



**. . . Fire Protection by Computer Design**

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

Job Name : 519 CUMBERLAND AVENUE HC2  
Building : 519 CUMBERLAND AVENUE  
Location : PORTLAND, MAINE 04103  
System : #1 AREA #2  
Contract :  
Data File : 519 CUMBERLAND AVENUE HC2.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 519 CUMBERLAND Date - 11/6/13  
Location - PORTLAND, MAINE 04103  
Building - 519 CUMBERLAND AVENUE System No. - #1 AREA #2  
Contractor - FREEDOM FIRE PROTECTION Contract No. -  
Calculated By - MIKE NOBLIT Drawing No. - FP-2  
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 9-0  
OCCUPANCY - CONDOS

S Type of Calculation: (X)NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D  
Y Number of Sprinklers Flowing: ( )1 ( )2 ( )4 (X)3  
S ( )Other  
T ( )Specific Ruling Made by Date  
E  
M Listed Flow at Start Point - 16 Gpm System Type  
Listed Pres. at Start Point - 7 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 - 50 Gpm Make TYCO Model LFII  
I Elevation at Highest Outlet - 20 Feet Size 1/2" K-Factor 4.9  
G Note: Temperature Rating 155  
N

Calculation Gpm Required 94.320 Psi Required 64.385 At Test  
Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:  
A Date of Test - 7/14/1992 Rated Cap. Cap.  
T Time of Test - @ Psi Elev.  
E Static (Psi) - 71 Elev.  
R Residual (Psi) - 65 Other Well  
Flow (Gpm) - 871 Proof Flow Gpm  
S Elevation -

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

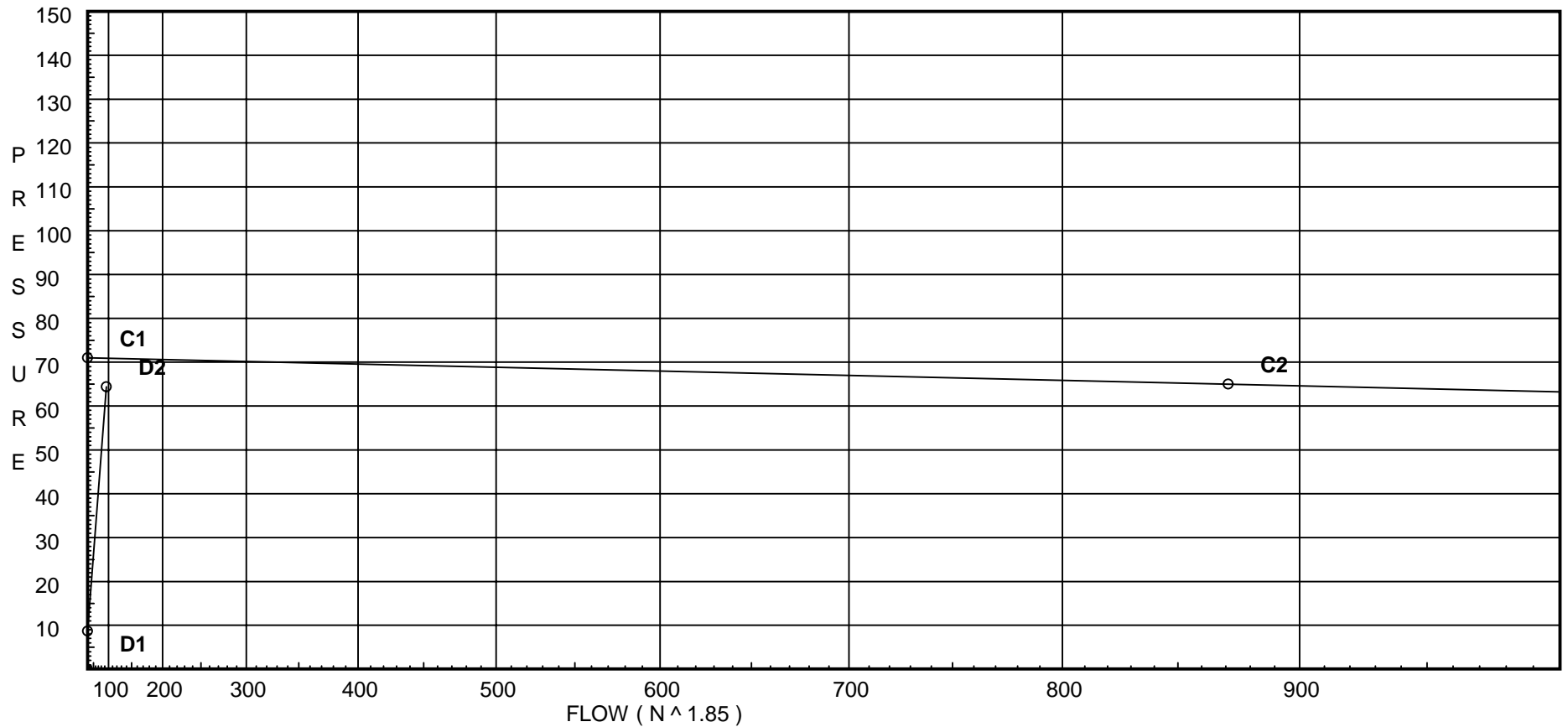
# Water Supply Curve (C)

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City Water Supply:  
C1 - Static Pressure : 71  
C2 - Residual Pressure: 65  
C2 - Residual Flow : 871

Demand:  
D1 - Elevation : 8.662  
D2 - System Flow : 94.3202  
D2 - System Pressure : 64.385  
Hose ( Adj City ) : \_\_\_\_\_  
Hose ( Demand ) : \_\_\_\_\_  
D3 - System Demand : 94.3202  
Safety Margin : 6.517



# Fittings Used Summary

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## 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

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
202	9.0	4.9	9.32	na	14.96	0.05	169	7.0
201	9.0	4.9	9.85	na	15.38	0.05	169	7.0
28	9.0		11.84	na				
203	20.0	4.4	10.1	na	13.98	0.05	0.001	10.1
27	20.0		10.27	na				
26	9.0		15.9	na				
25	9.0		16.08	na				
24	9.0		16.56	na				
23	9.0		16.91	na				
22	9.0		20.73	na				
21	9.0		30.94	na				
20	9.0		34.35	na				
3	9.0		34.82	na				
2	9.0		35.33	na				
1	0.0		45.06	na				
TEST	0.0		64.38	na	50.0			

The maximum velocity is 16.45 and it occurs in the pipe between nodes 23 and 22

Final Calculations - One-Line

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Ref Pt.	Press Total	K Fact.	Flow Added	Flow Total	Vel	Pipe Diam.	Pipe Length	Fit Sum.	Fit Length	Tot Len	C Fac	Pf perUL	Tot Pf	Elev Press	Fixed Loss	Next Press	Next Ref
202	9.318	4.90	14.96	14.96	5.55	1.049	7.000		0.0	7.000	120	0.0761	0.533	0.0	0.0	9.851	201
201	9.851	4.90	15.38	30.34	11.26	1.049	2.083	1T	5.0	7.083	120	0.2812	1.992	0.0	0.0	11.843	28
28	11.843		0.0	30.34	11.26	1.049	13.000	1T	5.0	18.000	120	0.2813	5.063	0.0	0.0	16.906	23
23	16.906	7.38	0.0	30.34													
203	10.100	4.40	13.98	13.98	5.19	1.049	0.500	1E	2.0	2.500	120	0.0672	0.168	0.0	0.0	10.268	27
27	10.268		0.0	13.98	5.19	1.049	11.000	1E	2.0	13.000	120	0.0671	0.872	4.764	0.0	15.904	26
26	15.904		0.0	13.98	5.19	1.049	0.583	1E	2.0	2.583	120	0.0674	0.174	0.0	0.0	16.078	25
25	16.078		0.0	13.98	5.19	1.049	5.250	1E	2.0	7.250	120	0.0670	0.486	0.0	0.0	16.564	24
24	16.564		0.0	13.98	5.19	1.049	5.083		0.0	5.083	120	0.0673	0.342	0.0	0.0	16.906	23
23	16.906		30.34	44.32	16.45	1.049	4.750	1E	2.0	6.750	120	0.5671	3.828	0.0	0.0	20.734	22
22	20.734		0.0	44.32	16.45	1.049	12.000	3E	6.0	18.000	120	0.5671	10.208	0.0	0.0	30.942	21
21	30.942		0.0	44.32	16.45	1.049	1.000	1T	5.0	6.000	120	0.5672	3.403	0.0	0.0	34.345	20
20	34.345		0.0	44.32	3.89	2.157	15.660	1T	12.307	27.967	120	0.0169	0.474	0.0	0.0	34.819	3
3	34.819		0.0	44.32	3.89	2.157	23.750	1E	6.153	29.903	120	0.0170	0.507	0.0	0.0	35.326	2
2	35.326		0.0	44.32	4.24	2.067	9.000	1E1Zaa	5.0	14.000	120	0.0208	0.291	3.898	5.541	45.056	1
1	45.056		0.0	44.32	6.63	1.653	50.000	17#	0.0	50.000	140	0.0466	2.329	0.0	17.000	64.385	TEST
TEST	64.385	13.70	50.00	94.32													