



... Fire Protection by Computer Design

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

Job Name : ADAMS SCHOOL BUILDING A SECOND FLOOR  
Building : BUILDING A SECOND FLOOR  
Location : VESPER STREET PORTLAND MAINE  
System : ONE  
Contract : C121102  
Data File : ADAMS SCHOOL BUILDING A SECOND FLOOR.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - ADAMS SCHOOL REDEVELOPMENT PROJECT Date - 11-1-12  
 Location - VESPER STREET PORTLAND MAINE  
 Building - BUILDING A SECOND FLOOR System No. - ONE  
 Contractor - DEAN AND ALLYN, INC. Contract No. - C121102  
 Calculated By - HARRY KING Drawing No. - 1 OF 2  
 Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'  
 OCCUPANCY - HOUSING

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 - 13 Gpm System Type  
 Listed Pres. at Start Point - 10.6 Psi (X) Wet ( ) Dry  
 D MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction  
 E Domestic Flow Added - Gpm Sprinkler or Nozzle  
 S Additional Flow Added - Gpm Make VIKING Model FREEDOM  
 I Elevation at Highest Outlet - 20 Feet Size 1/2" K-Factor 4.0  
 G Note:CUSHION: 7.9PSI Temperature Rating 155  
 N

Calculation Gpm Required 39.7 Psi Required 36.0 At Test  
 Summary C-Factor Used: Overhead 120 Underground 140

W Water Flow Test: Pump Data: Tank or Reservoir:  
 A Date of Test - 6-2-2005 Rated Cap. Cap.  
 T Time of Test - @ Psi Elev.  
 E Static (Psi) - 44 Elev.  
 R Residual (Psi) - 37 Other Well  
 Flow (Gpm) - 503 Proof Flow Gpm  
 S Elevation - 0

P Location: MUNJOY AT MOODY STREETS  
 P  
 L Source of Information: PORTLAND WATER DEPT  
 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	1T 5.0 0.0	1.000 5.000	7.000 10.828			K Factor = 4.90	
	12.96	0.0583	0.0	6.000	0.350			Vel = 4.81	
	0.0								
	12.96				18.178			K Factor = 3.04	
01 to 10	13.18	1.049 120	1T 5.0 1E 2.0	8.000 7.000	10.859 3.465			K Factor = 4.00	
	13.18	0.0601	0.0	15.000	0.902			Vel = 4.89	
	0.0								
	13.18				15.226			K Factor = 3.38	
02 to 11	13.02	1.049 120	1T 5.0 1E 2.0	8.000 7.000	10.600 3.465			K Factor = 4.00	
	13.02	0.0588	0.0	15.000	0.882			Vel = 4.83	
	0.0								
	13.02				14.947			K Factor = 3.37	
03 to 12	13.50	1.049 120	1T 5.0 1E 2.0	8.000 7.000	11.382 3.465			K Factor = 4.00	
	13.5	0.0629	0.0	15.000	0.943			Vel = 5.01	
	0.0								
	13.50				15.790			K Factor = 3.40	
10 to 13	13.18	1.38 120	2T 8.0 0.0	11.300 12.000	15.226 0.0				
	13.18	0.0158	0.0	23.300	0.369			Vel = 2.83	
	0.0								
	13.18				15.595			K Factor = 3.34	
11 to 13	13.02	1.049 120	1T 5.0 0.0	6.000 5.000	14.947 0.0				
	13.02	0.0589	0.0	11.000	0.648			Vel = 4.83	
	0.0								
	13.02				15.595			K Factor = 3.30	
12 to 14	13.50	1.38 120	2T 8.0 0.0	3.500 12.000	15.790 0.0				
	13.5	0.0165	0.0	15.500	0.256			Vel = 2.90	
	0.0								
	13.50				16.046			K Factor = 3.37	
13 to 14	26.20	1.38 120	0.0 0.0	8.000 0.0	15.595 0.0				
	26.2	0.0564	0.0	8.000	0.451			Vel = 5.62	
14 to 15	13.50	1.38 120	1T 6.0 0.0	43.000 6.000	16.046 0.0				
	39.7	0.1217	0.0	49.000	5.962			Vel = 8.52	

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	*****
15 to TR	0.0 39.7	1.38 120 0.1217	1E 3.0 0.0	8.500 3.000	22.008 2.166				
			0.0	11.500	1.399		Vel =	8.52	
TR to FF	0.0 39.7	1.38 120 0.1216	1S 7.0 1Z 3.0	7.000 10.000	25.573 8.032				
			0.0	17.000	2.068		* Fixed loss =	5.000	
							Vel =	8.52	
FF to CTY	0.0 39.7	4.1 120 0.0006	4E 14.928 0.0	500.000 43.710	35.673 0.0				
			0.0	543.710	0.329		Vel =	0.96	
	0.0 39.70								
					36.002		K Factor =	6.62	

# Fittings Used Summary

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Fitting Legend		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24	
Abbrev.	Name																					
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61	
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	
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	25.0	4.9	7.0	na	12.96	.05	256	7.0
01	20.0	4	10.86	na	13.18	.05	256	10.6
02	20.0	4	10.6	na	13.02	.05	256	10.6
03	20.0	4	11.38	na	13.5	.05	256	10.6
10	12.0		15.23	na				
11	12.0		14.95	na				
12	12.0		15.79	na				
13	12.0		15.59	na				
14	12.0		16.05	na				
15	12.0		22.01	na				
TR	7.0		25.57	na				
FF	0.0		35.67	na				
CTY	0.0		36.0	na				

The maximum velocity is 8.52 and it occurs in the pipe between nodes 14 and 15

# Water Supply Curve (C)

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City Water Supply:  
 C1 - Static Pressure : 44  
 C2 - Residual Pressure: 37  
 C2 - Residual Flow : 503

