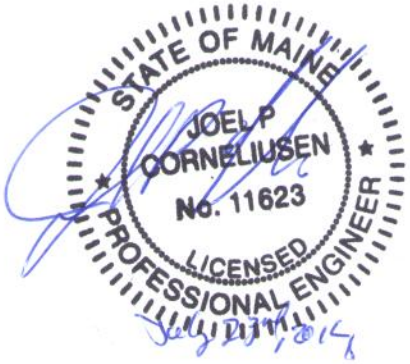


. . . Fire Protection by Computer Design

CORNELIUSEN CONSULTING
11 CRICKET LANE
LITTLETON
MA 01460
781-248-7497

Job Name	:	1844 Forest Ave Portlane Maine- 1st floor
Drawing	:	
Location	:	1844 Forest Ave Portlane Maine- 1st floor
Remote Area	:	1st FLOOR
Contract	:	
Data File	:	1844 FOREST AVE- PORTLAND MAINE-1ST FLOOR.WXF

HYDRAULIC CALCULATIONS
for

Project name: z-dance
Location: 1844 Forest Ave Portlane Maine- 1st floor
Drawing no:
Date:

Design

Remote area number: 1st FLOOR
Remote area location: 1st FLOOR
Occupancy classification: OH2
Density: .15 - Gpm/SqFt
Area of application: - SqFt
Coverage per sprinkler: 200 - SqFt
Type of sprinklers calculated: SIDEWALL EXTENDED COVERAGE
No. of sprinklers calculated: 8
In-rack demand: - GPM
Hose streams: 0 - GPM
Total water required (including hose streams): 353.558 - GPM @ 57.4087 - Psi
Type of system:
Volume of dry or preaction system: - Gal

Water supply information

Date: 2012
Location: PROTLAND WATER DEPARTMENT
Source:

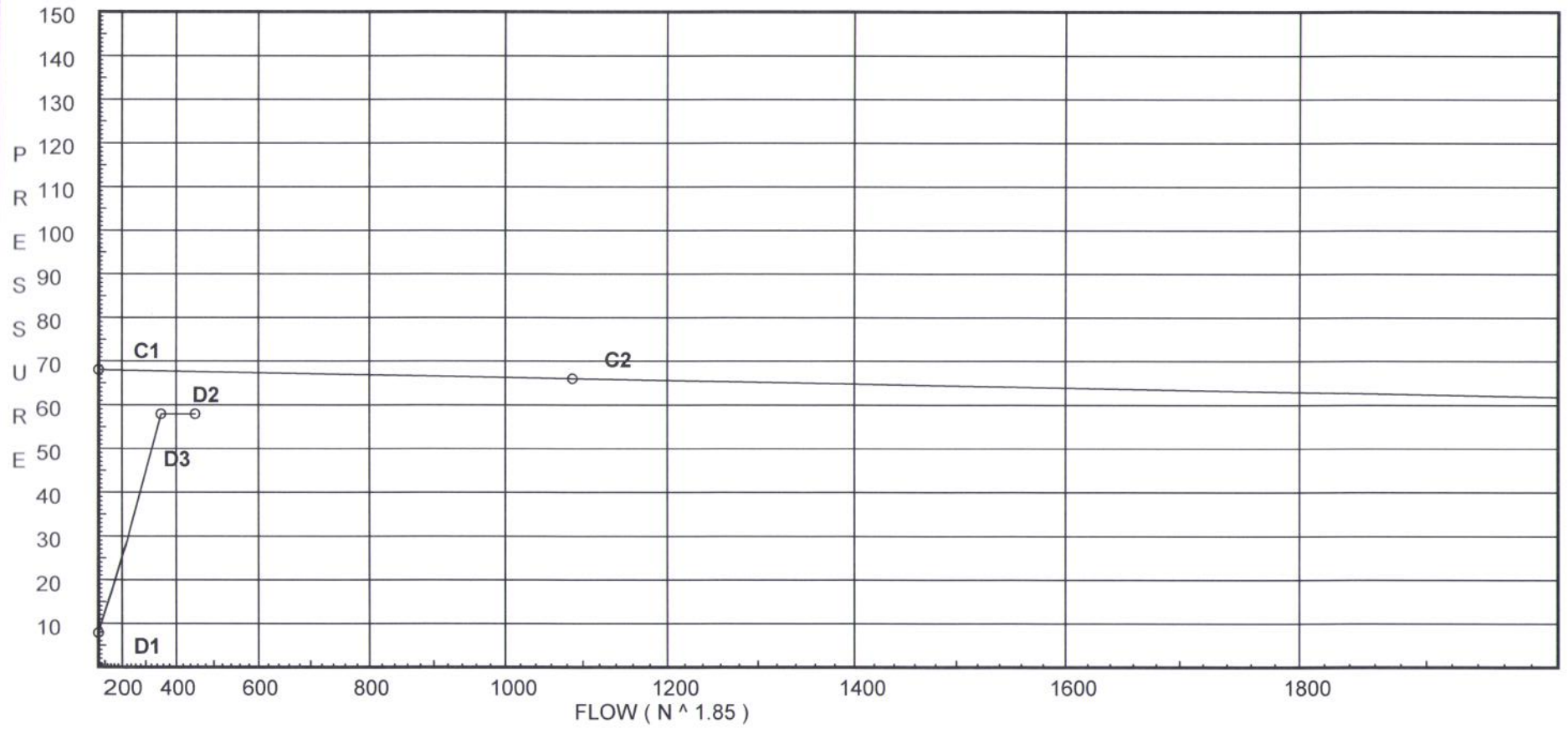
Name of contractor: CORNELIUSEN CONSULTING
Address: 11 CRICKET LANE / LITTLETON / MA 01460
Phone number: 781-248-7497
Name of designer:
Authority having jurisdiction:
Notes: (Include peaking information or gridded systems here.)

CORNELIUSEN CONSULTING
1844 Forest Ave Portlane Maine- 1st floor

City Water Supply:
C1 - Static Pressure : 68
C2 - Residual Pressure: 66
C2 - Residual Flow : 1087

Demand:

D1 - Elevation	:	7.796
D2 - System Flow	:	353.558
D2 - System Pressure	:	57.914
Hose (Demand)	:	100
D3 - System Demand	:	453.558
Safety Margin	:	9.689



SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
SOR	68.0	66	1087.0	67.603	453.56	57.914

NODE ANALYSIS

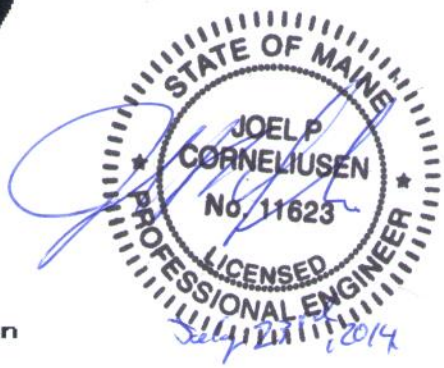
Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
500	18.0	8	30.0	43.82	
501	18.0	8	30.07	43.87	
502	18.0	8	30.33	44.06	
503	18.0	8	30.88	44.46	
504	0.0		39.85		
510	18.0	8	30.39	44.1	
511	18.0	8	30.46	44.16	
512	18.0	8	30.73	44.35	
513	18.0	8	31.29	44.75	
514	0.0		40.27		
520	0.0		41.96		
601	4.0		44.87		
603	4.0		45.16		
604	4.0		46.81		
605	0.0		49.65		
606	0.0		52.68		
607	0.0		56.55	100.0	
SOR	0.0		57.91		

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
500	18	8.00	43.82	2.5		0.0	11.500	120	30.000	
to						0.0	0.0		0.0	
501	18		43.82	2.635		0.0	11.500	0.0063	0.072	Vel = 2.58
501	18	8.00	43.87	2.5		0.0	11.500	120	30.072	
to						0.0	0.0		0.0	
502	18		87.69	2.635		0.0	11.500	0.0226	0.260	Vel = 5.16
502	18	8.00	44.06	2.5		0.0	11.500	120	30.332	
to						0.0	0.0		0.0	
503	18		131.75	2.635		0.0	11.500	0.0479	0.551	Vel = 7.75
503	18	8.00	44.46	2.5	1E	8.237	6.000	120	30.883	
to						0.0	8.237		7.796	
504	0		176.21	2.635		0.0	14.237	0.0822	1.170	Vel = 10.37
504	0		0.0	3	3E	28.223	24.000	120	39.849	
to					1T	20.159	48.382		0.0	
520	0		176.21	3.26		0.0	72.382	0.0291	2.109	Vel = 6.77
			0.0							
520			176.21						41.958	K Factor = 27.20
510	18	8.00	44.10	2.5		0.0	11.500	120	30.392	
to						0.0	0.0		0.0	
511	18		44.1	2.635		0.0	11.500	0.0063	0.073	Vel = 2.59
511	18	8.00	44.16	2.5		0.0	11.500	120	30.465	
to						0.0	0.0		0.0	
512	18		88.26	2.635		0.0	11.500	0.0229	0.263	Vel = 5.19
512	18	8.00	44.34	2.5		0.0	11.500	120	30.728	
to						0.0	0.0		0.0	
513	18		132.6	2.635		0.0	11.500	0.0485	0.558	Vel = 7.80
513	18	8.00	44.75	2.5	1E	8.237	6.000	120	31.286	
to						0.0	8.237		7.796	
514	0		177.35	2.635		0.0	14.237	0.0832	1.184	Vel = 10.43
514	0		0.0	3	3E	28.223	9.000	120	40.266	
to					1T	20.159	48.382		0.0	
520	0		177.35	3.26		0.0	57.382	0.0295	1.692	Vel = 6.82
			0.0							
520			177.35						41.958	K Factor = 27.38
520	0		353.56	3	2E	18.815	5.000	120	41.958	
to					1T	20.159	38.974		-1.732	
601	4		353.56	3.26		0.0	43.974	0.1057	4.646	Vel = 13.59
601	4		0.0	4		0.0	10.000	120	44.872	
to						0.0	0.0		0.0	
603	4		353.56	4.26		0.0	10.000	0.0287	0.287	Vel = 7.96
603	4		0.0	4	2E	26.334	5.000	120	45.159	
to					1T	26.334	52.668		0.0	
604	4		353.56	4.26		0.0	57.668	0.0287	1.656	Vel = 7.96
604	4		0.0	4	2E	26.334	12.000	120	46.815	
to						0.0	26.334		1.732	
605	0		353.56	4.26		0.0	38.334	0.0287	1.101	Vel = 7.96
605	0		0.0	4	1Avc	27.651	12.000	120	49.648	
to					3E	39.501	93.486		0.0	
606	0		353.56	4.26	1T	26.334	105.486	0.0287	3.029	Vel = 7.96

CORNELIUSEN CONSULTING
1844 Forest Ave Portlane Maine- 1st floor

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
606	0		0.0	4	1Zac	0.0	12.000	120	52.677	
to						0.0	0.0		3.524	* Fixed loss = 3.524
607	0		353.56	4.26		0.0	12.000	0.0287	0.344	Vel = 7.96
607	0	H100	100.00	6	2E	28.0	100.000	120	56.545	
to					1B	10.0	68.000		0.0	
SOR	0		453.56	6.065	1T	30.0	168.000	0.0081	1.369	Vel = 5.04
			0.0							
SOR			453.56						57.914	K Factor = 59.60

. . . Fire Protection by Computer Design



CORNELIUSEN CONSULTING
11 CRICKET LANE
LITTLETON
MA 01460
781-248-7497

Job Name	:	1844 Forest Ave- Portland Maine- 2ND FLOOR
Drawing	:	
Location	:	1844 Forest Ave- Portland Maine- 2ND FLOOR
Remote Area	:	2ND FLOOR
Contract	:	
Data File	:	1844 FOREST AVE- PORTLAND MAINE-2ND FLOOR.WXF

Water Supply Curve (C)

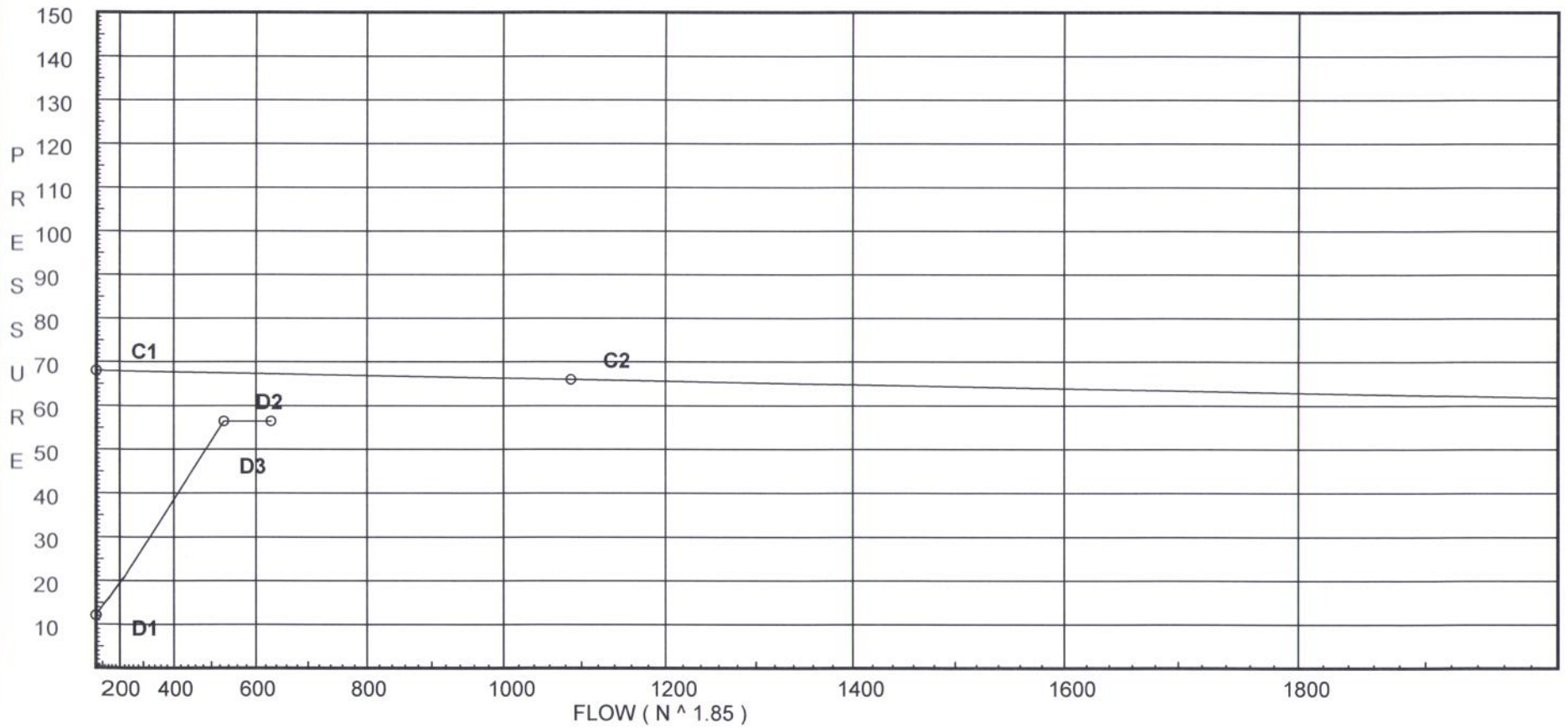
CORNELIUSEN CONSULTING
1844 Forest Ave- Portland Maine- 2ND FLOOR

Date

City Water Supply:
- C1 - Static Pressure : 68
- C2 - Residual Pressure: 66
- C2 - Residual Flow : 1087

Demand:

D1 - Elevation	:	12.127
D2 - System Flow	:	530.092
D2 - System Pressure	:	56.448
Hose (Demand)	:	100
D3 - System Demand	:	630.092
Safety Margin	:	10.822



SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
SOR	68.0	66	1087.0	67.271	630.09	56.448

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
1	24.0	5.6	7.55	15.38	
2	20.0	5.6	9.92	17.64	
11	24.0	5.6	7.6	15.44	
12	20.0	5.6	9.97	17.69	
21	24.0	5.6	7.78	15.62	
22	20.0	5.6	10.17	17.86	
31	24.0	5.6	8.18	16.01	
32	20.0	5.6	10.6	18.23	
41	24.0	5.6	8.86	16.67	
42	20.0	5.6	11.33	18.85	
51	24.0	5.6	9.91	17.63	
52	20.0	5.6	12.47	19.77	
200	28.0	5.6	7.0	14.82	
201	24.0	5.6	9.67	17.41	
202	20.0	5.6	14.07	21.01	
211	28.0	5.6	7.01	14.83	
212	24.0	5.6	9.68	17.43	
213	20.0	5.6	14.09	21.02	
221	28.0	5.6	7.07	14.89	
222	24.0	5.6	9.74	17.48	
224	20.0	5.6	14.17	21.08	
231	28.0	5.6	7.17	15.0	
232	24.0	5.6	9.86	17.59	
233	20.0	5.6	14.32	21.19	
241	28.0	5.6	7.36	15.19	
242	24.0	5.6	10.07	17.77	
243	20.0	5.6	14.59	21.39	
251	28.0	5.6	7.64	15.48	
252	24.0	5.6	10.39	18.05	
253	20.0	5.6	15.0	21.69	
100	20.0		14.12		
101	20.0		14.19		
102	20.0		14.48		
103	20.0		15.08		
104	20.0		16.13		
105	20.0		17.75		
106	20.0		22.73		
300	20.0		17.32		
301	20.0		17.34		
302	20.0		17.43		
303	20.0		17.63		
304	20.0		17.96		

NODE ANALYSIS (cont.)

Node Tag	*Elevation*	*Node Type*	*Pressure at Node*	*Discharge at Node*	*Notes*
305	20.0		18.47		
306	20.0		19.9		
400	14.0		28.57		
601	4.0		33.27		
603	4.0		33.87		
604	4.0		37.38		
605	0.0		41.44		
606	0.0		47.84		
607	0.0		53.93	100.0	
SOR	0.0		56.45		

Node1 / to / Node2	Elev1 / Elev2	K / Fact	Qa / Qt	Nom / Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact / Pf/Ft	Pt / Pe / Pf	******* Notes ******
1	24	5.60	15.38	1		0.0	8.000	120	7.547	
to						0.0	0.0		1.732	
2	20		15.38	1.049		0.0	8.000	0.0801	0.641	Vel = 5.71
2	20	5.60	17.64	1	2E	4.0	3.750	120	9.920	
to					1T	5.0	9.000		0.0	
100	20		33.02	1.049		0.0	12.750	0.3290	4.195	Vel = 12.26
			0.0							
100			33.02						14.115	K Factor = 8.79
11	24	5.60	15.44	1		0.0	8.000	120	7.598	
to						0.0	0.0		1.732	
12	20		15.44	1.049		0.0	8.000	0.0806	0.645	Vel = 5.73
12	20	5.60	17.68	1	2E	4.0	3.750	120	9.975	
to					1T	5.0	9.000		0.0	
101	20		33.12	1.049		0.0	12.750	0.3309	4.219	Vel = 12.30
			0.0							
101			33.12						14.194	K Factor = 8.79
21	24	5.60	15.62	1		0.0	8.000	120	7.782	
to						0.0	0.0		1.732	
22	20		15.62	1.049		0.0	8.000	0.0825	0.660	Vel = 5.80
22	20	5.60	17.86	1	2E	4.0	3.750	120	10.174	
to					1T	5.0	9.000		0.0	
102	20		33.48	1.049		0.0	12.750	0.3376	4.304	Vel = 12.43
			0.0							
102			33.48						14.478	K Factor = 8.80
31	24	5.60	16.01	1		0.0	8.000	120	8.176	
to						0.0	0.0		1.732	
32	20		16.01	1.049		0.0	8.000	0.0862	0.690	Vel = 5.94
32	20	5.60	18.23	1	2E	4.0	3.750	120	10.598	
to					1T	5.0	9.000		0.0	
103	20		34.24	1.049		0.0	12.750	0.3519	4.487	Vel = 12.71
			0.0							
103			34.24						15.085	K Factor = 8.82
41	24	5.60	16.67	1		0.0	8.000	120	8.857	
to						0.0	0.0		1.732	
42	20		16.67	1.049		0.0	8.000	0.0929	0.743	Vel = 6.19
42	20	5.60	18.85	1	2E	4.0	3.750	120	11.332	
to					1T	5.0	9.000		0.0	
104	20		35.52	1.049		0.0	12.750	0.3765	4.800	Vel = 13.19
			0.0							
104			35.52						16.132	K Factor = 8.84
51	24	5.60	17.63	1		0.0	8.000	120	9.912	
to						0.0	0.0		1.732	
52	20		17.63	1.049		0.0	8.000	0.1031	0.825	Vel = 6.54
52	20	5.60	19.77	1	2E	4.0	3.750	120	12.469	
to					1T	5.0	9.000		0.0	
105	20		37.4	1.049		0.0	12.750	0.4144	5.283	Vel = 13.88
			0.0							
105			37.40						17.752	K Factor = 8.88

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*******	Notes	******
200	28	5.60	14.82	1	2E	4.0	8.500	120	7.000			
to						0.0	4.000		1.732			
201	24		14.82	1.049		0.0	12.500	0.0747	0.934	Vel = 5.50		
201	24	5.60	17.41	1		0.0	8.500	120	9.666			
to						0.0	0.0		1.732			
202	20		32.23	1.049		0.0	8.500	0.3146	2.674	Vel = 11.96		
202	20	5.60	21.00	1.25	2E	6.0	3.500	120	14.072			
to					1T	6.0	12.000		0.0			
300	20		53.23	1.38		0.0	15.500	0.2094	3.245	Vel = 11.42		
			0.0									
300			53.23						17.317	K Factor = 12.79		
211	28	5.60	14.83	1	2E	4.0	8.500	120	7.014			
to						0.0	4.000		1.732			
212	24		14.83	1.049		0.0	12.500	0.0749	0.936	Vel = 5.51		
212	24	5.60	17.43	1		0.0	8.500	120	9.682			
to						0.0	0.0		1.732			
213	20		32.26	1.049		0.0	8.500	0.3152	2.679	Vel = 11.98		
213	20	5.60	21.02	1.25	2E	6.0	3.500	120	14.093			
to					1T	6.0	12.000		0.0			
301	20		53.28	1.38		0.0	15.500	0.2097	3.250	Vel = 11.43		
			0.0									
301			53.28						17.343	K Factor = 12.79		
221	28	5.60	14.89	1	2E	4.0	8.500	120	7.065			
to						0.0	4.000		1.732			
222	24		14.89	1.049		0.0	12.500	0.0754	0.943	Vel = 5.53		
222	24	5.60	17.47	1		0.0	8.500	120	9.740			
to						0.0	0.0		1.732			
224	20		32.36	1.049		0.0	8.500	0.3169	2.694	Vel = 12.01		
224	20	5.60	21.08	1.25	2E	6.0	3.500	120	14.166			
to					1T	6.0	12.000		0.0			
302	20		53.44	1.38		0.0	15.500	0.2109	3.269	Vel = 11.46		
			0.0									
302			53.44						17.435	K Factor = 12.80		
231	28	5.60	15.00	1	2E	4.0	8.500	120	7.174			
to						0.0	4.000		1.732			
232	24		15.0	1.049		0.0	12.500	0.0765	0.956	Vel = 5.57		
232	24	5.60	17.58	1		0.0	8.500	120	9.862			
to						0.0	0.0		1.732			
233	20		32.58	1.049		0.0	8.500	0.3211	2.729	Vel = 12.09		
233	20	5.60	21.20	1.25	2E	6.0	3.500	120	14.323			
to					1T	6.0	12.000		0.0			
303	20		53.78	1.38		0.0	15.500	0.2134	3.307	Vel = 11.54		
			0.0									
303			53.78						17.630	K Factor = 12.81		
241	28	5.60	15.19	1	2E	4.0	8.500	120	7.360			
to						0.0	4.000		1.732			
242	24		15.19	1.049		0.0	12.500	0.0782	0.978	Vel = 5.64		

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
242	24	5.60	17.77	1		0.0	8.500	120	10.070	
to						0.0	0.0		1.732	
243	20		32.96	1.049		0.0	8.500	0.3280	2.788	Vel = 12.24
243	20	5.60	21.39	1.25	2E	6.0	3.500	120	14.590	
to					1T	6.0	12.000		0.0	
304	20		54.35	1.38		0.0	15.500	0.2176	3.373	Vel = 11.66
			0.0							
304			54.35						17.963	K Factor = 12.82
251	28	5.60	15.48	1	2E	4.0	8.500	120	7.642	
to						0.0	4.000		1.732	
252	24		15.48	1.049		0.0	12.500	0.0811	1.014	Vel = 5.75
252	24	5.60	18.05	1		0.0	8.500	120	10.388	
to						0.0	0.0		1.732	
253	20		33.53	1.049		0.0	8.500	0.3385	2.877	Vel = 12.45
253	20	5.60	21.69	1.25	2E	6.0	3.500	120	14.997	
to					1T	6.0	12.000		0.0	
305	20		55.22	1.38		0.0	15.500	0.2240	3.472	Vel = 11.84
			0.0							
305			55.22						18.469	K Factor = 12.85
100	20		33.02	2		0.0	8.000	120	14.115	
to						0.0	0.0		0.0	
101	20		33.02	2.157		0.0	8.000	0.0099	0.079	Vel = 2.90
101	20		33.12	2		0.0	8.000	120	14.194	
to						0.0	0.0		0.0	
102	20		66.14	2.157		0.0	8.000	0.0355	0.284	Vel = 5.81
102	20		33.49	2		0.0	8.000	120	14.478	
to						0.0	0.0		0.0	
103	20		99.63	2.157		0.0	8.000	0.0759	0.607	Vel = 8.75
103	20		34.24	2		0.0	8.000	120	15.085	
to						0.0	0.0		0.0	
104	20		133.87	2.157		0.0	8.000	0.1309	1.047	Vel = 11.75
104	20		35.52	2		0.0	8.000	120	16.132	
to						0.0	0.0		0.0	
105	20		169.39	2.157		0.0	8.000	0.2025	1.620	Vel = 14.87
105	20		37.40	2		0.0	17.000	120	17.752	
to						0.0	0.0		0.0	
106	20		206.79	2.157		0.0	17.000	0.2928	4.977	Vel = 18.16
106	20		0.0	3	4E	37.631	25.000	120	22.729	
to					1T	20.159	57.790		2.599	
400	14		206.79	3.26		0.0	82.790	0.0392	3.243	Vel = 7.95
			0.0							
400			206.79						28.571	K Factor = 38.69
300	20		53.23	3		0.0	8.000	120	17.317	
to						0.0	0.0		0.0	
301	20		53.23	3.26		0.0	8.000	0.0032	0.026	Vel = 2.05
301	20		53.28	3		0.0	8.000	120	17.343	
to						0.0	0.0		0.0	
302	20		106.51	3.26		0.0	8.000	0.0115	0.092	Vel = 4.09

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
302	20		53.44	3		0.0	8.000	120	17.435	
to						0.0	0.0		0.0	
303	20		159.95	3.26		0.0	8.000	0.0244	0.195	Vel = 6.15
303	20		53.78	3		0.0	8.000	120	17.630	
to						0.0	0.0		0.0	
304	20		213.73	3.26		0.0	8.000	0.0416	0.333	Vel = 8.22
304	20		54.35	3		0.0	8.000	120	17.963	
to						0.0	0.0		0.0	
305	20		268.08	3.26		0.0	8.000	0.0632	0.506	Vel = 10.30
305	20		55.22	3		0.0	16.000	120	18.469	
to						0.0	0.0		0.0	
306	20		323.3	3.26		0.0	16.000	0.0896	1.433	Vel = 12.43
306	20		0.0	3	4E	37.631	10.000	120	19.902	
to					1T	20.159	57.790		2.599	
400	14		323.3	3.26		0.0	67.790	0.0895	6.070	Vel = 12.43
			0.0							
400			323.30						28.571	K Factor = 60.48
400	14		530.09	4		0.0	6.000	120	28.571	
to						0.0	0.0		4.331	
601	4		530.09	4.26		0.0	6.000	0.0607	0.364	Vel = 11.93
601	4		0.0	4		0.0	10.000	120	33.266	
to						0.0	0.0		0.0	
603	4		530.09	4.26		0.0	10.000	0.0608	0.608	Vel = 11.93
603	4		0.0	4	2E	26.334	5.000	120	33.874	
to					1T	26.334	52.668		0.0	
604	4		530.09	4.26		0.0	57.668	0.0607	3.503	Vel = 11.93
604	4		0.0	4	2E	26.334	12.000	120	37.377	
to						0.0	26.334		1.732	
605	0		530.09	4.26		0.0	38.334	0.0608	2.329	Vel = 11.93
605	0		0.0	4	1Avc	27.651	12.000	120	41.438	
to					3E	39.501	93.486		0.0	
606	0		530.09	4.26	1T	26.334	105.486	0.0607	6.407	Vel = 11.93
606	0		0.0	4	1Zac	0.0	12.000	120	47.845	
to						0.0	0.0		5.360	* Fixed loss = 5.36
607	0		530.09	4.26		0.0	12.000	0.0608	0.729	Vel = 11.93
607	0	H100	100.00	6	2E	28.0	100.000	120	53.934	
to					1B	10.0	68.000		0.0	
SOR	0		630.09	6.065	1T	30.0	168.000	0.0150	2.514	Vel = 7.00
			0.0							
SOR			630.09						56.448	K Factor = 83.86