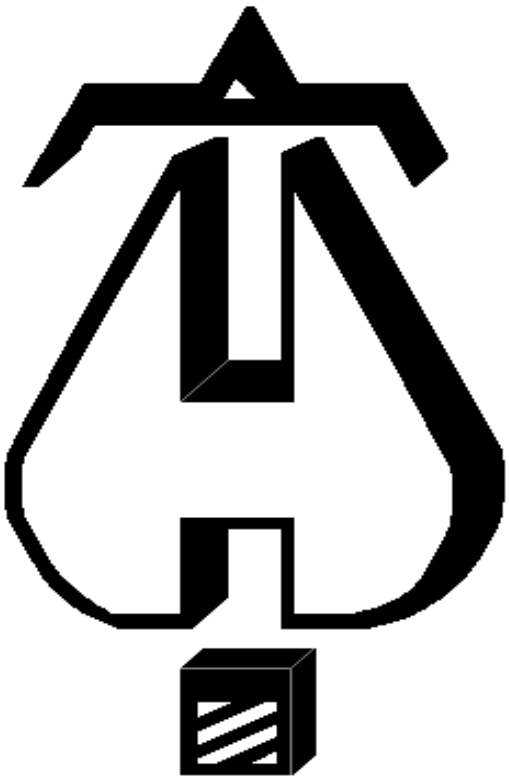

. . . Fire Protection by Computer Design

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

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

HYDRAULIC DESIGN INFORMATION SHEET

Name - PLYMOUTH HOUSE Date - 8-15-13
Location - 145 GLENWOOD AVE. PORTLAND, MAINE
Building - KITCHEN 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 16 x 16 ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm Sprinkler or Nozzle
Additional Flow Added - Gpm Make RELIABLE Model RFC43
Elevation at Highest Outlet - 10' Feet Size 1/2" K-Factor 4.3
Note:CUSHION 22.5 PSI Temperature Rating 165

Calculation Summary — Gpm Required 59.2 | Psi Required 48.4 | CITY
C-Factor Used: Overhead 120 | Underground 140

WATER SUPPLY

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

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
5	12.97	1.049	5E	10.0	12.000	9.100		K Factor = 4.30
to		120		0.0	10.000	0.0		
59	12.97	0.0584		0.0	22.000	1.285		Vel = 4.81
	0.0							
	12.97					10.385		K Factor = 4.02
6	13.08	1.049	3E	6.0	8.000	9.257		K Factor = 4.30
to		120	1T	5.0	11.000	0.0		
59	13.08	0.0594		0.0	19.000	1.128		Vel = 4.86
	0.0							
	13.08					10.385		K Factor = 4.06
7	39.98	1.049	5E	10.0	16.200	10.491		K Factor = 4.30
to		120		0.0	10.000	0.0		
60	39.98	0.4687		0.0	26.200	12.281		Vel = 14.84
	0.0							
	39.98					22.772		K Factor = 8.38
8	19.17	1.049	1E	2.0	17.000	19.884		K Factor = 4.30
to		120	1T	5.0	7.000	0.0		
60	19.17	0.1203		0.0	24.000	2.888		Vel = 7.12
	0.0							
	19.17					22.772		K Factor = 4.02
59	26.05	1.049		0.0	0.500	10.385		
to		120		0.0	0.0	0.0		
7	26.05	0.2120		0.0	0.500	0.106		Vel = 9.67
	0.0							
	26.05					10.491		K Factor = 8.04
60	59.16	1.38	1E	3.0	11.000	22.772		
to		120		0.0	3.000	0.0		
61	59.16	0.2545		0.0	14.000	3.563		Vel = 12.69
61	0.0	1.38	1E	3.0	10.600	26.335		
to		120		0.0	3.000	4.331		
62	59.16	0.2545		0.0	13.600	3.461		Vel = 12.69
62	0.0	1.61	1E	4.0	11.000	34.127		
to		120	1T	8.0	12.000	0.0		
63	59.16	0.1201		0.0	23.000	2.763		Vel = 9.32
63	0.0	1.61	1E	4.0	54.700	36.890		
to		120	1T	8.0	12.000	0.0		
TR	59.16	0.1201		0.0	66.700	8.012		Vel = 9.32

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/UL	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
TR	0.0	2.067	1Z	5.0	7.000	44.902		
to		120		0.0	5.000	3.000		* Fixed loss = 3.000
FF	59.16	0.0355		0.0	12.000	0.426		Vel = 5.66
FF	0.0	4.1	2E	29.067	50.000	48.328		
to		140	1T	29.067	61.041	0.0		
CTY	59.16	0.0010	1G	2.907	111.041	0.106		Vel = 1.44
	0.0							
	59.16					48.434		K Factor = 8.50

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
5	10.0	4.3	9.1	na	12.97	.05	256	9.1
6	10.0	4.3	9.26	na	13.08	.05	256	9.1
7	10.0	4.3	10.49	na	13.93	.05	256	9.1
8	10.0	4.3	19.88	na	19.17	.05	256	9.1
59	10.0		10.39	na				
60	10.0		22.77	na				
61	10.0		26.33	na				
62	0.0		34.13	na				
63	0.0		36.89	na				
TR	0.0		44.9	na				
FF	0.0		48.33	na				
CTY	0.0		48.43	na				

The maximum velocity is 14.84 and it occurs in the pipe between nodes 7 and 60

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