



... Fire Protection by Computer Design

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

Job Name : GLENWOOD ATTIC  
Building : ATTIC SPRINKLERS  
Location : 145 GLENWOOD AVE. PORTLAND, MAINE  
System : ONE  
Contract : C131155  
Data File : GLENWOOD ATTIC.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - PLYMOUTH HOUSE Date - 8-15-13  
 Location - 145 GLENWOOD AVE. PORTLAND, MAINE  
 Building - ATTIC SPRINKLERS System No. - ONE  
 Contractor - DEAN AND ALLYN, INC. Contract No. - C131155  
 Calculated By - H. KING Drawing No. - 1 OF 1  
 Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 10'  
 OCCUPANCY - APARTMENT HOUSE

S Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D  
 Y Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )  
 S ( )Other  
 T ( )Specific Ruling Made by Date  
 E  
 M Listed Flow at Start Point - 14.8 Gpm System Type  
 Listed Pres. at Start Point - 7 Psi (X) Wet ( ) Dry  
 D MAXIMUM LISTED SPACING 10 x 12 ( ) Deluge ( ) PreAction  
 E Domestic Flow Added - Gpm Sprinkler or Nozzle  
 S Additional Flow Added - Gpm Make RELIABLE Model F1FR  
 I Elevation at Highest Outlet - 29' Feet Size 1/2" K-Factor 5.6  
 G Note:CUSHION 6.04 PSI Temperature Rating 200  
 N

Calculation Gpm Required 61.9 Psi Required 64.9 CITY  
 Summary C-Factor Used: Overhead 120 Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:  
 A Date of Test - Rated Cap. Cap.  
 T Time of Test - @ Psi Elev.  
 E Static (Psi) - 71 Elev.  
 R Residual (Psi) - 64 Other Well  
 Flow (Gpm) - 992 Proof Flow Gpm  
 S Elevation - 0

P Location: GLENWOOD AVE  
 P  
 L Source of Information: PORTLAND WATER DIST 2008  
 Y

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	*****
1A to 1	-12.96	1.049 120	1E 2.0 1T 5.0	1.000 7.000	7.000 -5.197			K Factor = 4.90	
	-12.96	0.0584	0.0	8.000	0.467			Vel = 4.81	
	0.0								
	-12.96				2.270			K Factor = -8.60	
1 to 50	14.98	1.38 120	0.0 0.0	5.400 0.0	2.270 0.0			K Factor = 5.60	
	14.98	0.9250	0.0	5.400	4.995			Vel = 3.21	
	0.0								
	14.98				7.265			K Factor = 5.56	
2 to 50	14.82	1.38 120	1E 3.0 1T 6.0	4.500 9.000	7.000 0.0			K Factor = 5.60	
	14.82	0.0196	0.0	13.500	0.265			Vel = 3.18	
	0.0								
	14.82				7.265			K Factor = 5.50	
3 to 4	45.11	1.38 120	0.0 0.0	9.500 0.0	7.480 0.0			K Factor = 5.60	
	45.11	0.1541	0.0	9.500	1.464			Vel = 9.68	
4 to 51	16.75	1.38 120	1T 6.0 0.0	15.800 6.000	8.944 0.0			K Factor = 5.60	
	61.86	0.2764	0.0	21.800	6.026			Vel = 13.27	
	0.0								
	61.86				14.970			K Factor = 15.99	
50 to 3	29.80	1.38 120	0.0 0.0	3.000 0.0	7.265 0.0				
	29.8	0.0717	0.0	3.000	0.215			Vel = 6.39	
	0.0								
	29.80				7.480			K Factor = 10.90	
51 to 52	61.86	1.38 120	2E 5.0 0.0	9.700 6.000	14.970 0.0				
	61.86	0.2764	0.0	15.700	4.340			Vel = 13.27	
52 to 53	0.0	1.38 120	0.0 0.0	7.500 0.0	19.310 3.681				
	61.86	0.2764	0.0	7.500	2.073			Vel = 13.27	
53 to 54	0.0	1.38 120	1T 6.0 0.0	10.300 6.000	25.064 4.548				
	61.86	0.2764	0.0	16.300	4.506			Vel = 13.27	
54 to 61	0.0	1.38 120	1T 6.0 1E 3.0	17.700 9.000	34.118 0.0				
	61.86	0.2764	0.0	26.700	7.380			Vel = 13.27	
61 to 62	0.0	1.38 120	1E 3.0 0.0	10.700 3.000	41.498 4.331				
	61.86	0.2764	0.0	13.700	3.787			Vel = 13.27	

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 *****
62	0.0	1.61	1T 8.0	11.000	49.616		
to		120	1E 4.0	12.000	0.0		
63	61.86	0.1305	0.0	23.000	3.001		Vel = 9.75
63	0.0	1.61	1E 4.0	54.700	52.617		
to		120	1T 8.0	12.000	0.0		
TR	61.86	0.1305	0.0	66.700	8.703		Vel = 9.75
TR	0.0	2.067	1Z 5.0	7.000	61.320		
to		120	0.0	5.000	3.000		* Fixed loss = 3.000
FF	61.86	0.0386	0.0	12.000	0.463		Vel = 5.91
FF	0.0	4.1	2E 21.855	50.000	64.783		
to		120	1T 21.855	45.896	0.0		
CTY	61.86	0.0014	1G 2.186	95.896	0.132		Vel = 1.50
	0.0						
	61.86				64.915		K Factor = 7.68

# 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
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

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	17.0	4.9	7.0	na	12.96	.05	256	7.0
1	29.0	5.6	2.27	na	8.44	.10	130	7.0
2	29.0	5.6	7.0	na	14.82	.10	130	7.0
3	29.0	5.6	7.48	na	15.32	.10	130	7.0
4	29.0	5.6	8.94	na	16.75	.10	130	7.0
50	29.0		7.27	na				
51	29.0		14.97	na				
52	29.0		19.31	na				
53	20.5		25.06	na				
54	10.0		34.12	na				
61	10.0		41.5	na				
62	0.0		49.62	na				
63	0.0		52.62	na				
TR	0.0		61.32	na				
FF	0.0		64.78	na				
CTY	0.0		64.92	na				

The maximum velocity is 13.27 and it occurs in the pipe between nodes 4 and 51

Water Supply Curve (C)

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City Water Supply:  
C1 - Static Pressure : 71  
C2 - Residual Pressure: 64  
C2 - Residual Flow : 992

