



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

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

Job Name : SAGAMORE VILLAGE COMMUNITY BUILDING  
Building :  
Location : 21 POPHAM STREET, PORTLAND, MAINE 04102  
System : 1 OF 1  
Contract : 12074  
Data File : 12074SAGAMOREVILLCOMMBLDGA2.WXF

Hydraulic Design Information Sheet

Name - SAGAMORE VILLAGE COMMUNITY BUILDING Date - 11-30-2012  
 Location - 21 POPHAM STREET, PORTLAND, MAINE 04102  
 Building - System No. - 1 OF 1  
 Contractor - JARR MANAGEMENT Contract No. - 12074  
 Calculated By - SCOTT E. GARLAND Drawing No. - 1-3 OF 3  
 Construction: (X) Combustible ( ) Non-Combustible Ceiling Height - VARIES  
 Occupancy - ROOF SPACE - LIGHT HAZARD

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 - 9 HD CALC	System Type	Sprinkler/Nozzle
	Density - .10	( ) Wet	Make TYCO
D	Area Per Sprinkler - 250	(X) Dry	Model BB1 TY3180
E	Elevation at Highest Outlet - 121.917	( ) Deluge	Size 1/2 X 1/2
S	Hose Allowance - Inside -	( ) Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance -	( ) Other	Temp.Rat.212 DEG
G	Hose Allowance - Outside - 100		
N	Note DESIGN AREA #2 - MIDDLE ROOF		

Calculation Flow Required - 235.266 Press Required - 52.517 AT BASE OF RISER  
 Summary C-Factor Used: 100 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 5-21-2004		Cap. -
T	Time of Test -	Rated Cap.-	Elev.-
E	Static Press - 79	@ Press -	
R	Residual Press - 77	Elev. -	Well
S	Flow - 1677		Proof Flow
U	Elevation - 94.5		

P Location - ON BRIGHTON AVENUE AT CABOT STREET, 340'-0" AWAY FROM THE BUILDING

L Source of Information - PORTLAND WATER DISTRICT

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

G Horizontal Barriers Provided:  
 E

# Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
51	121.917	5.6	22.9	na	26.8	0.1	250	20.0
52	121.917	5.6	22.96	na	26.83	0.1	250	20.0
53	121.917	5.6	23.16	na	26.95	0.1	250	20.0
54	121.917	5.6	20.0	na	25.04	0.1	250	20.0
55	121.917	5.6	20.05	na	25.08	0.1	250	20.0
56	121.917	5.6	20.45	na	25.33	0.1	250	20.0
57	121.917	5.6	20.84	na	25.56	0.1	250	20.0
58	121.917	5.6	21.49	na	25.96	0.1	250	20.0
U	121.833		23.45	na				
59	121.833	5.6	24.49	na	27.71	0.1	250	20.0
S	121.833		29.59	na				
K	118.625		33.92	na				
L	118.542		38.32	na				
M	118.417		41.44	na				
N	118.417		41.87	na				
DD	117.083		42.67	na				
Z	106.75		48.36	na				
TDV	105.667		49.44	na				
RB	101.292		52.52	na				
X1	94.5		55.65	na	100.0			
TEST	94.5		55.7	na				

The maximum velocity is 20.71 and it occurs in the pipe between nodes 59 and S

# 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	*****
51 to 52	26.80 26.8	2.154 100.0 0.0095		6.000 0.0 6.000	22.902 0.0 0.057		K Factor = 5.60		
52 to 53	26.83 53.63	2.154 100.0 0.0340		6.000 0.0 6.000	22.959 0.0 0.204		K Factor = 5.60		
53 to U	26.95 80.58	2.154 100.0 0.0723		3.500 0.0 3.500	23.163 0.036 0.253		K Factor = 5.60		
	0.0 80.58				23.452		K Factor = 16.64		
54 to 55	25.04 25.04	2.154 100.0 0.0083		6.000 0.0 6.000	20.000 0.0 0.050		K Factor = 5.60		
55 to 56	25.08 50.12	2.154 100.0 0.0300	2E	8.724 0.0 13.391	4.667 8.724 0.402	20.050 0.0	K Factor = 5.60		
56 to 57	25.32 75.44	2.154 100.0 0.0638		6.000 0.0 6.000	20.452 0.0 0.383		K Factor = 5.60		
57 to 58	25.57 101.01	2.154 100.0 0.1098		6.000 0.0 6.000	20.835 0.0 0.659		K Factor = 5.60		
58 to U	25.96 126.97	2.154 100.0 0.1675	1T	8.724 0.0 11.474	2.750 8.724 1.922	21.494 0.036	K Factor = 5.60		
	0.0 126.97				23.452		K Factor = 26.22		
U to 59	207.55 207.55	2.154 100.0 0.4160		2.500 0.0 2.500	23.452 0.0 1.040			Vel = 18.27	
59 to S	27.72 235.27	2.154 100.0 0.5244	1T	8.724 0.0 9.724	1.000 8.724 5.099	24.492 0.0	K Factor = 5.60		
S to K	0.0 235.27	2.635 100.0 0.1964	1T	11.758 0.0 14.966	3.209 11.757 2.940	29.591 1.389		Vel = 13.84	
K to L	0.0 235.27	3.26 100.0 0.0697	2E	13.428 0.0 62.679	49.250 13.429 4.368	33.920 0.036		Vel = 9.04	
L to M	0.0 235.27	3.26 100.0 0.0697	2E	13.428 0.0 43.929	30.500 13.429 3.062	38.324 0.054		Vel = 9.04	
M to N	0.0 235.27	4.26 100.0 0.0189	1T	18.795 0.0 22.462	3.667 18.795 0.425	41.440 0.0		Vel = 5.30	
N to DD	0.0 235.27	4.26 100.0 0.0189	1E	9.397 0.0 12.230	2.833 9.397 0.231	41.865 0.578		Vel = 5.30	

# 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	*****
DD to Z	0.0  235.27	4.26 100.0 0.0189	2E 1T	18.795 18.795 0.0	26.167 37.590 63.757	42.674 4.475 1.208		Vel = 5.30	
Z to TDV	0.0  235.27	4.26 100.0 0.0189	2E	18.795 0.0	13.750 18.795 32.545	48.357 0.469 0.616		Vel = 5.30	
TDV to RB	0.0  235.27	4.26 120.0 0.0135	1D 1G 1E 1S	36.868 2.633 13.167 28.968	5.667 81.636 87.303	49.442 1.895 1.180		Vel = 5.30	
RB to X1	0.0  235.27	6.16 140.0 0.0017	1T 1G	43.037 4.304 0.0	65.000 47.341 112.341	52.517 2.942 0.189		Vel = 2.53	
X1 to TEST	100.00  335.27	12.34 140.0 0.0001	2T	187.534 0.0 0.0	275.000 187.534 462.534	55.648 0.0 0.051		Qa = 100 Vel = 0.90	
	0.0 335.27					55.699		K Factor = 44.92	

# Water Supply Curve (C)

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City Water Supply:  
C1 - Static Pressure : 79  
C2 - Residual Pressure: 77  
C2 - Residual Flow : 1677

Demand:  
D1 - Elevation : 11.874  
D2 - System Flow : 235.266  
D2 - System Pressure : 55.699  
Hose ( Adj City ) : \_\_\_\_\_  
Hose ( Demand ) : 100  
D3 - System Demand : 335.266  
Safety Margin : 23.199

