

. . . Fire Protection by Computer Design

Residential Fire Protection
64 Daggett Hill Rd.
Greene, ME 04236
946-3473

Job Name : 432-434 FORE STREET BLDG
Building : WOOD STUCTURE
Location : 3RD FLR-UNIT 3C LOFT
System : WET
Contract : C17002
Data File : 432-434 Fore St Bldg- 3rd Flr Mezz-Hyd Calc.WXF

Hydraulic Design Information Sheet

Name - 432-434 FORE STREET APT'S Date - 2/6/2017
 Location - 3RD FLR-UNIT 3C LOFT
 Building - WOOD STUCTURE System No. - WET
 Contractor - RESIDENTIAL FIRE PROTECTION Contract No. - C17002
 Calculated By - T.PRAY Drawing No. - 2 OF 2
 Construction: (X) Combustible () Non-Combustible Ceiling Height - VARIES
 Occupancy - APARTMENT (RESIDENTIAL)

S (X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.
 Y () NFPA 231 () NFPA 231C () Figure Curve

S Other

T Specific Ruling Made By Date

M	Area of Sprinkler Operation	- 4 SPRK	System Type	Sprinkler/Nozzle
	Density	- .1	(X) Wet	Make VIKING
D	Area Per Sprinkler	- 171	() Dry	Model VK467
E	Elevation at Highest Outlet	- 45.55'	() Deluge	Size 7/16
S	Hose Allowance - Inside	-	() Preaction	K-Factor 4.0
I	Rack Sprinkler Allowance	-	() Other	Temp.Rat.155
G	Hose Allowance - Outside	- 0		

N Note

Calculation Flow Required - 81.39 Press Required - 95.87 AT ALV
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 10/7/2016		Cap. -
T	Time of Test - N/A	Rated Cap.-	Elev.-
E	Static Press - 103	@ Press -	
R	Residual Press - 90	Elev. -	Well
S	Flow - 490		Proof Flow
U	Elevation - 4.58		

P Location - ALRM VALVE RISER

L Source of Information - INSPECTION TAG, 2" MAIN DRAIN TEST

C	Commodity	Class	Location
O	Storage Ht.	Area	Aisle W.
M	Storage Method:	%	Palletized % Rack
	() Single Row	() Conven. Pallet	() Auto. Storage () Encap.
S	() Double Row	() Slave Pallet	() Solid Shelf () Non
T	() Mult. Row		() Open Shelf

R K Flue Spacing Clearance:Storage to Ceiling
 A Longitudinal Transverse

E Horizontal Barriers Provided:

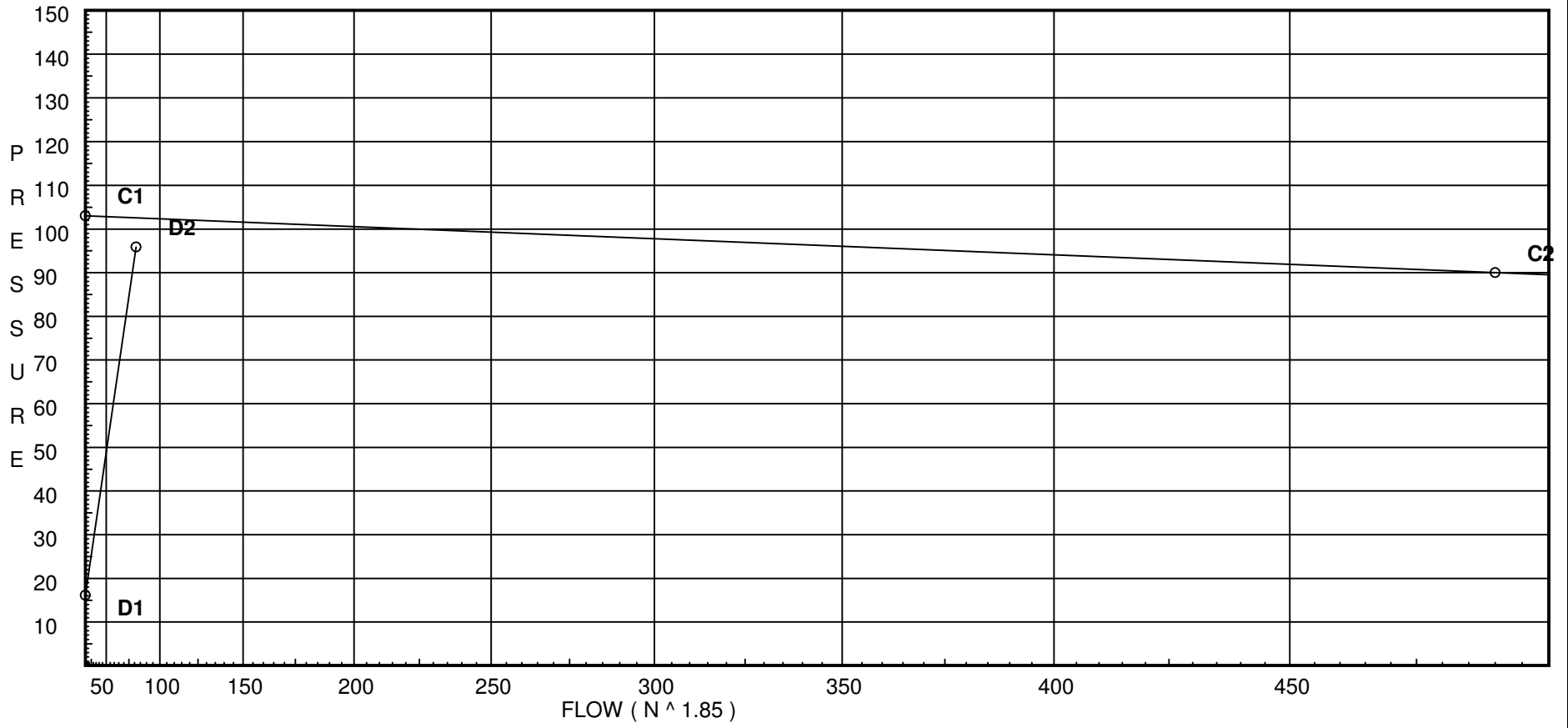
Water Supply Curve (C)

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City Water Supply:
C1 - Static Pressure : 103
C2 - Residual Pressure: 90
C2 - Residual Flow : 490

Demand:
D1 - Elevation : 16.103
D2 - System Flow : 81.3853
D2 - System Pressure : 95.870
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 81.3853
Safety Margin : 6.660



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
A	Generic Alarm Valve	0	0	0	0	0	0	7.7	21.5	0	17	17	27	29	0	0	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
F	45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
I	90' Grvd-Vic Elbow #10	0	0	2	3	4	3.5	6	5	8	7	8.5	10	13	17	20	23	25	33	36	40
J	90'Tee-Branch Grv Vic #20	0	0	4.5	6	8	8.5	10.8	13	17	16	21	25	33	41	50	65	78	88	98	120
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

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	41.76	4.9	15.35	na	19.2	0.1	192	7.0
2	41.76	4.9	16.19	na	19.72	0.1	192	7.0
3	45.55	4.9	17.32	na	20.39	0.1	150	7.0
4	44.09	4.9	20.3	na	22.08	0.1	150	7.0
10	44.09		25.79	na				
11	43.17		29.88	na				
12	31.21		43.94	na				
13	26.42		56.91	na				
14	25.59		73.27	na				
15	25.59		79.04	na				
100	6.79		94.58	na				
TOR	7.33		94.63	na				
ALV	4.58		95.87	na				

The maximum velocity is 17.46 and it occurs in the pipe between nodes 10 and 11

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
1	19.20	1.049		0.0	6.920	15.354				
to		120		0.0	0.0	0.0			K Factor = 4.90	
2	19.2	0.1207		0.0	6.920	0.835			Vel = 7.13	
2	19.72	1.049	3E	6.0	17.790	16.189			K Factor = 4.90	
to		120		0.0	6.000	-1.009				
10	38.92	0.4458		0.0	23.790	10.606			Vel = 14.45	
	0.0									
	38.92					25.786			K Factor = 7.66	
3	20.39	1.049	1E	2.0	10.460	17.317			K Factor = 4.90	
to		120	1T	5.0	7.000	0.632				
4	20.39	0.1349		0.0	17.460	2.355			Vel = 7.57	
4	22.08	1.049	1T	5.0	5.460	20.304			K Factor = 4.90	
to		120		0.0	5.000	0.0				
10	42.47	0.5241		0.0	10.460	5.482			Vel = 15.77	
10	38.92	1.38	1T	6.0	2.050	25.786				
to		120		0.0	6.000	0.398				
11	81.39	0.4593		0.0	8.050	3.697			Vel = 17.46	
11	0.0	1.38	1E	3.0	10.330	29.881				
to		120	1T	6.0	9.000	5.180				
12	81.39	0.4591		0.0	19.330	8.875			Vel = 17.46	
12	0.0	1.38	3E	9.0	8.745	43.936				
to		120	1T	6.0	15.000	2.075				
13	81.39	0.4591		0.0	23.745	10.902			Vel = 17.46	
13	0.0	1.38	2E	6.0	16.840	56.913				
to		120	2T	12.0	18.000	0.359				
14	81.39	0.4592		0.0	34.840	15.997			Vel = 17.46	
14	0.0	1.61	3E	12.0	14.620	73.269				
to		120		0.0	12.000	0.0				
15	81.39	0.2168		0.0	26.620	5.770			Vel = 12.83	
15	0.0	1.61	2F	4.0	14.160	79.039				
to		120	2E	8.0	20.000	8.142				
100	81.39	0.2167	1T	8.0	34.160	7.404			Vel = 12.83	
100	0.0	4.26	6I	55.302	50.760	94.585				
to		120	2J	42.135	97.437	-0.234				
TOR	81.39	0.0019		0.0	148.197	0.281			Vel = 1.83	
TOR	0.0	4.26	1A	22.384	2.750	94.632				
to		120		0.0	22.384	1.191				
ALV	81.39	0.0019		0.0	25.134	0.047			Vel = 1.83	
	0.0									
	81.39					95.870			K Factor = 8.31	