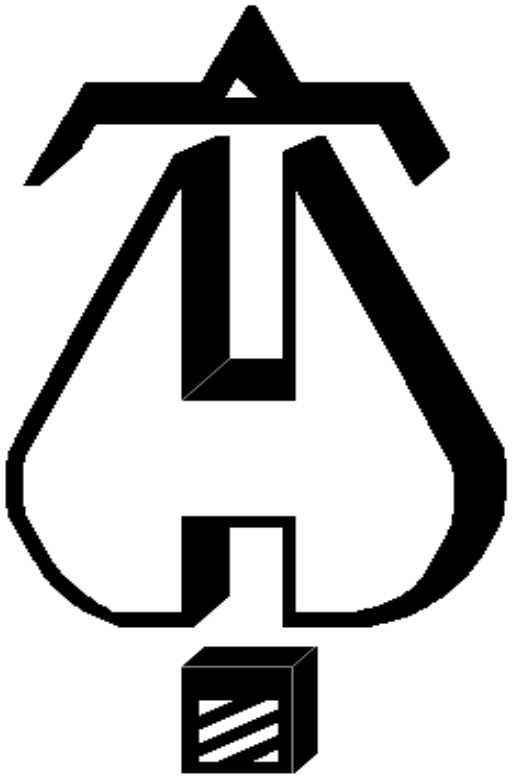


. . . Fire Protection by Computer Design

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

Job Name : 162 EASTERN PROMANADE APT
Building : 3rd floor level
Location : 162 Easter Promanade Portland, Maine
System : 1 of 1
Contract : C18006
Data File : 162 EASTERN PROMENADE APT-3RD LEVEL LOFT.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 162 Eastern Prom Apartments Date - 3-2-18
Location - 162 Easter Promanade Portland, Maine
Building - 3rd floor level System No. - 1 of 1
Contractor - Crandall Toothaker Contract No. - C18006
Calculated By - TPP Drawing No. - 1 of 1
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height Varies
OCCUPANCY - Residential

SYSTEM DESIGN

Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D
Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )
( )Other
( )Specific Ruling Made by Date

Listed Flow at Start Point - 13 Gpm System Type
Listed Pres. at Start Point - 7 Psi (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm Sprinkler or Nozzle
Additional Flow Added - Gpm Make VIKING Model VK494
Elevation at Highest Outlet - 47.5 Feet Size 7/16 K-Factor 4.9
Note:SAFETY MARGIN: 12.30 PSI Temperature Rating 155

Calculation Summary: Gpm Required 58.702 Psi Required 44.684 At Test
C-Factor Used: Overhead 150 Underground 150

WATER SUPPLY

Water Flow Test:	Pump Data:	Tank or Reservoir:
Date of Test - 5-25-17	Rated Cap.	Cap.
Time of Test -	@ Psi	Elev.
Static (Psi) - 57	Elev.	
Residual (Psi) - 54	Other	Well
Flow (Gpm) - 1198		Proof Flow Gpm
Elevation - 28		

Location: MUNJOY STREET AT MOODY STREET

Source of Information: PORTLAND WATER DISTRICT

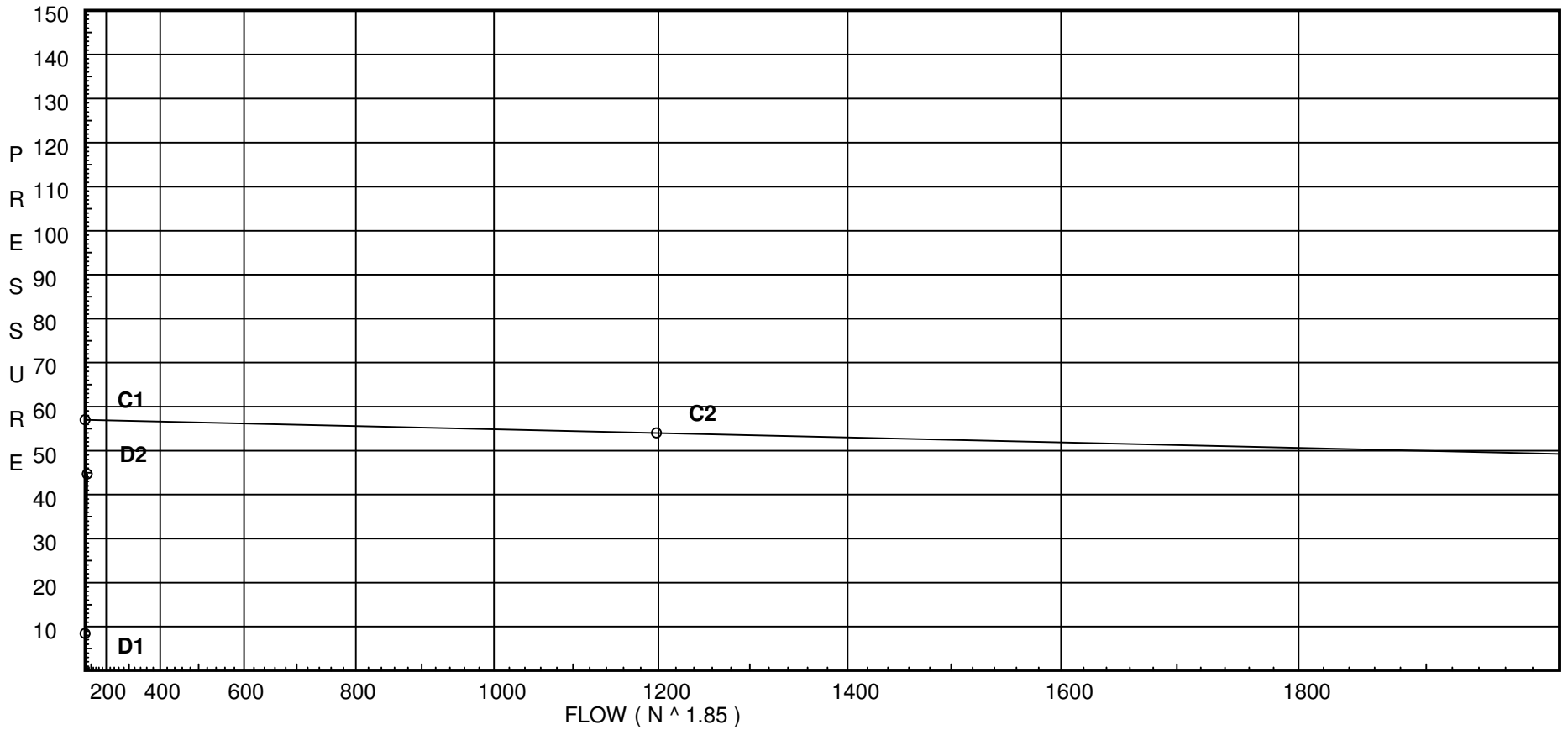
Water Supply Curve (C)

Residential Fire Protection
162 EASTERN PROMANADE APT

City Water Supply:
- C1 - Static Pressure : 57
- C2 - Residual Pressure: 54
- C2 - Residual Flow : 1198

Demand:

D1 - Elevation	:	8.445
D2 - System Flow	:	58.7024
D2 - System Pressure	:	44.684
Hose (Adj City)	:	_____
Hose (Demand)	:	_____
D3 - System Demand	:	58.7024
Safety Margin	:	12.305



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
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'Ell 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
R	CPVC Coupling Tee - Run	1	1	1	1	1	1	2	2	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

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	47.5	4.9	7.04	na	13.0	0.0508	256	7.0
2	47.5	4.9	7.68	na	13.58	0.0508	256	7.0
50	47.5		8.78	na				
3	47.5	4.9	8.96	na	14.66	0.0508	256	7.0
12	36.92		17.85	na				
13	36.92		17.85	na				
10	36.92	4.9	12.69	na	17.45	0.0508	256	7.0
11	36.92		17.13	na				
51	36.92		17.85	na				
52	36.92		17.99	na				
53	36.92		21.83	na				
54	27.21		28.51	na				
55	17.83		35.88	na				
56	7.71		43.88	na				
57	6.67		47.28	na				
TR	6.67		49.28	na				
BR	0.75		55.27	na				
8UG	9.0		52.89	na				
TEST	28.0		44.68	na				

The maximum velocity is 12.34 and it occurs in the pipe between nodes 52 and 53

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
1	13.00	0.874	1O	3.0	15.420	7.044		K Factor = 4.90
to		150		0.0	3.000	0.0		
50	13.0	0.0945		0.0	18.420	1.740		Vel = 6.95
	0.0							
	13.00					8.784		K Factor = 4.39
2	13.58	0.874	1R	1.0	9.790	7.680		K Factor = 4.90
to		150		0.0	1.000	0.0		
50	13.58	0.1023		0.0	10.790	1.104		Vel = 7.26
50	13.00	1.101	1R	1.0	0.500	8.784		
to		150		0.0	1.000	0.0		
3	26.58	0.1153		0.0	1.500	0.173		Vel = 8.96
3	14.67	1.394	3N	24.0	24.080	8.957		K Factor = 4.90
to		150	1O	6.0	30.000	4.582		
52	41.25	0.0823		0.0	54.080	4.450		Vel = 8.67
	0.0							
	41.25					17.989		K Factor = 9.73
12	0.0	0.874	1R	1.0	8.000	17.847		
to		150		0.0	1.000	0.0		
13	0.0	0.0		0.0	9.000	0.0		Vel = 0
13	0.0	1.101	1N	7.0	8.750	17.847		
to		150	1O	5.0	12.000	0.0		
51	0.0	0.0		0.0	20.750	0.0		Vel = 0
	0.0							
	0.0					17.847		K Factor = 0
10	17.45	0.874	1N	7.0	19.300	12.688		K Factor = 4.90
to		150	1R	1.0	8.000	0.0		
11	17.45	0.1628		0.0	27.300	4.445		Vel = 9.33
11	0.0	1.101	1O	5.0	8.500	17.133		
to		150		0.0	5.000	0.0		
51	17.45	0.0529		0.0	13.500	0.714		Vel = 5.88
51	0.0	1.394	2R	2.0	6.500	17.847		
to		150		0.0	2.000	0.0		
52	17.45	0.0167		0.0	8.500	0.142		Vel = 3.67
52	41.25	1.394	3R	3.0	15.330	17.989		
to		150	1O	6.0	9.000	0.0		
53	58.7	0.1581		0.0	24.330	3.846		Vel = 12.34
53	0.0	1.598	1N	9.0	13.420	21.835		
to		150	1O	8.0	17.000	4.205		
54	58.7	0.0813		0.0	30.420	2.472		Vel = 9.39
54	0.0	1.598	1N	9.0	14.670	28.512		
to		150	2O	16.0	26.000	4.062		
55	58.7	0.0813	1R	1.0	40.670	3.306		Vel = 9.39
55	0.0	1.598	1N	9.0	26.500	35.880		
to		150	1O	8.0	18.000	4.383		
56	58.7	0.0813	1R	1.0	44.500	3.617		Vel = 9.39
56	0.0	1.61	2E	8.0	8.880	43.880		
to		120	1T	8.0	16.000	0.450		
57	58.7	0.1184		0.0	24.880	2.947		Vel = 9.25

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
57	0.0	1.61	2E	8.0	8.920	47.277		
to		120		0.0	8.000	0.0		
TR	58.7	0.1184		0.0	16.920	2.004		Vel = 9.25
TR	0.0	1.61	3E	12.0	6.920	49.281		
to		120	1Z	4.0	22.000	2.564		
BR	58.7	0.1184	1Eql	6.0	28.920	3.424		Vel = 9.25
BR	0.0	2.003	1G	1.296	30.000	55.269		
to		150	1T	12.965	14.261	-3.573		
8UG	58.7	0.0271		0.0	44.261	1.198		Vel = 5.98
8UG	0.0	8.27		0.0	625.000	52.894		
to		140		0.0	0.0	-8.229		
TEST	58.7	0.0		0.0	625.000	0.019		Vel = 0.35
	0.0							
	58.70					44.684		K Factor = 8.78