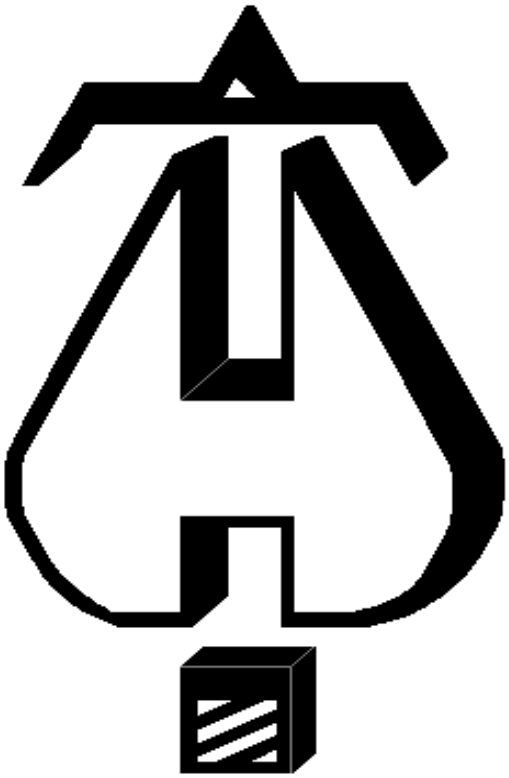


. . . Fire Protection by Computer Design

FREEDOM FIRE PROTECTION INC.
209 QUAKER RIDGE ROAD
CASCO, MAINE 04015
207-627-4109

Job Name : DANFORTH ON HIGH CONDOS HC1
Building : 81 DANFORTH STREET
Location : PORTLAND, MAINE 04101
System : #1 AREA #1
Contract :
Data File : DANFORTH ON HIGH CONDOS HC1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - DANFORTH ON HIGH CONDOS Date - 10/24/12
Location - PORTLAND, MAINE 04101
Building - 81 DANFORTH STREET System No. - #1 AREA #1
Contractor - Contract No. -
Calculated By - MIKE NOBLIT Drawing No. - FP-3
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 9'-6"
OCCUPANCY - APARTMENTS

SYSTEM DESIGN

Type of Calculation: (X)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 - 11.1 Gpm System Type
Listed Pres. at Start Point - 7 Psi (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 12' x 12' ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm Sprinkler or Nozzle
Additional Flow Added - 100 Gpm Make TYCO Model CC2
Elevation at Highest Outlet - Feet Size 1/2" K-Factor 4.2
Note: Temperature Rating 175

Calculation Summary — Gpm Required 160.815 Psi Required 72.822 At Test
C-Factor Used: Overhead 150 Underground 140

WATER SUPPLY

Water Flow Test:	Pump Data:	Tank or Reservoir:
Date of Test - 3/26/2008	Rated Cap.	Cap.
Time of Test -	@ Psi	Elev.
Static (Psi) - 81	Elev.	
Residual (Psi) - 0	Other	Well
Flow (Gpm) - 1644		Proof Flow Gpm
Elevation - -2'-0"		

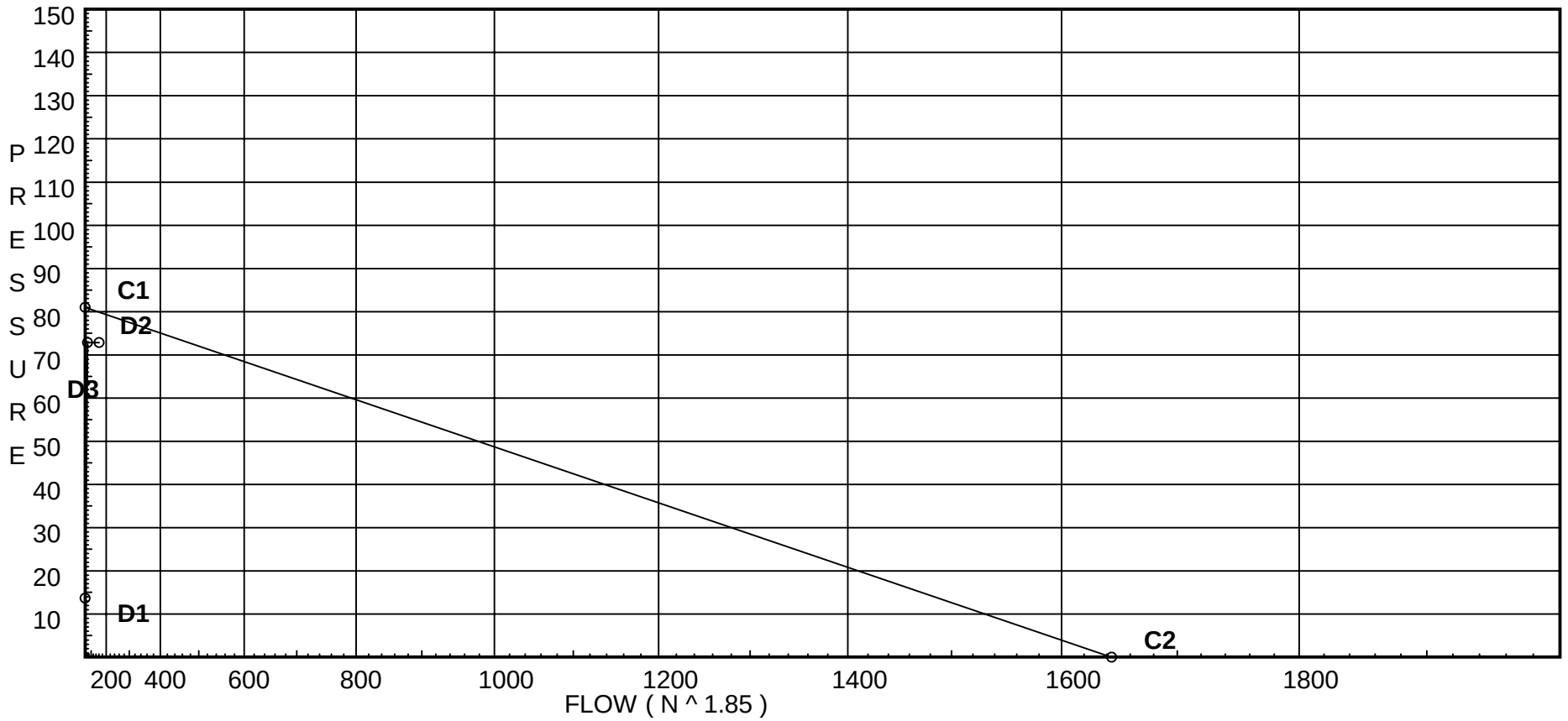
Location:

Source of Information: PORTLAND WATER DISTRICT

City Water Supply:
- C1 - Static Pressure : 81
- C2 - Residual Pressure: 0
- C2 - Residual Flow : 1644

Demand:

D1 - Elevation	:	13.679
D2 - System Flow	:	60.815
D2 - System Pressure	:	72.822
Hose (Adj City)	:	
Hose (Demand)	:	100
D3 - System Demand	:	160.815
Safety Margin	:	7.080



Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
B	Generic Butterfly Valve	0	0	0	0	0	0	7	10	0	12	9	10	12	19	21	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
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
Zac	Ames 2000SS	Fitting generates a Fixed Loss Based on Flow																			

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
101	31.583	4.2	15.5	na	16.53	0.1	144	7.0
102	31.583	4.2	13.21	na	15.26	0.1	144	7.0
103	31.583	4.2	12.11	na	14.62	0.1	144	7.0
104	31.583	4.2	11.76	na	14.4	0.1	144	7.0
19	31.583		12.18	na				
18	31.583		12.55	na				
17	31.583		13.68	na				
16	31.583		15.46	na				
15	31.583		16.94	na				
14	31.583		25.85	na				
13	31.583		34.4	na				
12	31.583		36.26	na				
11	31.583		37.41	na				
10	31.583		40.3	na				
9	31.583		44.09	na				
8	31.583		46.84	na				
7	31.583		53.48	na				
6	20.75		58.49	na				
5	12.25		62.62	na				
4	12.25		62.83	na				
3	9.33		64.37	na				
2	9.33		65.18	na				
1	5.42		66.91	na				
0	2.0		71.95	na				
TEST	0.0		72.82	na	100.0			

The maximum velocity is 20.49 and it occurs in the pipe between nodes 15 and 14

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
101	16.53	1.101	1T	9.563	20.500	15.498		K Factor = 4.20
to		150		0.0	9.562	0.0		
15	16.53	0.0478		0.0	30.062	1.438		Vel = 5.57
	0.0							
	16.53					16.936		K Factor = 4.02
102	15.26	1.101	1T	9.563	2.000	13.205		K Factor = 4.20
to		150		0.0	9.562	0.0		
17	15.26	0.0413		0.0	11.562	0.477		Vel = 5.14
	0.0							
	15.26					13.682		K Factor = 4.13
103	14.62	1.101	1T	9.563	2.000	12.114		K Factor = 4.20
to		150		0.0	9.562	0.0		
18	14.62	0.0381		0.0	11.562	0.440		Vel = 4.93
	0.0							
	14.62					12.554		K Factor = 4.13
104	14.40	1.101	1T	9.563	2.000	11.755		K Factor = 4.20
to		150		0.0	9.562	0.0		
19	14.4	0.0371		0.0	11.562	0.429		Vel = 4.85
19	0.0	1.101		0.0	10.000	12.184		
to		150		0.0	0.0	0.0		
18	14.4	0.0370		0.0	10.000	0.370		Vel = 4.85
18	14.62	1.101		0.0	8.330	12.554		
to		150		0.0	0.0	0.0		
17	29.02	0.1354		0.0	8.330	1.128		Vel = 9.78
17	15.26	1.101	1E	3.825	2.166	13.682		
to		150		0.0	3.825	0.0		
16	44.28	0.2961		0.0	5.991	1.774		Vel = 14.92
16	0.0	1.101		0.0	5.000	15.456		
to		150		0.0	0.0	0.0		
15	44.28	0.2960		0.0	5.000	1.480		Vel = 14.92
15	16.53	1.101	1E	3.825	12.916	16.936		
to		150		0.0	3.825	0.0		
14	60.81	0.5325		0.0	16.741	8.914		Vel = 20.49
14	0.0	1.101	1T	9.563	6.500	25.850		
to		150		0.0	9.562	0.0		
13	60.81	0.5324		0.0	16.062	8.552		Vel = 20.49
13	0.0	1.394		0.0	11.000	34.402		
to		150		0.0	0.0	0.0		
12	60.81	0.1687		0.0	11.000	1.856		Vel = 12.78
12	0.0	1.394		0.0	6.830	36.258		
to		150		0.0	0.0	0.0		
11	60.81	0.1688		0.0	6.830	1.153		Vel = 12.78

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
11	0.0	1.394	1T	9.523	7.583	37.411		
to		150		0.0	9.523	0.0		
10	60.81	0.1687		0.0	17.106	2.886		Vel = 12.78
10	0.0	1.598	1E	5.828	37.830	40.297		
to		150		0.0	5.828	0.0		
9	60.81	0.0868		0.0	43.658	3.789		Vel = 9.73
9	0.0	1.598	2E	11.656	20.083	44.086		
to		150		0.0	11.656	0.0		
8	60.81	0.0868		0.0	31.739	2.754		Vel = 9.73
8	0.0	1.682	1E	7.48	16.750	46.840		
to		150		0.0	7.479	5.000		* Fixed loss = 5
7	60.81	0.0676		0.0	24.229	1.638		Vel = 8.78
7	0.0	2.157		0.0	10.583	53.478		
to		120		0.0	0.0	4.692		
6	60.81	0.0303		0.0	10.583	0.321		Vel = 5.34
6	0.0	2.157	1E	6.153	8.500	58.491		
to		120		0.0	6.153	3.681		
5	60.81	0.0304		0.0	14.653	0.446		Vel = 5.34
5	0.0	2.157	1E	6.153	0.830	62.618		
to		120		0.0	6.153	0.0		
4	60.81	0.0305		0.0	6.983	0.213		Vel = 5.34
4	0.0	2.157	1E	6.153	2.916	62.831		
to		120		0.0	6.153	1.265		
3	60.81	0.0304		0.0	9.069	0.276		Vel = 5.34
3	0.0	2.157	1E	6.153	20.330	64.372		
to		120		0.0	6.153	0.0		
2	60.81	0.0304		0.0	26.483	0.805		Vel = 5.34
2	0.0	4.026	1E	10.0	3.166	65.177		
to		120	1B	12.0	22.000	1.693		
1	60.81	0.0015		0.0	25.166	0.037		Vel = 1.53
1	0.0	4.026	1Zac	0.0	3.420	66.907		
to		140		0.0	0.0	5.041		* Fixed loss = 3.56
0	60.81	0.0012		0.0	3.420	0.004		Vel = 1.53
0	0.0	6.16		0.0	25.000	71.952		
to		140		0.0	0.0	0.866		
TEST	60.81	0.0002		0.0	25.000	0.004		Vel = 0.65
	100.00							Qa = 100.00
	160.81					72.822		K Factor = 18.84