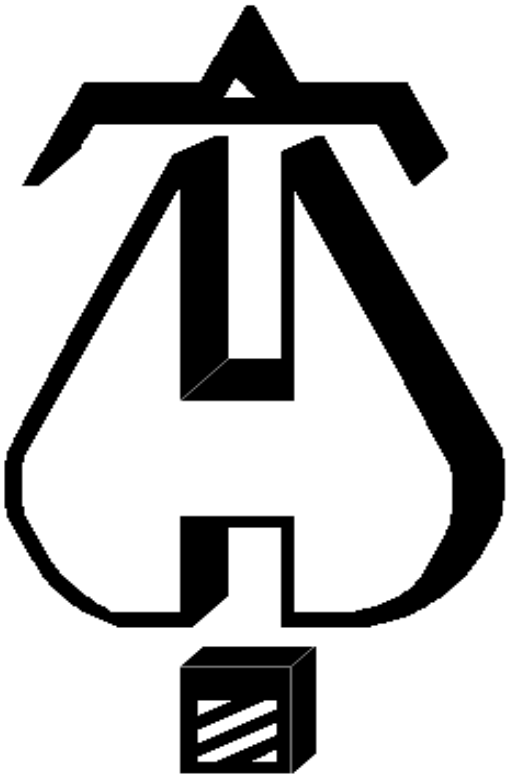


. . . Fire Protection by Computer Design

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

Job Name : NADEAU STOVER RESIDENCE
Building : 23 OREGON STREET
Location : PORTLAND, MAINE 04103
System : #1 AREA #1
Contract :
Data File : Nadeau Stover Residence HC1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - NADEAU STOVER RESIDENCE Date - 9/24/12
Location - PORTLAND, MAINE 04103
Building - 23 OREGON STREET System No. - #1 AREA #1
Contractor - FREEDOM FIRE PROTECTION Contract No. -
Calculated By - MICHAEL NOBLIT Drawing No. - FP-2
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height VARIES
OCCUPANCY - HOUSE

SYSTEM DESIGN

Type of Calculation: (X)NFPA 13 Residential ( )NFPA 13R (X)NFPA 13D
Number of Sprinklers Flowing: ( )1 (X)2 ( )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 - 0 Gpm Sprinkler or Nozzle
Additional Flow Added - 0 Gpm Make TYCO Model LFII
Elevation at Highest Outlet - 25'-3"Feet Size 1/2" K-Factor 4.9
Note: Temperature Rating 155

Calculation Summary — Gpm Required 26.156 Psi Required 72.520 At Test
C-Factor Used: Overhead 150 Underground 140

WATER SUPPLY

Water Flow Test:	Pump Data:	Tank or Reservoir:
Date of Test - 3/9/2012	Rated Cap.	Cap.
Time of Test -	@ Psi	Elev.
Static (Psi) - 101	Elev.	
Residual (Psi) - 0	Other	Well
Flow (Gpm) - 1321		Proof Flow Gpm
Elevation -		

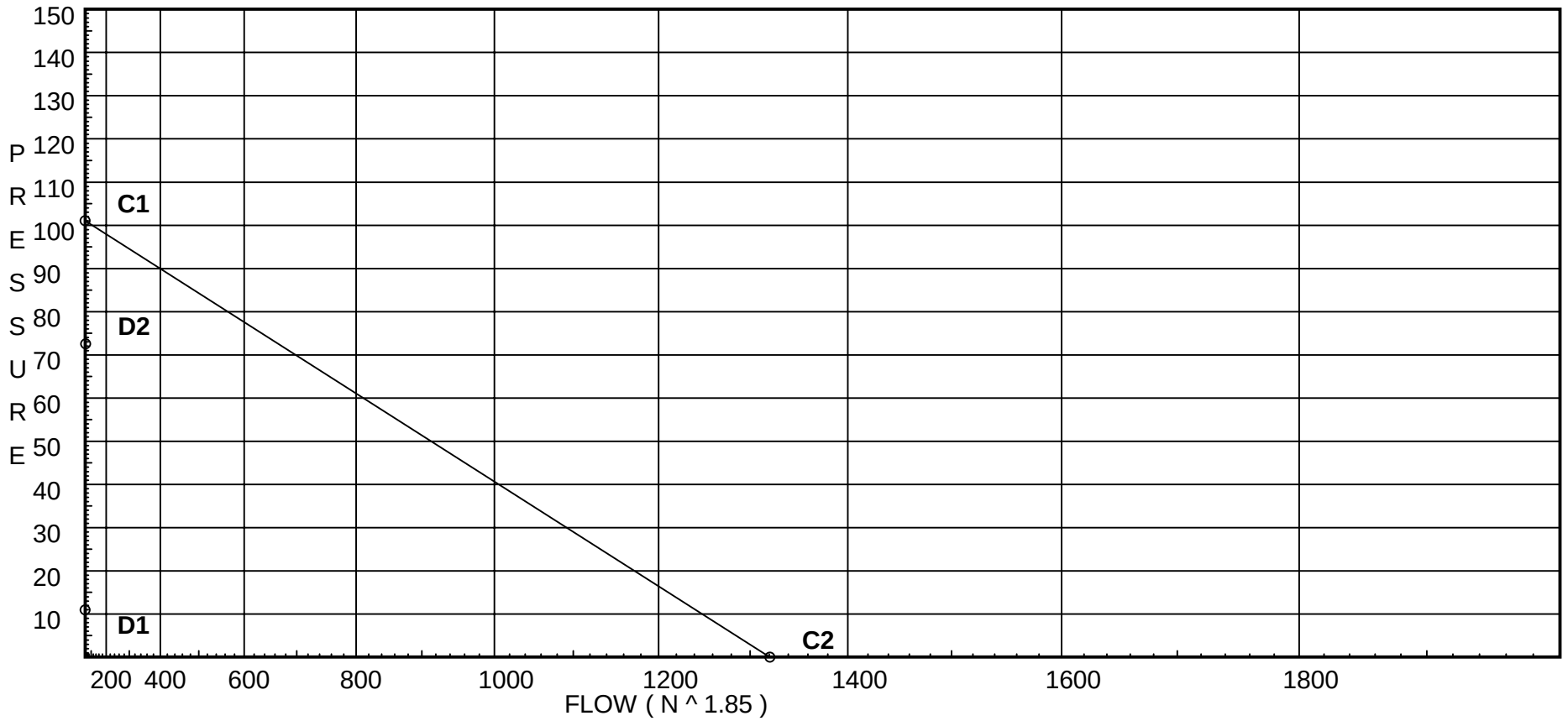
Location:

Source of Information: PORTLAND WATER DISTRICT

City Water Supply:
- C1 - Static Pressure : 101
- C2 - Residual Pressure: 0
- C2 - Residual Flow : 1321

Demand:

D1 - Elevation	:	10.936
D2 - System Flow	:	26.1561
D2 - System Pressure	:	72.520
Hose (Adj City)	:	
Hose (Demand)	:	
D3 - System Demand	:	26.1561
Safety Margin	:	28.409



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.
101	25.25	4.9	7.0	na	12.96	0.05	256	7.0
18	27.25		6.33	na				
102	25.25	4.9	7.25	na	13.19	0.05	256	7.0
17	27.25		6.58	na				
16	27.75		6.58	na				
15	27.75		8.77	na				
14	27.75		10.44	na				
13	22.75		13.78	na				
12	22.75		15.39	na				
11	14.083		21.18	na				
10	14.083		22.61	na				
9	14.083		24.38	na				
8	14.083		27.62	na				
7	4.66		33.19	na				
6	4.66		34.68	na				
5	4.66		38.53	na				
4	4.66		40.13	na				
3	4.66		41.38	na				
2	0.0		48.4	na				
1	0.0		54.41	na				
0	0.0		72.51	na				
TEST	0.0		72.52	na				

The maximum velocity is 19.25 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 ******
101	12.96	1.101	1E	3.825	2.500	7.000		K Factor = 4.90
to		150		0.0	3.825	-0.866		
18	12.96	0.0305		0.0	6.325	0.193		Vel = 4.37
18	0.0	1.101	1E	3.825	2.000	6.327		
to		150	1T	9.563	13.387	-0.217		
16	12.96	0.0305		0.0	15.387	0.470		Vel = 4.37
	0.0							
	12.96					6.580		K Factor = 5.05
102	13.19	1.101	1E	3.825	2.500	7.248		K Factor = 4.90
to		150		0.0	3.825	-0.866		
17	13.19	0.0315		0.0	6.325	0.199		Vel = 4.44
17	0.0	1.101	1E	3.825	3.000	6.581		
to		150		0.0	3.825	-0.217		
16	13.19	0.0316		0.0	6.825	0.216		Vel = 4.44
16	12.97	1.101	1T	9.563	10.000	6.580		
to		150		0.0	9.562	0.0		
15	26.16	0.1117		0.0	19.562	2.186		Vel = 8.82
15	0.0	1.101	3E	11.475	3.500	8.766		
to		150		0.0	11.475	0.0		
14	26.16	0.1118		0.0	14.975	1.674		Vel = 8.82
14	0.0	1.101	1E	3.825	6.660	10.440		
to		150		0.0	3.825	2.166		
13	26.16	0.1118		0.0	10.485	1.172		Vel = 8.82
13	0.0	1.101	1E	3.825	1.000	13.778		
to		150	1T	9.563	13.387	0.0		
12	26.16	0.1118		0.0	14.387	1.608		Vel = 8.82
12	0.0	1.101	1T	9.563	8.660	15.386		
to		150		0.0	9.562	3.754		
11	26.16	0.1118		0.0	18.222	2.037		Vel = 8.82
11	0.0	1.101	1T	9.563	3.250	21.177		
to		150		0.0	9.562	0.0		
10	26.16	0.1118		0.0	12.812	1.432		Vel = 8.82
10	0.0	1.101	1T	9.563	6.250	22.609		
to		150		0.0	9.562	0.0		
9	26.16	0.1118		0.0	15.812	1.767		Vel = 8.82
9	0.0	1.101	1E	3.825	15.660	24.376		
to		150	1T	9.563	13.387	0.0		
8	26.16	0.1118		0.0	29.047	3.247		Vel = 8.82
8	0.0	1.101	1E	3.825	9.500	27.623		
to		150		0.0	3.825	4.081		
7	26.16	0.1118		0.0	13.325	1.490		Vel = 8.82
7	0.0	1.049	1E	3.022	7.500	33.194		
to		150		0.0	3.022	0.0		
6	26.16	0.1415		0.0	10.522	1.489		Vel = 9.71

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
6	0.0	1.049	3E	6.0	12.000	34.683		
to		120		0.0	6.000	0.0		
5	26.16	0.2138		0.0	18.000	3.848		Vel = 9.71
5	0.0	1.049	1E	2.0	5.500	38.531		
to		120		0.0	2.000	0.0		
4	26.16	0.2137		0.0	7.500	1.603		Vel = 9.71
4	0.0	1.049	1T	5.0	0.830	40.134		
to		120		0.0	5.000	0.0		
3	26.16	0.2139		0.0	5.830	1.247		Vel = 9.71
3	0.0	1.049	1Zaa	0.0	4.660	41.381		
to		120		0.0	0.0	6.018		* Fixed loss = 4
2	26.16	0.2137		0.0	4.660	0.996		Vel = 9.71
2	0.0	1.125		0.0	20.000	48.395		
to		150		0.0	0.0	4.000		* Fixed loss = 4
1	26.16	0.1006		0.0	20.000	2.013		Vel = 8.44
1	0.0	0.745		0.0	17.750	54.408		
to		140		0.0	0.0	3.000		* Fixed loss = 3
0	26.16	0.8509		0.0	17.750	15.104		Vel = 19.25
0	0.0	6.16		0.0	250.000	72.512		
to		140		0.0	0.0	0.0		
TEST	26.16	0.0		0.0	250.000	0.008		Vel = 0.28
	0.0							
	26.16					72.520		K Factor = 3.07