

. . . Fire Protection by Computer Design

EASTERN FIRE PROTECTION
AUBURN, MAINE
207-784-1507

Job Name : AMERICAN TIRE DIST
Drawing : 1 OF 2
Location : PORTLAND, ME
Remote Area : SYSTEM#4
Contract : AU-5258-15
Data File : 5258 AMERICAN TIRE SYSTEM 4A.WXF

HYDRAULIC CALCULATIONS
for

Project name: AMERICAN TIRE DIST
Location: PORTLAND, ME
Drawing no: 1 OF 2
Date: 1-19-15

Design

Remote area number: SYSTEM#4
Remote area location: SYSTEM#4 ROOF
Occupancy classification:
Density: 25 PSI - Gpm/SqFt
Area of application: 12 HEADS - SqFt
Coverage per sprinkler: N/A - SqFt
Type of sprinklers calculated: TYCO 25.2 ESFR PENDENT
No. of sprinklers calculated: 12
In-rack demand: - GPM
Hose streams: 250 - GPM
Total water required (including hose streams): 1866.94 - GPM @ 100.839 - Psi
Type of system: WET
Volume of dry or preaction system: N/A - Gal

Water supply information

Date: 12-12-14
Location: FIRE PUMP TEST
Source: EASTERN FIRE PROTECTION

Name of contractor: EASTERN FIRE PROTECTION
Address: AUBURN, MAINE
Phone number: 207-784-1507
Name of designer: GRD

Authority having jurisdiction: MAINE STATE FIRE MARSHAL

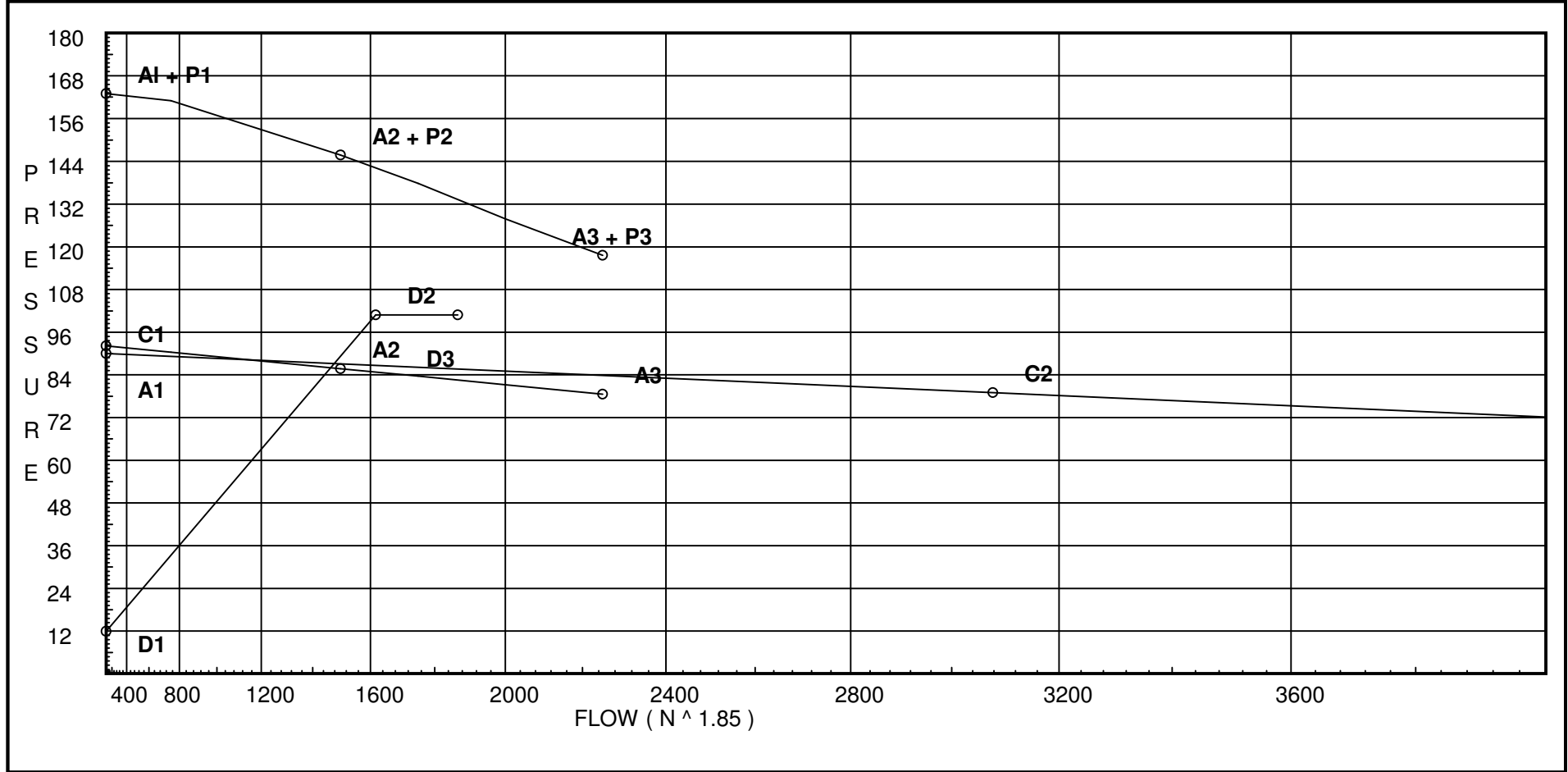
Notes: (Include peaking information or gridded systems here.) TOTAL SYSTEM DEMAND AND PRESSURE INDICATED AT DISCHARGE FLANGE OF FIRE PUMP

Water Supply Curve C

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City Water Supply: C1 - Static Pressure : 90 C2 - Residual Pressure: 79 C2 - Residual Flow : 3078 City Water Adjusted to Pump Inlet for Pf - Elev - Hose Flow A1 - Adjusted Static: 92.166 A2 - Adj Resid : 85.759 @ 1500 A3 - Adj Resid : 78.602 @ 2250	Pump Data: P1 - Pump Churn Pressure : 70.8 P2 - Pump Rated Pressure : 60 P2 - Pump Rated Flow : 1500 P3 - Pump Pressure @ Max Flow : 39 P3 - Pump Max Flow : 2250 City Residual Flow @ 0 = 9587.40 City Residual Flow @ 20 = 8369.59 City Water @ 150% of Pump = 83.84	Demand: D1 - Elevation : 11.984 D2 - System Flow : 1616.94 D2 - System Pressure : 100.839 Hose (Demand) : 250 D3 - System Demand : 1866.94 Safety Margin : 32.444
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Fittings Used Summary

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Fitting Legend		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	
Aty	Alarm Tyco AV-1								14		23		24	23								
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	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	61
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	13
I	90' Grvd-Vic Elbow #10	0	0	2	3	4	3.5	6	5	8	7	8.5	10	13	17	20	23	25	33	36	40	40
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65						
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121	121
Zca	Colt C200 Horz Butt	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

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
PO	See Information on Pump Curve			133.283	1866.94	100.839
TEST	90.0	79	3078.0	85.638	1866.94	85.638

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
701	127.83		51.49		
702	127.83		51.48		
703	127.83		51.54		
704	127.83		51.77		
705	127.83		51.94		
706	127.83		52.04		
707	127.83		52.09		
600	132.67		53.02		
601	132.67		53.02		
602	132.67		53.02		
604	132.67		53.02		
603	132.67		53.02		
605	132.67		52.99		
606	132.67		52.99		
607	132.67		52.99		
609	132.67		52.99		
608	132.67		52.99		
610	132.67		52.96		
611	132.67		52.96		
612	132.67		52.96		
614	132.67		52.96		
613	132.67		52.96		
691A	132.67		52.23		
950	132.67	25.2	33.29	145.4	
692A	132.67		35.7		
951	132.67	25.2	26.49	129.69	
952	132.67	25.2	25.07	126.18	
953	132.67	25.2	25.0	126.0	
954	132.67	25.2	33.31	145.45	
693A	132.67		35.72		
955	132.67	25.2	26.53	129.8	
956	132.67	25.2	25.12	126.31	
957	132.67	25.2	25.05	126.14	
702A	132.67		26.95		
958	132.67	25.2	35.18	149.48	
694A	132.67		37.72		
959	132.67	25.2	30.3	138.73	
960	132.67	25.2	29.49	136.85	

NODE ANALYSIS (cont.)

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
961	132.67	25.2	29.52	136.92	
695A	132.67		52.54		
696A	132.67		52.85		
697A	132.67		53.5		
698A	132.67		53.55		
706A	132.67		53.04		
699	130.67		55.8		
699A	132.67		54.02		
700	130.67		55.91		
700A	132.67		54.12		
680	130.67		53.88		
681	130.67		53.86		
682	130.67		53.83		
691	130.67		53.58		
692	130.67		53.55		
693	130.67		53.56		
694	130.67		53.62		
695	130.67		53.93		
696	130.67		54.28		
697	130.67		54.49		
698	130.67		54.67		
684	130.67		53.99		
685	130.67		55.48		
A	130.67		55.93		
TR4	130.67		59.41		
BR4	101.0		76.54		
UG3	100.0		83.02		
UG4	100.0		78.71	250.0	
50	100.0		83.48		
FLG	100.0		86.26		
PO	100.0		100.84		
PI	100.0		82.56		
BASE	100.0		83.96		
TEST	105.0		85.64		

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	*****
701 to 702	127.830 127.830		-50.42	4	0.0	11.250	120	51.494			
					0.0	0.0		0.0			
			-50.42	4.26	0.0	11.250	-0.0008	-0.009	Vel =	1.13	
702 to 703	127.830 127.830		190.03	4	0.0	10.000	120	51.485			
					0.0	0.0		0.0			
			139.61	4.26	0.0	10.000	0.0051	0.051	Vel =	3.14	
703 to 704	127.830 127.830		157.01	4	0.0	11.250	120	51.536			
					0.0	0.0		0.0			
			296.62	4.26	0.0	11.250	0.0208	0.234	Vel =	6.68	
704 to 705	127.830 127.830		-50.74	4	0.0	11.330	120	51.770			
					0.0	0.0		0.0			
			245.88	4.26	0.0	11.330	0.0147	0.166	Vel =	5.53	
705 to 706	127.830 127.830		-52.14	4	0.0	11.250	120	51.936			
					0.0	0.0		0.0			
			193.74	4.26	0.0	11.250	0.0094	0.106	Vel =	4.36	
706 to 707	127.830 127.830		-65.16	4	0.0	10.000	120	52.042			
					0.0	0.0		0.0			
			128.58	4.26	0.0	10.000	0.0044	0.044	Vel =	2.89	
707 to 708	127.830 0		-63.94	4	0.0	11.250	120	52.086			
					0.0	0.0		55.363			
			64.64	4.26	0.0	11.250	0.0012	0.014	Vel =	1.46	
708			0.0								
			64.64					107.463	K Factor =	6.24	
600 to 601	132.67 132.67	.0	0.0	2	0.0	8.330	120	53.017			
					0.0	0.0		0.0			
			0.0	2.157	0.0	8.330	0	0.0	Vel =	0	
601 to 602	132.67 132.67	.0	0.0	2	0.0	8.330	120	53.017			
					0.0	0.0		0.0			
			0.0	2.157	0.0	8.330	0	0.0	Vel =	0	
602 to 603	132.67 132.670	.0	0.0	2	T	12.307	5.000	120	53.017		
					0.0	12.307		0.0			
			0.0	2.157	0.0	17.307	0	0.0	Vel =	0	
603			0.0								
			0.0					53.017	K Factor =	0	
604 to 603	132.670 132.670	.0	0.0	2	T	12.307	3.330	120	53.017		
					0.0	12.307		0.0			
			0.0	2.157	0.0	15.637	0	0.0	Vel =	0	
603 to 680	132.670 130.670	.0	0.0	2	T	12.307	2.250	120	53.017		
					0.0	12.307		0.866			
			0.0	2.157	0.0	14.557	0	0.0	Vel =	0	
680			0.0								
			0.0					53.883	K Factor =	0	
605 to 606	132.67 132.670	.0	0.0	2		8.330	120	52.990			
					0.0	0.0		0.0			
			0.0	2.157	0.0	8.330	0	0.0	Vel =	0	

Final Calculations - Hazen-Williams

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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 to 607	132.670 132.67	.0	0.0	2		0.0	8.330	120	52.990			
						0.0	0.0		0.0			
			0.0	2.157		0.0	8.330	0	0.0		Vel = 0	
607 to 608	132.67 132.670	.0	0.0	2	T	12.307	5.000	120	52.990			
						0.0	12.307		0.0			
			0.0	2.157		0.0	17.307	0	0.0		Vel = 0	
			0.0						52.990		K Factor = 0	
609 to 608	132.670 132.670	.0	0.0	2	T	12.307	3.330	120	52.990			
						0.0	12.307		0.0			
			0.0	2.157		0.0	15.637	0	0.0		Vel = 0	
608 to 681	132.670 130.670	.0	0.0	2	T	12.307	2.000	120	52.990			
						0.0	12.307		0.866			
			0.0	2.157		0.0	14.307	0	0.0		Vel = 0	
			0.0						53.856		K Factor = 0	
610 to 611	132.67 132.670	.0	0.0	2		0.0	8.330	120	52.960			
						0.0	0.0		0.0			
			0.0	2.157		0.0	8.330	0	0.0		Vel = 0	
611 to 612	132.670 132.67	.0	0.0	2		0.0	8.330	120	52.960			
						0.0	0.0		0.0			
			0.0	2.157		0.0	8.330	0	0.0		Vel = 0	
612 to 613	132.67 132.670	.0	0.0	2	T	12.307	5.000	120	52.960			
						0.0	12.307		0.0			
			0.0	2.157		0.0	17.307	0	0.0		Vel = 0	
			0.0						52.960		K Factor = 0	
614 to 613	132.670 132.670	.0	0.0	2	T	12.307	3.330	120	52.960			
						0.0	12.307		0.0			
			0.0	2.157		0.0	15.637	0	0.0		Vel = 0	
613 to 682	132.670 130.670	.0	0.0	2	T	12.307	2.250	120	52.960			
						0.0	12.307		0.866			
			0.0	2.157		0.0	14.557	0	0.0		Vel = 0	
			0.0						53.826		K Factor = 0	
691A to 691	132.670 130.670		50.42	2	E T	6.153	4.000	120	52.231			
						12.307	18.460		0.866			
			50.42	2.157		0.0	22.460	0.0215	0.483		Vel = 4.43	
			0.0						53.580		K Factor = 6.89	
691A to 701	132.670 127.830		-50.42	2	2I 2T	8.615	98.500	120	52.231			
						24.613	33.228		2.096			
			-50.42	2.157		0.0	131.728	-0.0215	-2.833		Vel = 4.43	
			0.0						51.494		K Factor = -7.03	
701			-50.42									

Final Calculations - Hazen-Williams

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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	*****
950 to 692A	132.670 132.670	25.20	145.40 145.4	2	T	12.307 0.0	3.500 12.307	120	33.289 0.0			
692A to 692	132.670 130.670		287.21 432.61	2	T	12.307 0.0	2.500 12.307	120	35.701 0.866			Vel = 12.77
692 to 692A	130.670 132.670		0.0 432.61						53.552			K Factor = 59.12
692A to 951	132.670 132.670		-287.22	2	T	12.307 0.0	4.830 12.307	120	35.701 0.0			
951 to 952	132.670 132.670	25.20	129.70	2		0.0 0.0	8.000 0.0	120	26.487 0.0			Vel = 25.22
952 to 953	132.670 132.670	25.20	126.18	2		0.0 0.0	8.000 0.0	120	25.071 0.0			Vel = 13.83
953 to 702A	132.670 132.670	25.20	126.00	2	I T	4.307 12.307	11.670 16.614	120	25.000 0.0			Vel = 8.31
702A to 954	132.670 132.670		0.0 94.66						26.951			K Factor = 18.23
954 to 693A	132.670 132.670	25.20	145.44	2	T	12.307 0.0	3.500 12.307	120	33.312 0.0			
693A to 693	132.670 130.670		286.88 432.32	2	T	12.307 0.0	2.500 12.307	120	35.725 0.866			Vel = 12.77
693 to 693A	130.670 132.670		0.0 432.32						53.555			K Factor = 59.08
693A to 955	132.670 132.670		-286.88	2	T	12.307 0.0	4.830 12.307	120	35.725 0.0			
955 to 956	132.670 132.670	25.20	129.80	2		0.0 0.0	8.000 0.0	120	26.532 0.0			Vel = 25.19
956 to 957	132.670 132.670	25.20	126.31	2		0.0 0.0	8.000 0.0	120	25.123 0.0			Vel = 13.79
957 to 702A	132.670 132.670	25.20	126.14	2	I T	4.307 12.307	10.500 16.614	120	25.054 0.0			Vel = 2.70
702A to 702	132.670 127.830		94.66 190.03	2	2T	24.613 0.0	65.000 24.613	120	26.951 2.096			Vel = 8.37
702	127.830		0.0	2.157		0.0	89.613	0.2504	22.438			Vel = 16.68

Final Calculations - Hazen-Williams

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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	*****
702			0.0 190.03						51.485		K Factor = 26.48	
958 to 694A	132.670 132.670	25.20	149.48	2	T	12.307 0.0	3.500 12.307	120	35.185 0.0			
694A to 694	132.670 130.670		149.48	2.157		0.0	15.807	0.1606	2.539		Vel = 13.12	
694A to 694	132.670 130.670		255.48	2	T	12.307 0.0	2.500 12.307	120	37.724 0.866			
694			0.0 404.96						53.621		K Factor = 55.30	
694A to 959	132.670 132.670		-255.48	2	T	12.307 0.0	4.830 12.307	120	37.724 0.0			
959 to 960	132.670 132.670	25.20	138.72	2		0.0 0.0	8.000 0.0	120	30.305 0.0		Vel = 22.43	
960 to 961	132.670 132.670	25.20	136.85	2		0.0 0.0	8.000 0.0	120	29.491 0.0		Vel = 10.25	
961 to 703	132.670 127.830	25.20	136.92	2	2I 2T	8.615 24.613	80.000 33.228	120	29.522 2.096		Vel = 1.76	
703			0.0 157.01						51.536		K Factor = 21.87	
695A to 695	132.670 130.670		50.74	2	E T	6.153 12.307	6.000 18.460	120	52.535 0.866			
695			0.0 50.74						53.934		K Factor = 6.91	
695A to 704	132.670 127.830		-50.74	2	2I 2T	8.615 24.613	98.250 33.228	120	52.535 2.096		Vel = 4.45	
704			0.0 -50.74						51.770		K Factor = -7.05	
696A to 696	132.670 130.670		52.13	2	E T	6.153 12.307	6.000 18.460	120	52.854 0.866			
696			0.0 52.13						54.279		K Factor = 7.08	
696A to 705	132.670 127.830		-52.13	2	2I 2T	8.615 24.613	98.500 33.228	120	52.854 2.096		Vel = 4.58	
705			0.0 -52.13						51.936		K Factor = -7.23	
697A to 697	132.670 130.670		31.23	2	T	12.307 0.0	2.250 12.307	120	53.495 0.866			
697			31.23	2.157		0.0	14.557	0.0089	0.129		Vel = 2.74	

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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	*****
697			0.0 31.23					54.490		K Factor = 4.23	
697A to 706A	132.670 132.670		-31.23	2	I T	4.307 12.307	34.250 16.614	120	53.495 0.0		
			-31.23	2.157		0.0	50.864	-0.0089	-0.451	Vel = 2.74	
706A			0.0 -31.23					53.044		K Factor = -4.29	
698A to 698	132.670 130.670		33.94	2	E T	6.153 12.307	5.500 18.460	120	53.552 0.866		
			33.94	2.157		0.0	23.960	0.0104	0.248	Vel = 2.98	
698			0.0 33.94					54.666		K Factor = 4.59	
698A to 706A	132.670 132.670		-33.94	2	I T	4.307 12.307	32.500 16.614	120	53.552 0.0		
			-33.94	2.157		0.0	49.114	-0.0103	-0.508	Vel = 2.98	
706A to 706	132.670 127.830		-31.23	2	2T	24.613 0.0	65.000 24.613	120	53.044 2.096		
			-65.17	2.157		0.0	89.613	-0.0346	-3.098	Vel = 5.72	
706			0.0 -65.17					52.042		K Factor = -9.03	
699 to 699A	130.670 132.670		-63.94	2	2T	24.613 0.0	2.500 24.613	120	55.795 -0.866		
			-63.94	2.157		0.0	27.113	-0.0334	-0.905	Vel = 5.61	
699A to 707	132.670 127.830		0.0	2	2T	24.613 0.0	96.250 24.613	120	54.024 2.096		
			-63.94	2.157		0.0	120.863	-0.0334	-4.034	Vel = 5.61	
707			0.0 -63.94					52.086		K Factor = -8.86	
700 to 700A	130.670 132.670		-64.64	2	2T	24.613 0.0	2.500 24.613	120	55.911 -0.866		
			-64.64	2.157		0.0	27.113	-0.0341	-0.924	Vel = 5.68	
700A to 708	132.670 0		0.0	2	2T	24.613 0.0	96.250 24.613	120	54.121 57.459		
			-64.64	2.157		0.0	120.863	-0.0341	-4.117	Vel = 5.68	
708			0.0 -64.64					107.463		K Factor = -6.24	
680 to 681	130.670 130.670		-323.68	6		0.0 0.0	8.000 0.0	120	53.884 0.0		
			-323.68	6.357		0.0	8.000	-0.0035	-0.028	Vel = 3.27	
681 to 682	130.670 130.670		0.0	6		0.0 0.0	8.670 0.0	120	53.856 0.0		
			-323.68	6.357		0.0	8.670	-0.0035	-0.030	Vel = 3.27	
682 to 691	130.670 130.670		0.0	6		0.0 0.0	70.750 0.0	120	53.826 0.0		
			-323.68	6.357		0.0	70.750	-0.0035	-0.246	Vel = 3.27	

Final Calculations - Hazen-Williams

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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	*****
691 to 692	130.670 130.670		50.42 -273.26	6 6.357		0.0 0.0	11.250 0.0	120 -0.0025	53.580 0.0		Vel = 2.76	
692 to 693	130.670 130.670		432.61 159.35	6 6.357		0.0 0.0	3.750 3.750	120 0.0008	53.552 0.003		Vel = 1.61	
693 to 694	130.670 130.670		432.32 591.67	6 6.357		0.0 0.0	6.250 6.250	120 0.0106	53.555 0.066		Vel = 5.98	
694 to 695	130.670 130.670		404.97 996.64	6 6.357		0.0 0.0	11.250 11.250	120 0.0278	53.621 0.313		Vel = 10.07	
695 to 696	130.670 130.670		50.74 1047.38	6 6.357		0.0 0.0	11.330 11.330	120 0.0305	53.934 0.345		Vel = 10.59	
696 to 697	130.670 130.670		52.14 1099.52	6 6.357		0.0 0.0	6.330 6.330	120 0.0333	54.279 0.211		Vel = 11.11	
697 to 698	130.670 130.670		31.22 1130.74	6 6.357		0.0 0.0	5.000 5.000	120 0.0352	54.490 0.176		Vel = 11.43	
698 to A	130.670 130.670		33.94 1164.68	6 6.357	I	12.573 0.0	21.500 12.573	120 0.0371	54.666 0.0		Vel = 11.77	
A			0.0 1164.68						55.930		K Factor = 155.73	
680 to 684	130.670 130.670		323.68 323.68	6 6.357	2I	25.147 0.0	5.000 25.147	120 0.0034	53.884 0.0		Vel = 3.27	
684 to 685	130.670 130.670		0.0 323.68	4 4.26		0.0 0.0	61.000 61.000	120 0.0244	53.988 1.488		Vel = 7.29	
685 to 699	130.670 130.670		0.0 323.68	6 6.357		0.0 0.0	92.000 0.0	120 0.0035	55.476 0.0		Vel = 3.27	
699 to 700	130.670 130.670		63.94 387.62	6 6.357	I	12.573 0.0	11.250 12.573	120 0.0049	55.795 0.0		Vel = 3.92	
700 to A	130.670 130.670		64.64 452.26	6 6.357		0.0 0.0	3.000 3.000	120 0.0063	55.911 0.019		Vel = 4.57	
A to TR4	130.670 130.670		1164.68 1616.94	6 6.357	2I	25.147 0.0	26.000 25.147	120 0.0681	55.930 0.0		Vel = 16.34	
TR4 to BR4	130.670 101		0.0 1616.94	6 6.357	A G	30.176 3.772	29.000 33.948	120 0.0681	59.411 12.850		Vel = 16.34	

Final Calculations - Hazen-Williams

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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	*****
BR4 to UG4	101 100		0.0 1616.94	8 7.98	E T G	27.183 52.855 6.041	30.000 86.077 116.077	150 0.0149	76.545 0.433 1.728		Vel = 10.37	
UG4			0.0 1616.94						78.706		K Factor = 182.26	
UG3 to 50	100 100		596.53 596.53	8 7.98	T	52.855 0.0 0.0	140.000 52.855 192.855	150 0.0024	83.025 0.0 0.454		Vel = 3.83	
50			0.0 596.53						83.479		K Factor = 65.29	
UG3 to UG4	100 100		-596.53 -596.53	8 7.98	6L 3G	117.791 18.122 0.0	1700.000 135.913 1835.913	150 -0.0024	83.025 0.0 -4.319		Vel = 3.83	
UG4 to 50	100 100	H250	1866.94 1270.41	8 7.98	2T 2L G	105.71 39.264 6.041	350.000 151.014 501.014	150 0.0095	78.706 0.0 4.773		Vel = 8.15	
50 to FLG	100 100		596.53 1866.94	8 7.98	2E T G	54.365 52.855 6.041	30.000 113.260 143.260	150 0.0194	83.479 0.0 2.782		Vel = 11.98	
FLG to PO	100 100		0.0 1866.94	8 8.249	S B 6l Zca	52.853 14.094 91.611 0.0	149.000 158.558 307.558	120 0.0250	86.261 6.900 7.678		* * Fixed Loss = 6.9 Vel = 11.21	
PO			0.0 1866.94						100.839		K Factor = 185.92	
System Demand Pressure									100.839			
Safety Margin									32.444			
Continuation Pressure									133.283			
Pressure @ Pump Outlet									133.283			
Pressure From Pump Curve									-50.721			
Pressure @ Pump Inlet									82.562			
PI to BASE	100 100		0.0 1866.94	8 8.249	G T	4.698 41.108 0.0	10.000 45.806 55.806	120 0.0250	82.562 0.0 1.393		Vel = 11.21	
BASE to TEST	100 105		0.0 1866.94	8 7.98	2L T G	39.264 52.855 6.041	100.000 98.159 198.159	150 0.0194	83.955 -2.166 3.849		Vel = 11.98	
TEST			0.0 1866.94						85.638		K Factor = 201.74	