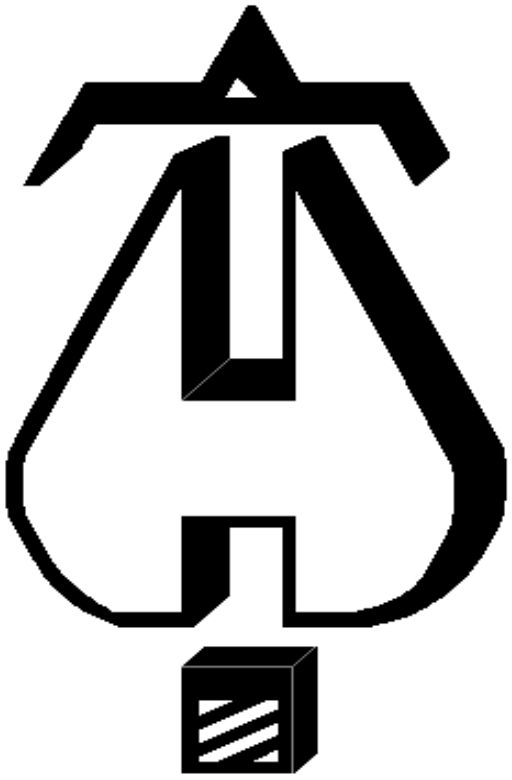


. . . Fire Protection by Computer Design

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

Job Name : MOTHERHOUSE SENIOR HOUSING
Building : WOOD FRAMED
Location : 4TH FLOOR-UNIT (AREA#4)
System : 1
Contract : C17011
Data File : MOTHERHOUSE-4TH FLR-UNIT.WXF

Hydraulic Design Information Sheet

Name - MOTHERHOUSE SENIOR HOUSING Date - 7/27/2017
Location - 4TH FLOOR-UNIT (AREA#4)
Building - WOOD FRAMED System No. - 1
Contractor - RESIDENTIAL FIRE PROTECTION Contract No. - C17011
Calculated By - T. PRAY Drawing No. - 4 OF 5
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height - 10'-6"
Occupancy - LIGHT HAZARD

SYSTEM DESIGN

(X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. ( ) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling Made By Date

Area of Sprinkler Operation	- 4 SPRK'S	System Type	Sprinkler/Nozzle
Density	- .0508	(X) Wet	Make VIKING
Area Per Sprinkler	- 256	( ) Dry	Model VK486
Elevation at Highest Outlet	- 163.42	( ) Deluge	Size 1/2"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 4.0
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.155
Hose Allowance - Outside	- 100		

Note

Calculation Summary: Flow Required - 53.94 Press Required - 57.25 AT BOR
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 6/2/2017			Cap. -
Time of Test	- 6:30 AM	Rated Cap.-		Elev.-
Static Press	- 58	@ Press	-	
Residual Press	- 56	Elev.	-	Well
Flow	- 1061			Proof Flow
Elevation	- 122			

Location - HYDRANTS ARE LOCATED ON STEVENS AVE, SEE PLOT PLAN

Source of Information - PORTLAND WATER DISTRICT

STORAGE

Commodity Class Location
Storage Ht. Area Aisle W.
Storage Method: Solid Piled % Palletized % Rack

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

Flue Spacing Clearance:Storage to Ceiling
Longitudinal Transverse

Horizontal Barriers Provided:

Water Supply Curve (C)

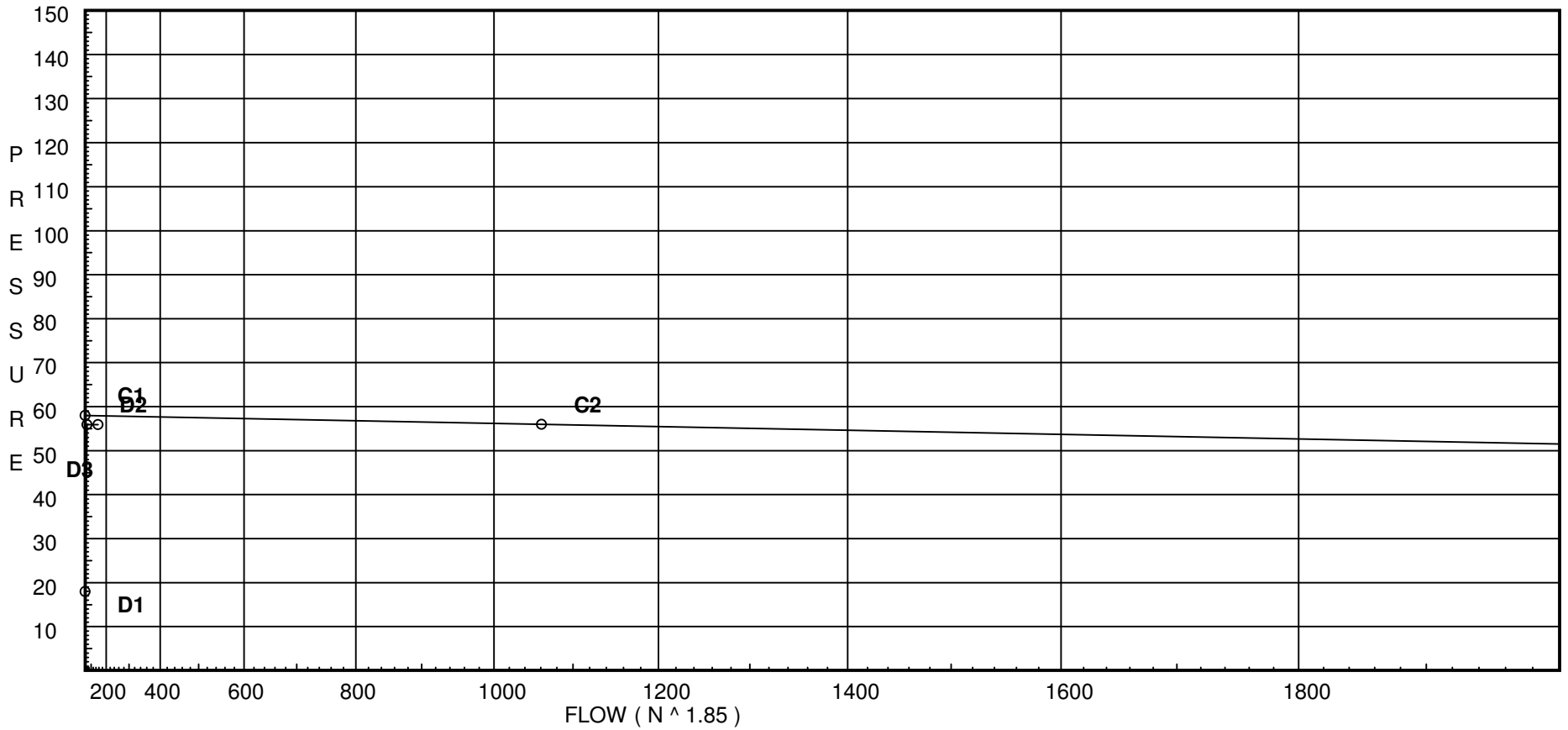
Residential Fire Protection
MOTHERHOUSE SENIOR HOUSING

Date 7/27/2017

City Water Supply:
- C1 - Static Pressure : 58
- C2 - Residual Pressure: 56
- C2 - Residual Flow : 1061

Demand:

D1 - Elevation	:	17.939
D2 - System Flow	:	53.444
D2 - System Pressure	:	55.942
Hose (Adj City)	:	_____
Hose (Demand)	:	100
D3 - System Demand	:	153.444
Safety Margin	:	2.002



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	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
B	Generic Butterfly Valve	0	0	0	0	0	0	7	10	0	12	9	10	12	19	21	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
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
L	Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
N	CPVC 90'Ell Harvel-Spears	7	7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
S	Generic Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
20	163.42	4	10.6	na	13.02	0.0508	256	10.6
21	163.42	4	10.72	na	13.1	0.0508	256	10.6
400A	163.42		11.2	na				
400	161.92		12.58	na				
22	163.42	4	11.6	na	13.62	0.0508	256	10.6
23	163.42	4	11.73	na	13.7	0.0508	256	10.6
401A	163.42		12.26	na				
401	161.92		13.69	na				
402	161.92		19.33	na				
403	161.92		27.67	na				
404	161.92		28.28	na				
406	161.92		30.05	na				
406A	161.92		34.85	na				
416	161.92		38.3	na				
601	161.92		38.44	na				
602	150.58		43.36	na				
603	138.5		48.6	na				
604	126.42		53.86	na				
605	125.92		54.13	na				
TOR	122.58		55.61	na				
HDR	118.92		57.25	na				
6UG	117.42		57.9	na				
TEST	122.0		55.94	na	100.0			

The maximum velocity is 11.23 and it occurs in the pipe between nodes 401 and 402

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
20	13.02	0.874	1O	3.0	3.375	10.600		K Factor = 4.00
to		150		0.0	3.000	0.0		
400A	13.02	0.0947		0.0	6.375	0.604		Vel = 6.96
	0.0							
	13.02					11.204		K Factor = 3.89
21	13.10	0.874	1O	3.0	2.040	10.721		K Factor = 4.00
to		150		0.0	3.000	0.0		
400A	13.1	0.0958		0.0	5.040	0.483		Vel = 7.01
400A	13.02	1.101	1O	5.0	1.500	11.204		
to		150		0.0	5.000	0.650		
400	26.12	0.1114		0.0	6.500	0.724		Vel = 8.80
400	0.0	1.101		0.0	10.000	12.578		
to		150		0.0	0.0	0.0		
401	26.12	0.1115		0.0	10.000	1.115		Vel = 8.80
	0.0							
	26.12					13.693		K Factor = 7.06
22	13.62	0.874	1O	3.0	3.375	11.600		K Factor = 4.00
to		150		0.0	3.000	0.0		
401A	13.62	0.1029		0.0	6.375	0.656		Vel = 7.28
	0.0							
	13.62					12.256		K Factor = 3.89
23	13.70	0.874	1O	3.0	2.040	11.732		K Factor = 4.00
to		150		0.0	3.000	0.0		
401A	13.7	0.1040		0.0	5.040	0.524		Vel = 7.33
401A	13.62	1.101	1O	5.0	1.500	12.256		
to		150		0.0	5.000	0.650		
401	27.32	0.1211		0.0	6.500	0.787		Vel = 9.21
401	26.12	1.394	1N	8.0	28.460	13.693		
to		150	1O	6.0	14.000	0.0		
402	53.44	0.1329		0.0	42.460	5.642		Vel = 11.23
402	0.0	1.394	2O	12.0	50.750	19.335		
to		150		0.0	12.000	0.0		
403	53.44	0.1329		0.0	62.750	8.337		Vel = 11.23
403	-25.90	1.598	1N	9.0	21.500	27.672		
to		150		0.0	9.000	0.0		
404	27.54	0.0201		0.0	30.500	0.612		Vel = 4.41
404	0.0	1.598	1O	8.0	80.125	28.284		
to		150		0.0	8.000	0.0		
406	27.54	0.0200		0.0	88.125	1.765		Vel = 4.41
	0.0							
	27.54					30.049		K Factor = 5.02
403	25.91	1.598	1N	9.0	107.790	27.672		
to		150	2O	16.0	25.000	0.0		
406	25.91	0.0179		0.0	132.790	2.377		Vel = 4.14
406	27.53	1.598	2N	18.0	52.210	30.049		
to		150		0.0	18.000	0.0		
406A	53.44	0.0683		0.0	70.210	4.797		Vel = 8.55
406A	0.0	1.682	2I	9.9	13.290	34.846		
to		120	1J	9.9	29.700	0.0		
416	53.44	0.0804	1T	9.9	42.990	3.458		Vel = 7.72

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
416	0.0	3.26	1F	4.032	3.000	38.304		
to		120	1S	21.503	38.975	0.0		
601	53.44	0.0032	1B	13.44	41.975	0.135		Vel = 2.05
601	0.0	4.26		0.0	11.340	38.439		
to		120		0.0	0.0	4.911		
602	53.44	0.0009		0.0	11.340	0.010		Vel = 1.20
602	0.0	4.26		0.0	12.080	43.360		
to		120		0.0	0.0	5.232		
603	53.44	0.0008		0.0	12.080	0.010		Vel = 1.20
603	0.0	4.26	1J	21.067	12.580	48.602		
to		120		0.0	21.067	5.232		
604	53.44	0.0009		0.0	33.647	0.030		Vel = 1.20
604	0.0	4.26	4I	36.868	20.170	53.864		
to		120		0.0	36.868	0.217		
605	53.44	0.0009		0.0	57.038	0.049		Vel = 1.20
605	0.0	4.026	2F	8.0	14.000	54.130		
to		120	1E	10.0	18.000	1.447		
TOR	53.44	0.0011		0.0	32.000	0.036		Vel = 1.35
TOR	0.0	4.026	1A	17.0	3.670	55.613		
to		120	1G	2.0	39.000	1.585		
HDR	53.44	0.0011	1T	20.0	42.670	0.049		Vel = 1.35
HDR	0.0	7.981	1S	45.0	11.000	57.247		
to		120	1E	18.0	63.000	0.650		
6UG	53.44	0.0		0.0	74.000	0.003		Vel = 0.34
6UG	0.0	6.16	1L	12.911	180.000	57.900		
to		140	1G	4.304	60.252	-1.984		
TEST	53.44	0.0001	1T	43.037	240.252	0.026		Vel = 0.58
	100.00							Qa = 100.00
	153.44					55.942		K Factor = 20.51