



. . . Fire Protection by Computer Design

Sprinkler Systems Inc.
2-4 Avon Street
P O Box 1285
Lewiston, Maine 04240
207-782-0104

Job Name : 106 HIGH STREET
Building :
Location : 106 HIGH STREET, PORTLAND, MAINE 04101
System : 1 OF 1
Contract : 13073
Data File : 13073106HIGHSTREETPTLDA34.WXF

Hydraulic Design Information Sheet

Name - 106 HIGH STREET Date - 11-1-2013
 Location - 106 HIGH STREET, PORTLAND, MAINE 04101
 Building - System No. - 1 OF 1
 Contractor - EAST BROWN COW Contract No. - 13073
 Calculated By - SCOTT E. GARLAND Drawing No. - 1,2 OF 2
 Construction: (X) Combustible () Non-Combustible Ceiling Height - VARIES
 Occupancy - BAR KITCHEN AREA - ORDINARY HAZARD GP1

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

S Other

T Specific Ruling Made By Date

Area of Sprinkler Operation	Density	System Type	Sprinkler/Nozzle
ENTIRE	.15	(X) Wet	Make RELIABLE
Area Per Sprinkler	130	() Dry	Model F1FR56
Elevation at Highest Outlet	106.667	() Deluge	Size 1/2 X 1/2
Hose Allowance - Inside	-	() Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	() Other	Temp.Rat.200 DEG
Hose Allowance - Outside	250		

N Note DESIGN AREA #3 - 1ST FLOOR BAR KITCHEN

Calculation Flow Required - 60.836 Press Required - 29.195 AT BASE OF RISER
 Summary C-Factor Used: 120 Overhead 140 Underground

Water Flow Test:	Pump Data:	Tank or Reservoir:
Date of Test - 3-26-2008	Rated Cap.-	Cap. -
Time of Test -	@ Press -	Elev.-
Static Press - 91	Elev. -	Well
Residual Press - 88		Proof Flow
Flow - 1644		
Elevation - 13.0		

U Location - AT MAPLE STREET AND DANFORTH STREET, 1270' AWAY

P Source of Information - PORTLAND WATER DISTRICT

Commodity	Class	Location
Storage Ht.	Area	Aisle W.
Storage Method:	%	%
() Single Row	() Conven. Pallet	() Auto. Storage
() Double Row	() Slave Pallet	() Solid Shelf
() Mult. Row		() Open Shelf

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

G Horizontal Barriers Provided:

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
41	106.667	5.6	7.03	na	14.85	0.15	99	7.032
42	106.667	5.6	7.18	na	15.01	0.15	99	7.032
43	106.667	5.6	7.57	na	15.41	0.15	99	7.032
44	106.667	5.6	7.73	na	15.57	0.15	99	7.032
AA	106.667		7.64	na				
AB	106.667		8.22	na				
AC	106.667		10.68	na				
AD	106.667		14.38	na				
AE	108.583		14.16	na				
AF	110.75		14.18	na				
AG	110.75		14.4	na				
W	110.75		14.51	na				
X	110.75		14.79	na				
Y	110.75		14.85	na				
Z	98.417		20.26	na				
RT	98.417		20.28	na				
TV	97.0		23.9	na				
RB	93.0		29.2	na				
X1	100.0		26.23	na	250.0			
X2	100.0		26.24	na				
X3	55.0		45.81	na				
TEST	13.0		64.71	na				

The maximum velocity is 11.95 and it occurs in the pipe between nodes AB and AC

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftg's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
41 to 42	14.85	1.442 120.0		0.0	9.500	7.032 0.0			K Factor = 5.60	
42 to AA	14.85	0.0159		0.0	9.500	0.151			Vel = 2.92	
42 to AA	15.01	1.442 120.0	1T	7.432	0.500	7.183 0.0			K Factor = 5.60	
	29.86	0.0580		0.0	7.932	0.460			Vel = 5.87	
	0.0 29.86					7.643			K Factor = 10.80	
43 to 44	15.41	1.442 120.0		0.0	9.500	7.569 0.0			K Factor = 5.60	
44 to AB	15.41	0.0171		0.0	9.500	0.162			Vel = 3.03	
44 to AB	15.57	1.442 120.0	1T	7.432	0.500	7.731 0.0			K Factor = 5.60	
	30.98	0.0620		0.0	7.932	0.492			Vel = 6.09	
	0.0 30.98					8.223			K Factor = 10.80	
AA to AB	29.86	1.442 120.0		0.0	10.000	7.643 0.0				
AB to AC	29.86	0.0580		0.0	10.000	0.580			Vel = 5.87	
AB to AC	30.98	1.442 120.0		0.0	11.333	8.223 0.0				
AC to AD	60.84	0.2164		0.0	11.333	2.452			Vel = 11.95	
AC to AD	0.0	1.442 120.0	1T	7.432	9.667	10.675 0.0				
AD to AE	60.84	0.2164		0.0	17.099	3.700			Vel = 11.95	
AD to AE	0.0	2.635 120.0	2E 1T	16.474	20.875	14.375 -0.830				
AE to AF	60.84	0.0115		0.0	53.823	0.618			Vel = 3.58	
AE to AF	0.0	2.635 120.0	5E	41.186	42.333	14.163 -0.939				
AF to AG	60.84	0.0115		0.0	83.519	0.960			Vel = 3.58	
AF to AG	0.0	2.635 120.0		0.0	18.875	14.184 0.0				
AG to W	60.84	0.0115		0.0	18.875	0.217			Vel = 3.58	
AG to W	0.0	2.635 120.0		0.0	9.500	14.401 0.0				
W to X	60.84	0.0115		0.0	9.500	0.109			Vel = 3.58	
W to X	0.0	3.26 120.0	2E 1T	18.815	28.792	14.510 0.0				
X to Y	60.84	0.0041		0.0	67.766	0.276			Vel = 2.34	
X to Y	0.0	3.26 120.0	1E	9.408	5.583	14.786 0.0				
Y to Z	60.84	0.0041		0.0	14.991	0.061			Vel = 2.34	
Y to Z	0.0	4.26 120.0	1E 1T	13.167	25.875	14.847 5.341				
Z to RT	60.84	0.0011		0.0	65.376	0.073			Vel = 1.37	
Z to RT	0.0	4.26 120.0	1E	13.167	7.000	20.261 0.0				
	60.84	0.0011		0.0	20.167	0.022			Vel = 1.37	

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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	*****
RT to TV	0.0 60.84	4.26 120.0 0.0007	1Fsp 0.0 0.0	1.417 0.0 1.417	20.283 3.614 0.001		* Fixed loss = 3 Vel = 1.37		
TV to RB	0.0 60.84	4.26 120.0 0.0012	1Zac 0.0 0.0	4.000 0.0 4.000	23.898 5.292 0.005		* Fixed loss = 3.56 Vel = 1.37		
RB to X1	0.0 60.84	4.1 140.0 0.0010	1E 1G 1T	14.534 2.907 29.067	15.000 46.508 61.508	29.195 -3.032 0.062	Vel = 1.48		
X1 to X2	250.00 310.84	12.34 140.0 0.0001	1T 0.0 0.0	93.767 0.0 133.767	40.000 93.767 0.013	26.225 0.0	Qa = 250 Vel = 0.83		
X2 to X3	0.0 310.84	12.34 140.0 0.0001	2E 1T 0.0	84.39 93.767 0.0	720.000 178.157 898.157	26.238 19.490 0.086	Vel = 0.83		
X3 to TEST	0.0 310.84	8.23 100.0 0.0013	0.0 0.0 0.0	550.000 0.0 550.000	45.814 18.190 0.706		Vel = 1.87		
	0.0 310.84				64.710		K Factor = 38.64		

Water Supply Curve (C)

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City Water Supply:
C1 - Static Pressure : 91
C2 - Residual Pressure: 88
C2 - Residual Flow : 1644

Demand:
D1 - Elevation : 40.567
D2 - System Flow : 60.836
D2 - System Pressure : 64.710
Hose (Adj City) : _____
Hose (Demand) : 250
D3 - System Demand : 310.836
Safety Margin : 26.153

