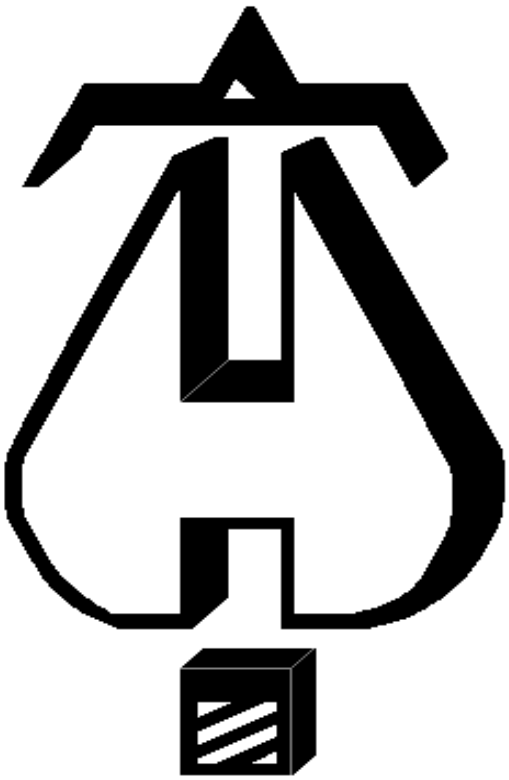

. . . Fire Protection by Computer Design

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

Job Name	:	732 FOREST AVE BASEMENT
Building	:	
Location	:	732 FOREST AVE PORTLAND MAINE
System	:	ONE
Contract	:	C171466
Data File	:	732 FOREST AVE BASEMENT.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - 732 FOREST AVE BASEMENT Date - 10-10-17
Location - 732 FOREST AVE PORTLAND MAINE
Building - System No. - ONE
Contractor - DEAN AND ALLYN, INC. Contract No. - C171466
Calculated By - H. KING Drawing No. - 1 OF 1
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'
OCCUPANCY - APARTMENTS

SYSTEM DESIGN

Type of Calculation: ( )NFPA 13 Residential ( )NFPA 13R ( )NFPA 13D
Number of Sprinklers Flowing: ( )1 ( )2 ( )4 ( )
( )Other ORDINARY HAZARD I IN BASEMENT
( )Specific Ruling Made by Date

Listed Flow at Start Point - 14.8 Gpm — System Type
Listed Pres. at Start Point - 7 Psi — (X) Wet ( ) Dry
MAXIMUM LISTED SPACING 10 x 10 — ( ) Deluge ( ) PreAction
Domestic Flow Added - Gpm — Sprinkler or Nozzle
Additional Flow Added - Gpm — Make RELIABLE Model F1FR56
Elevation at Highest Outlet - 0 Feet — Size 1/2" K-Factor 5.6
Note:CUSHION 5.8 PSI — Temperature Rating 155

Calculation Summary: Gpm Required 461 Psi Required 75.8 AT CITY
C-Factor Used: Overhead 120 Underground 120

WATER SUPPLY

Water Flow Test:	Pump Data:	Tank or Reservoir:
Date of Test - 6-22-17	Rated Cap.	Cap.
Time of Test -	@ Psi	Elev.
Static (Psi) - 82	Elev.	
Residual (Psi) - 80	Other	Well
Flow (Gpm) - 1209		Proof Flow Gpm
Elevation - 0		

Location: IN FRONT OF BUILDING ON 16" CITY MAIN

Source of Information: PORTLAND WATER DEPT.

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
1	15.00	1.049		0.0	9.000	7.175		K Factor = 5.60
to		120.0		0.0	0.0	0.0		
2	15.0	0.0764		0.0	9.000	0.688		Vel = 5.57
2	15.70	1.38	E	3.0	10.300	7.863		K Factor = 5.60
to		120.0	T	6.0	9.000	0.0		
20	30.7	0.0756		0.0	19.300	1.459		Vel = 6.59
	0.0							
	30.70					9.322		K Factor = 10.06
3	15.13	1.049		0.0	9.000	7.295		K Factor = 5.60
to		120.0		0.0	0.0	0.0		
4	15.13	0.0777		0.0	9.000	0.699		Vel = 5.62
4	15.83	1.38	E	3.0	8.300	7.994		K Factor = 5.60
to		120.0	T	6.0	9.000	0.0		
20	30.96	0.0768		0.0	17.300	1.328		Vel = 6.64
	0.0							
	30.96					9.322		K Factor = 10.14
5	79.34	1.61		0.0	10.000	9.971		K Factor = 5.60
to		120.0		0.0	0.0	0.0		
6	79.34	0.2068		0.0	10.000	2.068		Vel = 12.50
6	19.43	2.067	2T	20.0	9.000	12.039		K Factor = 5.60
to		120.0		0.0	20.000	0.0		
21	98.77	0.0918		0.0	29.000	2.663		Vel = 9.44
	0.0							
	98.77					14.702		K Factor = 25.76
7	16.76	1.049	E	2.0	5.500	8.962		K Factor = 5.60
to		120.0	T	5.0	7.000	0.0		
22	16.76	0.0939		0.0	12.500	1.174		Vel = 6.22
	0.0							
	16.76					10.136		K Factor = 5.26
8	16.76	1.049	E	2.0	5.500	8.962		K Factor = 5.60
to		120.0	T	5.0	7.000	0.0		
22	16.76	0.0939		0.0	12.500	1.174		Vel = 6.22
	0.0							
	16.76					10.136		K Factor = 5.26
9	51.63	1.61		0.0	10.000	10.447		K Factor = 5.60
to		120.0		0.0	0.0	0.0		
10	51.63	0.0934		0.0	10.000	0.934		Vel = 8.14
10	18.89	1.61	2T	16.0	9.000	11.381		K Factor = 5.60
to		120.0		0.0	16.000	0.0		
23	70.52	0.1663		0.0	25.000	4.157		Vel = 11.11
	0.0							
	70.52					15.538		K Factor = 17.89
11	20.40	1.049		0.0	9.000	13.268		K Factor = 5.60
to		120.0		0.0	0.0	0.0		
12	20.4	0.1350		0.0	9.000	1.215		Vel = 7.57
12	21.31	1.38	E	3.0	9.000	14.483		K Factor = 5.60
to		120.0	T	6.0	9.000	0.0		
24	41.71	0.1333		0.0	18.000	2.400		Vel = 8.95

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
	0.0							
	41.71					16.883		K Factor = 10.15
20	61.66	1.61		0.0	5.000	9.322		
to		120.0		0.0	0.0	0.0		
5	61.66	0.1298		0.0	5.000	0.649		Vel = 9.72
	0.0							
	61.66					9.971		K Factor = 19.53
21	98.77	2.067		0.0	9.100	14.702		
to		120.0		0.0	0.0	0.0		
23	98.77	0.0919		0.0	9.100	0.836		Vel = 9.44
	0.0							
	98.77					15.538		K Factor = 25.06
22	33.53	1.38		0.0	3.500	10.136		
to		120.0		0.0	0.0	0.0		
9	33.53	0.0889		0.0	3.500	0.311		Vel = 7.19
	0.0							
	33.53					10.447		K Factor = 10.37
23	169.30	2.067	T	10.0	8.000	15.538		
to		120.0		0.0	10.000	0.0		
26	169.3	0.2488		0.0	18.000	4.479		Vel = 16.19
	0.0							
	169.30					20.017		K Factor = 37.84
24	41.71	1.61		0.0	5.000	16.883		
to		120.0		0.0	0.0	0.0		
13	41.71	0.0630		0.0	5.000	0.315		Vel = 6.57
13	0.0	1.61		0.0	10.000	17.198		
to		120.0		0.0	0.0	0.0		
14	41.71	0.0629		0.0	10.000	0.629		Vel = 6.57
14	0.0	1.61	2T	16.0	9.000	17.827		
to		120.0		0.0	16.000	0.0		
25	41.71	0.0629		0.0	25.000	1.573		Vel = 6.57
25	0.0	1.61	T	8.0	1.800	19.400		
to		120.0		0.0	8.000	0.0		
26	41.71	0.0630		0.0	9.800	0.617		Vel = 6.57
26	169.29	2.067	E	5.0	5.000	20.017		
to		120.0		0.0	5.000	0.0		
TR	211.0	0.3740		0.0	10.000	3.740		Vel = 20.17
TR	0.01	2.067	S	11.0	7.000	23.757		
to		120.0		0.0	11.000	5.000		* * Fixed Loss = 5
FF	211.01	0.3740		0.0	18.000	6.732		Vel = 20.17
FF	-0.01	1.72	T	4.086	40.000	35.489		
to		120.0		0.0	4.086	0.0		
CTY	211.0	0.9153		0.0	44.086	40.353		Vel = 29.14
	250.00							Qa = 250.00
	461.00					75.842		K Factor = 52.94

Pressure / Flow Summary - STANDARD

DEAN AND ALLYN, INC.
732 FOREST AVE BASEMENT

Date 10-10-17

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	0.0	5.6	7.17	na	15.0	0.15	100	7.0
2	0.0	5.6	7.86	na	15.7	0.15	100	7.0
3	0.0	5.6	7.3	na	15.13	0.15	100	7.0
4	0.0	5.6	7.99	na	15.83	0.15	100	7.0
5	0.0	5.6	9.97	na	17.68	0.15	100	7.0
6	0.0	5.6	12.04	na	19.43	0.15	100	7.0
7	0.0	5.6	8.96	na	16.76	0.15	100	7.0
8	0.0	5.6	8.96	na	16.76	0.15	100	7.0
9	0.0	5.6	10.45	na	18.1	0.15	100	7.0
10	0.0	5.6	11.38	na	18.89	0.15	100	7.0
11	0.0	5.6	13.27	na	20.4	0.15	100	7.0
12	0.0	5.6	14.48	na	21.31	0.15	100	7.0
20	0.0		9.32	na				
21	0.0		14.7	na				
22	0.0		10.14	na				
23	0.0		15.54	na				
24	0.0		16.88	na				
13	0.0		17.2	na				
14	0.0		17.83	na				
25	0.0		19.4	na				
26	0.0		20.02	na				
TR	0.0		23.76	na				
FF	0.0		35.49	na				
CTY	0.0		75.84	na	250.0			

The maximum velocity is 29.14 and it occurs in the pipe between nodes FF and CTY

Water Supply Curve C

DEAN AND ALLYN, INC.
732 FOREST AVE BASEMENT

Date 10-10-17

City Water Supply:
- C1 - Static Pressure : 82
- C2 - Residual Pressure: 80
- C2 - Residual Flow : 1209

Demand:
- D1 - Elevation : _____
- D2 - System Flow : 211.006
- D2 - System Pressure : 75.842
- Hose (Demand) : 250
- D3 - System Demand : 461.006
- Safety Margin : 5.822