

... Fire Protection by Computer Design

FIRE PROTECTION SPRINKLER SER.
278 HARRIS RD
MINOT, MAINE
04258
207-393-7422

Job Name : MAY ST APARTMENTS
Building : FP-1
Location : 7-9 MAY ST
System : #1
Contract :
Data File : MAY ST APARTMENTS 2ND FL CALC.WXF

HYDRAULIC CALCULATIONS
for

Project name: MAY ST APARTMENTS
Location: 7-9 MAY ST
Drawing no: FP-1
Date: 1-16-15

Design

Remote area number: #1
Remote area location: 2ND FLOOR BED RM #1
Occupancy classification: LIGHT HAZARD
Density: .05 - Gpm/SqFt
Area of application: 197 - SqFt
Coverage per sprinkler: 256 - SqFt
Type of sprinklers calculated: RELIABLE RES 44 HSW AND RFC-49 CONCEALED PEN
No. of sprinklers calculated: 2
In-rack demand: - GPM
Hose streams: 0 - GPM
Total water required (including hose streams): 33.1111 - GPM @ 41.0067 - Psi
Type of system:
Volume of dry or preaction system: - Gal

Water supply information

Date: 6-12-15
Location: INTERSECTION OF MAY ST AND DANFOURTH ST
Source: PORTLAND WATER DEPT

Name of contractor: FIRE PROTECTION SPRINKLER SER.
Address: 278 HARRIS RD / MINOT, MAINE / 04258
Phone number: 207-393-7422
Name of designer: TIM FORTIN
Authority having jurisdiction: STATE OF MAINE / CITY OF PORTLAND
Notes: (Include peaking information or gridded systems here.)

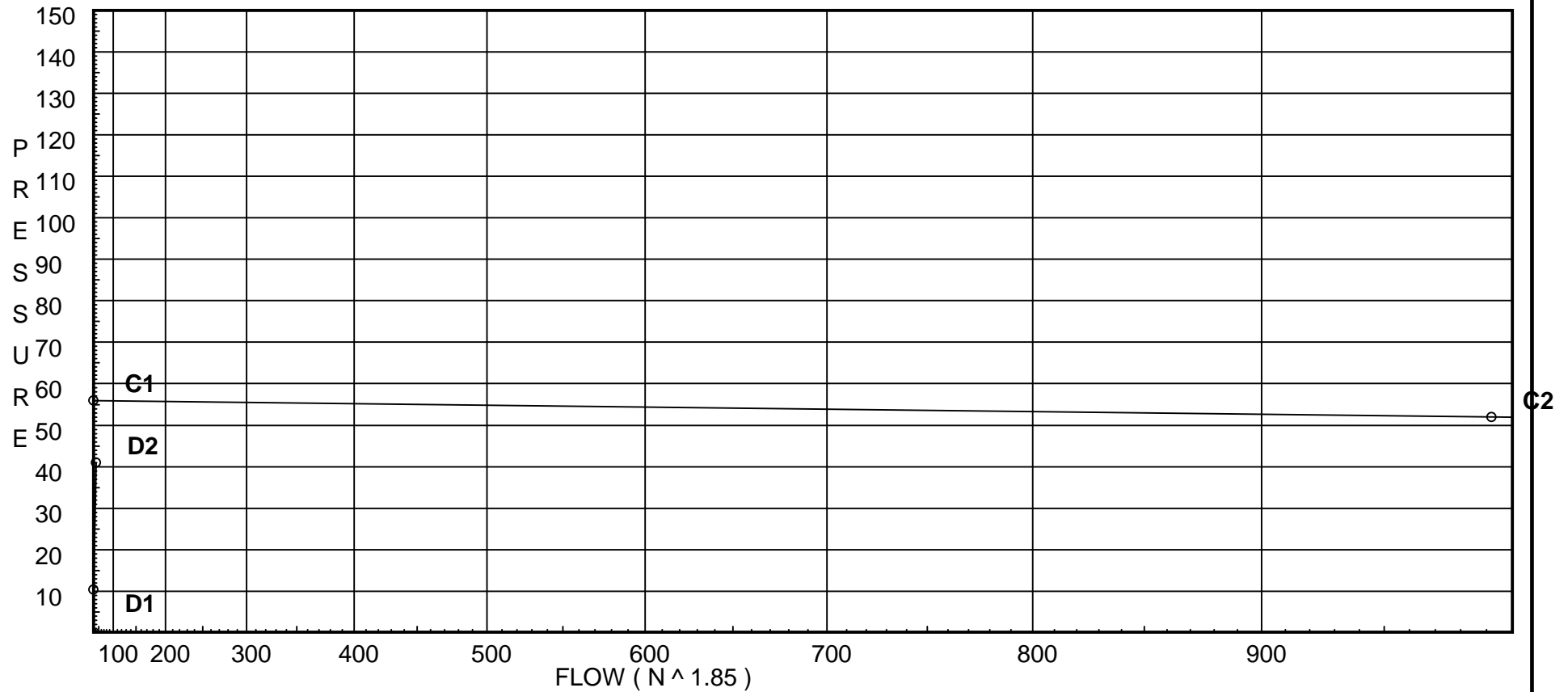
Water Supply Curve (C)

FIRE PROTECTION SPRINKLER SER.
MAY ST APARTMENTS

Page 2
Date 1-16-15

City Water Supply:
C1 - Static Pressure : 56
C2 - Residual Pressure: 52
C2 - Residual Flow : 992

Demand:
D1 - Elevation : 10.394
D2 - System Flow : 33.1111
D2 - System Pressure : 41.007
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 33.1111
Safety Margin : 14.986



Fittings Used Summary

FIRE PROTECTION SPRINKLER SER.
MAY ST APARTMENTS

Page 3
Date 1-16-15

Fitting Legend		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
Abbrev.	Name																				
G	Generic Gate Valve	0	0	1	1	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
R*	CPVC Coupling Tee-Run	1	1	1	1	1	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
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
Z	Generic Flow Switch	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Zik	Wilkins 950XL	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

FIRE PROTECTION SPRINKLER SER.
MAY ST APARTMENTS

Page 4
Date 1-16-15

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	24.0	4.4	13.3	na	16.05	0.05	256	13.3
2	24.0		13.58	na				
3	24.0		15.4	na				
4	16.0		19.54	na				
5	25.0	4.9	12.13	na	17.06	0.05	256	7.0
6	25.0		13.47	na				
7	16.0		18.13	na				
8	16.0		18.62	na				
9	16.0		19.86	na				
10	16.0		21.4	na				
11	8.0		25.74	na				
12	8.0		26.17	na				
13	8.0		27.73	na				
TOR	8.0		29.47	na				
BOR	0.0		40.64	na				
UG	-3.0		42.3	na				
TEST	0.0		41.01	na				

The maximum velocity is 11.16 and it occurs in the pipe between nodes 9 and 10

Final Calculations - Hazen-Williams

FIRE PROTECTION SPRINKLER SER.
MAY ST APARTMENTS

Page 5
Date 1-16-15

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	16.05	1.101	1O 5.0	1.200	13.300		K Factor = 4.40
to		150.0	0.0	5.000	0.0		
2	16.05	0.0453	0.0	6.200	0.281		Vel = 5.41
2	0.0	1.101	3N 21.0	17.100	13.581		
to		150.0	2R 2.0	23.000	0.0		
3	16.05	0.0453	0.0	40.100	1.815		Vel = 5.41
3	0.0	1.101	1N 7.0	8.000	15.396		
to		150.0	0.0	7.000	3.465		
4	16.05	0.0453	0.0	15.000	0.679		Vel = 5.41
4	0.0	1.101	1O 5.0	2.100	19.540		
to		150.0	0.0	5.000	0.0		
9	16.05	0.0452	0.0	7.100	0.321		Vel = 5.41
	0.0						
	16.05				19.861		K Factor = 3.60
5	17.06	1.101	3N 21.0	5.400	12.128		K Factor = 4.90
to		150.0	0.0	21.000	0.0		
6	17.06	0.0508	0.0	26.400	1.340		Vel = 5.75
6	0.0	1.101	1N 7.0	8.000	13.468		
to		150.0	0.0	7.000	3.898		
7	17.06	0.0507	0.0	15.000	0.760		Vel = 5.75
7	0.0	1.101	1O 5.0	4.800	18.126		
to		150.0	0.0	5.000	0.0		
8	17.06	0.0508	0.0	9.800	0.498		Vel = 5.75
8	0.0	1.101	1N 7.0	10.400	18.624		
to		150.0	2R 2.0	14.000	0.0		
9	17.06	0.0507	1O 5.0	24.400	1.237		Vel = 5.75
9	16.05	1.101	1N 7.0	1.900	19.861		
to		150.0	0.0	7.000	0.0		
10	33.11	0.1729	0.0	8.900	1.539		Vel = 11.16
10	0.0	1.394	1N 8.0	8.000	21.400		
to		150.0	0.0	8.000	3.465		
11	33.11	0.0548	0.0	16.000	0.877		Vel = 6.96
11	0.0	1.394	1O 6.0	1.900	25.742		
to		150.0	0.0	6.000	0.0		
12	33.11	0.0548	0.0	7.900	0.433		Vel = 6.96
12	0.0	1.394	2R 2.0	20.300	26.175		
to		150.0	1O 6.0	8.000	0.0		
13	33.11	0.0548	0.0	28.300	1.550		Vel = 6.96
13	0.0	1.394	2R 2.0	23.900	27.725		
to		150.0	1O 6.0	8.000	0.0		
TOR	33.11	0.0548	0.0	31.900	1.749		Vel = 6.96

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
TOR	0.0	1.38	1G 1.511	6.000	29.474		
to		150.0	1Zik 0.0	6.044	10.472		* Fixed loss = 7.007
BOR	33.11	0.0575	1Z 4.533	12.044	0.692		Vel = 7.10
BOR	0.0	1.917	1G 1.047	20.000	40.638		
to		150.0	1T 10.47	11.517	1.299		
UG	33.11	0.0116	0.0	31.517	0.367		Vel = 3.68
UG	0.0	8.27	1T 55.354	180.000	42.304		
to		140.0	0.0	55.354	-1.299		
TEST	33.11	0.0	0.0	235.354	0.002		Vel = 0.20
	0.0						
	33.11				41.007		K Factor = 5.17