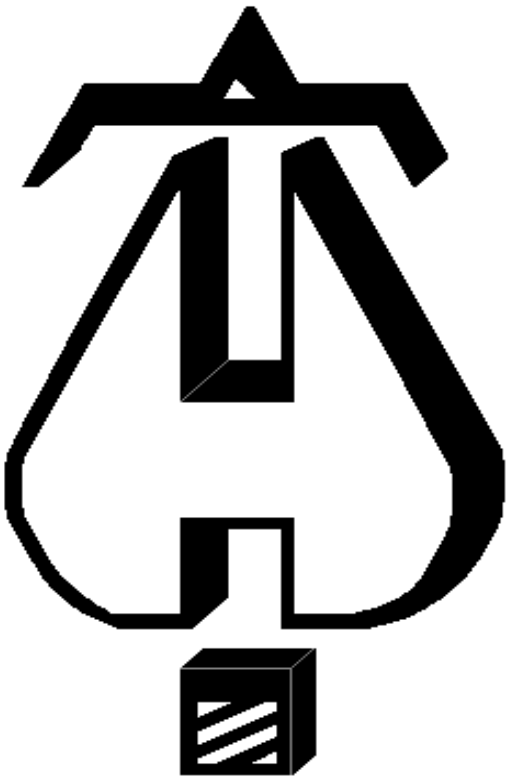

. . . Fire Protection by Computer Design

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

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

HYDRAULIC DESIGN INFORMATION SHEET

Name - ADAMS SCHOOL REDEVELOPMENT PROJECT Date - 11-1-12
Location - VESPER STREET PORTLAND MAINE
Building - BUILDING A FIRST 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

SYSTEM DESIGN

Type of Calculation: ( )NFPA 13 Residential (X)NFPA 13R ( )NFPA 13D
Number of Sprinklers Flowing: ( )1 ( )2 (X)4 ( )
( )Other
( )Specific Ruling Made by Date

Listed Flow at Start Point - 20 Gpm System Type
Listed Pres. at Start Point - 16.7 Psi (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 20 x 20 ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm Sprinkler or Nozzle
Additional Flow Added - Gpm Make VIKING Model FREEDOM
Elevation at Highest Outlet - 12 Feet Size 1/2" K-Factor 4.9
Note:CUSHION: 5.8 PSI Temperature Rating 155

Calculation Summary: Gpm Required 40.3 Psi Required 38.1 At Test
C-Factor Used: Overhead 120 Underground 120

WATER SUPPLY

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

Location: MUNJOY AT MOODY STREETS

Source of Information: PORTLAND WATER DEPT

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	12.96	1.049	1T	5.0	1.000	7.000		K Factor = 4.90
to		120		0.0	5.000	10.828		
1	12.96	0.0583		0.0	6.000	0.350		Vel = 4.81
	0.0							
	12.96					18.178		K Factor = 3.04
04	20.02	1.38	1T	6.0	13.000	16.700		K Factor = 4.90
to		120		0.0	6.000	0.0		
4.5	20.02	0.0343		0.0	19.000	0.652		Vel = 4.29
	0.0							
	20.02					17.352		K Factor = 4.81
05	20.31	1.38	1T	6.0	13.000	17.180		K Factor = 4.90
to		120		0.0	6.000	0.0		
14	20.31	0.0352		0.0	19.000	0.669		Vel = 4.36
	0.0							
	20.31					17.849		K Factor = 4.81
4.5	20.02	1.38		0.0	14.500	17.352		
to		120		0.0	0.0	0.0		
14	20.02	0.0343		0.0	14.500	0.497		Vel = 4.29
14	20.31	1.38	1T	6.0	43.000	17.849		
to		120		0.0	6.000	0.0		
15	40.33	0.1253		0.0	49.000	6.140		Vel = 8.65
15	0.0	1.38	1E	3.0	8.500	23.989		
to		120		0.0	3.000	2.166		
TR	40.33	0.1252		0.0	11.500	1.440		Vel = 8.65
TR	0.0	1.38	1S	7.0	7.000	27.595		
to		120	1Z	3.0	10.000	8.032		* Fixed loss = 5.000
FF	40.33	0.1253		0.0	17.000	2.130		Vel = 8.65
FF	0.0	4.1	4E	14.928	500.000	37.757		
to		120		0.0	43.710	0.0		
CTY	40.33	0.0006		0.0	543.710	0.339		Vel = 0.98
	0.0							
	40.33					38.096		K Factor = 6.53

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
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

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
04	12.0	4.9	16.7	na	20.02	.05	400	16.7
05	12.0	4.9	17.18	na	20.31	.05	400	16.7
4.5	12.0		17.35	na				
14	12.0		17.85	na				
15	12.0		23.99	na				
TR	7.0		27.6	na				
FF	0.0		37.76	na				
CTY	0.0		38.1	na				

The maximum velocity is 8.65 and it occurs in the pipe between nodes 14 and 15

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