



... Fire Protection by Computer Design

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

Job Name : 279 BRACKETT STREET BASEMENT
Building :
Location : PORTLAND MAINE
System : ONE
Contract : 161323
Data File : 279 BRACKETT STREET BASEMENT.WXF

Hydraulic Design Information Sheet

Name - 279 BRACKETT STREET Date - 2-20-16
 Location - PORTLAND MAINE
 Building - System No. - ONE
 Contractor - DEAN AND ALLYN, INC. Contract No. - 161323
 Calculated By - H. KING Drawing No. - 1 OF 1
 Construction: (X) Combustible () Non-Combustible Ceiling Height - 9'
 Occupancy - APARTMENT BUILDING BASEMENT

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

M	Area of Sprinkler Operation	- 900	System Type	Sprinkler/Nozzle
	Density	- .15	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 108	() Dry	Model FIFR
E	Elevation at Highest Outlet	- 0	() Deluge	Size 1/2"
S	Hose Allowance - Inside	-	() Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance	-	() Other	Temp.Rat.155
G	Hose Allowance - Outside	- 100		

N Note CUSHION 5.5 PSI

Calculation Flow Required - 289.7 Press Required - 46.1
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 1-12-16		Cap. -
T	Time of Test -	Rated Cap.-	Elev.-
E	Static Press - 52	@ Press -	
R	Residual Press - 49	Elev. -	Well
	Flow - 949		Proof Flow
S	Elevation - 0		

P Location - BRACKETT STREET

L Source of Information - PORTLAND WATER DIST.

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:

Final Calculations - Hazen-Williams

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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	*****
51	16.20	1.38		0.0	9.000	8.369			K Factor = 5.60	
to		120.0		0.0	0.0	0.0				
52	16.2	0.0231		0.0	9.000	0.208			Vel = 3.47	
52	16.40	1.38	T	6.0	5.000	8.577			K Factor = 5.60	
to		120.0		0.0	6.000	0.0				
70T	32.6	0.0845		0.0	11.000	0.930			Vel = 6.99	
	0.0									
	32.60					9.507			K Factor = 10.57	
53	16.27	1.38		0.0	9.000	8.444			K Factor = 5.60	
to		120.0		0.0	0.0	0.0				
54	16.27	0.0234		0.0	9.000	0.211			Vel = 3.49	
54	16.48	1.38	T	6.0	4.000	8.655			K Factor = 5.60	
to		120.0		0.0	6.000	0.0				
70T	32.75	0.0852		0.0	10.000	0.852			Vel = 7.02	
	0.0									
	32.75					9.507			K Factor = 10.62	
55	16.42	1.38		0.0	9.000	8.602			K Factor = 5.60	
to		120.0		0.0	0.0	0.0				
56	16.42	0.0238		0.0	9.000	0.214			Vel = 3.52	
56	16.63	1.38	T	6.0	5.000	8.816			K Factor = 5.60	
to		120.0		0.0	6.000	0.0				
71T	33.05	0.0866		0.0	11.000	0.953			Vel = 7.09	
	0.0									
	33.05					9.769			K Factor = 10.57	
57	16.50	1.38		0.0	9.000	8.680			K Factor = 5.60	
to		120.0		0.0	0.0	0.0				
58	16.5	0.0239		0.0	9.000	0.215			Vel = 3.54	
58	16.70	1.38	T	6.0	4.000	8.895			K Factor = 5.60	
to		120.0		0.0	6.000	0.0				
71T	33.2	0.0874		0.0	10.000	0.874			Vel = 7.12	
	0.0									
	33.20					9.769			K Factor = 10.62	
59	18.67	1.049		0.0	9.000	11.117			K Factor = 5.60	
to		120.0		0.0	0.0	0.0				
60	18.67	0.1146		0.0	9.000	1.031			Vel = 6.93	
60	19.52	1.38	T	6.0	2.000	12.148			K Factor = 5.60	
to		120.0		0.0	6.000	0.0				
72T	38.19	0.1132		0.0	8.000	0.906			Vel = 8.19	
	0.0									
	38.19					13.054			K Factor = 10.57	
62	19.89	1.38	T	6.0	7.000	12.614			K Factor = 5.60	
to		120.0		0.0	6.000	0.0				
72T	19.89	0.0338		0.0	13.000	0.440			Vel = 4.27	
	0.0									
	19.89					13.054			K Factor = 5.51	
70T	65.35	1.38	T	6.0	0.300	9.507				
to		120.0		0.0	6.000	0.0				
70	65.35	0.3059		0.0	6.300	1.927			Vel = 14.02	

Final Calculations - Hazen-Williams

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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	*****
	0.0 65.35						11.434		K Factor = 19.33	
71T to 71	66.25 66.25	1.38 120.0 0.3138	T	6.0 0.0 0.0	0.300 6.000 6.300	9.769 0.0 1.977			Vel = 14.21	
	0.0 66.25						11.746		K Factor = 19.33	
72T to 72	58.08 58.08	1.38 120.0 0.2460	T	6.0 0.0 0.0	0.300 6.000 6.300	13.054 0.0 1.550			Vel = 12.46	
	0.0 58.08						14.604		K Factor = 15.20	
70 to 71	65.35 65.35	2.067 120.0 0.0427		0.0 0.0 0.0	7.300 0.0 7.300	11.434 0.0 0.312			Vel = 6.25	
71 to 72	66.25 131.6	2.067 120.0 0.1562	E	5.0 0.0 0.0	13.300 5.000 18.300	11.746 0.0 2.858			Vel = 12.58	
72 to 73	58.08 189.68	2.067 120.0 0.3071	2E T	10.0 10.0 0.0	20.400 20.000 40.400	14.604 0.0 12.407			Vel = 18.14	
73 to TR	0.0 189.68	2.067 120.0 0.3071	E	5.0 0.0 0.0	20.100 5.000 25.100	27.011 0.0 7.708			Vel = 18.14	
TR to FF	0.0 189.68	2.067 120.0 0.3071	S	11.0 0.0 0.0	8.000 11.000 19.000	34.719 5.000 5.835			** Fixed Loss = 5 Vel = 18.14	
FF to CTY	0.0 189.68	4.1 120.0 0.0109	T G	21.855 2.186 0.0	30.000 24.041 54.041	45.554 0.0 0.591			Vel = 4.61	
	100.00 289.68						46.145		Qa = 100.00 K Factor = 42.64	

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
51	0.0	5.6	8.37	na	16.2	0.15	108	7.0
52	0.0	5.6	8.58	na	16.4	0.15	108	7.0
53	0.0	5.6	8.44	na	16.27	0.15	108	7.0
54	0.0	5.6	8.65	na	16.47	0.15	108	7.0
55	0.0	5.6	8.6	na	16.42	0.15	108	7.0
56	0.0	5.6	8.82	na	16.63	0.15	108	7.0
57	0.0	5.6	8.68	na	16.5	0.15	108	7.0
58	0.0	5.6	8.9	na	16.7	0.15	108	7.0
59	0.0	5.6	11.12	na	18.67	0.15	108	7.0
60	0.0	5.6	12.15	na	19.52	0.15	108	7.0
62	0.0	5.6	12.61	na	19.89	0.15	108	7.0
70T	0.0		9.51	na				
71T	0.0		9.77	na				
72T	0.0		13.05	na				
70	0.0		11.43	na				
71	0.0		11.75	na				
72	0.0		14.6	na				
73	0.0		27.01	na				
TR	0.0		34.72	na				
FF	0.0		45.55	na				
CTY	0.0		46.15	na	100.0			

The maximum velocity is 18.14 and it occurs in the pipe between nodes 72 and 73

Water Supply Curve C

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City Water Supply:
C1 - Static Pressure : 52
C2 - Residual Pressure: 49
C2 - Residual Flow : 949

Demand:
D1 - Elevation : _____
D2 - System Flow : 189.68
D2 - System Pressure : 46.145
Hose (Demand) : 100
D3 - System Demand : 289.68
Safety Margin : 5.521

