

. . . Fire Protection by Computer Design

SPRINKLER SYSTEMS INC.
P. O. BOX 1285
2-4 AVON STREET
LEWISTON, ME 04243
207-782-0104

Job Name : WAYNFLETE LOWER SCHOOL
Building : NEW LOWER SCHOOL
Location : 360 SPRING STREET, PORTLAND, MAINE 04101
System : 2 OF 2
Contract : 17-058
Data File : 17058WAYNFLETELOWERSCHOOLA1.WXF

Hydraulic Design Information Sheet

Name - WAYNFLETE LOWER SCHOOL Date - 10-16-2017
 Location - 360 SPRING STREET, PORTLAND, MAINE 04101
 Building - NEW LOWER SCHOOL System No. - 2 OF 2
 Contractor - WRIGHT-RYAN Contract No. - 17-058
 Calculated By - SCOTT E. GARLAND Drawing No. - 1-3 OF 3
 Construction: () Combustible (X) Non-Combustible Ceiling Height - VARIES
 Occupancy - CLASSROOMS - 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 - 1325	System Type	Sprinkler/Nozzle
	Density - .10	(X) Wet	Make RELIABLE
D	Area Per Sprinkler - 148.163	() Dry	Model FIFR56
E	Elevation at Highest Outlet - 133.625	() Deluge	Size 1/2" X 1/2"
S	Hose Allowance - Inside -	() Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance -	() Other	Temp.Rat.155 DEG
G	Hose Allowance - Outside - 100		

N Note DESIGN AREA #1 - UPPER LEVEL CLASSROOMS

Calculation Flow Required - 226.147 Press Required - 48.503 AT BASE OF RISER
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 8-22-2016		Cap. -
T	Time of Test -	Rated Cap.-	Elev.-
E	Static Press - 51	@ Press -	
R	Residual Press - 49	Elev. -	Well
	Flow - 903		Proof Flow
S	Elevation - 113.292		

U Location - ON SPRING STREET, APPROX. 435' AWAY FROM THE BUILDING

P 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

Fittings Used Summary

SPRINKLER SYSTEMS INC.
WAYNFLETE LOWER SCHOOL

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Date 10-16-17

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
Bvcb	B Fly Vic 705W	0	0	0	0	0	0	5	5	0	12	12	8	11	12	14	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
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
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
Zie	Wilkins 375	Fitting generates a Fixed Loss Based on Flow																			

Unit 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.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TEST	51.0	49	903.0	50.696	326.15	45.51

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
TYP	0.0	5.6	7.0	14.82	
TYP1	0.0	5.6	7.0	14.82	
TYP2	0.0	5.6	7.0	14.82	
TYP3	0.0	5.6	7.0	14.82	
1	133.5	5.3	8.62	15.55	K=K @ DROP
2	133.5	5.3	8.74	15.66	K=K @ DROP
3	133.5	5.3	9.11	15.99	K=K @ DROP
4	133.5	5.3	10.06	16.8	K=K @ DROP
5	133.625	5.28	7.87	14.82	K=K @ DRP1
6	133.625	5.28	7.98	14.92	K=K @ DRP1
7	133.625	5.28	8.32	15.23	K=K @ DRP1
8	133.625	5.28	9.19	16.01	K=K @ DRP1
9	131.5	5.27	8.7	15.56	K=K @ DRP2
10	131.5	5.27	8.82	15.66	K=K @ DRP2
11	131.5	5.27	9.19	15.99	K=K @ DRP2
12	131.5	5.27	10.14	16.79	K=K @ DRP2
13	131.083	5.3	12.21	18.52	K=K @ DRP3
14	131.083	5.3	12.38	18.65	K=K @ DRP3
A	133.5		12.25		
B	129.25		14.15		
C	129.25		14.17		
D	129.25		14.27		
E	129.25		14.64		
F	128.792		15.68		
G	128.792		16.11		
H	128.792		16.54		
I	128.792		17.41		
J	128.792		17.8		
K	117.958		22.96		
L	116.5		24.74		
M	104.042		31.67		
N	105.5		32.35		
P	107.0		32.53		
TOR2	107.0		32.85		
BR2	102.0		38.61		
BKFL	102.0		38.64		
BASE	100.667		48.5		
1000	115.292		42.31	100.0	
2000	113.292		43.47		
TEST	113.292		45.51		

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv. Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
TYP to DROP	0 0	5.60	14.82 14.82	1 1.049	2E T 4.0 5.0 0.0	2.000 9.000 11.000	120	7.000 0.0 0.822		Vel = 5.50	
			0.0 14.82					7.822		K Factor = 5.30	
TYP1 to DRP1	0 0	5.60	14.82 14.82	1 1.049	2E T 4.0 5.0 0.0	2.667 9.000 11.667	120	7.000 0.0 0.872		Vel = 5.50	
			0.0 14.82					7.872		K Factor = 5.28	
TYP2 to DRP2	0 0	5.60	14.82 14.82	1 1.049	2E T 4.0 5.0 0.0	2.917 9.000 11.917	120	7.000 0.0 0.890		Vel = 5.50	
			0.0 14.82					7.890		K Factor = 5.28	
TYP3 to DRP3	0 0	5.60	14.82 14.82	1 1.049	2E T 4.0 5.0 0.0	1.917 9.000 10.917	120	7.000 0.0 0.816		Vel = 5.50	
			0.0 14.82					7.816		K Factor = 5.30	
1 to 2	133.500 133.500	5.3	15.55 15.55	1.5 1.61	0.0 0.0 0.0	12.000 0.0 12.000	120	8.619 0.0 0.122		K = K @ DROP Vel = 2.45	
2 to 3	133.500 133.500	5.3	15.67 31.22	1.5 1.61	0.0 0.0 0.0	10.000 0.0 10.000	120	8.741 0.0 0.368		K = K @ DROP Vel = 4.92	
3 to 4	133.500 133.500	5.3	15.98 47.2	1.5 1.61	0.0 0.0 0.0	12.000 0.0 12.000	120	9.109 0.0 0.949		K = K @ DROP Vel = 7.44	
4 to A	133.500 133.500	5.3	16.81 64.01	1.5 1.61	T 8.0 0.0 0.0	7.750 8.000 15.750	120	10.058 0.0 2.189		K = K @ DROP Vel = 10.09	
			0.0 64.01					12.247		K Factor = 18.29	
5 to 6	133.625 133.625	5.28	14.82 14.82	1.5 1.61	0.0 0.0 0.0	12.000 0.0 12.000	120	7.872 0.0 0.111		K = K @ DRP1 Vel = 2.34	
6 to 7	133.625 133.625	5.28	14.92 29.74	1.5 1.61	0.0 0.0 0.0	10.000 0.0 10.000	120	7.983 0.0 0.336		K = K @ DRP1 Vel = 4.69	
7 to 8	133.625 133.625	5.28	15.23 44.97	1.5 1.61	0.0 0.0 0.0	12.000 0.0 12.000	120	8.319 0.0 0.868		K = K @ DRP1 Vel = 7.09	
8 to B	133.625 129.250	5.28	16.01 60.98	1.5 1.61	E T 4.0 8.0 0.0	12.125 12.000 24.125	120	9.187 1.895 3.065		K = K @ DRP1 Vel = 9.61	
			0.0 60.98					14.147		K Factor = 16.21	

Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.
WAYNFLETE LOWER SCHOOL

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv. Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
9 to 10	131.500 131.500	5.27	15.56	1.5	0.0 0.0	12.000 0.0	120	8.697 0.0		K = K @ DRP2	
10 to 11	131.500 131.500	5.27	15.66	1.5	0.0 0.0	10.000 0.0	120	8.819 0.0		K = K @ DRP2	
11 to 12	131.500 131.500	5.27	15.99	1.5	0.0 0.0	12.000 0.0	120	9.187 0.0		K = K @ DRP2	
12 to C	131.500 129.250	5.27	16.79	1.5	E T 4.0 8.0 0.0	10.000 12.000 22.000	120	10.136 0.974 3.057		K = K @ DRP2	
C			64.0 0.0 64.00	1.61				14.167		K Factor = 17.00	
13 to 14	131.083 131.083	5.3	18.52	1.5	0.0 0.0	12.000 0.0	120	12.211 0.0		K = K @ DRP3	
14 to D	131.083 129.250	5.3	18.65	1.5	E T 4.0 8.0 0.0	9.583 12.000 21.583	120	12.379 0.794 1.097		K = K @ DRP3	
D			0.0 37.17					14.270		K Factor = 9.84	
A to B	133.500 129.250		64.01	4	3E 0.0	39.501 39.501	120	12.247 1.841			
B to C	129.250 129.250		64.01	4.26	0.0	48.668	0.0012	0.059		Vel = 1.44	
B to C	129.250 129.250		60.97	4	0.0 0.0	4.833 0.0	120	14.147 0.0			
C to D	129.250 129.250		124.98	4.26	0.0	4.833	0.0041	0.020		Vel = 2.81	
C to D	129.250 129.250		64.00	4	0.0 0.0	11.417 0.0	120	14.167 0.0			
D to E	129.250 129.250		188.98	4.26	0.0	11.417	0.0090	0.103		Vel = 4.25	
D to E	129.250 129.250		37.17	4	T 0.0	26.334 26.334	120	14.270 0.0			
E to F	129.250 128.792		226.15	4.26	0.0	29.376	0.0126	0.369		Vel = 5.09	
E to F	129.250 128.792		0.0	4	E T 13.167 26.334	27.292 39.501	120	14.639 0.198			
F to G	128.792 128.792		226.15	4.26	0.0	66.793	0.0126	0.840		Vel = 5.09	
F to G	128.792 128.792		0.0	4	0.0 0.0	34.500 0.0	120	15.677 0.0			
G to H	128.792 128.792		226.15	4.26	0.0	34.500	0.0126	0.433		Vel = 5.09	
G to H	128.792 128.792		0.0	4	T 0.0	26.334 26.334	120	16.110 0.0			
H to I	128.792 128.792		226.15	4.26	0.0	34.292	0.0126	0.431		Vel = 5.09	
H to I	128.792 128.792		0.0	4	E T 13.167 26.334	29.542 39.501	120	16.541 0.0			
I to J	128.792 128.792		226.15	4.26	0.0	69.043	0.0126	0.867		Vel = 5.09	
I to J	128.792 128.792		0.0	4	T 0.0	26.334 26.334	120	17.408 0.0			
J	128.792		226.15	4.26	0.0	31.501	0.0126	0.396		Vel = 5.09	

Final Calculations - Hazen-Williams

SPRINKLER SYSTEMS INC.
WAYNFLETE LOWER SCHOOL

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv. Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
J to K	128.792 117.958		0.0 226.15	4 4.26	T 0.0	26.334 26.334	120 0.0126	17.804 4.692			
						0.0	37.167	0.467	Vel =	5.09	
K to L	117.958 116.500		0.0 226.15	4 4.26	2E T 0.0	26.334 26.334	120 0.0126	22.963 0.631			
						0.0	90.877	1.142	Vel =	5.09	
L to M	116.500 104.042		0.0 226.15	4 4.26	4E T 0.0	52.668 26.334	120 0.0126	24.736 5.396			
						0.0	122.669	1.540	Vel =	5.09	
M to N	104.042 105.500		0.0 226.15	4 4.26	3E T 0.0	39.501 26.334	120 0.0126	31.672 -0.631			
						0.0	103.877	1.305	Vel =	5.09	
N to P	105.500 107		0.0 226.15	4 4.26	2E T 0.0	26.334 26.334	120 0.0126	32.346 -0.650			
						0.0	66.293	0.833	Vel =	5.09	
P to TOR2	107 107		0.0 226.15	4 4.26	E 0.0	13.167 13.167	120 0.0126	32.529 0.0			
						0.0	25.376	0.319	Vel =	5.09	
TOR2 to BR2	107 102		0.0 226.15	4 4.26	Bvcb T Fsp 0.0	15.8 26.334	120 0.0125	32.848 5.166	* Fixed Loss = 3		
						0.0	47.134	0.591	Vel =	5.09	
BR2 to BKFL	102 102		0.0 226.15	4 4.26	0.0 0.0	3.000 0.0	120 0.0127	38.605 0.0			
						0.0	3.000	0.038	Vel =	5.09	
BKFL to BASE	102 100.667		0.0 226.15	4 4.26	2E Zie 0.0	26.334 26.334	120 0.0126	38.643 9.453	* Fixed Loss = 8.876		
						0.0	32.334	0.407	Vel =	5.09	
BASE to 1000	100.667 115.292		0.0 226.15	8 8.27	E 2F G T 55.354	28.468 28.468 6.326	270.000 118.616 388.616	140 -6.334 0.145			
						0.0	0.0004	0.145	Vel =	1.35	
1000 to 2000	115.292 113.292	H100	100.00 326.15	8 8.23	T 0.0	29.011 29.010	100 0.0014	42.314 0.866			
						0.0	209.010	0.293	Vel =	1.97	
2000 to TEST	113.292 113.292		0.0 326.15	6 6.14	E F T	10.608 5.304	310.000 38.644	100 0.0			
						22.732	348.644	2.037	Vel =	3.53	
TEST			0.0 326.15					45.510	K Factor =	48.35	

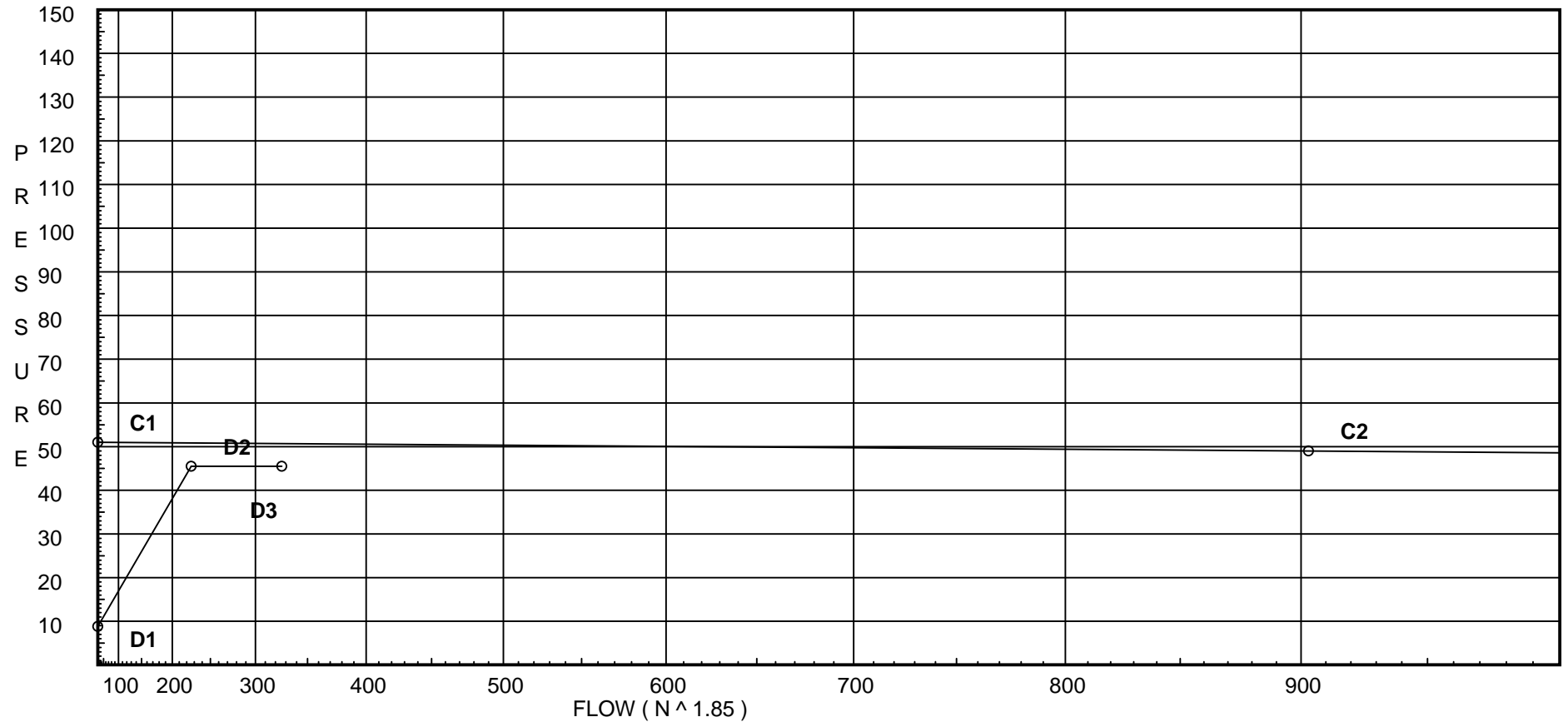
Water Supply Curve C

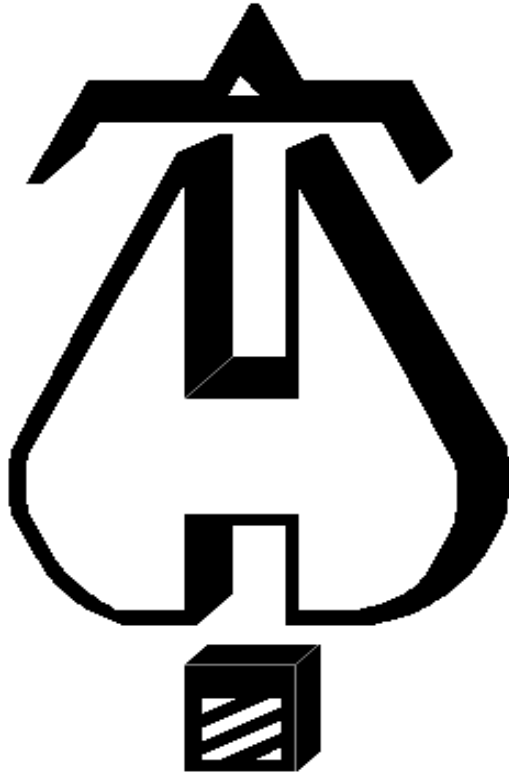
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WAYNFLETE LOWER SCHOOL

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City Water Supply:
C1 - Static Pressure : 51
C2 - Residual Pressure: 49
C2 - Residual Flow : 903

Demand:
D1 - Elevation : 8.806
D2 - System Flow : 226.147
D2 - System Pressure : 45.510
Hose (Demand) : 100
D3 - System Demand : 326.147
Safety Margin : 5.186





. . . Fire Protection by Computer Design

SPRINKLER SYSTEMS INC.
P. O. BOX 1285
2-4 AVON STREET
LEWISTON, ME 04243
207-782-0104

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System : 2 OF 2
Contract : 17-058
Data File : 17058WAYNFLETELOWERSCHOOA2.WXF

Hydraulic Design Information Sheet

Name - WAYNFLETE LOWER SCHOOL Date - 10-16-2017
 Location - 360 SPRING STREET, PORTLAND, MAINE 04101
 Building - NEW LOWER SCHOOL System No. - 2 OF 2
 Contractor - WRIGHT-RYAN Contract No. - 17-058
 Calculated By - SCOTT E. GARLAND Drawing No. - 1-3 OF 3
 Construction: () Combustible (X) Non-Combustible Ceiling Height - VARIES
 Occupancy - ART STUDIO AREA - ORDINARY HAZARD GP 2

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

Specific Ruling	Made By	Date
M Area of Sprinkler Operation - 900	System Type	Sprinkler/Nozzle
Density - .20	(X) Wet	Make RELIABLE
D Area Per Sprinkler - 114	() Dry	Model FIFR56
E Elevation at Highest Outlet - 104.542	() Deluge	Size 1/2" X 1/2"
S Hose Allowance - Inside -	() Preaction	K-Factor 5.6
I Rack Sprinkler Allowance -	() Other	Temp.Rat.155 DEG
G Hose Allowance - Outside - 250		

N Note DESIGN AREA #2 - LOWER LEVEL ART STUDIO

Calculation Flow Required - 303.928 Press Required - 42.352 AT BASE OF RISER
 Summary C-Factor Used: 120 Overhead 140 Underground

Water Flow Test:	Pump Data:	Tank or Reservoir:
A Date of Test - 8-22-2016		Cap. -
T Time of Test -	Rated Cap.-	Elev.-
E Static Press - 51	@ Press -	
R Residual Press - 49	Elev. -	Well
Flow - 903		Proof Flow
S Elevation - 113.292		

U Location - ON SPRING STREET, APPROX. 435' AWAY FROM THE BUILDING

P Source of Information - PORTLAND WATER DISTRICT

Commodity	Class	Location
Storage Ht.	Area	Aisle W.
M Storage Method: Solid Piled	% Palletized	% Rack
() Single Row	() Conven. Pallet	() Auto. Storage
S R () Double Row	() Slave Pallet	() Solid Shelf
T A () Mult. Row		() Open Shelf

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

G Horizontal Barriers Provided:

Fittings Used Summary

SPRINKLER SYSTEMS INC.
WAYNFLETE LOWER SCHOOL

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Date 10-16-2017

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
Bvcb	B Fly Vic 705W	0	0	0	0	0	0	5	5	0	12	12	8	11	12	14	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
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
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
Zie	Wilkins 375	Fitting generates a Fixed Loss Based on Flow																			

Unit 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.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TEST	51.0	49	903.0	50.19	553.93	43.343

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
TYP	0.0	5.6	11.76	19.2	
TYP1	0.0	5.6	11.76	19.2	
TYP2	0.0	5.6	16.58	22.8	
TYP3	0.0	5.6	11.76	19.2	
20	104.542	5.4	16.1	21.68	K=K @ DROP
21	104.542	5.4	16.25	21.79	K=K @ DROP
22	104.542	5.4	16.79	22.15	K=K @ DROP
23	104.542	5.4	18.1	22.99	K=K @ DROP
24	104.542	5.3	16.17	21.31	K=K @ DRP1
25	104.542	5.3	16.32	21.41	K=K @ DRP1
26	104.542	5.3	16.84	21.75	K=K @ DRP1
27	104.542	5.35	18.18	22.8	K=K @ DRP2
28	104.542	5.43	14.56	20.72	K=K @ DRP3
29	104.542	5.3	14.61	20.26	K=K @ DRP1
T	104.542		14.91		
30	104.542	5.3	15.02	20.54	K=K @ DRP1
31	104.542	5.3	16.05	21.23	K=K @ DRP1
32	104.542	5.3	17.84	22.39	K=K @ DRP1
33	104.542	5.3	18.66	22.9	K=K @ DRP1
Q	104.542		20.26		
R	104.542		20.28		
S	104.542		20.37		
U	104.042		22.34		
V	104.042		22.66		
W	104.042		23.0		
M	104.042		23.99		
N	105.5		25.61		
P	107.0		26.4		
TOR2	107.0		26.95		
BR2	102.0		33.14		
BKFL	102.0		33.2		
BASE	100.667		42.35		
1000	115.292		36.27	250.0	
2000	113.292		37.92		
TEST	113.292		43.34		

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv. Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
TYP to DROP	0 0	5.60	19.20 19.2	1 1.049	T 0.0 0.0	5.0 0.0 7.167	120 0.1207	11.755 0.0 0.865		Vel = 7.13	
DROP			0.0 19.20					12.620		K Factor = 5.40	
TYP1 to DRP1	0 0	5.60	19.20 19.2	1 1.049	2E T 0.0	4.0 5.0 11.333	120 0.1207	11.755 0.0 1.368		Vel = 7.13	
DRP1			0.0 19.20					13.123		K Factor = 5.30	
TYP2 to DRP2	0 0	5.60	22.80 22.8	1 1.049	E T 0.0	2.0 5.0 9.667	120 0.1658	16.577 0.0 1.603		Vel = 8.46	
DRP2			0.0 22.80					18.180		K Factor = 5.35	
TYP3 to DRP3	0 0	5.60	19.20 19.2	1 1.049	T 0.0 0.0	5.0 0.0 6.167	120 0.1206	11.755 0.0 0.744		Vel = 7.13	
DRP3			0.0 19.20					12.499		K Factor = 5.43	
20 to 21	104.542 104.542	5.4	21.68 21.68	1.5 1.61		0.0 0.0 8.000	120 0.0188	16.097 0.0 0.150		K = K @ DROP Vel = 3.42	
21 to 22	104.542 104.542	5.4	21.79 43.47	1.5 1.61		0.0 0.0 8.000	120 0.0680	16.247 0.0 0.544		K = K @ DROP Vel = 6.85	
22 to 23	104.542 104.542	5.4	22.15 65.62	1.5 1.61		0.0 0.0 9.000	120 0.1454	16.791 0.0 1.309		K = K @ DROP Vel = 10.34	
23 to Q	104.542 104.542	5.4	22.99 88.61	1.5 1.61	T 0.0 0.0	8.0 0.0 8.500	120 0.2536	18.100 0.0 2.156		K = K @ DROP Vel = 13.96	
Q			0.0 88.61					20.256		K Factor = 19.69	
24 to 25	104.542 104.542	5.3	21.31 21.31	1.5 1.61		0.0 0.0 8.000	120 0.0182	16.170 0.0 0.146		K = K @ DRP1 Vel = 3.36	
25 to 26	104.542 104.542	5.3	21.41 42.72	1.5 1.61		0.0 0.0 8.000	120 0.0658	16.316 0.0 0.526		K = K @ DRP1 Vel = 6.73	
26 to 27	104.542 104.542	5.3	21.75 64.47	1.5 1.61		0.0 0.0 9.500	120 0.1408	16.842 0.0 1.338		K = K @ DRP1 Vel = 10.16	
27 to R	104.542 104.542	5.35	22.80 87.27	1.5 1.61	T 0.0 0.0	8.0 0.0 8.500	120 0.2466	18.180 0.0 2.096		K = K @ DRP2 Vel = 13.75	
R			0.0 87.27					20.276		K Factor = 19.38	

Final Calculations - Hazen-Williams

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv. Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
28 to T	104.542 104.542	5.43	20.72 20.72	1.5 1.61	E T 4.0 8.0 0.0	8.250 12.000 20.250	120 0.0172	14.562 0.0 0.349		K = K @ DRP3 Vel = 3.27	
T			0.0 20.72					14.911		K Factor = 5.37	
29 to T	104.542 104.542	5.3	20.26 20.26	1.5 1.61	E T 4.0 8.0 0.0	5.917 12.000 17.917	120 0.0166	14.614 0.0 0.297		K = K @ DRP1 Vel = 3.19	
T			0.0 20.26					14.911		K Factor = 5.25	
T to 30	104.542 104.542		40.99 40.99	1.5 1.61	0.0 0.0 0.0	1.750 0.0 1.750	120 0.0611	14.911 0.0 0.107		Vel = 6.46	
30 to 31	104.542 104.542	5.3	20.53 61.52	1.5 1.61	0.0 0.0 0.0	8.000 0.0 8.000	120 0.1291	15.018 0.0 1.033		K = K @ DRP1 Vel = 9.70	
31 to 32	104.542 104.542	5.3	21.24 82.76	1.5 1.61	0.0 0.0 0.0	8.000 0.0 8.000	120 0.2235	16.051 0.0 1.788		K = K @ DRP1 Vel = 13.04	
32 to 33	104.542 104.542	5.3	22.39 105.15	2 2.067	0.0 0.0 0.0	8.000 0.0 8.000	120 0.1031	17.839 0.0 0.825		K = K @ DRP1 Vel = 10.05	
33 to S	104.542 104.542	5.3	22.89 128.04	2 2.067	T 10.0 0.0 0.0	1.500 10.000 11.500	120 0.1484	18.664 0.0 1.707		K = K @ DRP1 Vel = 12.24	
S			0.0 128.04					20.371		K Factor = 28.37	
Q to R	104.542 104.542		88.61 88.61	4 4.26	0.0 0.0 0.0	9.042 0.0 9.042	120 0.0022	20.256 0.0 0.020		Vel = 1.99	
R to S	104.542 104.542		87.27 175.88	4 4.26	0.0 0.0 0.0	12.000 0.0 12.000	120 0.0079	20.276 0.0 0.095		Vel = 3.96	
S to U	104.542 104.042		128.05 303.93	4 4.26	E T 13.167 26.334 0.0	41.452 39.501 80.953	120 0.0217	20.371 0.217 1.757		Vel = 6.84	
U to V	104.042 104.042		0.0 303.93	4 4.26	0.0 0.0 0.0	14.375 0.0 14.375	120 0.0217	22.345 0.0 0.312		Vel = 6.84	
V to W	104.042 104.042		0.0 303.93	4 4.26	0.0 0.0 0.0	15.709 0.0 15.709	120 0.0217	22.657 0.0 0.341		Vel = 6.84	
W to M	104.042 104.042		0.0 303.93	4 4.26	T 26.334 0.0 0.0	19.250 26.334 45.584	120 0.0217	22.998 0.0 0.989		Vel = 6.84	
M to N	104.042 105.500		0.0 303.93	4 4.26	3E T 39.501 26.334 0.0	38.042 65.835 103.877	120 0.0217	23.987 -0.631 2.254		Vel = 6.84	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv. Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
N to P	105.500 107		0.0 303.93	4 4.26	2E T 26.334 0.0	13.625 52.668 66.293	120 0.0217	25.610 -0.650 1.440			Vel = 6.84
P to TOR2	107 107		0.0 303.93	4 4.26	E 0.0 0.0	13.167 12.209 13.167 25.376	120 0.0217	26.400 0.0 0.550			Vel = 6.84
TOR2 to BR2	107 102		0.0 303.93	4 4.26	Bvcb T Fsp 0.0	15.8 26.334 47.134	120 0.0217	26.950 5.166 1.023		* Fixed Loss = 3	Vel = 6.84
BR2 to BKFL	102 102		0.0 303.93	4 4.26		0.0 3.000 0.0 3.000	120 0.0217	33.139 0.0 0.065			Vel = 6.84
BKFL to BASE	102 100.667		0.0 303.93	4 4.26	2E Zie 0.0	26.334 6.000 26.334 32.334	120 0.0217	33.204 8.447 0.701		* Fixed Loss = 7.869	Vel = 6.84
BASE to 1000	100.667 115.292		0.0 303.93	8 8.27	E 2F G T 28.468 28.468 6.326 55.354	270.000 118.616 388.616	140 0.0006	42.352 -6.334 0.251			Vel = 1.82
1000 to 2000	115.292 113.292	H250	250.00 553.93	8 8.23	T 0.0 0.0	29.011 180.000 29.010 209.010	100 0.0037	36.269 0.866 0.781			Vel = 3.34
2000 to TEST	113.292 113.292		0.0 553.93	6 6.14	E F T 10.608 5.304 22.732	310.000 38.644 348.644	100 0.0156	37.916 0.0 5.427			Vel = 6.00
TEST			0.0 553.93					43.343		K Factor = 84.14	

Water Supply Curve C

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City Water Supply:
C1 - Static Pressure : 51
C2 - Residual Pressure: 49
C2 - Residual Flow : 903

Demand:
D1 - Elevation : -3.790
D2 - System Flow : 303.928
D2 - System Pressure : 43.343
Hose (Demand) : 250
D3 - System Demand : 553.928
Safety Margin : 6.847

