



... 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 : 133 MORNING ST
Building : 129 Morning Street
Location : BASEMENT - Portland, Maine
System : WX5
Contract : C780
Data File : 133-Morn.WX5

Fittings Used Summary

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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
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
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
Zaa	Ames 2000B	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

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

Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
D401	7.667	5.6	10.22	na	17.9	0.15	80	7.0
D402	7.667	5.6	9.79	na	17.52	0.15	80	7.0
D403	7.667	5.6	12.13	na	19.5	0.15	130	7.0
D404	7.667	5.6	12.83	na	20.06	0.15	100	7.0
151	8.0		12.35	na				
152	8.0		14.2	na				
153	8.0		13.08	na				
153A	8.0		14.78	na				
147	8.0		9.95	na				
148	8.0		10.71	na				
149	8.0		12.38	na				
150	8.0		14.52	na				
72	8.0		14.91	na				
153B	8.0		15.53	na				
73	7.333		18.92	na				
74	7.333		24.34	na				
BTR	6.833		25.14	na				
BR	1.0		31.25	na				
UC	-5.0		41.51	na				
TEST	-10.0		55.13	na				

The maximum velocity is 13.15 and it occurs in the pipe between nodes 148 and 149

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
D401 to 148	17.90 17.9 0.0 17.90	1.049 120 0.1060	1T	5.0 0.0 0.0	1.000 5.000 6.000	10.222 -0.144 0.636			K Factor = 5.60 Vel = 6.64	
							10.714		K Factor = 5.47	
D402 to 147	17.52 17.52 0.0 17.52	1.049 120 0.1020	1E	2.0 0.0 0.0	1.000 2.000 3.000	9.788 -0.144 0.306			K Factor = 5.60 Vel = 6.50	
							9.950		K Factor = 5.55	
D403 to 151	19.50 19.5 0.0 19.50	1.049 120 0.1243	1E	2.0 0.0 0.0	1.000 2.000 3.000	12.125 -0.144 0.373			K Factor = 5.60 Vel = 7.24	
							12.354		K Factor = 5.55	
D404 to 153	20.06 20.06 0.0 20.06	1.049 120 0.1307	1E	2.0 0.0 0.0	1.000 2.000 3.000	12.828 -0.144 0.392			K Factor = 5.60 Vel = 7.45	
							13.076		K Factor = 5.55	
151 to 152	19.50 19.5 0.0 19.50	1.049 120 0.1241	1E 1T	2.0 5.0 0.0	7.870 7.000 14.870	12.354 0.0 1.846			Vel = 7.24	
152 to 72	0.0 19.5 0.0 19.50	1.049 120 0.1242	1T	5.0 0.0 0.0	0.700 5.000 5.700	14.200 0.0 0.708			Vel = 7.24	
							14.908		K Factor = 5.05	
153 to 153A	20.06 20.06 0.0 20.06	1.049 120 0.1309	2E 1T	4.0 5.0 0.0	4.042 9.000 13.042	13.076 0.0 1.707			Vel = 7.45	
153A to 153B	0.0 20.06 0.0 20.06	1.049 120 0.1307	1T	5.0 0.0 0.0	0.700 5.000 5.700	14.783 0.0 0.745			Vel = 7.45	
							15.528		K Factor = 5.09	
147 to 148	17.52 17.52 0.0 17.52	1.049 120 0.1019		0.0 0.0 0.0	7.500 0.0 7.500	9.950 0.0 0.764			Vel = 6.50	
148 to 149	17.90 35.42 0.0 35.42	1.049 120 0.3746	1E	2.0 0.0 0.0	2.450 2.000 4.450	10.714 0.0 1.667			Vel = 13.15	
149 to 150	0.0 35.42 0.0 35.42	1.049 120 0.3747	1T	5.0 0.0 0.0	0.700 5.000 5.700	12.381 0.0 2.136			Vel = 13.15	
150 to 72	0.0 35.42 0.0 35.42	1.682 120 0.0376		0.0 0.0 0.0	10.410 0.0 10.410	14.517 0.0 0.391			Vel = 5.11	

Final Calculations - Hazen-Williams

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
72	19.50	1.682		7.333		14.908			
to		120		0.0		0.0			
153B	54.92	0.0845		7.333		0.620		Vel = 7.93	
153B	20.06	1.682		20.583		15.528			
to		120		0.0		0.289			
73	74.98	0.1505		20.583		3.098		Vel = 10.83	
73	0.0	1.61	1E 4.0	9.146		18.915			
to		120	2T 16.0	20.000		0.0			
74	74.98	0.1862		29.146		5.428		Vel = 11.82	
74	0.0	2.067	1T 10.0	0.500		24.343			
to		120		10.000		0.217			
BTR	74.98	0.0551		10.500		0.579		Vel = 7.17	
BTR	0.0	2.067	1Fsp 0.0	5.583		25.139			
to		120	1E 5.0	5.000		5.526		* Fixed loss = 3	
BR	74.98	0.0552		10.583		0.584		Vel = 7.17	
BR	0.0	2.067	6E 30.0	3.688		31.249			
to		120	1Zaa 0.0	30.000		8.399		* Fixed loss = 5.8	
UC	74.98	0.0552		33.688		1.858		Vel = 7.17	
UC	0.0	1.917	2E 10.47	206.950		41.506			
to		150		10.470		2.166			
TEST	74.98	0.0527		217.420		11.453		Vel = 8.33	
	0.0								
	74.98					55.125		K Factor = 10.10	

Water Supply Curve (C)

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City Water Supply:
C1 - Static Pressure : 72
C2 - Residual Pressure: 68
C2 - Residual Flow : 903

Demand:
D1 - Elevation : 7.652
D2 - System Flow : 74.9813
D2 - System Pressure : 55.125
Hose (Adj City) : _____
Hose (Demand) : _____
D3 - System Demand : 74.9813
Safety Margin : 16.835

