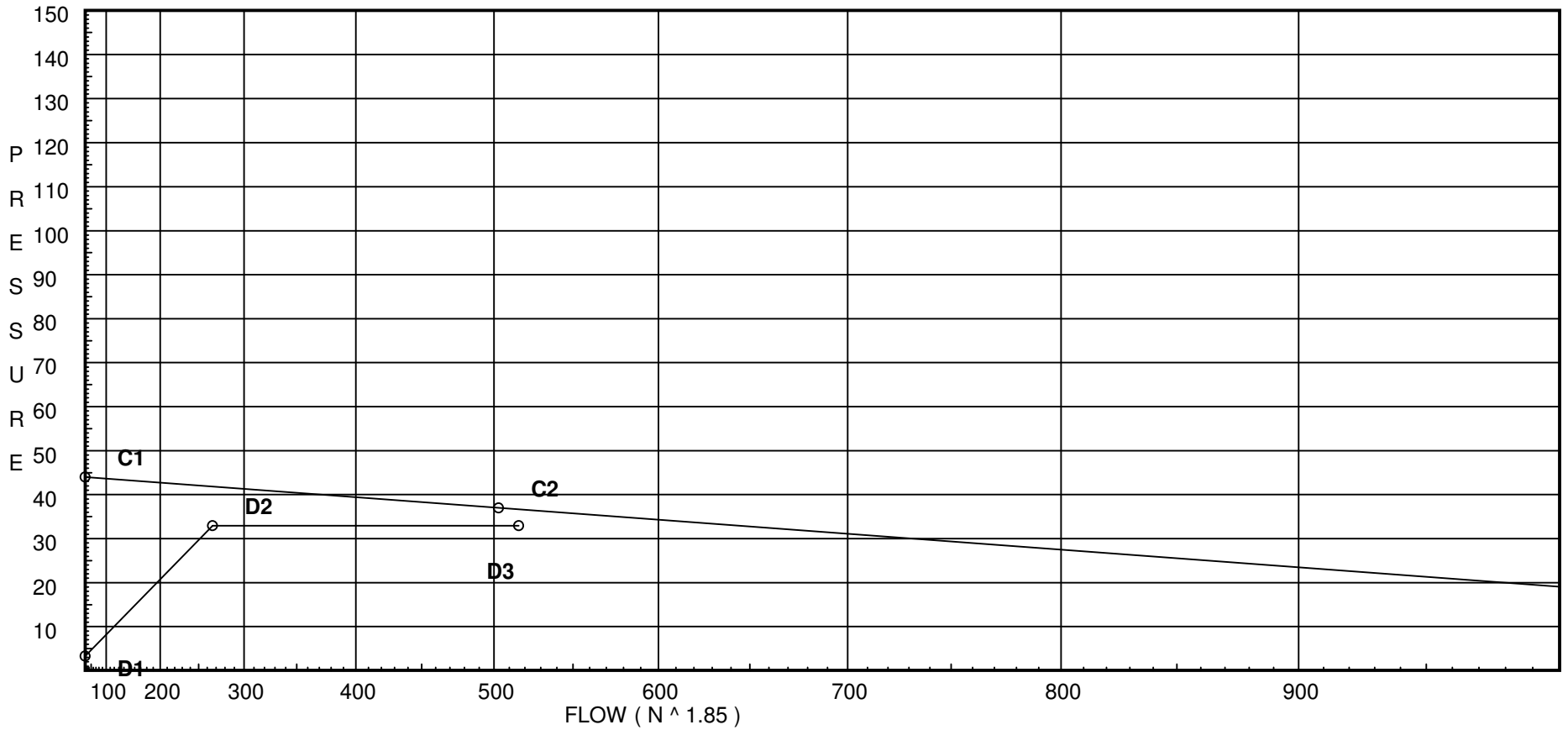
Residential Fire Protection
65 Munjoy Street

Date 1/5/17

City Water Supply:
- C1 - Static Pressure : 44
- C2 - Residual Pressure: 37
- C2 - Residual Flow : 503

Demand:

D1 - Elevation	:	3.283
D2 - System Flow	:	266.122
D2 - System Pressure	:	32.918
Hose (Adj City)	:	_____
Hose (Demand)	:	250
D3 - System Demand	:	516.122
Safety Margin	:	3.740



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
D	Generic Dry Pipe Valve	0	0	0	0	0	0	9.5	17	0	28	0	47	0	0	0	0	0	0	0	0
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
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
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

Pressure / Flow Summary - STANDARD

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
50	8.58	5.6	11.21	na	18.75	0.15	125	7.0
51	8.58	5.6	11.37	na	18.89	0.15	125	7.0
52	8.58	5.6	11.96	na	19.37	0.15	125	7.0
53	8.58	5.6	13.23	na	20.37	0.15	125	7.0
54	8.58	5.6	15.47	na	22.02	0.15	125	7.0
55	8.58	5.6	15.82	na	22.28	0.15	125	7.0
56	8.58	5.6	11.37	na	18.88	0.15	125	7.0
57	8.58	5.6	11.54	na	19.02	0.15	125	7.0
58	8.58	5.6	12.13	na	19.51	0.15	125	7.0
59	8.58	5.6	13.42	na	20.51	0.15	125	7.0
60	8.58	5.6	15.68	na	22.18	0.15	125	7.0
61	8.58	5.6	15.27	na	21.88	0.15	100	7.0
62	8.58	5.6	16.09	na	22.46	0.15	125	7.0
70	8.58		18.51	na				
71	8.58		18.77	na				
TOR1	8.58		19.64	na				
DPV	5.0		22.93	na				
HDR1	3.5		25.02	na				
6UG	1.0		31.83	na				
TEST	1.0		32.92	na	250.0			

The maximum velocity is 14.45 and it occurs in the pipe between nodes 60 and 71

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
50	18.75	1.682		0.0	10.000	11.210		K Factor = 5.60
to		100		0.0	0.0	0.0		
51	18.75	0.0163		0.0	10.000	0.163		Vel = 2.71
51	18.89	1.682		0.0	10.000	11.373		K Factor = 5.60
to		100		0.0	0.0	0.0		
52	37.64	0.0589		0.0	10.000	0.589		Vel = 5.43
52	19.36	1.682		0.0	10.000	11.962		K Factor = 5.60
to		100		0.0	0.0	0.0		
53	57.0	0.1270		0.0	10.000	1.270		Vel = 8.23
53	20.37	1.682		0.0	10.000	13.232		K Factor = 5.60
to		100		0.0	0.0	0.0		
54	77.37	0.2235		0.0	10.000	2.235		Vel = 11.17
54	22.03	1.682	1T	7.065	1.500	15.467		K Factor = 5.60
to		100		0.0	7.066	0.0		
70	99.4	0.3552		0.0	8.566	3.043		Vel = 14.35
	0.0							
	99.40					18.510		K Factor = 23.10
55	22.28	1.049	1T	3.568	8.500	15.824		K Factor = 5.60
to		100		0.0	3.568	0.0		
70	22.28	0.2226		0.0	12.068	2.686		Vel = 8.27
	0.0							
	22.28					18.510		K Factor = 5.18
56	18.88	1.682		0.0	10.000	11.371		K Factor = 5.60
to		100		0.0	0.0	0.0		
57	18.88	0.0165		0.0	10.000	0.165		Vel = 2.73
57	19.02	1.682		0.0	10.000	11.536		K Factor = 5.60
to		100		0.0	0.0	0.0		
58	37.9	0.0597		0.0	10.000	0.597		Vel = 5.47
58	19.51	1.682		0.0	10.000	12.133		K Factor = 5.60
to		100		0.0	0.0	0.0		
59	57.41	0.1287		0.0	10.000	1.287		Vel = 8.29
59	20.51	1.682		0.0	10.000	13.420		K Factor = 5.60
to		100		0.0	0.0	0.0		
60	77.92	0.2264		0.0	10.000	2.264		Vel = 11.25
60	22.18	1.682	1T	7.065	1.500	15.684		K Factor = 5.60
to		100		0.0	7.066	0.0		
71	100.1	0.3599		0.0	8.566	3.083		Vel = 14.45
	0.0							
	100.10					18.767		K Factor = 23.11
61	21.88	1.049	1E	2.0	3.375	15.267		K Factor = 5.60
to		120		0.0	2.000	0.0		
62	21.88	0.1537		0.0	5.375	0.826		Vel = 8.12
62	22.47	1.38	1T	4.282	8.500	16.093		K Factor = 5.60
to		100		0.0	4.282	0.0		
71	44.35	0.2092		0.0	12.782	2.674		Vel = 9.51
	0.0							
	44.35					18.767		K Factor = 10.24
70	121.67	3.26		0.0	12.500	18.510		
to		100		0.0	0.0	0.0		
71	121.67	0.0206		0.0	12.500	0.257		Vel = 4.68

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
71	144.45	3.26	1I	4.796	5.210	18.767		
to		100		0.0	4.795	0.0		
TOR1	266.12	0.0876		0.0	10.005	0.876		Vel = 10.23
TOR1	0.0	3.26	1D	16.306	3.580	19.643		
to		100		0.0	16.306	1.550		
DPV	266.12	0.0875		0.0	19.886	1.741		Vel = 10.23
DPV	0.0	3.26	1G	1.344	1.500	22.934		
to		120	1T	20.159	21.503	0.650		
HDR1	266.12	0.0625		0.0	23.003	1.437		Vel = 10.23
HDR1	0.0	3.26	3I	20.159	7.500	25.021		
to		120		0.0	20.159	5.083		* Fixed loss = 4
6UG	266.12	0.0624		0.0	27.659	1.727		Vel = 10.23
6UG	0.0	4.1	1L	8.72	30.000	31.831		
to		140	1G	2.907	40.694	0.0		
TEST	266.12	0.0154	1T	29.067	70.694	1.087		Vel = 6.47
	250.00							Qa = 250.00
	516.12					32.918		K Factor = 89.96