



... Fire Protection by Computer Design

DEAN AND ALLYN, INC.
116 LEWISTON ROAD
GRAY MAINE 04039
207 657 5646

Job Name : JEWISH MUSEUM ATTIC
Building : MUSEUM
Location : 267 CONGRESS STREET PORTLAND MAINE
System : ONE
Contract : C141184
Data File : JEWISHMUSEUMATTIC.WXF

Hydraulic Design Information Sheet

Name - MAINE JEWISH MUSEUM Date - 2-2-14
 Location - 267 CONGRESS STREET PORTLAND MAINE
 Building - MUSEUM System No. - ONE
 Contractor - DEAN AND ALLYN, INC. Contract No. - C141184
 Calculated By - H. KING Drawing No. - 1 OF 1
 Construction: (X) Combustible () Non-Combustible Ceiling Height - VARIES
 Occupancy - MUSEUM

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 - 1500	System Type	Sprinkler/Nozzle
	Density - .10	(X) Wet	Make RELIABLE
D	Area Per Sprinkler - 120	() Dry	Model F1FR
E	Elevation at Highest Outlet - 47	() Deluge	Size 1/2"
S	Hose Allowance - Inside - 0	() Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance - 0	() Other	Temp.Rat.200
G	Hose Allowance - Outside - 100		

N

Note CUSHION 6.8 PSI

Calculation Flow Required - 349.9 Press Required - 72.7 CITY
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 9-13-2011	Rated Cap.-	Cap. -
T	Time of Test -	@ Press -	Elev.-
E	Static Press - 80	Elev. -	
R	Residual Press - 75		Well
	Flow - 1162		Proof Flow
S	Elevation - 0		

U

P Location - CUMBERLAND AVE

P

L Source of Information - PWD

Y

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

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

G

E Horizontal Barriers Provided:

Final Calculations - Standard

DEAN AND ALLYN, INC.
JEWISH MUSEUM ATTIC

Page 2
Date 2-2-14

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
1	14.82	1.049		8.700	7.000			K Factor = 5.60	
to		120		0.0	0.0				
2	14.82	0.0747		8.700	0.650			Vel = 5.50	
2	15.48	1.049		8.700	7.650			K Factor = 5.60	
to		120		0.0	0.0				
3	30.3	0.2807		8.700	2.442			Vel = 11.25	
3	17.80	1.38	1T	6.0	6.000	10.092		K Factor = 5.60	
to		120		0.0	6.000	0.0			
50T	48.1	0.1735		12.000	2.082			Vel = 10.32	
	0.0								
	48.10				12.174			K Factor = 13.79	
4	16.54	1.049		8.700	8.728			K Factor = 5.60	
to		120		0.0	0.0				
5	16.54	0.0916		8.700	0.797			Vel = 6.14	
5	17.29	1.049	1T	5.0	2.700	9.525		K Factor = 5.60	
to		120		0.0	5.000	0.0			
50T	33.83	0.3440		7.700	2.649			Vel = 12.56	
	0.0								
	33.83				12.174			K Factor = 9.70	
6	14.96	1.049		8.700	7.140			K Factor = 5.60	
to		120		0.0	0.0				
7	14.96	0.0761		8.700	0.662			Vel = 5.55	
7	15.65	1.049		8.700	7.802			K Factor = 5.60	
to		120		0.0	0.0				
8	30.61	0.2860		8.700	2.488			Vel = 11.36	
8	17.96	1.38	1T	6.0	6.000	10.290		K Factor = 5.60	
to		120		0.0	6.000	0.0			
51T	48.57	0.1767		12.000	2.120			Vel = 10.42	
	0.0								
	48.57				12.410			K Factor = 13.79	
9	16.71	1.049		8.700	8.901			K Factor = 5.60	
to		120		0.0	0.0				
10	16.71	0.0932		8.700	0.811			Vel = 6.20	
10	17.45	1.049	1T	5.0	2.700	9.712		K Factor = 5.60	
to		120		0.0	5.000	0.0			
51T	34.16	0.3504		7.700	2.698			Vel = 12.68	
	0.0								
	34.16				12.410			K Factor = 9.70	
11	15.43	1.049		8.700	7.590			K Factor = 5.60	
to		120		0.0	0.0				
12	15.43	0.0806		8.700	0.701			Vel = 5.73	

Final Calculations - Standard

DEAN AND ALLYN, INC.
JEWISH MUSEUM ATTIC

Page 3
Date 2-2-14

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
12	16.12	1.049		8.700	8.291		K Factor = 5.60
to		120		0.0	0.0		
13	31.55	0.3024		8.700	2.631		Vel = 11.71
13	18.51	1.38	1T	6.0	6.000	10.922	K Factor = 5.60
to		120		0.0	6.000	0.0	
52T	50.06	0.1869		12.000	2.243		Vel = 10.74
	0.0						
	50.06				13.165		K Factor = 13.80
14	17.22	1.049		8.700	9.454		K Factor = 5.60
to		120		0.0	0.0		
15	17.22	0.0987		8.700	0.859		Vel = 6.39
15	17.98	1.049	1T	5.0	2.700	10.313	K Factor = 5.60
to		120		0.0	5.000	0.0	
52T	35.2	0.3704		7.700	2.852		Vel = 13.07
	0.0						
	35.20				13.165		K Factor = 9.70
50T	81.92	1.61	1T	8.0	3.000	12.174	
to		120		0.0	8.000	0.866	
50	81.92	0.2195		11.000	2.414		Vel = 12.91
	0.0						
	81.92				15.454		K Factor = 20.84
51T	82.73	1.61	1T	8.0	2.800	12.410	
to		120		0.0	8.000	0.866	
51	82.73	0.2234		10.800	2.413		Vel = 13.04
	0.0						
	82.73				15.689		K Factor = 20.89
52T	85.26	1.61	1T	8.0	2.700	13.165	
to		120		0.0	8.000	0.866	
52	85.26	0.2362		10.700	2.527		Vel = 13.44
	0.0						
	85.26				16.558		K Factor = 20.95
50	81.92	2.635		11.800	15.454		
to		120		0.0	0.0		
51	81.92	0.0199		11.800	0.235		Vel = 4.82
51	82.73	2.635		12.000	15.689		
to		120		0.0	0.0		
52	164.65	0.0724		12.000	0.869		Vel = 9.69
52	85.26	2.635	1T	16.474	23.600	16.558	
to		120		0.0	16.474	0.0	
53	249.91	0.1568		40.074	6.284		Vel = 14.70
53	0.0	2.635	1E	8.237	18.000	22.842	
to		120		0.0	8.237	6.930	
55	249.91	0.1568		26.237	4.114		Vel = 14.70

Final Calculations - Standard

DEAN AND ALLYN, INC.
JEWISH MUSEUM ATTIC

Page 4
Date 2-2-14

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
55	0.0	2.635	1E	8.237	7.300	33.886			
to		120	1T	16.474	24.711	0.0			
56	249.91	0.1568		0.0	32.011	5.020		Vel = 14.70	
56	0.0	2.635	1T	16.474	16.300	38.906			
to		120	1E	8.237	24.711	0.0			
57	249.91	0.1568		0.0	41.011	6.430		Vel = 14.70	
57	0.0	3.26		0.0	10.000	45.336			
to		120		0.0	0.0	5.197			
58	249.91	0.0557		0.0	10.000	0.557		Vel = 9.61	
58	0.0	3.26	1E	9.408	10.800	51.090			
to		120		0.0	9.408	4.764			
59	249.91	0.0556		0.0	20.208	1.124		Vel = 9.61	
59	0.0	3.26	2E	11.408	12.500	56.978			
to		120	1T	20.159	38.975	0.0			
60	249.91	0.0556		0.0	51.475	2.863		Vel = 9.61	
60	0.0	3.26	1E	9.408	22.000	59.841			
to		120	1T	20.159	29.567	0.0			
61	249.91	0.0556		0.0	51.567	2.867		Vel = 9.61	
61	0.0	3.26	1E	9.408	4.800	62.708			
to		120		0.0	9.408	0.0			
TR	249.91	0.0557		0.0	14.208	0.791		Vel = 9.61	
TR	0.0	4.26	1E	13.167	6.000	63.499			
to		120	1Z	13.167	26.334	7.599		* Fixed loss = 5.000	
FF	249.91	0.0151		0.0	32.334	0.488		Vel = 5.63	
FF	0.0	6.16	1G	3.236	400.000	71.586			
to		120	1T	32.359	35.595	0.0			
CTY	249.91	0.0025		0.0	435.595	1.092		Vel = 2.69	
	100.00							Qa = 100.00	
	349.91					72.678		K Factor = 41.04	

Fittings Used Summary

DEAN AND ALLYN, INC.
JEWISH MUSEUM ATTIC

Page 5
Date 2-2-14

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	Generic Gate Valve	0	0	1	1	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
T	90' Flow Thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Z	Generic Flow Switch	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61

Pressure / Flow Summary - STANDARD

DEAN AND ALLYN, INC.
 JEWISH MUSEUM ATTIC

Page 6
 Date 2-2-14

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	47.0	5.6	7.0	na	14.82	.10	120	7.0
2	47.0	5.6	7.65	na	15.49	.10	120	7.0
3	47.0	5.6	10.09	na	17.79	.10	120	7.0
4	47.0	5.6	8.73	na	16.54	.10	120	7.0
5	47.0	5.6	9.53	na	17.28	.10	120	7.0
6	47.0	5.6	7.14	na	14.96	.10	120	7.0
7	47.0	5.6	7.8	na	15.64	.10	120	7.0
8	47.0	5.6	10.29	na	17.96	.10	120	7.0
9	47.0	5.6	8.9	na	16.71	.10	120	7.0
10	47.0	5.6	9.71	na	17.45	.10	120	7.0
11	47.0	5.6	7.59	na	15.43	.10	120	7.0
12	47.0	5.6	8.29	na	16.12	.10	120	7.0
13	47.0	5.6	10.92	na	18.51	.10	120	7.0
14	47.0	5.6	9.45	na	17.22	.10	120	7.0
15	47.0	5.6	10.31	na	17.98	.10	120	7.0
50T	47.0		12.17	na				
51T	47.0		12.41	na				
52T	47.0		13.16	na				
50	45.0		15.45	na				
51	45.0		15.69	na				
52	45.0		16.56	na				
53	45.0		22.84	na				
55	29.0		33.89	na				
56	29.0		38.91	na				
57	29.0		45.34	na				
58	17.0		51.09	na				
59	6.0		56.98	na				
60	6.0		59.84	na				
61	6.0		62.71	na				
TR	6.0		63.5	na				
FF	0.0		71.59	na				
CTY	0.0		72.68	na	100.0			

The maximum velocity is 14.7 and it occurs in the pipe between nodes 52 and 53

Water Supply Curve (C)

DEAN AND ALLYN, INC.
 JEWISH MUSEUM ATTIC

Page 7
 Date 2-2-14

City Water Supply:
 C1 - Static Pressure : 80
 C2 - Residual Pressure: 75
 C2 - Residual Flow : 1162

