



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

SPRINKLER SYSTEMS INC.  
4 AVON STREET  
P O BOX 1285  
LEWISTON, ME. 04243  
207-782-0104

Job Name : Hyatt Place Dry System Area 1  
Building : NEW  
Location : FORE STREET PORTLAND, MAINE  
System : 2 DRY  
Contract : 12101  
Data File : Hyatt Area Dry System Area 1.WXF

Hydraulic Design Information Sheet

Name - HYATT PLACE PORTLAND DRY SYSTEM AREA 1 Date - 07/12/13  
 Location - FORE STREET PORTLAND, MAINE  
 Building - NEW System No. - 2 DRY  
 Contractor - SPRINKLER SYSTEMS INC. Contract No. - 12101  
 Calculated By - CDS Drawing No. - 1-4 OF 4  
 Construction: ( ) Combustible (x) Non-Combustible Ceiling Height - VARIES  
 Occupancy - HOTEL / PORTE COCHERE

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

E	Area of Sprinkler Operation	1950	System Type	Sprinkler/Nozzle
M	Density	- .15	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 130	( ) Dry	Model F3QR
E	Elevation at Highest Outlet	- 38.500	( ) Deluge	Size 1/2" X 1/2"
S	Hose Allowance - Inside	- 0	( ) Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance	- 0	( ) Other	Temp.Rat.200 DEG.
G	Hose Allowance - Outside	- 250		

N Note

Calculation Flow Required - 366.69 Press Required - 86.534 AT BASE  
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 05/11/2013		Cap. -
T	Time of Test - AM	Rated Cap.-	Elev.-
E	Static Press - 101	@ Press -	
R	Residual Press - 99	Elev. -	Well
	Flow - 1342		Proof Flow
S	Elevation - 24.0'		

U Location - ON SITE

P Source of Information - OWNER AND WATER DISTRICT

C	Commodity	Class	Location
O	Storage Ht.	Area	Aisle W.
M	Storage Method:	%	Palletized % Rack
M	( ) 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:

# Fittings Used Summary

SPRINKLER SYSTEMS INC.  
Hyatt Place Dry System Area 1

Page 2  
Date

Fitting Legend		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
Abbrev.	Name																				
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Zac	Ames 2000SS	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

SPRINKLER SYSTEMS INC.  
Hyatt Place Dry System Area 1

Page 3  
Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	5.6	11.57	na	19.05	0.15	127	7.0
113D	38.5	K = K @ ARM	17.48	na	22.01			
113	38.5	K = K @ ARM	17.56	na	22.06			
111A	38.5	K = K @ ARM	15.26	na	20.57			
111	38.5	K = K @ ARM	15.34	na	20.62			
HSW	38.5	5.6	11.57	na	19.05	0.15	127	7.0
106A	38.5		13.9	na				
106B	38.5	K = K @ ARM	13.92	na	19.64			
106	38.5	K = K @ ARM	14.16	na	19.81			
113A	38.5	K = K @ ARM	16.81	na	21.58			
113B	38.5	K = K @ ARM	16.89	na	21.63			
113C	38.5	K = K @ ARM	17.18	na	21.82			
108	38.5	K = K @ ARM	14.67	na	20.17			
109	38.5	K = K @ ARM	14.75	na	20.21			
110	38.5	K = K @ ARM	15.0	na	20.39			
ARM1	38.5	5.6	11.9	na	19.32	0.15	127	7.0
101A	38.5	K = K @ ARM	13.23	na	19.15			
101	38.5		13.27	na				
102	38.5	K = K @ ARM	13.57	na	19.4			
103	38.5		13.58	na				
104	38.5	K = K @ ARM	13.74	na	19.51			
105	38.5	K = K @ ARM	14.07	na	19.74			
107	38.5		14.76	na				
112	38.5		15.66	na				
114	38.5		17.92	na				
115	38.5		49.97	na				
TDR	38.5		56.72	na				
TDV	29.5		64.64	na				
DVTI	28.0		80.45	na				
BKFL	26.0		82.03	na				
BASE	24.0		86.53	na				
HOSE	24.0		87.02	na	250.0			
TEST	24.0		87.04	na				

The maximum velocity is 21.57 and it occurs in the pipe between nodes 114 and 115

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Dry System Area 1

Page 4  
Date

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
TYP to ARM	19.05 19.05	1.049 100.0 0.1667	2T	7.137 0.0 0.0	2.000 7.137 9.137	11.572 0.0 1.523			K Factor = 5.60 Vel = 7.07	
	0.0 19.05						13.095		K Factor = 5.26	
113D to 113	22.01 22.01	2.157 100.0 0.0065		0.0 0.0 0.0	13.000 0.0 13.000	17.477 0.0 0.085			K Factor @ node ARM Vel = 1.93	
113 to 114	22.06 44.07	2.157 100.0 0.0235	1T	8.783 0.0 0.0	6.500 8.783 15.283	17.562 0.0 0.359			K Factor @ node ARM Vel = 3.87	
	0.0 44.07						17.921		K Factor = 10.41	
111A to 111	20.57 20.57	2.157 100.0 0.0058		0.0 0.0 0.0	13.000 0.0 13.000	15.264 0.0 0.075			K Factor @ node ARM Vel = 1.81	
111 to 112	20.62 41.19	2.157 100.0 0.0207	1T	8.783 0.0 0.0	6.500 8.783 15.283	15.339 0.0 0.317			K Factor @ node ARM Vel = 3.62	
	0.0 41.19						15.656		K Factor = 10.41	
HSW to 106A	19.05 19.05	1.049 100.0 0.1667	2T 2E	7.137 2.855 0.0	4.000 9.992 13.992	11.572 0.0 2.332			K Factor = 5.60 Vel = 7.07	
106A to 106B	0.0 19.05	2.157 100.0 0.0047		0.0 0.0 0.0	2.750 0.0 2.750	13.904 0.0 0.013			Vel = 1.67	
106B to 106	19.64 38.69	2.157 100.0 0.0185		0.0 0.0 0.0	13.000 0.0 13.000	13.917 0.0 0.240			K Factor @ node ARM Vel = 3.40	
106 to 107	19.81 58.5	2.157 100.0 0.0397	1T	8.783 0.0 0.0	6.500 8.783 15.283	14.157 0.0 0.607			K Factor @ node ARM Vel = 5.14	
	0.0 58.50						14.764		K Factor = 15.22	
113A to 113B	21.58 21.58	2.157 100.0 0.0063		0.0 0.0 0.0	13.000 0.0 13.000	16.807 0.0 0.082			K Factor @ node ARM Vel = 1.89	
113B to 113C	21.64 43.22	2.157 100.0 0.0226		0.0 0.0 0.0	13.000 0.0 13.000	16.889 0.0 0.294			K Factor @ node ARM Vel = 3.79	
113C to 114	21.82 65.04	2.157 100.0 0.0483	1T	8.783 0.0 0.0	6.500 8.783 15.283	17.183 0.0 0.738			K Factor @ node ARM Vel = 5.71	
	0.0									

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Dry System Area 1

Page 5  
Date

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
	65.04					17.921			K Factor = 15.36	
108 to 109	20.17	2.157 100.0		0.0	13.000	14.673 0.0			K Factor @ node ARM	
109 to 110	20.17	0.0055		0.0	13.000	0.072			Vel = 1.77	
109 to 110	20.21	2.157 100.0		0.0	13.000	14.745 0.0			K Factor @ node ARM	
110 to 112	40.38	0.0200		0.0	13.000	0.260			Vel = 3.55	
110 to 112	20.39	2.157 100.0	1T	8.783	6.500	15.005 0.0			K Factor @ node ARM	
112	60.77	0.0426		0.0	15.283	0.651			Vel = 5.34	
	0.0 60.77					15.656			K Factor = 15.36	
ARM1 to 101	19.32	1.049 100.0	1E 1T	1.427 3.568	3.000 4.995	11.904 0.0			K Factor = 5.60	
101	19.32	0.1710		0.0	7.995	1.367			Vel = 7.17	
	0.0 19.32					13.271			K Factor = 5.30	
101A to 101	19.15	2.157 100.0		0.0	8.000	13.231 0.0			K Factor @ node ARM	
101 to 103	19.15	0.0050		0.0	8.000	0.040			Vel = 1.68	
101 to 103	19.32	2.157 100.0	1T	8.783	8.000	13.271 0.0				
103	38.47	0.0183		0.0	16.783	0.307			Vel = 3.38	
	0.0 38.47					13.578			K Factor = 10.44	
102 to 103	19.40	2.635 100.0		0.0	2.000	13.574 0.0			K Factor @ node ARM	
103 to 104	19.4	0.0020		0.0	2.000	0.004			Vel = 1.14	
103 to 104	38.47	2.635 100.0		0.0	11.000	13.578 0.0				
104 to 105	57.87	0.0146		0.0	11.000	0.161			Vel = 3.40	
104 to 105	19.51	2.635 100.0		0.0	13.000	13.739 0.0			K Factor @ node ARM	
105 to 107	77.38	0.0252		0.0	13.000	0.327			Vel = 4.55	
105 to 107	19.74	2.635 100.0	1T	11.758	6.500	14.066 0.0			K Factor @ node ARM	
107 to 112	97.12	0.0382		0.0	18.257	0.698			Vel = 5.71	
107 to 112	58.50	2.635 100.0		0.0	9.750	14.764 0.0				
112 to 114	155.62	0.0915		0.0	9.750	0.892			Vel = 9.16	
112 to 114	101.96	2.635 100.0		0.0	9.750	15.656 0.0				
114 to 115	257.58	0.2323		0.0	9.750	2.265			Vel = 15.15	
114 to 115	109.10	2.635 100.0	2E 1T	11.758 11.758	48.250 23.514	17.921 0.0				
115	366.68	0.4466		0.0	71.764	32.047			Vel = 21.57	

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Dry System Area 1

Page 6  
Date

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
115 to TDR	0.0 366.68	2.635 100.0 0.4466	1E	5.879 0.0 0.0	9.250 5.879 15.129	49.968 0.0 6.756		Vel = 21.57	
TDR to TDV	0.0 366.68	2.635 100.0 0.4466		0.0 0.0 0.0	9.000 0.0 9.000	56.724 3.898 4.019		Vel = 21.57	
TDV to DVTI	0.0 366.68	2.635 120.0 0.3187	1B 1E 1T 1Eq	9.61 8.237 16.474 8.237	5.000 42.558 47.558	64.641 0.650 15.157		Vel = 21.57	
DVTI to BKFL	0.0 366.68	4.26 120.0 0.0307	1E	13.167 0.0 0.0	10.000 13.167 23.167	80.448 0.866 0.711		Vel = 8.25	
BKFL to BASE	0.0 366.68	4.026 120.0 0.0410	1Zac	0.0 0.0 0.0	1.000 0.0 1.000	82.025 4.468 0.041		* Fixed loss = 3.602 Vel = 9.24	
BASE to HOSE	0.0 366.68	6.16 140.0 0.0038	1E 1T 1G	20.084 43.037 4.304	60.000 67.425 127.425	86.534 0.0 0.488		Vel = 3.95	
HOSE to TEST	250.00 616.68	12.34 140.0 0.0003		0.0 0.0 0.0	50.000 0.0 50.000	87.022 0.0 0.017		Qa = 250 Vel = 1.65	
	0.0 616.68					87.039		K Factor = 66.10	

# Water Supply Curve (C)

SPRINKLER SYSTEMS INC.  
Hyatt Place Dry System Area 1

Page 7  
Date

City Water Supply:  
C1 - Static Pressure : 101  
C2 - Residual Pressure: 99  
C2 - Residual Flow : 1342

Demand:  
D1 - Elevation : 6.280  
D2 - System Flow : 366.685  
D2 - System Pressure : 87.039  
Hose ( Demand ) : 250  
D3 - System Demand : 616.685  
Safety Margin : 13.486

