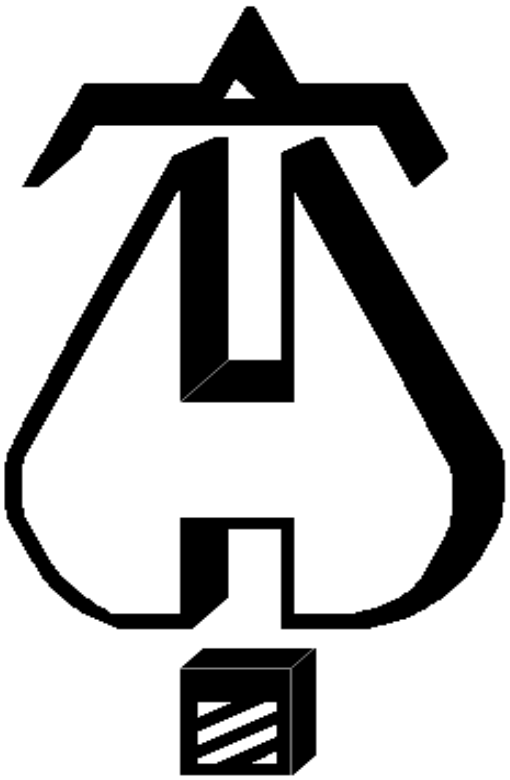

. . . Fire Protection by Computer Design

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

Job Name : SURFACE CREATIONS OF MAINE
Building :
Location : 25 RICE STREET PORTLAND MAINE
System : ONE
Contract : C141204
Data File : 25 RICE STREET.WXF

Hydraulic Design Information Sheet

Name - SURFACE CREATIONS OF MAINE Date - 4-14-14
Location - 25 RICE STREET PORTLAND MAINE
Building - System No. - ONE
Contractor - DEAN AND ALLYN, INC. Contract No. - C141204
Calculated By - H. KING Drawing No. - 1 OF 1
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - 12'
Occupancy - GRANITE COUNTERTOP SHOW ROOM AND OFFICES

SYSTEM DESIGN

(X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. (X) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling Made By Date

Area of Sprinkler Operation	- 1950	System Type	Sprinkler/Nozzle
Density	- .15	( ) Wet	Make RELIABLE
Area Per Sprinkler	- 120	(X) Dry	Model F1FR
Elevation at Highest Outlet	- 13	( ) Deluge	Size 1/2"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.155
Hose Allowance - Outside	- 250		

Note CUSHION 9.3 PSI

Calculation Summary: Flow Required - 707.9 Press Required - 69.0 CITY
C-Factor Used: 100 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 9-7-2011			Cap. -
Time of Test	-	Rated Cap.-		Elev.-
Static Press	- 79	@ Press	-	
Residual Press	- 77	Elev.	-	Well
Flow	- 1331			Proof Flow
Elevation	- 0			

Location - RICE STREET AT RIVERSIDE IND. PARKWAY

Source of Information - PWD RECORDS

STORAGE

Commodity Class Location
Storage Ht. Area Aisle W.
Storage Method: Solid Piled % Palletized % Rack

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

Flue Spacing Clearance:Storage to Ceiling
Longitudinal Transverse

Horizontal Barriers Provided:

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
01A	18.00	1.049	2E	3.427	2.000	10.332		K Factor = 5.60
to		100	1T	3.568	6.423	-0.433		
01	18.0	0.1499		0.0	8.423	1.263		Vel = 6.68
	0.0							
	18.00					11.162		K Factor = 5.39
01	18.03	1.049		0.0	8.700	11.162		K Factor @ node 01
to		100		0.0	0.0	0.0		
02	18.03	0.1555		0.0	8.700	1.353		Vel = 6.69
02	19.06	1.38		0.0	7.500	12.515		K Factor @ node 01
to		100		0.0	0.0	0.0		
03	37.09	0.1504		0.0	7.500	1.128		Vel = 7.96
03	19.90	1.38		0.0	8.500	13.643		K Factor @ node 01
to		100		0.0	0.0	0.0		
04	56.99	0.3328		0.0	8.500	2.829		Vel = 12.22
04	21.87	1.61		0.0	8.200	16.472		K Factor @ node 01
to		100		0.0	0.0	0.0		
05	78.86	0.2865		0.0	8.200	2.349		Vel = 12.43
05	23.37	1.61		0.0	12.000	18.821		K Factor @ node 01
to		100		0.0	0.0	0.0		
06	102.23	0.4631		0.0	12.000	5.557		Vel = 16.11
06	26.60	1.61		0.0	12.000	24.378		K Factor @ node 01
to		100		0.0	0.0	0.0		
77	128.83	0.7103		0.0	12.000	8.524		Vel = 20.30
	0.0							
	128.83					32.902		K Factor = 22.46
07	18.00	1.049		0.0	8.700	11.162		K Factor @ node 01
to		100		0.0	0.0	0.0		
08	18.0	0.1501		0.0	8.700	1.306		Vel = 6.68
08	19.02	1.38		0.0	12.000	12.468		K Factor @ node 01
to		100		0.0	0.0	0.0		
09	37.02	0.1498		0.0	12.000	1.798		Vel = 7.94
09	20.35	1.38	2E	4.141	13.000	14.266		K Factor @ node 01
to		100		0.0	4.282	0.0		
10	57.37	0.3369		0.0	17.282	5.822		Vel = 12.31
10	24.15	1.61		0.0	12.000	20.088		K Factor @ node 01
to		100		0.0	0.0	0.0		
11	81.52	0.3047		0.0	12.000	3.656		Vel = 12.85
11	26.25	1.61	1T	5.71	18.000	23.744		K Factor @ node 01
to		100		0.0	5.710	0.0		
53	107.77	0.5105		0.0	23.710	12.104		Vel = 16.98
	0.0							
	107.77					35.848		K Factor = 18.00

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	18.87	1.049		0.0	10.800	12.268		K Factor @ node 01
to		100		0.0	0.0	0.0		
13	18.87	0.1637		0.0	10.800	1.768		Vel = 7.01
13	20.18	1.38		0.0	12.000	14.036		K Factor @ node 01
to		100		0.0	0.0	0.0		
14	39.05	0.1653		0.0	12.000	1.984		Vel = 8.38
14	21.57	1.38		0.0	10.000	16.020		K Factor @ node 01
to		100		0.0	0.0	0.0		
15	60.62	0.3731		0.0	10.000	3.731		Vel = 13.00
15	23.94	1.61		0.0	12.000	19.751		K Factor @ node 01
to		100		0.0	0.0	0.0		
16	84.56	0.3259		0.0	12.000	3.911		Vel = 13.33
16	26.21	1.61	1T	5.71	18.000	23.662		K Factor @ node 01
to		100		0.0	5.710	0.0		
51	110.77	0.5371		0.0	23.710	12.735		Vel = 17.46
	0.0							
	110.77					36.397		K Factor = 18.36
17	18.82	1.049		0.0	10.800	12.206		K Factor @ node 01
to		100		0.0	0.0	0.0		
18	18.82	0.1630		0.0	10.800	1.760		Vel = 6.99
18	20.14	1.38		0.0	12.000	13.966		K Factor @ node 01
to		100		0.0	0.0	0.0		
19	38.96	0.1646		0.0	12.000	1.975		Vel = 8.36
19	21.51	1.38		0.0	10.000	15.941		K Factor @ node 01
to		100		0.0	0.0	0.0		
20	60.47	0.3714		0.0	10.000	3.714		Vel = 12.97
20	23.88	1.61		0.0	12.000	19.655		K Factor @ node 01
to		100		0.0	0.0	0.0		
21	84.35	0.3244		0.0	12.000	3.893		Vel = 13.29
21	26.15	1.61	1T	5.71	18.000	23.548		K Factor @ node 01
to		100		0.0	5.710	0.0		
50	110.5	0.5347		0.0	23.710	12.677		Vel = 17.41
	0.0							
	110.50					36.225		K Factor = 18.36
77	128.83	2.067	1T	7.137	6.000	32.902		
to		100		0.0	7.137	0.0		
52	128.83	0.2103		0.0	13.137	2.763		Vel = 12.32
	0.0							
	128.83					35.665		K Factor = 21.57
50	110.50	3.26		0.0	10.000	36.225		
to		100		0.0	0.0	0.0		
51	110.5	0.0172		0.0	10.000	0.172		Vel = 4.25

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
51	110.77	3.26	1T	14.388	1.000	36.397		
to		100		0.0	14.388	0.0		
54	221.27	0.0623		0.0	15.388	0.958		Vel = 8.51
	0.0							
	221.27					37.355		K Factor = 36.20
52	128.83	3.26		0.0	8.000	35.665		
to		100		0.0	0.0	0.0		
53	128.83	0.0229		0.0	8.000	0.183		Vel = 4.95
53	107.78	3.26	1T	14.388	7.000	35.848		
to		100		0.0	14.388	0.0		
54	236.61	0.0705		0.0	21.388	1.507		Vel = 9.09
54	221.26	3.26	4E	10.714	63.500	37.355		
to		100	1T	14.388	41.245	0.866		
TR	457.87	0.2389		0.0	104.745	25.019		Vel = 17.60
TR	0.0	6.357	1D	42.176	11.000	63.240		
to		100	1G	2.692	73.584	4.764		
FF	457.87	0.0092	1S	28.716	84.584	0.782		Vel = 4.63
FF	0.0	8.27	1G	6.326	100.000	68.786		
to		140	1T	55.354	90.149	0.0		
CTY	457.87	0.0014	1E	28.468	190.149	0.262		Vel = 2.73
	250.00							Qa = 250.00
	707.87					69.048		K Factor = 85.19

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
D	Generic Dry Pipe Valve	0	0	0	0	0	0	9.5	17	0	28	0	47	0	0	0	0	0	0	0	0
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
S	Generic Swing Check Vlv	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
01A	12.0	5.6	10.33	na	18.0	.15	120	7.0
01	13.0	K = K @ 01	11.16	na	18.0			
02	13.0	K = K @ 01	12.52	na	19.06			
03	13.0	K = K @ 01	13.64	na	19.9			
04	13.0	K = K @ 01	16.47	na	21.87			
05	13.0	K = K @ 01	18.82	na	23.37			
06	13.0	K = K @ 01	24.38	na	26.6			
07	13.0	K = K @ 01	11.16	na	18.0			
08	13.0	K = K @ 01	12.47	na	19.02			
09	13.0	K = K @ 01	14.27	na	20.35			
10	13.0	K = K @ 01	20.09	na	24.15			
11	13.0	K = K @ 01	23.74	na	26.25			
12	13.0	K = K @ 01	12.27	na	18.87			
13	13.0	K = K @ 01	14.04	na	20.18			
14	13.0	K = K @ 01	16.02	na	21.56			
15	13.0	K = K @ 01	19.75	na	23.94			
16	13.0	K = K @ 01	23.66	na	26.21			
17	13.0	K = K @ 01	12.21	na	18.82			
18	13.0	K = K @ 01	13.97	na	20.13			
19	13.0	K = K @ 01	15.94	na	21.51			
20	13.0	K = K @ 01	19.65	na	23.89			
21	13.0	K = K @ 01	23.55	na	26.14			
77	13.0		32.9	na				
50	13.0		36.23	na				
51	13.0		36.4	na				
52	13.0		35.67	na				
53	13.0		35.85	na				
54	13.0		37.35	na				
TR	11.0		63.24	na				
FF	0.0		68.79	na				
CTY	0.0		69.05	na	250.0			

The maximum velocity is 20.3 and it occurs in the pipe between nodes 06 and 77

City Water Supply:
C1 - Static Pressure : 79
C2 - Residual Pressure: 77
C2 - Residual Flow : 1331