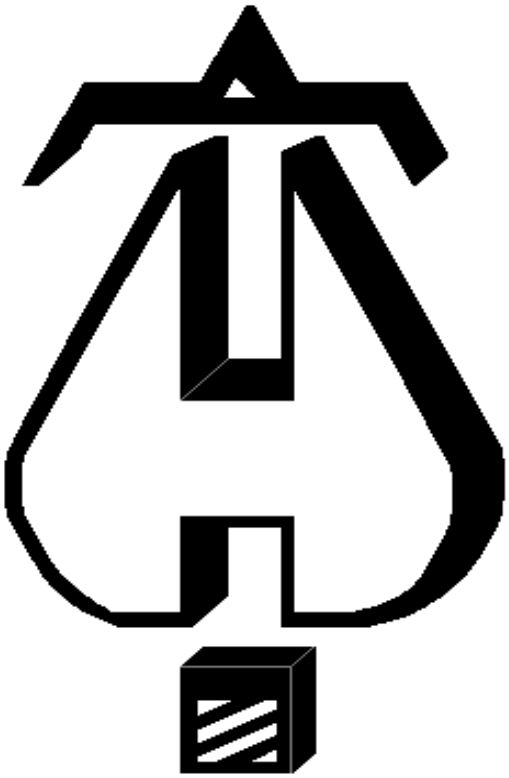


. . . Fire Protection by Computer Design

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

Job Name : 171 & 169 NEAL STREET HC2
Building : 171 & 169 NEAL STREET
Location : PORTLAND, MAINE 04102
System : #1 AREA #2
Contract :
Data File : 171 & 169 NEAL STREET HC2.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 171 & 169 NEAL STREET Date - 12/17/12
Location - PORTLAND, MAINE 04102
Building - 171 & 169 NEAL STREET System No. - #1 AREA #2
Contractor - FREEDOM FIRE PROTECTION Contract No. -
Calculated By - MICHAEL NOBLIT Drawing No. - FP-3
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'-7"
OCCUPANCY - APARTMENT

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 - 14 Gpm System Type
Listed Pres. at Start Point - 10.1 Psi (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 14' x 14' ( ) Deluge ( ) PreAction
Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
Additional Flow Added - 0 Gpm Make TYCO Model LFII
Elevation at Highest Outlet - 27'-9"Feet Size 1/2" K-Factor 4.4
Note: Temperature Rating 155

Calculation Summary — Gpm Required 56.227 Psi Required 48.712 At Test
C-Factor Used: Overhead 120 Underground 140

WATER SUPPLY

Water Flow Test:
Date of Test - 8/16/2008
Time of Test -
Static (Psi) - 55
Residual (Psi) - 0
Flow (Gpm) - 1186
Elevation -

Pump Data:
Rated Cap.
@ Psi
Elev.
Other

Tank or Reservoir:
Cap.
Elev.
Well
Proof Flow Gpm

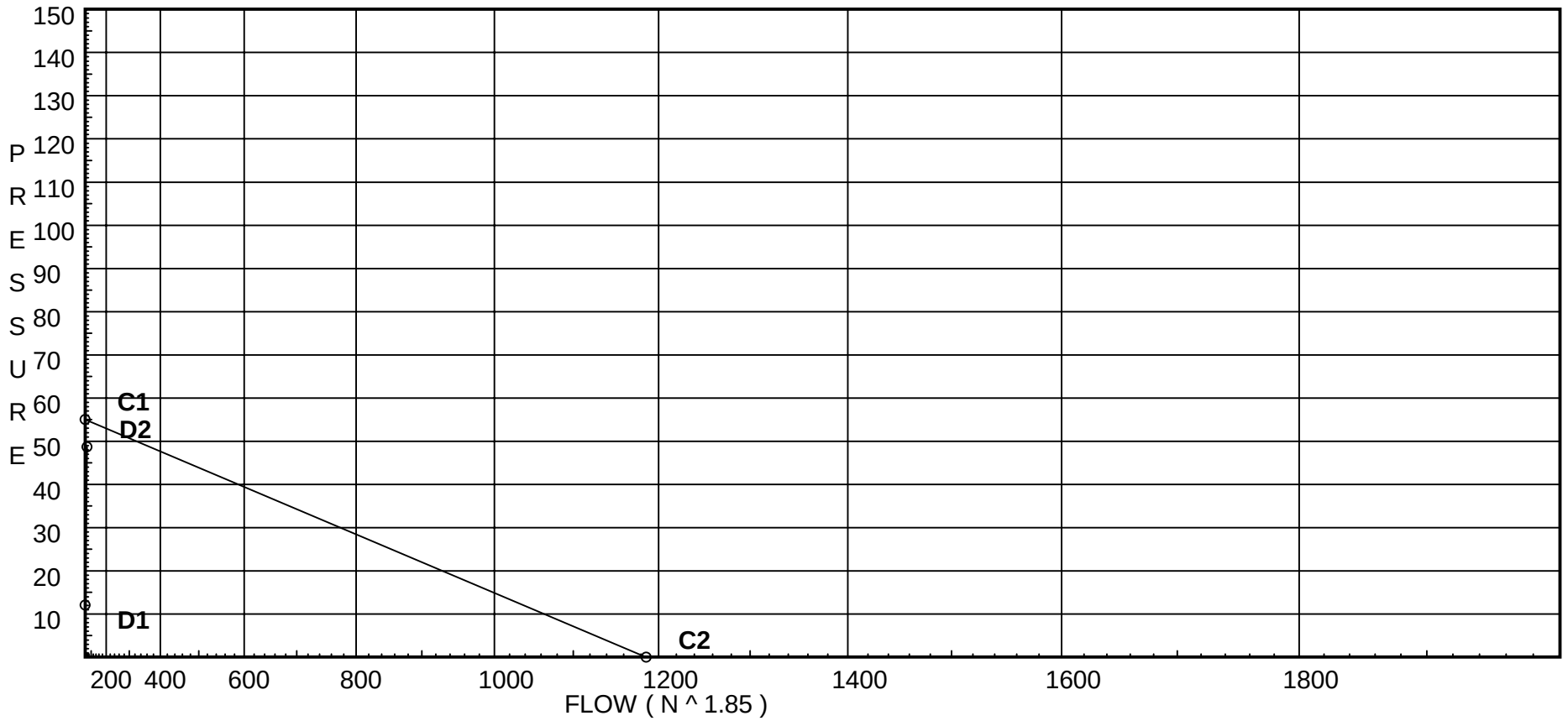
Location:

Source of Information: PORTLAND WATER DISTRICT

City Water Supply:
- C1 - Static Pressure : 55
- C2 - Residual Pressure: 0
- C2 - Residual Flow : 1186

Demand:

D1 - Elevation	:	12.019
D2 - System Flow	:	56.2272
D2 - System Pressure	:	48.712
Hose (Adj City)	:	
Hose (Demand)	:	
D3 - System Demand	:	56.2272
Safety Margin	:	6.092



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
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
Zaa	Ames 2000B	Fitting generates a Fixed Loss Based on Flow																			

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
204	27.75		10.34	na				
203	27.75	4.4	10.1	na	13.99	0.05	0.001	10.1
202	27.75	4.4	10.1	na	13.98	0.05	0.001	10.1
201	27.75	4.4	10.28	na	14.11	0.05	0.001	10.1
20	27.75		11.67	na				
7	27.75		12.7	na				
6	16.66		19.05	na				
5	16.66		19.79	na				
4	6.166		25.92	na				
3	6.166		27.94	na				
2	6.166		29.6	na				
1	0.0		37.88	na				
0	0.0		48.71	na				
TEST	0.0		48.71	na				

The maximum velocity is 10.47 and it occurs in the pipe between nodes 1 and 0

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
204	29.49	1.61	3E	12.0	20.000	10.340		
to		120	1T	8.0	20.000	0.0		
20	29.49	0.0332		0.0	40.000	1.326		Vel = 4.65
	0.0							
	29.49					11.666		K Factor = 8.63
204	-15.34	1.61	1E	4.0	12.000	10.340		K Factor = 4.40
to		120	1T	8.0	12.000	0.0		
203	-15.34	-0.0099		0.0	24.000	-0.238		Vel = 2.42
203	13.98	1.61	1E	4.0	9.830	10.102		K Factor = 4.40
to		120	1T	8.0	12.000	0.0		
202	-1.36	-0.0001		0.0	21.830	-0.002		Vel = 0.21
202	13.98	1.61	2E	8.0	10.660	10.100		K Factor = 4.40
to		120	1T	8.0	16.000	0.0		
201	12.62	0.0069		0.0	26.660	0.184		Vel = 1.99
201	14.11	1.61	6E	24.0	26.000	10.284		K Factor = 4.40
to		120		0.0	24.000	0.0		
20	26.73	0.0276		0.0	50.000	1.382		Vel = 4.21
20	29.50	1.61	1T	8.0	1.500	11.666		
to		120		0.0	8.000	0.0		
7	56.23	0.1093		0.0	9.500	1.038		Vel = 8.86
7	0.0	1.61	1E	4.0	10.083	12.704		
to		120		0.0	4.000	4.803		
6	56.23	0.1094		0.0	14.083	1.541		Vel = 8.86
6	0.0	1.61	1E	4.0	2.830	19.048		
to		120		0.0	4.000	0.0		
5	56.23	0.1092		0.0	6.830	0.746		Vel = 8.86
5	0.0	1.61	1E	4.0	10.500	19.794		
to		120		0.0	4.000	4.545		
4	56.23	0.1094		0.0	14.500	1.586		Vel = 8.86
4	0.0	1.61	1T	8.0	10.416	25.925		
to		120		0.0	8.000	0.0		
3	56.23	0.1094		0.0	18.416	2.014		Vel = 8.86
3	0.0	1.61	1T	8.0	7.166	27.939		
to		120		0.0	8.000	0.0		
2	56.23	0.1093		0.0	15.166	1.658		Vel = 8.86
2	0.0	1.61	1Zaa	0.0	6.166	29.597		
to		120		0.0	0.0	7.612		* Fixed loss = 4.942
1	56.23	0.1093		0.0	6.166	0.674		Vel = 8.86
1	0.0	1.481		0.0	31.000	37.883		
to		140		0.0	0.0	7.000		* Fixed loss = 7
0	56.23	0.1235		0.0	31.000	3.828		Vel = 10.47
0	0.0	12.34	1T	93.767	150.000	48.711		
to		140		0.0	93.767	0.0		
TEST	56.23	0.0		0.0	243.767	0.001		Vel = 0.15

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*******	Notes ******
	0.0							
	56.23				48.712		K Factor =	8.06