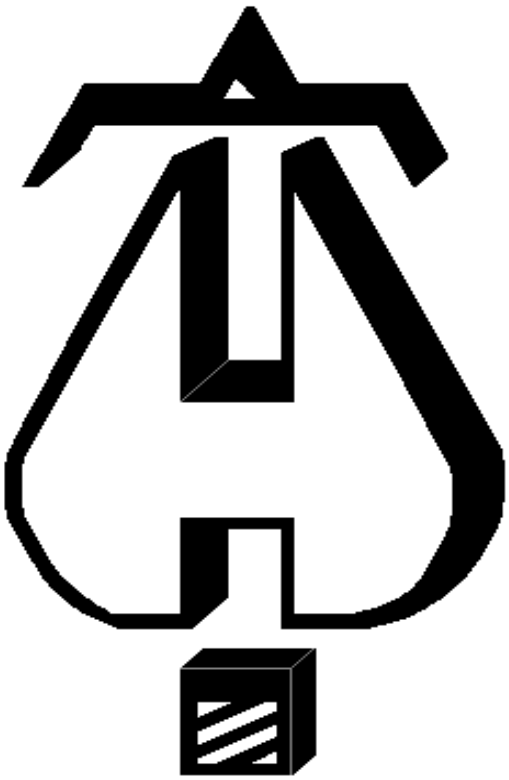

. . . Fire Protection by Computer Design

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

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

HYDRAULIC DESIGN INFORMATION SHEET

Name - PLYMOUTH HOUSE Date - 8-15-13
Location - 145 GLENWOOD AVE. PORTLAND, MAINE
Building - COMMON ROOM 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

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 - 13 Gpm System Type
Listed Pres. at Start Point - 9.1 Psi (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 14 x 14 ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm Sprinkler or Nozzle
Additional Flow Added - Gpm Make RELIABLE Model RFC43
Elevation at Highest Outlet - 20.5'Feet Size 1/2" K-Factor 4.3
Note:CUSHION 16.8 PSI Temperature Rating 165

Calculation Summary — Gpm Required 40.9 Psi Required 54.2 CITY
C-Factor Used: Overhead 120 Underground 140

WATER SUPPLY

Water Flow Test:
Date of Test -
Time of Test -
Static (Psi) - 71
Residual (Psi) - 64
Flow (Gpm) - 992
Elevation - 0

Pump Data:
Rated Cap.
@ Psi
Elev.
Other

Tank or Reservoir:
Cap.
Elev.

Well
Proof Flow Gpm

Location: GLENWOOD AVE

Source of Information: PORTLAND WATER DIST 2008

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	1E	2.0	1.000	7.000		K Factor = 4.90
to		120	1T	5.0	7.000	7.363		
1	12.96	0.0584		0.0	8.000	0.467		Vel = 4.81
	0.0							
	12.96					14.830		K Factor = 3.37
9	13.70	1.049	1E	2.0	10.700	10.144		K Factor = 4.30
to		120		0.0	2.000	0.0		
10	13.7	0.0646		0.0	12.700	0.820		Vel = 5.09
10	14.23	1.049	1T	5.0	4.700	10.964		K Factor = 4.30
to		120		0.0	5.000	0.0		
64	27.93	0.2414		0.0	9.700	2.342		Vel = 10.37
	0.0							
	27.93					13.306		K Factor = 7.66
11	12.97	1.049	4E	8.0	54.000	9.100		K Factor = 4.30
to		120	2T	10.0	18.000	0.0		
64	12.97	0.0584		0.0	72.000	4.206		Vel = 4.81
64	27.93	1.049	1E	2.0	0.500	13.306		
to		120		0.0	2.000	0.0		
65	40.9	0.4888		0.0	2.500	1.222		Vel = 15.18
65	0.0	1.049	1E	2.0	10.500	14.528		
to		120		0.0	2.000	4.548		
66	40.9	0.4889		0.0	12.500	6.111		Vel = 15.18
66	0.0	1.049	1E	2.0	18.300	25.187		
to		120	1T	5.0	7.000	0.0		
60	40.9	0.4890		0.0	25.300	12.371		Vel = 15.18
60	0.0	1.38	1E	3.0	10.800	37.558		
to		120		0.0	3.000	0.0		
61	40.9	0.1286		0.0	13.800	1.774		Vel = 8.77
61	0.0	1.38	1E	3.0	10.700	39.332		
to		120		0.0	3.000	4.331		
62	40.9	0.1286		0.0	13.700	1.762		Vel = 8.77
62	0.0	1.61	1T	8.0	11.000	45.425		
to		120	1E	4.0	12.000	0.0		
63	40.9	0.0607		0.0	23.000	1.396		Vel = 6.45
63	0.0	1.61	1E	4.0	54.800	46.821		
to		120	1T	8.0	12.000	0.0		
TR	40.9	0.0607		0.0	66.800	4.055		Vel = 6.45
TR	0.0	2.067	1Z	5.0	7.000	50.876		
to		120		0.0	5.000	3.000		* Fixed loss = 3.000
FF	40.9	0.0179		0.0	12.000	0.215		Vel = 3.91
FF	0.0	4.1	2E	21.855	50.000	54.091		
to		120	1T	21.855	45.896	0.0		
CTY	40.9	0.0006	1G	2.186	95.896	0.062		Vel = 0.99

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*******	Notes ******
	0.0							
	40.90				54.153		K Factor = 5.56	

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

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
9	20.5	4.3	10.14	na	13.7	.06	196	9.1
10	20.5	4.3	10.96	na	14.24	.06	196	9.1
11	20.5	4.3	9.1	na	12.97	.06	196	9.1
64	20.5		13.31	na				
65	20.5		14.53	na				
66	10.0		25.19	na				
60	10.0		37.56	na				
61	10.0		39.33	na				
62	0.0		45.42	na				
63	0.0		46.82	na				
TR	0.0		50.88	na				
FF	0.0		54.09	na				
CTY	0.0		54.15	na				

The maximum velocity is 15.18 and it occurs in the pipe between nodes 64 and 65

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