



... Fire Protection by Computer Design

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

Job Name : 264 STATE STREET BASEMENT  
Building : 264 STATE ST  
Location : 264 STATE STREET PORTLAND MAINE  
System : ONE  
Contract : 1119  
Data File : 264STATE.WXF

Hydraulic Design Information Sheet

Name - 264 STATE STREET Date - 12-8-12  
 Location - 264 STATE STREET PORTLAND MAINE  
 Building - 264 STATE ST System No. - ONE  
 Contractor - DEAN AND ALLYN, INC. Contract No. - 1119  
 Calculated By - H. KING Drawing No. - 1 OF 1  
 Construction: (X) Combustible ( ) Non-Combustible Ceiling Height - 10'  
 Occupancy - APARTMENT HOUSE

S (X) NFPA 13 (X) 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 VIKING
D	Area Per Sprinkler	- 130	( ) Dry	Model MICROFAST
E	Elevation at Highest Outlet	- 0	( ) Deluge	Size 1/2"
S	Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance	- 250	( ) Other	Temp.Rat.155
G	Hose Allowance - Outside	-		

N

Note CUSHION 19.0 PSI

Calculation Flow Required - 544.8 Press Required - 67.7 at  
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 7-6-06	Rated Cap.-	Cap. -
T	Time of Test -	@ Press -	Elev.-
E	Static Press - 88	Elev. -	
R	Residual Press - 82		Well
	Flow - 1277		Proof Flow
S	Elevation - 0		

U

P Location - PWD ON SHERMAN ST

P

L Source of Information - PWD

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

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

G

E Horizontal Barriers Provided:

Final Calculations - Standard

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
50 to 60	19.50 19.5	1.049 120 0.1242	1T 5.0 0.0 0.0	6.000 5.000 11.000	12.125 0.0 1.366		K Factor = 5.60 Vel = 7.24		
	0.0 19.50					13.491	K Factor = 5.31		
51 to 60	19.87 19.87	1.049 120 0.1286	1T 5.0 0.0 0.0	2.000 5.000 7.000	12.591 0.0 0.900		K Factor = 5.60 Vel = 7.38		
	0.0 19.87					13.491	K Factor = 5.41		
52 to 61	20.20 20.2	1.049 120 0.1326	1T 5.0 0.0 0.0	6.000 5.000 11.000	13.015 0.0 1.459		K Factor = 5.60 Vel = 7.50		
	0.0 20.20					14.474	K Factor = 5.31		
53 to 61	20.59 20.59	1.049 120 0.1373	1T 5.0 0.0 0.0	2.000 5.000 7.000	13.513 0.0 0.961		K Factor = 5.60 Vel = 7.64		
	0.0 20.59					14.474	K Factor = 5.41		
54 to 62	23.41 23.41	1.049 120 0.1742	 0.0 0.0 0.0	3.300 0.0 3.300	17.481 0.0 0.575		K Factor = 5.60 Vel = 8.69		
	0.0 23.41					18.056	K Factor = 5.51		
55 to 63	25.84 25.84	1.049 120 0.2090	1T 5.0 0.0 0.0	3.200 5.000 8.200	21.298 0.0 1.714		K Factor = 5.60 Vel = 9.59		
	0.0 25.84					23.012	K Factor = 5.39		
56 to 58	22.58 22.58	1.049 120 0.1629	 0.0 0.0 0.0	7.500 0.0 7.500	16.262 0.0 1.222		K Factor = 5.60 Vel = 8.38		
	0.0 22.58					17.484	K Factor = 5.40		
57 to 64	27.25 27.25	1.049 120 0.2305	1T 5.0 0.0 0.0	3.200 5.000 8.200	23.674 0.0 1.890		K Factor = 5.60 Vel = 10.12		
	0.0 27.25					25.564	K Factor = 5.39		
58 to 63	46.00 46.0	1.049 120 0.6075	1T 5.0 0.0 0.0	4.100 5.000 9.100	17.484 0.0 5.528		K Factor = 5.60 Vel = 17.08		

Final Calculations - Standard

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
	0.0 46.00									
						23.012			K Factor =	9.59
59 to 64	128.29	1.61 120	1T	8.0 0.0	4.100 8.000	19.478 0.0			K Factor =	5.60
	128.29	0.5030		0.0	12.100	6.086			Vel =	20.22
	0.0 128.29								K Factor =	25.37
80 to 65	32.81	1.049 120	1E 1T	2.0 5.0	6.200 7.000	34.324 0.0			K Factor =	5.60
	32.81	0.3251		0.0	13.200	4.291			Vel =	12.18
	0.0 32.81								K Factor =	5.28
81 to 66	34.69	1.049 120	1E 1T	2.0 5.0	6.200 7.000	38.376 0.0			K Factor =	5.60
	34.69	0.3605		0.0	13.200	4.758			Vel =	12.88
	0.0 34.69								K Factor =	5.28
60 to 61	39.37	1.38 120		0.0 0.0	8.200 0.0	13.491 0.0				
	39.37	0.1199		0.0	8.200	0.983			Vel =	8.44
61 to 62	40.79	1.61 120	1T	8.0 0.0	9.000 8.000	14.474 0.0				
	80.16	0.2107		0.0	17.000	3.582			Vel =	12.63
62 to 59	23.41	1.61 120		0.0 0.0	4.200 0.0	18.056 0.0				
	103.57	0.3386		0.0	4.200	1.422			Vel =	16.32
	0.0 103.57								K Factor =	23.47
63 to 64	71.84	1.38 120		0.0 0.0	7.000 0.0	23.012 0.0				
	71.84	0.3646		0.0	7.000	2.552			Vel =	15.41
64 to 65	155.54	1.61 120		0.0 0.0	9.000 0.0	25.564 0.0				
	227.38	1.4501		0.0	9.000	13.051			Vel =	35.83
65 to 66	32.81	2.067 120		0.0 0.0	8.200 0.0	38.615 0.0				
	260.19	0.5511		0.0	8.200	4.519			Vel =	24.88
66 to TR	34.69	2.067 120	1E	5.0 0.0	1.000 5.000	43.134 0.0				
	294.88	0.6947		0.0	6.000	4.168			Vel =	28.19
TR to FF	0.0	2.067 120	1G 1S	1.0 11.0	8.000 12.000	47.302 5.000			* Fixed loss =	5.000
	294.88	0.6947		0.0	20.000	13.894			Vel =	28.19

Final Calculations - Standard

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Hyd. Ref. Point	Qa  Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****  Notes  *****
FF to CTY	0.0  294.88	4.1 140 0.0186	1T 29.067 1G 2.907 0.0	50.000 31.974 81.974	66.196 0.0 1.524		Vel = 7.17  Qa = 250.00 K Factor = 66.21
	250.00 544.88				67.720		

# Fittings Used Summary

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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
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

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
50	0.0	5.6	12.13	na	19.5	.15	130	7.0
51	0.0	5.6	12.59	na	19.87	.15	130	7.0
52	0.0	5.6	13.02	na	20.2	.15	130	7.0
53	0.0	5.6	13.51	na	20.59	.15	130	7.0
54	0.0	5.6	17.48	na	23.41	.15	130	7.0
55	0.0	5.6	21.3	na	25.84	.15	130	7.0
56	0.0	5.6	16.26	na	22.58	.15	130	7.0
57	0.0	5.6	23.67	na	27.25	.15	130	7.0
58	0.0	5.6	17.48	na	23.42	.15	130	7.0
59	0.0	5.6	19.48	na	24.72	.15	130	7.0
80	0.0	5.6	34.32	na	32.81	.15	130	7.0
81	0.0	5.6	38.38	na	34.69	.15	130	7.0
60	0.0		13.49	na				
61	0.0		14.47	na				
62	0.0		18.06	na				
63	0.0		23.01	na				
64	0.0		25.56	na				
65	0.0		38.62	na				
66	0.0		43.13	na				
TR	0.0		47.3	na				
FF	0.0		66.2	na				
CTY	0.0		67.72	na	250.0			

The maximum velocity is 35.83 and it occurs in the pipe between nodes 64 and 65

# Water Supply Curve (C)

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City Water Supply:  
 C1 - Static Pressure : 88  
 C2 - Residual Pressure: 82  
 C2 - Residual Flow : 1277

