



**... Fire Protection by Computer Design**

DEAN & ALLYN, INC.  
32 LEWISTON ROAD BUILDING 1C  
P.O. BOX 709  
GRAY, ME 04039  
207-657-5646

Job Name : PAYSON STREET CHILD CARE  
Building : ONE  
Location : 1340 RIVERSIDE STREET PORTLAND MAINE  
System : ONE  
Contract : TBD  
Data File : PAYSON CHILD CARE 1.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - PAYSON STREET CHILD CARE Date - 8-9-08  
 Location - 1340 RIVERSIDE STREET PORTLAND MAINE  
 Building - ONE System No. - ONE  
 Contractor - DEAN AND ALLYN, INC. Contract No. - TBD  
 Calculated By - H KING Drawing No. - 1 OF 1  
 Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'  
 OCCUPANCY - CHILD CARE FAC.

S Type of Calculation: ( )NFPA 13 Residential ( )NFPA 13R (X)NFPA 13D  
 Y Number of Sprinklers Flowing: ( )1 ( )2 ( )4 (X)3  
 S ( )Other  
 T ( )Specific Ruling Made by Date  
 E  
 M Listed Flow at Start Point - 13 Gpm System Type  
 Listed Pres. at Start Point - 7.5 Psi (X) Wet ( ) Dry  
 D MAXIMUM LISTED SPACING 14 x 14 ( ) Deluge ( ) PreAction  
 E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle  
 S Additional Flow Added - 0 Gpm Make VIKING Model FREEDOM  
 I Elevation at Highest Outlet - 24' Feet Size 1/2" K-Factor 4.9  
 G Note:CUSHION 13.56PSI Temperature Rating 155  
 N

Calculation Gpm Required 39.63 Psi Required 38.19 At Test  
 Summary C-Factor Used: Overhead 120 Underground 120

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) - 55 Elev.  
 R Residual (Psi) - 50 Other Well  
 Flow (Gpm) - 50 Proof Flow Gpm  
 S Elevation - 0

P Location:  
 P  
 L Source of Information:  
 Y

# Fittings Used Summary

DEAN & ALLYN, INC.  
PAYSON STREET CHILD CARE

Page 2  
Date 8-9-08

## Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	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 Valve	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

## Units Summary

Diameter Units           Inches  
 Length Units             Feet  
 Flow Units                US Gallons per Minute  
 Pressure Units           Pounds per Square Inch

# Pressure / Flow Summary - STANDARD

DEAN & ALLYN, INC.  
PAYSON STREET CHILD CARE

Page 3  
Date 8-9-08

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	24.0	4.9	7.0	na	12.96	0.06	196	7.0
1	24.0	K = K @ 1	7.53	na	12.96			
2	24.0	K = K @ 1	7.65	na	13.07			
3	24.0	K = K @ 1	8.27	na	13.59			
10	24.0		8.51	na				
11	23.0		13.8	na				
12	16.0		18.53	na				
13	16.0		21.5	na				
14	8.0		28.24	na				
TR	8.0		31.45	na				
FF	0.0		37.58	na				
PMP	0.0		38.19	na				

The maximum velocity is 8.5 and it occurs in the pipe between nodes 10 and 11

# Final Calculations - Hazen-Williams

DEAN & ALLYN, INC.  
PAYSON STREET CHILD CARE

Page 4  
Date 8-9-08

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
1A to 1	12.96 12.96	1.049 120 0.0583	1E 1T	2.0 5.0 0.0	2.000 7.000 9.000	7.000 0.0 0.525			K Factor = 4.90	
	0.0 12.96						7.525		K Factor = 4.72	
1 to 2	12.96 12.96	1.38 120 0.0154		0.0 0.0 0.0	8.000 0.0 8.000	7.525 0.0 0.123			K Factor @ node 1	Vel = 2.78
2 to 10	13.07 26.03	1.38 120 0.0557	1E 1T	3.0 6.0 0.0	6.500 9.000 15.500	7.648 0.0 0.864			K Factor @ node 1	Vel = 5.58
	0.0 26.03						8.512		K Factor = 8.92	
3 to 10	13.59 13.59	1.38 120 0.0168	1E 1T	3.0 6.0 0.0	5.200 9.000 14.200	8.274 0.0 0.238			K Factor @ node 1	Vel = 2.92
10 to 11	26.04 39.63	1.38 120 0.1213	3E 1T	9.0 6.0 0.0	25.000 15.000 40.000	8.512 0.433 4.851				Vel = 8.50
11 to 12	0.0 39.63	1.38 120 0.1212	1T	6.0 0.0 0.0	8.000 6.000 14.000	13.796 3.032 1.697				Vel = 8.50
12 to 13	0.0 39.63	1.38 120 0.1213	2E 2T	6.0 12.0 0.0	6.500 18.000 24.500	18.525 0.0 2.971				Vel = 8.50
13 to 14	0.0 39.63	1.38 120 0.1213	3E 1T	9.0 6.0 0.0	12.000 15.000 27.000	21.496 3.465 3.274				Vel = 8.50
14 to TR	0.0 39.63	1.38 120 0.1213	2T	12.0 0.0 0.0	14.500 12.000 26.500	28.235 0.0 3.214				Vel = 8.50
TR to FF	0.0 39.63	1.38 120 0.1404	2E 1S 1Z	6.0 7.0 0.0	6.000 13.000 19.000	31.449 3.465 2.667				Vel = 8.50
FF to PMP	0.0 39.63	1.38 120 0.1214		0.0 0.0 0.0	5.000 0.0 5.000	37.581 0.0 0.607				Vel = 8.50
	0.0 39.63						38.188		K Factor = 6.41	

# Water Supply Curve (C)

DEAN & ALLYN, INC.  
PAYSON STREET CHILD CARE

Page 5  
Date 8-9-08

City Water Supply:  
C1 - Static Pressure : 55  
C2 - Residual Pressure: 50  
C2 - Residual Flow : 50

Demand:  
D1 - Elevation : 10.394  
D2 - System Flow : 39.6276  
D2 - System Pressure : 38.188  
Hose ( Adj City ) : \_\_\_\_\_  
Hose ( Demand ) : \_\_\_\_\_  
D3 - System Demand : 39.6276  
Safety Margin : 13.560

