



. . . Fire Protection by Computer Design

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

Job Name : NADEAU STOVER RESIDENCE HC2
Building : 23 OREGON STREET
Location : PORTLAND, MAINE 04103
System : #1 AREA #2
Contract :
Data File : Nadeau Stover Residence HC2.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 #2
Contractor - FREEDOM FIRE PROTECTION Contract No. -
Calculated By - MICHAEL NOBLIT Drawing No. - FP-2
Construction: (X) Combustible () Non-Combustible Ceiling Height 7'-6"
OCCUPANCY - HOUSE

S Type of Calculation: (X)NFPA 13 Residential ()NFPA 13R (X)NFPA 13D
Y Number of Sprinklers Flowing: ()1 (X)2 ()4 ()
S ()Other
T ()Specific Ruling Made by Date
E
M Listed Flow at Start Point - 16 Gpm System Type
Listed Pres. at Start Point - 13.2 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 16' x 16' () Deluge () PreAction
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
S Additional Flow Added - 0 Gpm Make TYCO Model LFII
I Elevation at Highest Outlet - Feet Size 1/2" K-Factor 4.4
G Note: Temperature Rating 155
N

Calculation Gpm Required 32.025 Psi Required 74.153 At Test
Summary C-Factor Used: Overhead 150 Underground 140

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

P Location:
P
L Source of Information: PORTLAND WATER DISTRICT
Y

Water Supply Curve (C)

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE HC2

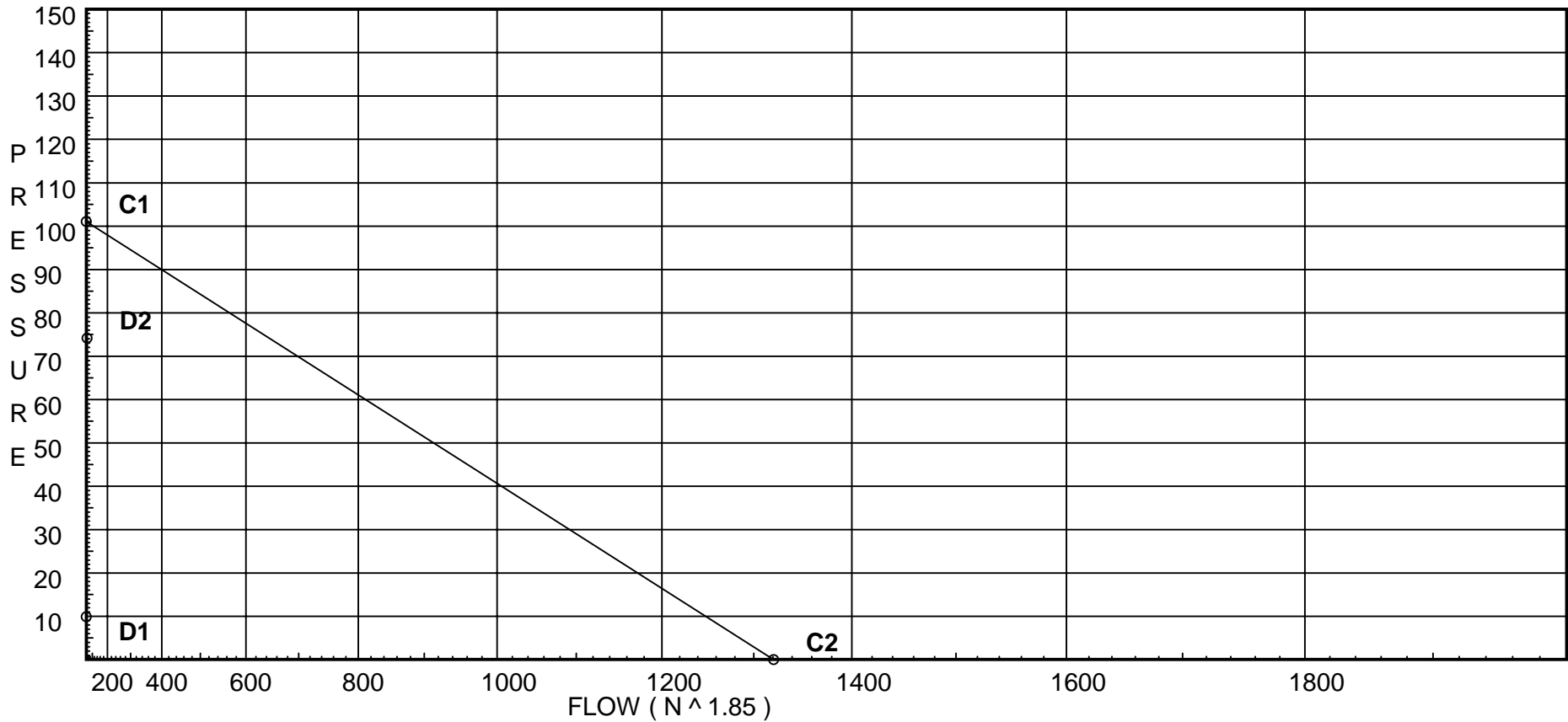
Page 2
Date 9/24/12

City Water Supply:

C1 - Static Pressure : 101
C2 - Residual Pressure: 0
C2 - Residual Flow : 1321

Demand:

D1 - Elevation : 9.853
D2 - System Flow : 32.025
D2 - System Pressure : 74.153
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 32.025
Safety Margin : 26.744



Fittings Used Summary

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE HC2

Page 3
Date 9/24/12

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	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																			

Pressure / Flow Summary - STANDARD

FREEDOM FIRE PROTECTION INC.
 NADEAU STOVER RESIDENCE HC2

Page 4
 Date 9/24/12

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
201	22.75	4.4	13.29	na	16.04	0.05	0.001	13.2
26	22.75		13.48	na				
202	22.75	4.4	13.2	na	15.99	0.05	0.001	13.2
25	22.75		13.39	na				
24	14.083		17.71	na				
23	14.083		18.06	na				
22	14.083		19.28	na				
21	4.66		26.46	na				
20	4.66		32.81	na				
3	4.66		34.52	na				
2	0.0		42.25	na				
1	0.0		49.18	na				
0	0.0		74.14	na				
TEST	0.0		74.15	na				

The maximum velocity is 23.57 and it occurs in the pipe between nodes 1 and 0

Final Calculations - Hazen-Williams

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE HC2

Page 5
Date 9/24/12

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
201 to 26	16.04	1.101 150	1E	3.825 0.0	0.500 3.825	13.288 0.0		K Factor = 4.40	
26 to 23	16.04	0.0451 1.101 150		0.0 9.563 0.0	4.325 8.660 9.562	0.195 13.483 3.754		Vel = 5.41	
23 to 0	16.04	0.0452 0.0		0.0	18.222	0.824		Vel = 5.41	
0 to 202	16.04					18.061		K Factor = 3.77	
202 to 25	15.99	1.101 150	1E	3.825 0.0	0.500 3.825	13.200 0.0		K Factor = 4.40	
25 to 24	15.99	0.0449 1.101 150		0.0 3.825 0.0	4.325 8.660 3.825	0.194 13.394 3.754		Vel = 5.39	
24 to 23	15.99	0.0449 1.101 150		0.0 3.825 0.0	12.485 8.660 3.825	0.561 13.394 3.754		Vel = 5.39	
23 to 22	15.99	0.0450 1.101 150		0.0 3.825 0.0	7.825 4.000 3.825	0.352 17.709 0.0		Vel = 5.39	
22 to 21	16.03	1.101 150	1E	3.825 0.0	3.660 3.825	18.061 0.0			
21 to 20	32.02	0.1626 1.101 150		0.0 9.563 0.0	7.485 9.500 9.562	1.217 19.278 4.081		Vel = 10.79	
20 to 3	32.02	0.1626 1.101 150		0.0 9.563 0.0	19.062 9.500 5.000	3.099 19.278 4.081		Vel = 10.79	
3 to 2	32.02	0.3109 1.049 120	1T	5.0 0.0	15.416 5.000	26.458 0.0			
2 to 1	32.02	0.3109 1.049 120		0.0 5.0 0.0	20.416 0.500 5.000	6.347 32.805 0.0		Vel = 11.89	
1 to 0	32.02	0.3109 1.049 120		0.0 5.0 0.0	5.500 0.500 5.000	1.710 32.805 0.0		Vel = 11.89	
0 to TEST	32.02	0.0 1.049 120	1Zaa	0.0 0.0	4.660 0.0	34.515 6.285		* Fixed loss = 4.267	
TEST to 1	32.02	0.3109 1.125 150		0.0 0.0	4.660 20.000	1.449 42.249		Vel = 11.89	
1 to 0	32.02	0.1464 1.125 150		0.0 0.0	20.000 0.0	2.927 4.000		* Fixed loss = 4	
0 to TEST	32.02	0.1464 0.745 140		0.0 0.0	20.000 17.750	2.927 49.176		Vel = 10.33	
TEST to 0	32.02	0.0 0.745 140		0.0 0.0	250.000 17.750	74.142 21.966		* Fixed loss = 3	
0 to TEST	32.02	0.0 6.16 140		0.0 0.0	250.000 0.0	74.142 0.0		Vel = 23.57	
TEST to 0	32.02	0.0 0.0		0.0	250.000	0.011		Vel = 0.34	

Final Calculations - Standard

FREEDOM FIRE PROTECTION INC.
NADEAU STOVER RESIDENCE HC2

Page 6
Date 9/24/12

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
	32.02				74.153			K Factor =	3.72
