



**... 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 Area 1  
Building : NEW  
Location : FORE STREET PORTLAND, MAINE  
System : 1 WET  
Contract : 12101  
Data File : Hyatt Area 1.WXF

Hydraulic Design Information Sheet

Name - HYATT PLACE PORTLAND AREA 1 Date - 06/20/13  
 Location - FORE STREET PORTLAND, MAINE  
 Building - NEW System No. - 1 WET  
 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 / BEDROOMS

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

E				
M	Area of Sprinkler Operation	- 4 HEADS	System Type	Sprinkler/Nozzle
	Density	- .10	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 202	( ) Dry	Model F1RES49
E	Elevation at Highest Outlet	- 100.500	( ) Deluge	Size 7/16" X 1/2"
S	Hose Allowance - Inside	- 0	( ) Preaction	K-Factor 4.9
I	Rack Sprinkler Allowance	- 0	( ) Other	Temp.Rat.155 DEG.
G	Hose Allowance - Outside	- 100		

N Note

Calculation Flow Required - 85.12 Press Required - 83.232 AT BASE  
 Summary C-Factor Used: 150 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

L Y

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

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

G Horizontal Barriers Provided:  
 E

# Fittings Used Summary

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 1

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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
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
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 Area 1

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Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	4.9	16.66	na	20.0	0.1	200	16.66
TYP1	0.0	4.9	16.99	na	20.2	0.1	202	16.99
1	100.5	K = K @ DROP	18.6	na	20.66			
2	100.5	K = K @ ARM	18.64	na	20.2			
3	100.5	K = K @ DROP	19.91	na	21.37			
4	100.5	K = K @ ARM	23.94	na	22.89			
5	100.5		30.63	na				
12	100.5		34.73	na				
A7	100.5		47.02	na				
A6	89.5		51.8	na				
A5	80.17		55.86	na				
A4	70.83		59.93	na				
A3	61.6		63.95	na				
A2	50.83		68.63	na				
A1	38.0		74.45	na				
TOR	34.0		76.24	na				
BKFL	26.0		79.76	na				
BASE	24.0		83.23	na				
HOSE	24.0		83.26	na	100.0			
TEST	24.0		83.27	na				

The maximum velocity is 20.97 and it occurs in the pipe between nodes 3 and 4

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 1

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Date

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftnng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
TYP to DROP	20.00 20.0	1.049 120.0 0.1302	1T 5.0 0.0 0.0	1.000 5.000 6.000	16.660 0.0 0.781		K Factor = 4.90 Vel = 7.42		
	0.0 20.00					17.441	K Factor = 4.79		
TYP1 to ARM	20.20 20.2	1.101 150.0 0.0693	2E 7.65 1T 9.563 0.0	6.500 17.212 23.712	16.995 0.0 1.643		K Factor = 4.90 Vel = 6.81		
	0.0 20.20					18.638	K Factor = 4.68		
1 to 2	20.66 20.66	1.101 150.0 0.0720	0.0 0.0 0.0	0.500 0.0 0.500	18.602 0.0 0.036		K Factor @ node DROP Vel = 6.96		
2 to 3	20.20 40.86	1.101 150.0 0.2550	0.0 0.0 0.0	5.000 0.0 5.000	18.638 0.0 1.275		K Factor @ node ARM Vel = 13.77		
3 to 4	21.37 62.23	1.101 150.0 0.5556	0.0 0.0 0.0	7.250 0.0 7.250	19.913 0.0 4.028		K Factor @ node DROP Vel = 20.97		
4 to 5	22.89 85.12	1.394 150.0 0.3143	1E 4.762 1T 9.523 0.0	7.000 14.284 21.284	23.941 0.0 6.690		K Factor @ node ARM Vel = 17.89		
5 to 12	0.0 85.12	2.157 120.0 0.0567	2E 12.307 0.0 0.0	60.000 12.307 72.307	30.631 0.0 4.098		Vel = 7.47		
12 to A7	0.0 85.12	2.157 120.0 0.0567	2E 12.307 4T 49.227 1B 7.384 1Fsp 0.0	95.000 68.918 163.918	34.729 3.000 9.289		* Fixed loss = 3 Vel = 7.47		
A7 to A6	0.0 85.12	4.26 120.0 0.0021	0.0 0.0 0.0	11.000 0.0 11.000	47.018 4.764 0.023		Vel = 1.92		
A6 to A5	0.0 85.12	4.26 120.0 0.0020	0.0 0.0 0.0	9.330 0.0 9.330	51.805 4.041 0.019		Vel = 1.92		
A5 to A4	0.0 85.12	4.26 120.0 0.0020	0.0 0.0 0.0	9.330 0.0 9.330	55.865 4.045 0.019		Vel = 1.92		
A4 to A3	0.0 85.12	4.26 120.0 0.0020	0.0 0.0 0.0	9.330 0.0 9.330	59.929 3.998 0.019		Vel = 1.92		
A3 to A2	0.0 85.12	4.26 120.0 0.0021	0.0 0.0 0.0	10.500 0.0 10.500	63.946 4.664 0.022		Vel = 1.92		
A2 to A1	0.0 85.12	4.26 120.0 0.0021	1B 15.8 6E 79.002 0.0	30.500 94.802 125.302	68.632 5.557 0.258		Vel = 1.92		

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 1

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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	*****
A1 to TOR	0.0 85.12	4.26 120.0 0.0021	1T	26.334 0.0 29.334	3.000 26.334 29.334	74.447 1.732 0.061		Vel = 1.92	
TOR to BKFL	0.0 85.12	4.26 120.0 0.0021	1E	13.167 0.0 28.167	15.000 13.167 28.167	76.240 3.465 0.058		Vel = 1.92	
BKFL to BASE	0.0 85.12	4.026 120.0 0.0030	1Zac	0.0 0.0 0.0	1.000 0.0 1.000	79.763 3.466 0.003		* Fixed loss = 2.6 Vel = 2.15	
BASE to HOSE	0.0 85.12	6.16 140.0 0.0003	1E 1T 1G	20.084 43.037 4.304	60.000 67.425 127.425	83.232 0.0 0.032		Vel = 0.92	
HOSE to TEST	100.00 185.12	12.34 140.0 0.0		0.0 0.0 0.0	50.000 0.0 50.000	83.264 0.0 0.002		Qa = 100 Vel = 0.50	
	0.0 185.12					83.266		K Factor = 20.29	

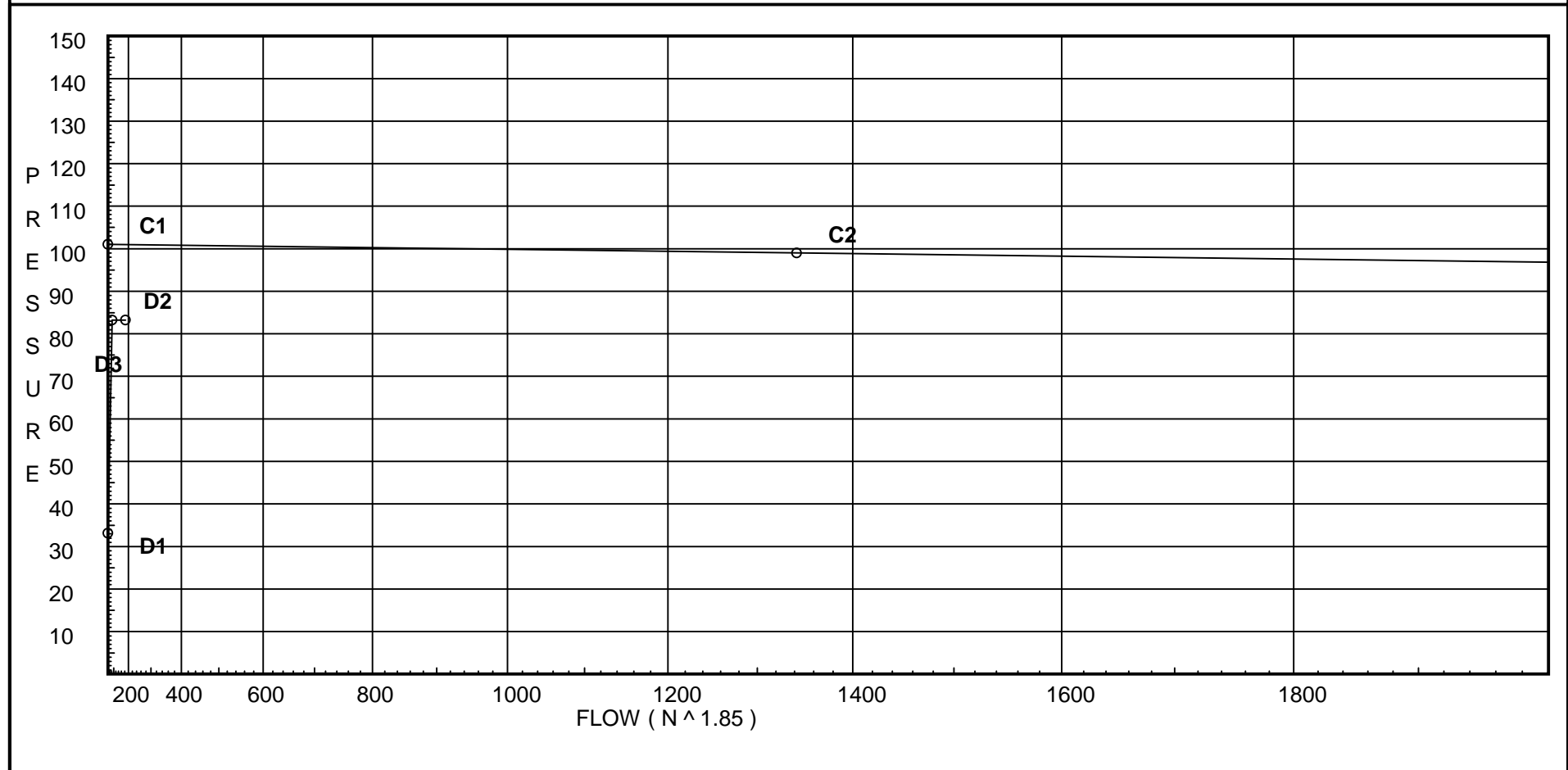
# Water Supply Curve (C)

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 1

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Date

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

Demand:  
D1 - Elevation : 33.132  
D2 - System Flow : 85.12  
D2 - System Pressure : 83.266  
Hose ( Demand ) : 100  
D3 - System Demand : 185.12  
Safety Margin : 17.683



Hydraulic Design Information Sheet

Name - HYATT PLACE PORTLAND AREA 2 Date - 06/20/13  
 Location - FORE STREET PORTLAND, MAINE  
 Building - NEW System No. - 1 WET  
 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 / SERVICE AREA

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				
M	Area of Sprinkler Operation	- ENTIRE	System Type	Sprinkler/Nozzle
	Density	- .15	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 130	( ) Dry	Model F1FR
E	Elevation at Highest Outlet	- 102.250	( ) 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.155 DEG.
G	Hose Allowance - Outside	- 250		

N Note

Calculation Flow Required - 110.71 Press Required - 83.523 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
	( ) 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:



# Pressure / Flow Summary - STANDARD

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 2

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Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	5.6	12.13	na	19.5	0.15	130	7.0
6	102.25	5.6	11.25	na	18.78	0.15	100	7.0
7	102.25	K = K @ DROP	12.87	na	19.5			
8	102.25	5.6	17.29	na	23.28	0.15	130	7.0
9	102.25		17.3	na				
10	102.25	5.6	18.17	na	23.87	0.15	130	7.0
11	102.25	5.6	20.37	na	25.27	0.15	130	7.0
12	100.5		29.44	na				
A7	100.5		47.54	na				
A6	89.5		52.34	na				
A5	80.17		56.42	na				
A4	70.83		60.49	na				
A3	61.6		64.52	na				
A2	50.83		69.22	na				
A1	38.0		75.2	na				
TOR	34.0		77.03	na				
BKFL	26.0		80.59	na				
BASE	24.0		83.52	na				
HOSE	24.0		83.58	na	250.0			
TEST	24.0		83.58	na				

The maximum velocity is 15.99 and it occurs in the pipe between nodes 11 and 12

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 2

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Date

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftnng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
TYP to DROP	19.50 19.5	1.049 120.0 0.1242	1T 5.0 0.0 0.0	1.000 5.000 6.000	12.125 0.0 0.745			K Factor = 5.60 Vel = 7.24	
	0.0 19.50					12.870		K Factor = 5.44	
6 to 7	18.78 18.78	1.049 120.0 0.1159	3E 6.0 0.0 0.0	8.000 6.000 14.000	11.248 0.0 1.622			K Factor = 5.60 Vel = 6.97	
7 to 9	19.50 38.28	1.049 120.0 0.4326	1T 5.0 0.0 0.0	5.250 5.000 10.250	12.870 0.0 4.434			K Factor @ node DROP Vel = 14.21	
	0.0 38.28					17.304		K Factor = 9.20	
8 to 9	23.28 23.28	1.682 120.0 0.0180	0.0 0.0 0.0	1.000 0.0 1.000	17.286 0.0 0.018			K Factor = 5.60 Vel = 3.36	
9 to 10	38.28 61.56	1.682 120.0 0.1045	0.0 0.0 0.0	8.250 0.0 8.250	17.304 0.0 0.862			Vel = 8.89	
10 to 11	23.87 85.43	1.682 120.0 0.1916	0.0 0.0 0.0	11.500 0.0 11.500	18.166 0.0 2.203			K Factor = 5.60 Vel = 12.34	
11 to 12	25.28 110.71	1.682 120.0 0.3095	1E 4.95 1T 9.9 0.0	12.000 14.850 26.850	20.369 0.758 8.309			K Factor = 5.60 Vel = 15.99	
12 to A7	0.0 110.71	2.157 120.0 0.0922	2E 12.307 4T 49.227 1B 7.384 1Fsp 0.0	95.000 68.918 163.918	29.436 3.000 15.106			* Fixed loss = 3 Vel = 9.72	
A7 to A6	0.0 110.71	4.26 120.0 0.0034	0.0 0.0 0.0	11.000 0.0 11.000	47.542 4.764 0.037			Vel = 2.49	
A6 to A5	0.0 110.71	4.26 120.0 0.0033	0.0 0.0 0.0	9.330 0.0 9.330	52.343 4.041 0.031			Vel = 2.49	
A5 to A4	0.0 110.71	4.26 120.0 0.0034	0.0 0.0 0.0	9.330 0.0 9.330	56.415 4.045 0.032			Vel = 2.49	
A4 to A3	0.0 110.71	4.26 120.0 0.0033	0.0 0.0 0.0	9.330 0.0 9.330	60.492 3.998 0.031			Vel = 2.49	
A3 to A2	0.0 110.71	4.26 120.0 0.0033	0.0 0.0 0.0	10.500 0.0 10.500	64.521 4.664 0.035			Vel = 2.49	
A2 to A1	0.0 110.71	4.26 120.0 0.0034	1B 15.8 6E 79.002 0.0	30.500 94.802 125.302	69.220 5.557 0.420			Vel = 2.49	

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 2

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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	*****
A1 to TOR	0.0 110.71	4.26 120.0 0.0034	1T 26.334 0.0 0.0	3.000 26.334 29.334	75.197 1.732 0.099		Vel = 2.49		
TOR to BKFL	0.0 110.71	4.26 120.0 0.0033	1E 13.167 0.0 0.0	15.000 13.167 28.167	77.028 3.465 0.094		Vel = 2.49		
BKFL to BASE	0.0 110.71	4.026 120.0 0.0040	1Zac 0.0 0.0 0.0	1.000 0.0 1.000	80.587 2.932 0.004		* Fixed loss = 2.066 Vel = 2.79		
BASE to HOSE	0.0 110.71	6.16 140.0 0.0004	1E 20.084 1T 43.037 1G 4.304	60.000 67.425 127.425	83.523 0.0 0.054		Vel = 1.19		
HOSE to TEST	250.00 360.71	12.34 140.0 0.0001	0.0 0.0 0.0	50.000 0.0 50.000	83.577 0.0 0.006		Qa = 250 Vel = 0.97		
	0.0 360.71				83.583		K Factor = 39.45		

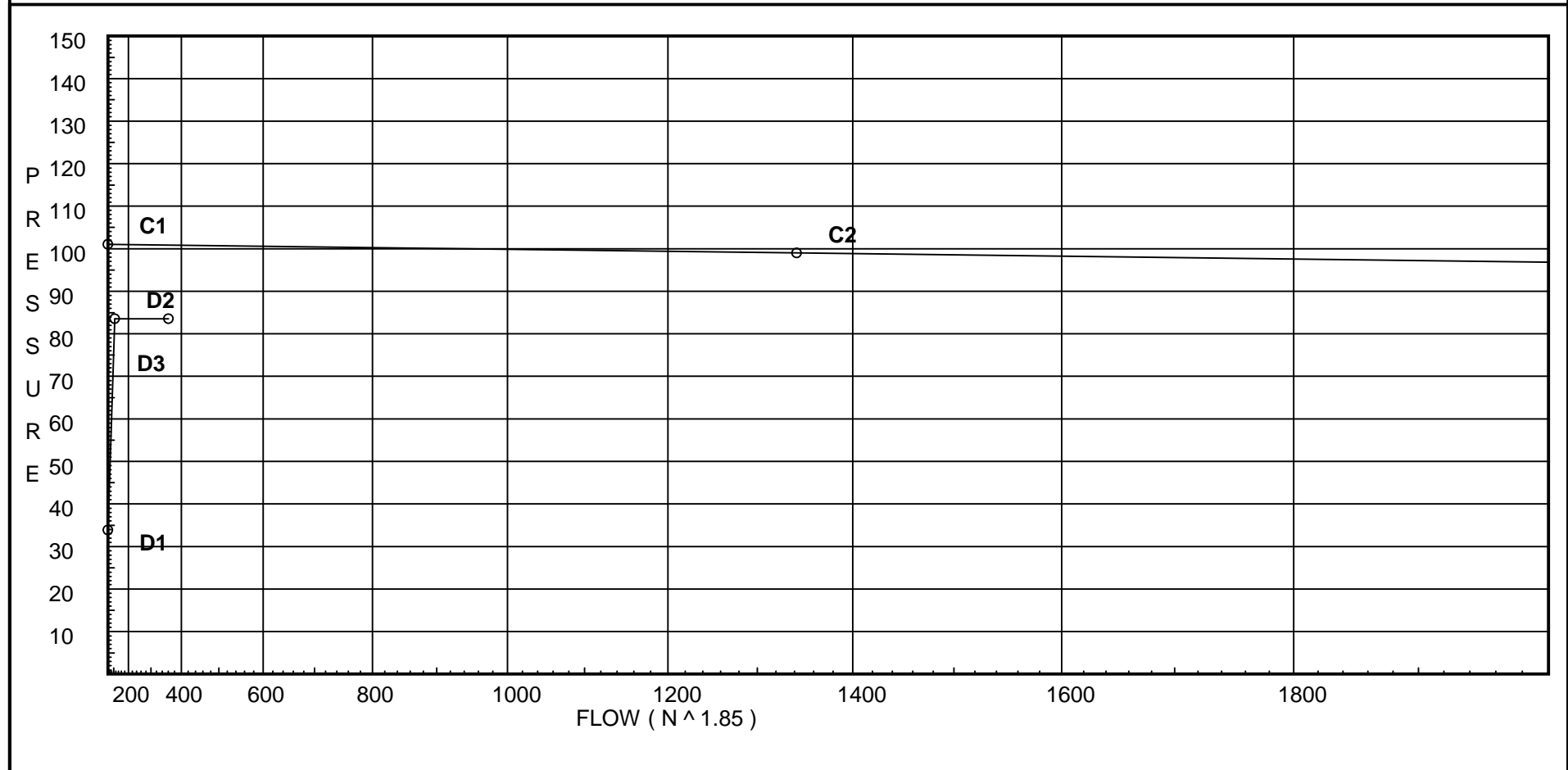
# Water Supply Curve (C)

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 2

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Date

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

Demand:  
D1 - Elevation : 33.890  
D2 - System Flow : 110.707  
D2 - System Pressure : 83.583  
Hose ( Demand ) : 250  
D3 - System Demand : 360.707  
Safety Margin : 17.241



Hydraulic Design Information Sheet

Name - HYATT PLACE PORTLAND AREA 3 Date - 06/20/13  
 Location - FORE STREET PORTLAND, MAINE  
 Building - NEW System No. - 1 WET  
 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 / BEDROOMS

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

E				
M	Area of Sprinkler Operation	- 4 HEADS	System Type	Sprinkler/Nozzle
	Density	- .05	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 324	( ) Dry	Model F1RES49
E	Elevation at Highest Outlet	- 89.500	( ) Deluge	Size 7/16" X 1/2"
S	Hose Allowance - Inside	- 0	( ) Preaction	K-Factor 4.9
I	Rack Sprinkler Allowance	- 0	( ) Other	Temp.Rat.155 DEG.
G	Hose Allowance - Outside	- 100		

N Note

Calculation Flow Required - 74.95 Press Required - 89.829 AT BASE  
 Summary C-Factor Used: 150 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:

# Pressure / Flow Summary - STANDARD

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 3

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Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	4.9	12.0	na	16.97	0.05	324	12.0
21	89.5	K = K @ DROP	12.58	na	16.97			
22	89.5	K = K @ DROP	13.41	na	17.53			
23	89.5	K = K @ DROP	16.87	na	19.66			
24	89.5		16.94	na				
25	89.5	K = K @ DROP	18.87	na	20.79			
26	89.5		30.68	na				
27	89.5		46.79	na				
A6	89.5		58.1	na				
A5	80.17		62.15	na				
A4	70.83		66.22	na				
A3	61.6		70.23	na				
A2	50.83		74.91	na				
A1	38.0		80.67	na				
TOR	34.0		82.45	na				
BKFL	26.0		85.96	na				
BASE	24.0		89.83	na				
HOSE	24.0		89.86	na	100.0			
TEST	24.0		89.86	na				

The maximum velocity is 25.26 and it occurs in the pipe between nodes 25 and 26

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 3

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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 DROP	16.97 16.97	1.049 120.0 0.0960	1T	5.0 0.0 0.0	1.000 5.000 6.000	12.000 0.0 0.576			K Factor = 4.90 Vel = 6.30	
	0.0 16.97						12.576		K Factor = 4.79	
21 to 22	16.97 16.97	1.101 120.0 0.0759		0.0 0.0 0.0	11.000 0.0 11.000	12.576 0.0 0.835			K Factor @ node DROP Vel = 5.72	
22 to 24	17.53 34.5	1.101 150.0 0.1866	1E 1T	3.825 9.563 0.0	5.500 13.387 18.887	13.411 0.0 3.525			K Factor @ node DROP Vel = 11.63	
	0.0 34.50						16.936		K Factor = 8.38	
23 to 24	19.66 19.66	1.101 150.0 0.0660		0.0 0.0 0.0	1.000 0.0 1.000	16.870 0.0 0.066			K Factor @ node DROP Vel = 6.63	
24 to 25	34.50 54.16	1.101 150.0 0.4296		0.0 0.0 0.0	4.500 0.0 4.500	16.936 0.0 1.933			Vel = 18.25	
25 to 26	20.79 74.95	1.101 150.0 0.7838	1T	9.563 0.0 0.0	5.500 9.562 15.062	18.869 0.0 11.806			K Factor @ node DROP Vel = 25.26	
26 to 27	0.0 74.95	1.101 150.0 0.7839	1T	9.563 0.0 0.0	11.000 9.562 20.562	30.675 0.0 16.118			Vel = 25.26	
27 to A6	0.0 74.95	2.157 120.0 0.0448	3T 1B 1Fsp 1E	36.92 7.384 0.0 6.153	135.000 50.457 185.457	46.793 3.000 8.306			* Fixed loss = 3 Vel = 6.58	
A6 to A5	0.0 74.95	4.26 120.0 0.0016		0.0 0.0 0.0	9.330 0.0 9.330	58.099 4.041 0.015			Vel = 1.69	
A5 to A4	0.0 74.95	4.26 120.0 0.0016		0.0 0.0 0.0	9.330 0.0 9.330	62.155 4.045 0.015			Vel = 1.69	
A4 to A3	0.0 74.95	4.26 120.0 0.0016		0.0 0.0 0.0	9.330 0.0 9.330	66.215 3.998 0.015			Vel = 1.69	
A3 to A2	0.0 74.95	4.26 120.0 0.0017		0.0 0.0 0.0	10.500 0.0 10.500	70.228 4.664 0.018			Vel = 1.69	
A2 to A1	0.0 74.95	4.26 120.0 0.0016	1B 6E	15.8 79.002 0.0	30.500 94.802 125.302	74.910 5.557 0.203			Vel = 1.69	
A1 to TOR	0.0 74.95	4.26 120.0 0.0016	1T	26.334 0.0 0.0	3.000 26.334 29.334	80.670 1.732 0.048			Vel = 1.69	

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 3

Page 15  
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	*****
TOR	0.0	4.26	1E	13.167	15.000	82.450			
to		120.0		0.0	13.167	3.465			
BKFL	74.95	0.0016		0.0	28.167	0.046		Vel = 1.69	
BKFL	0.0	4.026	1Zac	0.0	1.000	85.961			
to		120.0		0.0	0.0	3.866		* Fixed loss = 3	
BASE	74.95	0.0030		0.0	1.000	0.003		Vel = 1.89	
BASE	0.0	6.16	1E	20.084	60.000	89.830			
to		140.0	1T	43.037	67.425	0.0			
HOSE	74.95	0.0002	1G	4.304	127.425	0.025		Vel = 0.81	
HOSE	100.00	12.34		0.0	50.000	89.855		Qa = 100	
to		140.0		0.0	0.0	0.0			
TEST	174.95	0.0		0.0	50.000	0.002		Vel = 0.47	
	0.0								
	174.95					89.857		K Factor = 18.46	



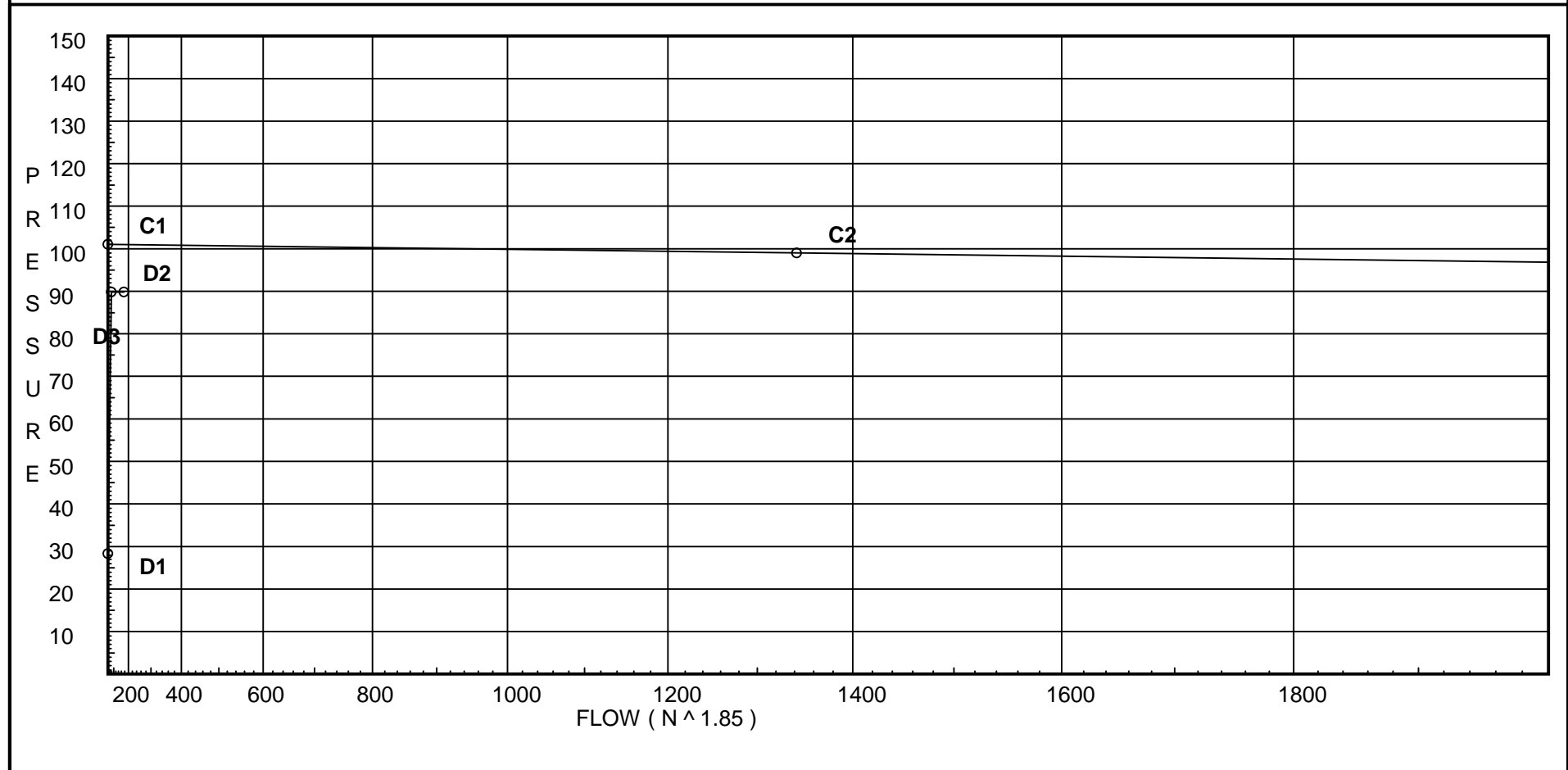
# Water Supply Curve (C)

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 3

Page 16  
Date

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

Demand:  
D1 - Elevation : 28.368  
D2 - System Flow : 74.953  
D2 - System Pressure : 89.857  
Hose ( Demand ) : 100  
D3 - System Demand : 174.953  
Safety Margin : 11.097



Hydraulic Design Information Sheet

Name - HYATT PLACE PORTLAND AREA 4 Date - 06/20/13  
 Location - FORE STREET PORTLAND, MAINE  
 Building - NEW System No. - 1 WET  
 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 / BEDROOMS

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

E				
M	Area of Sprinkler Operation	- 4 HEADS	System Type	Sprinkler/Nozzle
	Density	- .05	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 324	( ) Dry	Model F1RES44
E	Elevation at Highest Outlet	- 80.170	( ) Deluge	Size 7/16" X 1/2"
S	Hose Allowance - Inside	- 0	( ) Preaction	K-Factor 4.4
I	Rack Sprinkler Allowance	- 0	( ) Other	Temp.Rat.155 DEG.
G	Hose Allowance - Outside	- 100		

N Note

Calculation Flow Required - 78.37 Press Required - 83.130 AT BASE  
 Summary C-Factor Used: 150 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
	( ) 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:

# Pressure / Flow Summary - STANDARD

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 4

Page 18  
Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	4.9	12.0	na	16.97	0.05	324	12.0
TYP1	0.0	4.4	27.62	na	23.13	0.1	231.25	27.62
33	80.17	4.4	20.86	na	20.1	0.05	324	18.7
34	80.17	4.4	20.99	na	20.16	0.05	324	18.7
32	80.17	4.4	18.82	na	19.09	0.05	324	18.7
31	80.17	4.4	18.7	na	19.03	0.05	324	18.7
32T	80.17		19.47	na				
34T	80.17		21.71	na				
34TT	80.17		33.68	na				
35	80.17		38.68	na				
36	80.17		43.14	na				
A5	80.17		55.55	na				
A4	70.83		59.61	na				
A3	61.6		63.62	na				
A2	50.83		68.3	na				
A1	38.0		74.08	na				
TOR	34.0		75.87	na				
BKFL	26.0		79.38	na				
BASE	24.0		83.13	na				
HOSE	24.0		83.16	na	100.0			
TEST	24.0		83.16	na				

The maximum velocity is 26.41 and it occurs in the pipe between nodes 34T and 34TT

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 4

Page 19  
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 DROP	16.97	1.049 120.0	1T	5.0 0.0	1.000 5.000	12.000 0.0			K Factor = 4.90	
	16.97	0.0960		0.0	6.000	0.576			Vel = 6.30	
	0.0 16.97						12.576		K Factor = 4.79	
TYP1 to HSW	23.12	1.049 120.0	1T	5.0 0.0	1.500 5.000	27.622 0.0			K Factor = 4.40	
	23.12	0.1703		0.0	6.500	1.107			Vel = 8.58	
	0.0 23.12						28.729		K Factor = 4.31	
33 to 34T	20.10	1.049 120.0	1T	5.0 0.0	1.500 5.000	20.861 0.0			K Factor = 4.40	
	20.1	0.1312		0.0	6.500	0.853			Vel = 7.46	
	0.0 20.10						21.714		K Factor = 4.31	
34 to 34T	20.16	1.049 120.0	1T	5.0 0.0	0.500 5.000	20.988 0.0			K Factor = 4.40	
	20.16	0.1320		0.0	5.500	0.726			Vel = 7.48	
	0.0 20.16						21.714		K Factor = 4.33	
32 to 32T	19.09	1.049 120.0	1T	5.0 0.0	0.500 5.000	18.815 0.0			K Factor = 4.40	
	19.09	0.1193		0.0	5.500	0.656			Vel = 7.09	
	0.0 19.09						19.471		K Factor = 4.33	
31 to 32T	19.03	1.049 120.0	1T	5.0 0.0	1.500 5.000	18.700 0.0			K Factor = 4.40	
	19.03	0.1186		0.0	6.500	0.771			Vel = 7.06	
32T to 34T	19.08	1.101 150.0		0.0 0.0	10.000 0.0	19.471 0.0				
	38.11	0.2243		0.0	10.000	2.243			Vel = 12.84	
34T to 34TT	40.26	1.101 150.0	1T	9.563 0.0	4.500 9.562	21.714 0.0				
	78.37	0.8512		0.0	14.062	11.969			Vel = 26.41	
34TT to 35	0.0	1.394 150.0	1T	9.523 0.0	9.000 9.523	33.683 0.0				
	78.37	0.2698		0.0	18.523	4.997			Vel = 16.47	
35 to 36	0.0	1.394 150.0	1T	9.523 0.0	7.000 9.523	38.680 0.0				
	78.37	0.2697		0.0	16.523	4.457			Vel = 16.47	
36 to A5	0.0	2.157 120.0	3T 1B	36.92 7.384	143.000 50.457	43.137 3.000			* Fixed loss = 3	
	78.37	0.0486	1Fsp 1E	0.0 6.153	193.457	9.409			Vel = 6.88	
A5 to A4	0.0	4.26 120.0		0.0 0.0	9.330 0.0	55.546 4.045				
	78.37	0.0017		0.0	9.330	0.016			Vel = 1.76	

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 4

Page 20  
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	*****
A4	0.0	4.26		0.0	9.330	59.607				
to		120.0		0.0	0.0	3.998				
A3	78.37	0.0017		0.0	9.330	0.016		Vel =	1.76	
A3	0.0	4.26		0.0	10.500	63.621				
to		120.0		0.0	0.0	4.664				
A2	78.37	0.0018		0.0	10.500	0.019		Vel =	1.76	
A2	0.0	4.26	1B	15.8	30.500	68.304				
to		120.0	6E	79.002	94.802	5.557				
A1	78.37	0.0018		0.0	125.302	0.222		Vel =	1.76	
A1	0.0	4.26	1T	26.334	3.000	74.083				
to		120.0		0.0	26.334	1.732				
TOR	78.37	0.0018		0.0	29.334	0.052		Vel =	1.76	
TOR	0.0	4.26	1E	13.167	15.000	75.867				
to		120.0		0.0	13.167	3.465				
BKFL	78.37	0.0018		0.0	28.167	0.050		Vel =	1.76	
BKFL	0.0	4.026	1Zac	0.0	1.000	79.382				
to		120.0		0.0	0.0	3.746		* Fixed loss =	2.88	
BASE	78.37	0.0020		0.0	1.000	0.002		Vel =	1.98	
BASE	0.0	6.16	1E	20.084	60.000	83.130				
to		140.0	1T	43.037	67.425	0.0				
HOSE	78.37	0.0002	1G	4.304	127.425	0.028		Vel =	0.84	
HOSE	100.00	12.34		0.0	50.000	83.158		Qa =	100	
to		140.0		0.0	0.0	0.0				
TEST	178.37	0.0		0.0	50.000	0.002		Vel =	0.48	
	0.0									
	178.37					83.160		K Factor =	19.56	

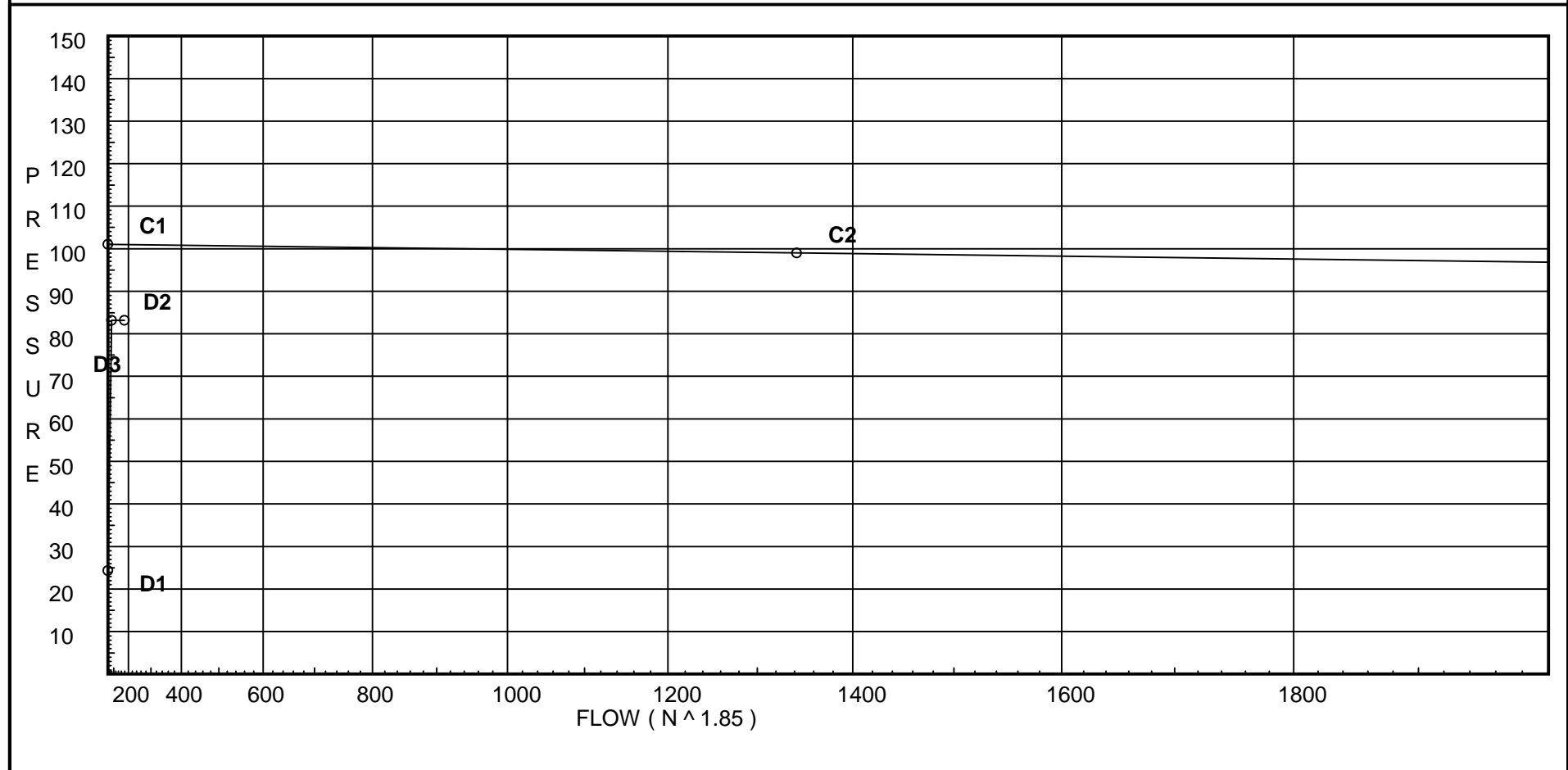
# Water Supply Curve (C)

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 4

Page 21  
Date

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

Demand:  
D1 - Elevation : 24.327  
D2 - System Flow : 78.367  
D2 - System Pressure : 83.160  
Hose ( Demand ) : 100  
D3 - System Demand : 178.367  
Safety Margin : 17.792



Hydraulic Design Information Sheet

Name - HYATT PLACE PORTLAND AREA 5 Date - 06/20/13  
 Location - FORE STREET PORTLAND, MAINE  
 Building - NEW System No. - 1 WET  
 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 / BEDROOMS

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

E				
M	Area of Sprinkler Operation	- 4 HEADS	System Type	Sprinkler/Nozzle
	Density	- .05	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 324	( ) Dry	Model F1RES44
E	Elevation at Highest Outlet	- 80.170	( ) Deluge	Size 7/16" X 1/2"
S	Hose Allowance - Inside	- 0	( ) Preaction	K-Factor 4.4
I	Rack Sprinkler Allowance	- 0	( ) Other	Temp.Rat.155 DEG.
G	Hose Allowance - Outside	- 100		

N Note

Calculation Flow Required - 86.04 Press Required - 86.817 AT BASE  
 Summary C-Factor Used: 150 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: Solid Piled % Palletized % Rack  
 M ( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.  
 S R ( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non  
 T A ( ) Mult. Row ( ) Open Shelf

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

G Horizontal Barriers Provided:  
 E

# Pressure / Flow Summary - STANDARD

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 5

Page 23  
Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	4.9	12.0	na	16.97	0.05	324	12.0
TYP1	0.0	4.4	18.7	na	19.03	0.05	324	18.7
37A	80.17	K = K @ HSW	19.35	na	19.03			
37B	80.17	K = K @ HSW	20.04	na	19.36			
37C	80.17	K = K @ DROP	23.18	na	23.04			
37D	80.17	K = K @ DROP	26.43	na	24.61			
38	80.17		42.18	na				
39	80.17		45.7	na				
A5	80.17		59.48	na				
A4	70.83		63.55	na				
A3	61.6		67.56	na				
A2	50.83		72.25	na				
A1	38.0		78.07	na				
TOR	34.0		79.86	na				
BKFL	26.0		83.39	na				
BASE	24.0		86.82	na				
HOSE	24.0		86.85	na	100.0			
TEST	24.0		86.85	na				

The maximum velocity is 28.99 and it occurs in the pipe between nodes 37D and 38



# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 5

Page 24  
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 DROP	16.97	1.049 120.0	1T	5.0 0.0	1.000 5.000	12.000 0.0			K Factor = 4.90	
	16.97	0.0960		0.0	6.000	0.576			Vel = 6.30	
	0.0 16.97						12.576		K Factor = 4.79	
TYP1 to HSW	19.03	1.049 120.0	1T	5.0 0.0	0.500 5.000	18.700 0.0			K Factor = 4.40	
	19.03	0.1187		0.0	5.500	0.653			Vel = 7.06	
	0.0 19.03						19.353		K Factor = 4.33	
37A to 37B	19.03	1.101 150.0		0.0 0.0	11.000 0.0	19.353 0.0			K Factor @ node HSW	
	19.03	0.0620		0.0	11.000	0.682			Vel = 6.41	
37B to 37C	19.36	1.101 150.0	1E	3.825 0.0	10.000 3.825	20.035 0.0			K Factor @ node HSW	
	38.39	0.2273		0.0	13.825	3.143			Vel = 12.94	
37C to 37D	23.04	1.101 150.0		0.0 0.0	6.000 0.0	23.178 0.0			K Factor @ node DROP	
	61.43	0.5423		0.0	6.000	3.254			Vel = 20.70	
37D to 38	24.61	1.101 150.0	1T	9.563 0.0	6.000 9.562	26.432 0.0			K Factor @ node DROP	
	86.04	1.0117		0.0	15.562	15.744			Vel = 28.99	
38 to 39	0.0	1.394 150.0		0.0 0.0	11.000 0.0	42.176 0.0				
	86.04	0.3206		0.0	11.000	3.527			Vel = 18.09	
39 to A5	0.0	2.157 120.0	3T 1B	36.92 7.384	136.000 50.457	45.703 3.000			* Fixed loss = 3	
	86.04	0.0578	1Fsp 1E	0.0 6.153	186.457	10.779			Vel = 7.55	
A5 to A4	0.0	4.26 120.0		0.0 0.0	9.330 0.0	59.482 4.045				
	86.04	0.0020		0.0	9.330	0.019			Vel = 1.94	
A4 to A3	0.0	4.26 120.0		0.0 0.0	9.330 0.0	63.546 3.998				
	86.04	0.0020		0.0	9.330	0.019			Vel = 1.94	
A3 to A2	0.0	4.26 120.0		0.0 0.0	10.500 0.0	67.563 4.664				
	86.04	0.0022		0.0	10.500	0.023			Vel = 1.94	
A2 to A1	0.0	4.26 120.0	1B 6E	15.8 79.002	30.500 94.802	72.250 5.557				
	86.04	0.0021		0.0	125.302	0.263			Vel = 1.94	
A1 to TOR	0.0	4.26 120.0	1T	26.334 0.0	3.000 26.334	78.070 1.732				
	86.04	0.0021		0.0	29.334	0.062			Vel = 1.94	
TOR to BKFL	0.0	4.26 120.0	1E	13.167 0.0	15.000 13.167	79.864 3.465				
	86.04	0.0021		0.0	28.167	0.059			Vel = 1.94	

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 5

Page 25  
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	*****
BKFL to BASE	0.0 86.04	4.026 120.0 0.0030	1Zac	0.0 0.0 0.0	1.000 0.0 1.000	83.388 3.426 0.003			* Fixed loss = 2.56 Vel = 2.17	
BASE to HOSE	0.0 86.04	6.16 140.0 0.0003	1E 1T 1G	20.084 43.037 4.304	60.000 67.425 127.425	86.817 0.0 0.033			Vel = 0.93	
HOSE to TEST	100.00 186.04	12.34 140.0 0.0		0.0 0.0 0.0	50.000 0.0 50.000	86.850 0.0 0.002			Qa = 100 Vel = 0.50	
	0.0 186.04					86.852			K Factor = 19.96	

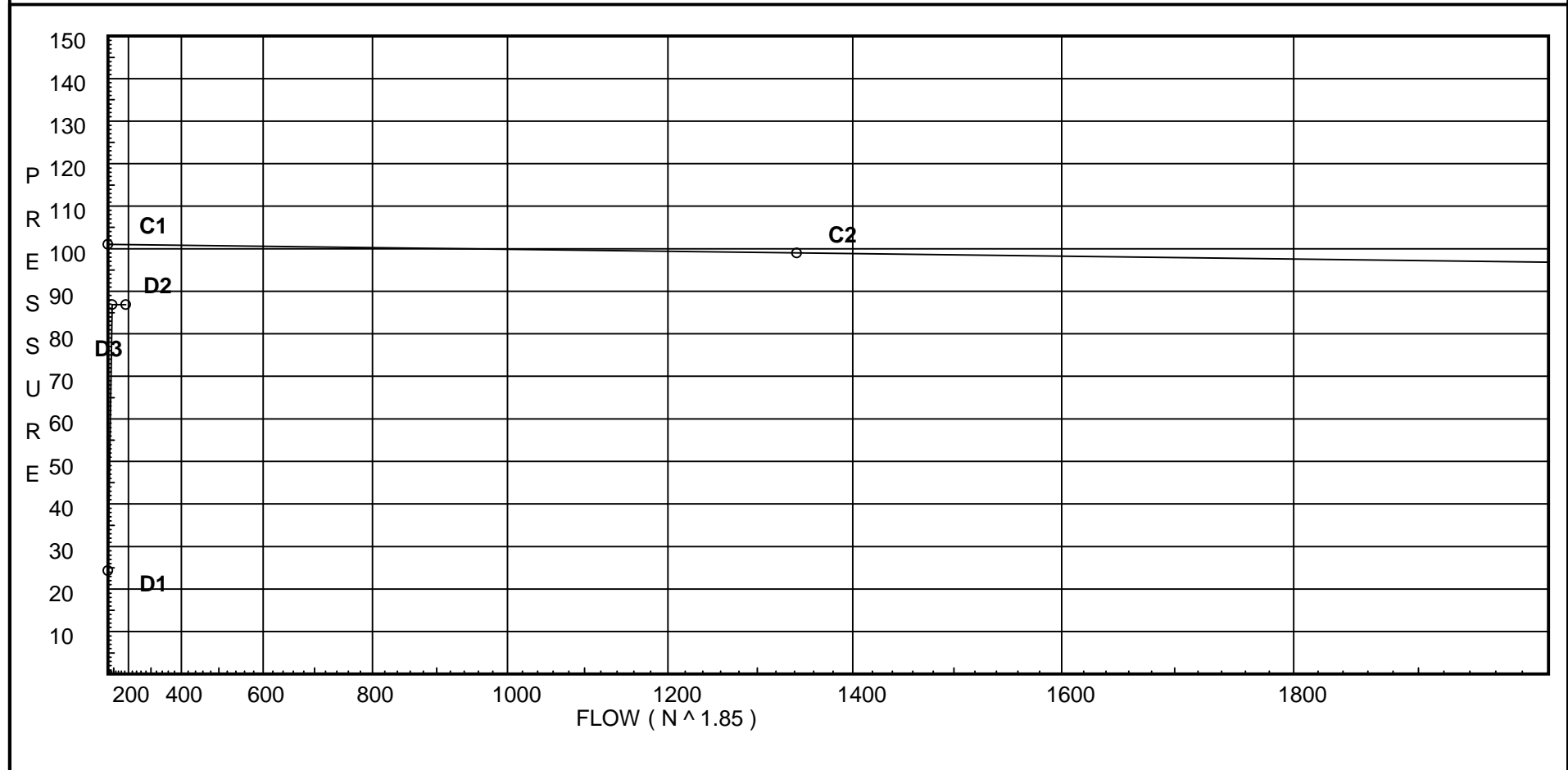
# Water Supply Curve (C)

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 5

Page 26  
Date

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

Demand:  
D1 - Elevation : 24.327  
D2 - System Flow : 86.038  
D2 - System Pressure : 86.852  
Hose ( Demand ) : 100  
D3 - System Demand : 186.038  
Safety Margin : 14.096



Hydraulic Design Information Sheet

Name - HYATT PLACE PORTLAND AREA 6 Date - 06/20/13  
 Location - FORE STREET PORTLAND, MAINE  
 Building - NEW System No. - 1 WET  
 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 / MECHANICAL ROOM

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				
M	Area of Sprinkler Operation	- 900	System Type	Sprinkler/Nozzle
	Density	- .15	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 130	( ) Dry	Model F1FR
E	Elevation at Highest Outlet	- 50.830	( ) 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 - 226.01 Press Required - 64.866 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: Solid Piled	%	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

G Horizontal Barriers Provided:

# Pressure / Flow Summary - STANDARD

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 6

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Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	5.6	12.13	na	19.5	0.15	130	7.0
ARM1	50.83	5.6	13.08	na	20.25	0.15	130	7.0
ARM2	50.83	5.6	15.46	na	22.02	0.15	130	7.0
67	50.83	5.6	12.63	na	19.9	0.15	130	7.0
68	50.83	5.6	12.76	na	20.01	0.15	130	7.0
69	50.83	K = K @ ARM	13.24	na	19.5			
70	50.83	K = K @ ARM	13.73	na	19.86			
71	50.83		14.94	na				
72	50.83	K = K @ ARM	15.2	na	20.89			
61	50.83	5.6	14.03	na	20.97	0.15	130	7.0
62	50.83	5.6	14.17	na	21.08	0.15	130	7.0
63	50.83	K = K @ ARM	14.6	na	20.47			
64	50.83	K = K @ ARM	15.46	na	21.07			
65	50.83		17.2	na				
66	50.83		22.35	na				
73	50.83		22.75	na				
A2	50.83		48.18	na				
A1	38.0		55.31	na				
TOR	34.0		57.41	na				
BKFL	26.0		61.23	na				
BASE	24.0		64.87	na				
HOSE	24.0		65.07	na	250.0			
TEST	24.0		65.08	na				

The maximum velocity is 17.39 and it occurs in the pipe between nodes 72 and 73

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 6

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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	19.50 19.5	1.049 120.0 0.1242	1E 1T	2.0 5.0 0.0	2.000 7.000 9.000	12.125 0.0 1.118			K Factor = 5.60	
	0.0 19.50									
							13.243		K Factor = 5.36	
ARM1 to 71	20.25 20.25	1.049 120.0 0.1331	1E 1T	2.0 5.0 0.0	7.000 7.000 14.000	13.077 0.0 1.864			K Factor = 5.60	
	0.0 20.25									
							14.941		K Factor = 5.24	
ARM2 to 65	22.02 22.02	1.049 120.0 0.1554	1E 1T	2.0 5.0 0.0	4.250 7.000 11.250	15.456 0.0 1.748			K Factor = 5.60	
	0.0 22.02									
							17.204		K Factor = 5.31	
67 to 68	19.90 19.9	1.682 120.0 0.0129		0.0 0.0 0.0	10.000 0.0 10.000	12.633 0.0 0.129			K Factor = 5.60	
68 to 69	20.01 39.91	1.682 120.0 0.0469		0.0 0.0 0.0	10.250 0.0 10.250	12.762 0.0 0.481			K Factor = 5.60	
69 to 70	19.50 59.41	1.682 120.0 0.0978		0.0 0.0 0.0	5.000 0.0 5.000	13.243 0.0 0.489			K Factor @ node ARM	
70 to 71	19.86 79.27	1.682 120.0 0.1668		0.0 0.0 0.0	7.250 0.0 7.250	13.732 0.0 1.209			K Factor @ node ARM	
71 to 72	20.25 99.52	1.682 120.0 0.2550		0.0 0.0 0.0	1.000 0.0 1.000	14.941 0.0 0.255				Vel = 14.37
72 to 73	20.89 120.41	1.682 120.0 0.3614	1T	9.9 0.0 0.0	11.000 9.900 20.900	15.196 0.0 7.554			K Factor @ node ARM	
	0.0 120.41									
							22.750		K Factor = 25.24	
61 to 62	20.97 20.97	1.682 120.0 0.0143		0.0 0.0 0.0	10.000 0.0 10.000	14.027 0.0 0.143			K Factor = 5.60	
62 to 63	21.08 42.05	1.682 120.0 0.0516		0.0 0.0 0.0	8.250 0.0 8.250	14.170 0.0 0.426			K Factor = 5.60	
63 to 64	20.48 62.53	1.682 120.0 0.1075		0.0 0.0 0.0	8.000 0.0 8.000	14.596 0.0 0.860			K Factor @ node ARM	
64 to 65	21.06 83.59	1.682 120.0 0.1840		0.0 0.0 0.0	9.500 0.0 9.500	15.456 0.0 1.748			K Factor @ node ARM	
										Vel = 12.07

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 6

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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	22.02	1.682	1T	9.9	8.250	17.204				
to		120.0		0.0	9.900	0.0				
66	105.61	0.2836		0.0	18.150	5.148		Vel = 15.25		
66	0.0	2.635		0.0	12.500	22.352				
to		120.0		0.0	0.0	0.0				
73	105.61	0.0318		0.0	12.500	0.398		Vel = 6.21		
73	120.40	2.635	3T	49.423	105.000	22.750				
to		120.0	1B	9.61	67.270	3.000		* Fixed loss = 3		
A2	226.01	0.1302	1Fsp	0.0	172.270	22.430		Vel = 13.30		
			1E	8.237						
A2	0.0	4.26	1B	15.8	30.500	48.180				
to		120.0	6E	79.002	94.802	5.557				
A1	226.01	0.0125		0.0	125.302	1.571		Vel = 5.09		
A1	0.0	4.26	1T	26.334	3.000	55.308				
to		120.0		0.0	26.334	1.732				
TOR	226.01	0.0126		0.0	29.334	0.369		Vel = 5.09		
TOR	0.0	4.26	1E	13.167	15.000	57.409				
to		120.0		0.0	13.167	3.465				
BKFL	226.01	0.0125		0.0	28.167	0.353		Vel = 5.09		
BKFL	0.0	4.026	1Zac	0.0	1.000	61.227				
to		120.0		0.0	0.0	3.622		* Fixed loss = 2.756		
BASE	226.01	0.0170		0.0	1.000	0.017		Vel = 5.70		
BASE	0.0	6.16	1E	20.084	60.000	64.866				
to		140.0	1T	43.037	67.425	0.0				
HOSE	226.01	0.0016	1G	4.304	127.425	0.199		Vel = 2.43		
HOSE	250.00	12.34		0.0	50.000	65.065		Qa = 250		
to		140.0		0.0	0.0	0.0				
TEST	476.01	0.0002		0.0	50.000	0.011		Vel = 1.28		
	0.0									
	476.01					65.076		K Factor = 59.01		

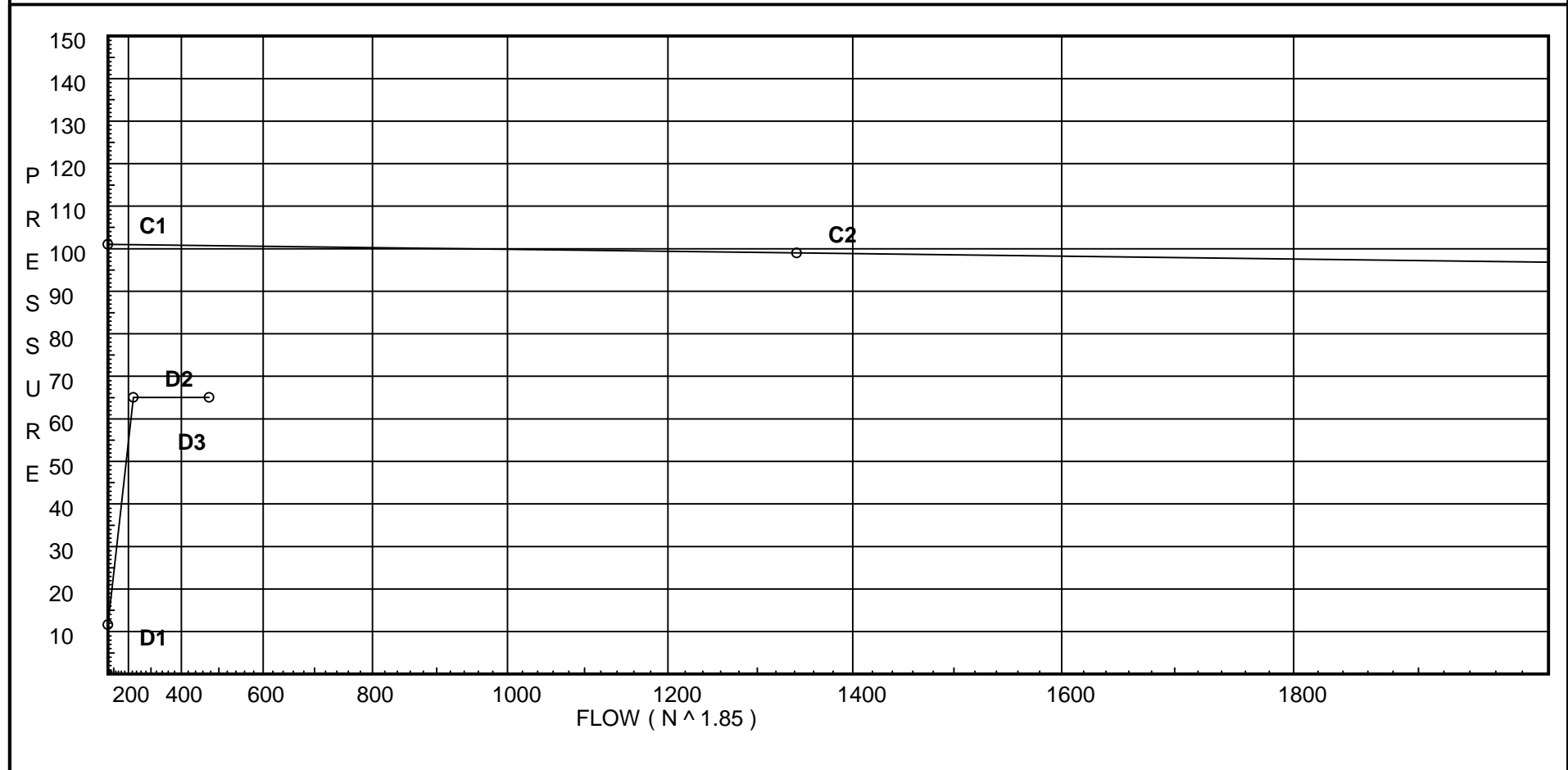
# Water Supply Curve (C)

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 6

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Date

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

Demand:  
D1 - Elevation : 11.620  
D2 - System Flow : 226.014  
D2 - System Pressure : 65.076  
Hose ( Demand ) : 250  
D3 - System Demand : 476.014  
Safety Margin : 35.630





Hydraulic Design Information Sheet

Name - HYATT PLACE PORTLAND AREA 9 Date - 06/20/13  
 Location - FORE STREET PORTLAND, MAINE  
 Building - NEW System No. - 1 WET  
 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 / RETAIL

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

S Other

T Specific Ruling Made By Date

E				
M	Area of Sprinkler Operation	- ENTIRE	System Type	Sprinkler/Nozzle
	Density	- .20	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 130	( ) Dry	Model F1FR
E	Elevation at Highest Outlet	- 40	( ) 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 - 242.79 Press Required - 62.416 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

Y

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

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

G Horizontal Barriers Provided:  
 E

# Pressure / Flow Summary - STANDARD

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 9

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Date

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP	0.0	5.6	12.13	na	19.5	0.15	130	7.0
131	40.0	5.6	25.69	na	28.39	0.2	130	7.0
127	40.0	5.6	23.92	na	27.39	0.2	130	7.0
123	40.0	5.6	23.43	na	27.11	0.2	130	7.0
129	40.0	5.6	23.65	na	27.23	0.2	130	7.0
130	40.0	5.6	24.19	na	27.54	0.2	130	7.0
125	40.0	5.6	22.01	na	26.27	0.2	130	7.0
126	40.0	5.6	22.51	na	26.57	0.2	130	7.0
121	40.0	5.6	21.56	na	26.0	0.2	130	7.0
122	40.0	5.6	22.05	na	26.3	0.2	130	7.0
124	40.0		24.86	na				
128	40.0		25.37	na				
132	40.0		27.25	na				
97E	40.0		48.71	na				
TOR	34.0		54.8	na				
BKFL	26.0		58.67	na				
BASE	24.0		62.42	na				
HOSE	24.0		62.64	na	250.0			
TEST	24.0		62.66	na				

The maximum velocity is 21.32 and it occurs in the pipe between nodes 132 and 97E

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 9

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Date

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftnng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
TYP to ARM	19.50 19.5	1.049 120.0 0.1242	1E 2.0 1T 5.0 0.0	2.000 7.000 9.000	12.125 0.0 1.118		K Factor = 5.60 Vel = 7.24		
	0.0 19.50					13.243	K Factor = 5.36		
131 to 132	28.39 28.39	1.049 120.0 0.2486	1T 5.0 0.0 0.0	1.250 5.000 6.250	25.694 0.0 1.554		K Factor = 5.60 Vel = 10.54		
	0.0 28.39					27.248	K Factor = 5.44		
127 to 128	27.39 27.39	1.049 120.0 0.2328	1T 5.0 0.0 0.0	1.250 5.000 6.250	23.920 0.0 1.455		K Factor = 5.60 Vel = 10.17		
	0.0 27.39					25.375	K Factor = 5.44		
123 to 124	27.11 27.11	1.049 120.0 0.2283	1T 5.0 0.0 0.0	1.250 5.000 6.250	23.433 0.0 1.427		K Factor = 5.60 Vel = 10.06		
	0.0 27.11					24.860	K Factor = 5.44		
129 to 130	27.23 27.23	1.442 120.0 0.0489	0.0 0.0 0.0	11.000 0.0 11.000	23.649 0.0 0.538		K Factor = 5.60 Vel = 5.35		
130 to 132	27.54 54.77	1.442 120.0 0.1782	1T 7.432 0.0 0.0	9.750 7.432 17.182	24.187 0.0 3.061		K Factor = 5.60 Vel = 10.76		
	0.0 54.77					27.248	K Factor = 10.49		
125 to 126	26.27 26.27	1.442 120.0 0.0457	0.0 0.0 0.0	11.000 0.0 11.000	22.007 0.0 0.503		K Factor = 5.60 Vel = 5.16		
126 to 128	26.57 52.84	1.442 120.0 0.1667	1T 7.432 0.0 0.0	9.750 7.432 17.182	22.510 0.0 2.865		K Factor = 5.60 Vel = 10.38		
	0.0 52.84					25.375	K Factor = 10.49		
121 to 122	26.00 26.0	1.442 120.0 0.0449	0.0 0.0 0.0	11.000 0.0 11.000	21.556 0.0 0.494		K Factor = 5.60 Vel = 5.11		
122 to 124	26.30 52.3	1.442 120.0 0.1635	1T 7.432 0.0 0.0	9.750 7.432 17.182	22.050 0.0 2.810		K Factor = 5.60 Vel = 10.27		
124 to 128	27.10 79.4	2.157 120.0 0.0499	0.0 0.0 0.0	10.330 0.0 10.330	24.860 0.0 0.515		Vel = 6.97		

# Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 9

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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	*****
128 to 132	80.23 159.63	2.157 120.0 0.1813		10.330 0.0 10.330	25.375 0.0 1.873			Vel = 14.02	
132 to 97E	83.16 242.79	2.157 120.0 0.3940	1E 6.153 1T 12.307	36.000 18.460 54.460	27.248 0.0 21.457			Vel = 21.32	
97E to TOR	0.0 242.79	4.26 120.0 0.0143	1B 15.8 1Fsp 0.0 1E 13.167	6.000 28.967 34.967	48.705 5.599 0.501		* Fixed loss = 3	Vel = 5.47	
TOR to BKFL	0.0 242.79	4.26 120.0 0.0143	1E 13.167	15.000 13.167 28.167	54.805 3.465 0.403			Vel = 5.47	
BKFL to BASE	0.0 242.79	4.026 120.0 0.0190	1Zac 0.0	1.000 0.0 1.000	58.673 3.724 0.019		* Fixed loss = 2.858	Vel = 6.12	
BASE to HOSE	0.0 242.79	6.16 140.0 0.0018	1E 20.084 1T 43.037 1G 4.304	60.000 67.425 127.425	62.416 0.0 0.228			Vel = 2.61	
HOSE to TEST	250.00 492.79	12.34 140.0 0.0002		50.000 0.0 50.000	62.644 0.0 0.011		Qa = 250	Vel = 1.32	
	0.0 492.79				62.655			K Factor = 62.26	

# Water Supply Curve (C)

SPRINKLER SYSTEMS INC.  
Hyatt Place Area 9

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Date

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

Demand:  
D1 - Elevation : 6.930  
D2 - System Flow : 242.792  
D2 - System Pressure : 62.655  
Hose ( Demand ) : 250  
D3 - System Demand : 492.792  
Safety Margin : 38.031

