

... Fire Protection by Computer Design

Dean and Allyn Inc  
116 Lewiston Road  
Your Street Address 2  
Gray ME, 04039  
(207)657-5646

Job Name : Portland Jetport Repipe '13 ZONE 1  
Building : Parking Garage  
Location : Portland Maine  
System :  
Contract : C131180  
Data File : PJPREPIPE.WXF

# Water Supply Curve (C)

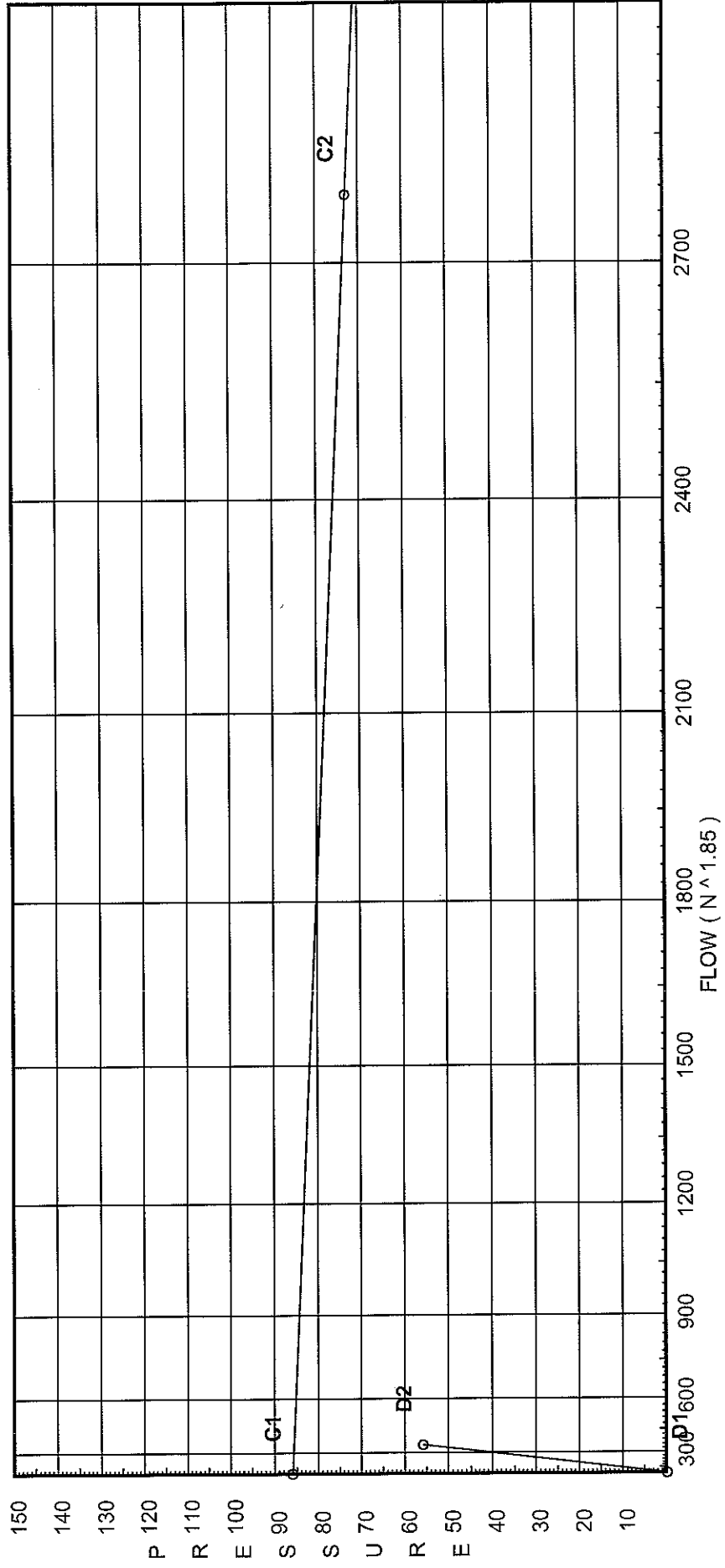
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 Portland Jetport Repipe '13 ZONE 1

## City Water Supply:

C1 - Static Pressure : 86  
 C2 - Residual Pressure: 73  
 C2 - Residual Flow : 2781

## Demand:

D1 - Elevation : -0.181  
 D2 - System Flow : 356.884  
 D2 - System Pressure : 55.774  
 Hose ( Adj City ) : \_\_\_\_\_  
 Hose ( Demand ) : \_\_\_\_\_  
 D3 - System Demand : 356.884  
 Safety Margin : 29.935



# 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
B NFA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
Dvc Dry Vic 756	0	0	0	0	3	9	8	17	0	21	0	22	50	0	0	0	0	0	0	0
E NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
F NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
Zlu Wilkins 975																				

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.
99	13.0	5.6	10.33	na	18.0	0.15	120	7.0
99A	11.667		12.75	na				
100	11.667	5.6	12.76	na	20.0	0.15	120	10.32
101	11.542	5.6	13.34	na	20.46	0.15	120	10.32
102	11.417	5.6	14.57	na	21.38	0.15	120	10.32
103	11.417	5.6	16.66	na	22.86	0.15	120	10.32
104	13.0	5.6	9.68	na	17.42	0.15	92.5	7.0
104A	11.667		11.99	na				
105	11.667	5.6	12.0	na	19.4	0.15	92.5	7.0
106	11.542	5.6	12.55	na	19.84	0.15	92.5	7.0
107	11.417	5.6	13.71	na	20.74	0.15	92.5	7.0
108	11.417	5.6	15.69	na	22.18	0.15	92.5	7.0
109	13.0	5.6	9.84	na	17.57	0.15	113.75	7.0
109A	11.667		11.98	na				
110	11.667	5.6	11.99	na	19.39	0.15	113.75	9.29
111	11.542	5.6	12.54	na	19.83	0.15	113.75	9.29
112	11.417	5.6	13.71	na	20.74	0.15	113.75	9.29
113	11.417	5.6	15.69	na	22.18	0.15	113.75	9.29
114	11.417	5.6	23.89	na	27.37	0.15	120	10.32
115	11.417	5.6	24.18	na	27.54	0.15	120	10.32
89	10.167		27.7	na				
88	10.167		27.73	na				
87	10.167		27.78	na				
86	10.167		28.02	na				
86A	9.75		29.12	na				
85	10.167		36.43	na				
84	9.708		38.4	na				
83	9.458		43.49	na				
TR	21.458		39.41	na				
BR	17.458		42.53	na				
BASE	16.417		54.08	na				
HOSE	13.417		55.51	na				
TEST	13.417		55.77	na				

The maximum velocity is 16.18 and it occurs in the pipe between nodes 103 and 89

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	*****
99 to 99A	18.00 18.0	1.049 120.0 0.1071	4E	8.0 0.0 0.0	9.208 8.000 17.208	10.332 0.577 1.843		K Factor = 5.60		
99A to 100	0.0 18.0	1.61 120.0 0.0120		0.0 0.0 0.0	0.500 0.0 0.500	12.752 0.0 0.006		Vel = 2.84		
100 to 101	20.00 38.0	1.61 120.0 0.0530		0.0 0.0 0.0	10.000 0.0 10.000	12.758 0.054 0.530		K Factor = 5.60		
101 to 102	20.46 58.46	1.61 120.0 0.1175		0.0 0.0 0.0	10.000 0.0 10.000	13.342 0.054 1.175		K Factor = 5.60		
102 to 103	21.37 79.83	1.61 120.0 0.2092		0.0 0.0 0.0	10.000 0.0 10.000	14.571 0.0 2.092		K Factor = 5.60		
103 to 89	22.86 102.69	1.61 120.0 0.3333	2E	8.0 0.0 0.0	23.500 8.000 31.500	16.663 0.541 10.498		K Factor = 5.60		
	0.0 102.69					27.702		K Factor = 19.51		
104 to 104A	17.42 17.42	1.049 120.0 0.1008	4E	8.0 0.0 0.0	9.208 8.000 17.208	9.677 0.577 1.735		K Factor = 5.60		
104A to 105	0.0 17.42	1.61 120.0 0.0120		0.0 0.0 0.0	0.500 0.0 0.500	11.989 0.0 0.006		Vel = 2.75		
105 to 106	19.40 36.82	1.61 120.0 0.0500		0.0 0.0 0.0	10.000 0.0 10.000	11.995 0.054 0.500		K Factor = 5.60		
106 to 107	19.83 56.65	1.61 120.0 0.1109		0.0 0.0 0.0	10.000 0.0 10.000	12.549 0.054 1.109		K Factor = 5.60		
107 to 108	20.74 77.39	1.61 120.0 0.1974		0.0 0.0 0.0	10.000 0.0 10.000	13.712 0.0 1.974		K Factor = 5.60		
108 to 88	22.18 99.57	1.61 120.0 0.3148	3E	12.0 0.0 0.0	24.542 12.000 36.542	15.686 0.541 11.502		K Factor = 5.60		
	0.0 99.57					27.729		K Factor = 18.91		
109 to 109A	17.57 17.57	1.049 120.0 0.1024	3E	6.0 0.0 0.0	9.208 6.000 15.208	9.844 0.577 1.558		K Factor = 5.60		
109A to 110	0.0 17.57	1.61 120.0 0.0140		0.0 0.0 0.0	0.500 0.0 0.500	11.979 0.0 0.007		Vel = 2.77		
110 to 111	19.39 36.96	1.61 120.0 0.0503		0.0 0.0 0.0	10.000 0.0 10.000	11.986 0.054 0.503		K Factor = 5.60		

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	*****
111 to 112	19.83 to 56.79	1.61 to 0.1114		10.000 to 10.000	12.543 to 1.114			K Factor = 5.60 Vel = 8.95	
112 to 113	20.74 to 77.53	1.61 to 0.1981		10.000 to 10.000	13.711 to 1.981			K Factor = 5.60 Vel = 12.22	
113 to 87	22.18 to 99.71	1.61 to 0.3156	3E 12.0	24.583 to 36.583	15.692 to 11.544			K Factor = 5.60 Vel = 15.71	
	0.0 to 99.71				27.777			K Factor = 18.92	
114 to 115	27.37 to 27.37	1.61 to 0.0289		10.000 to 10.000	23.894 to 0.289			K Factor = 5.60 Vel = 4.31	
115 to 86	27.54 to 54.91	1.61 to 0.1047	2E 8.0	23.500 to 31.500	24.183 to 3.297			K Factor = 5.60 Vel = 8.65	
	0.0 to 54.91				28.021			K Factor = 10.37	
89 to 88	102.69 to 102.69	4.26 to 0.0029		9.250 to 9.250	27.702 to 0.027			Vel = 2.31	
88 to 87	99.57 to 202.26	4.26 to 0.0101		4.750 to 4.750	27.729 to 0.048			Vel = 4.55	
87 to 86	99.71 to 301.97	4.26 to 0.0215		11.375 to 11.375	27.777 to 0.244			Vel = 6.80	
86 to 86A	54.91 to 356.88	4.26 to 0.0292		31.333 to 31.333	28.021 to 0.915			Vel = 8.03	
86A to 85	0.0 to 356.88	4.26 to 0.0292	2F 10.534	246.125 to 256.659	29.117 to 7.499			Vel = 8.03	
85 to 84	0.0 to 356.88	4.26 to 0.0292	2E 26.334	34.125 to 60.459	36.435 to 1.766			Vel = 8.03	
84 to 83	0.0 to 356.88	4.26 to 0.0292	3E 39.501	130.917 to 170.418	38.400 to 4.979			Vel = 8.03	
83 to TR	0.0 to 356.88	4.26 to 0.0292	2E 26.334	12.000 to 38.334	43.487 to 1.120			Vel = 8.03	
TR to BR	0.0 to 356.88	4.26 to 0.0292	1Dvc 1B 27.651 15.8	4.000 to 47.451	39.410 to 1.386			Vel = 8.03	
BR to BASE	0.0 to 356.88	8.249 to 0.0011	1Ziu 0.0	7.000 to 7.000	42.528 to 0.008			* Fixed loss = 11.097 Vel = 2.14	

# 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	*****
BASE to HOSE	0.0 356.88	8.27 140.0 0.0009	3E 1G	85.404 6.326 0.0	50.000 91.730 141.730	54.084 1.299 0.123		Vel = 2.13		
HOSE to TEST	0.0 356.88	12.34 140.0 0.0001	6F 1E	121.897 42.195 0.0	2000.000 164.092 2164.092	55.506 0.0 0.268		Vel = 0.96		
	0.0 356.88					55.774		K Factor = 47.79		

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