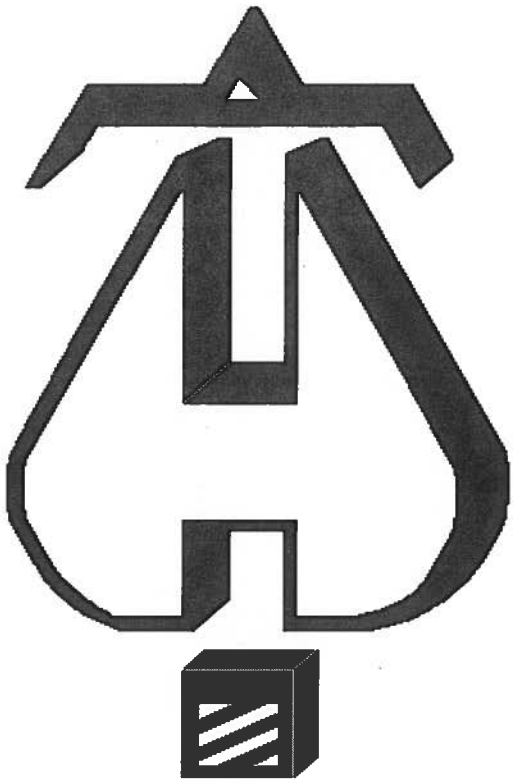


. . . Fire Protection by Computer Design

EASTERN FIRE PROTECTION
170 KITTY HAWK AVE
AUBURN, ME 04210
207-784-1507

Job Name	:	465 CONGRESS TENTH FLOOR UPRIGHT
Drawing	:	1 OF 1
Location	:	PORTLAND, ME
Remote Area	:	1
Contract	:	5057-13
Data File	:	465 CONGRESS 10th floor UPRIGHT.WXF

Water Supply Curve C

EASTERN FIRE PROTECTION
465 CONGRESS TENTH FLOOR UPRIGHT

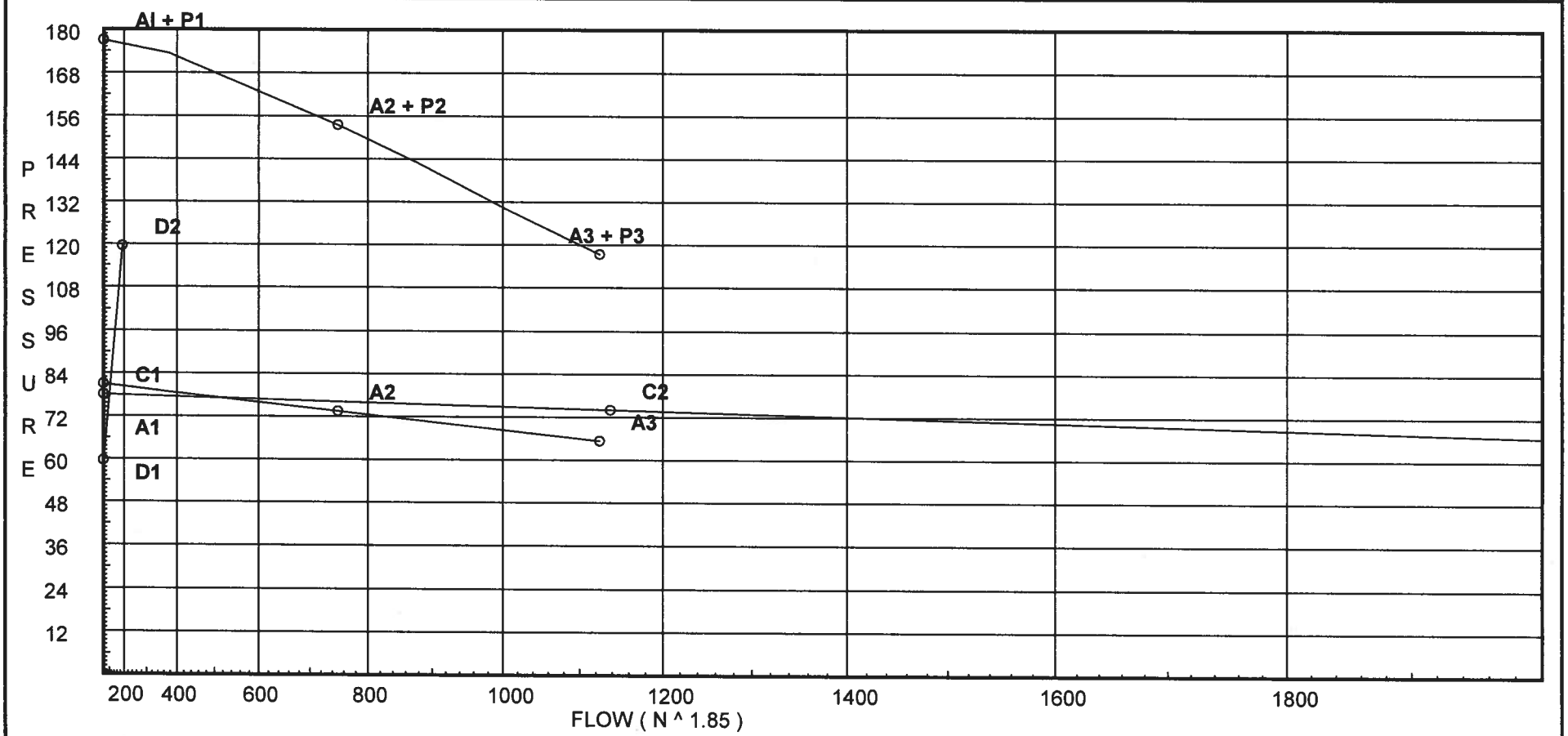
Date 7/18/13

City Water Supply:
- C1 - Static Pressure : 78
- C2 - Residual Pressure: 74
- C2 - Residual Flow : 1138

City Water Adjusted to Pump Inlet for Pf - Elev - Hose Flow
- A1 - Adjusted Static: 80.987
- A2 - Adj Resid : 73.464 @ 750
- A3 - Adj Resid : 65.36 @ 1125

Pump Data:
- P1 - Pump Churn Pressure : 96
- P2 - Pump Rated Pressure : 80
- P2 - Pump Rated Flow : 750
- P3 - Pump Pressure @ Max Flow : 52
- P3 - Pump Max Flow : 1125
- City Residual Flow @ 0 = 5668.37
- City Residual Flow @ 20 = 4829.57
- City Water @ 150% of Pump = 74.08

Demand:
- D1 - Elevation : 59.551
- D2 - System Flow : 192.135
- D2 - System Pressure : 119.465
- Hose (Demand) :
- D3 - System Demand : 192.135
- Hose (Adj City) : 100
- Safety Margin : 56.436



Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
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
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
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
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
S	NFPA 13 Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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
Zac	Ames 2000SS	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			175.901	192.14	119.465
TEST	78.0	74	1138.0	77.677	292.14	77.677

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
LIN	100.0	5.6	7.0	14.82	
LIN1	100.0	5.6	7.0	14.82	
8	237.5	5.39	12.24	18.86	K=K @ SPRG
9	235.5	5.39	12.86	19.34	K=K @ SPRG
8A	235.5		13.68		
17	235.5	5.39	15.84	21.46	K=K @ SPRG
13	235.5	5.39	14.76	20.72	K=K @ SPRG
16	235.5	5.39	16.15	21.67	K=K @ SPRG
16A	231.5		20.67		
17A	231.5		25.76		
10	235.5	5.39	9.01	16.19	K=K @ SPR1
11	237.5	5.39	7.55	14.82	K=K @ SPR1
11A	235.5		9.28		
12	235.5	5.39	11.65	18.41	K=K @ SPR1
KK	229.5		19.8		
14	235.5	5.39	13.5	19.82	K=K @ SPR1
15	235.5	5.39	14.93	20.84	K=K @ SPR1
LL	229.5		22.85		
C	229.5		42.95		
B	229.5		42.94		
M	229.5		42.0		
JJ	229.5		45.44		
6A	229.5		43.47		
D	229.5		43.64		
E	229.5		44.46		
F	229.5		45.76		
G	229.5		47.2		
H	229.5		47.67		
HH	229.5		47.76		
FCV	227.25		55.03		
J	129.667		98.47		
K	107.167		109.69		
L	107.167		110.02		
BFP	93.0		116.28		
PO	93.0		119.46		
PI	93.0		80.29		
BASE	93.0		80.58		
TEST	100.0		77.68	100.0	

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 *******
LIN	100	5.60	14.82	1	1E	2.0	5.333	120	7.000	
to						0.0	2.000		0.0	
SPRG	100		14.82	1.049		0.0	7.333	0.0747	0.548	Vel = 5.50
			0.0							
SPRG			14.82						7.548	K Factor = 5.39
LIN1	100	5.60	14.82	1	1E	2.0	5.333	120	7.000	
to						0.0	2.000		0.0	
SPR1	100		14.82	1.049		0.0	7.333	0.0747	0.548	Vel = 5.50
			0.0							
SPR1			14.82						7.548	K Factor = 5.39
8	237.500	5.39	18.86	1		0.0	5.000	120	12.235	K = K @ SPRG
to						0.0	0.0		0.866	
8A	235.500		18.86	1.049		0.0	5.000	0.1168	0.584	Vel = 7.00
			0.0							
8A			18.86						13.685	K Factor = 5.10
9	235.500	5.39	19.34	1	1T	5.0	1.708	120	12.864	K = K @ SPRG
to						0.0	5.000		0.0	
8A	235.500		19.34	1.049		0.0	6.708	0.1224	0.821	Vel = 7.18
8A	235.500		18.87	1		0.0	5.000	120	13.685	
to						0.0	0.0		0.0	
17	235.500		38.21	1.049		0.0	5.000	0.4310	2.155	Vel = 14.18
17	235.500	5.39	21.46	1	1E	2.0	1.333	120	15.840	K = K @ SPRG
to					1T	5.0	7.000		1.732	
17A	231.500		59.67	1.049		0.0	8.333	0.9832	8.193	Vel = 22.15
			0.0							
17A			59.67						25.765	K Factor = 11.76
13	235.500	5.39	20.72	1		0.0	10.000	120	14.763	K = K @ SPRG
to						0.0	0.0		0.0	
16	235.500		20.72	1.049		0.0	10.000	0.1390	1.390	Vel = 7.69
16	235.500	5.39	21.68	1	2E	4.0	1.333	120	16.153	K = K @ SPRG
to						0.0	4.000		1.732	
16A	231.500		42.4	1.049		0.0	5.333	0.5224	2.786	Vel = 15.74
16A	231.500		0.0	1		0.0	9.750	120	20.671	
to						0.0	0.0		0.0	
17A	231.500		42.4	1.049		0.0	9.750	0.5225	5.094	Vel = 15.74
17A	231.500		59.67	1	1E	2.0	0.960	120	25.765	
to					1T	5.0	7.000		0.866	
HH	229.500		102.07	1.049		0.0	7.960	2.6540	21.126	Vel = 37.89
			0.0							
HH			102.07						47.757	K Factor = 14.77
10	235.500	5.39	16.19	1		0.0	3.083	120	9.011	K = K @ SPR1
to						0.0	0.0		0.0	
11A	235.500		16.19	1.049		0.0	3.083	0.0879	0.271	Vel = 6.01
			0.0							
11A			16.19						9.282	K Factor = 5.31
11	237.500	5.39	14.82	1	1E	2.0	4.625	120	7.548	K = K @ SPR1
to					1T	5.0	7.000		0.866	
11A	235.500		14.82	1.049		0.0	11.625	0.0747	0.868	Vel = 5.50

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 ******
11A	235.500		16.18	1		0.0	8.083	120	9.282	
to						0.0	0.0		0.0	
12	235.500		31.0	1.049		0.0	8.083	0.2928	2.367	Vel = 11.51
12	235.500	5.39	18.41	1	2E	4.0	4.000	120	11.649	K = K @ SPR1
to						0.0	4.000		2.599	
KK	229.500		49.41	1.049		0.0	8.000	0.6935	5.548	Vel = 18.34
KK	229.500		0.0	1		0.0	8.417	150	19.796	
to						0.0	0.0		0.0	
LL	229.500		49.41	1.101		0.0	8.417	0.3626	3.052	Vel = 16.65
			0.0							
LL			49.41						22.848	K Factor = 10.34
14	235.500	5.39	19.82	1		0.0	11.167	120	13.503	K = K @ SPR1
to						0.0	0.0		0.0	
15	235.500		19.82	1.049		0.0	11.167	0.1280	1.429	Vel = 7.36
15	235.500	5.39	20.84	1	1E	2.0	4.000	120	14.932	K = K @ SPR1
to					1T	5.0	7.000		2.599	
LL	229.500		40.66	1.049		0.0	11.000	0.4834	5.317	Vel = 15.09
LL	229.500		49.41	1	1T	9.563	7.833	150	22.848	
to						0.0	9.562		0.0	
M	229.500		90.07	1.101		0.0	17.395	1.1011	19.154	Vel = 30.35
			0.0							
M			90.07						42.002	K Factor = 13.90
C	229.500		-32.96	1.5		0.0	0.500	150	42.953	
to						0.0	0.0		0.0	
B	229.500		-32.96	1.598		0.0	0.500	-0.0280	-0.014	Vel = 5.27
B	229.500		0.0	1.5	1E	5.828	27.708	150	42.939	
to						0.0	5.828		0.0	
M	229.500		-32.96	1.598		0.0	33.536	-0.0279	-0.937	Vel = 5.27
M	229.500		90.07	1.5	1T	11.656	32.875	150	42.002	
to						0.0	11.656		0.0	
JJ	229.500		57.11	1.598		0.0	44.531	0.0772	3.440	Vel = 9.14
JJ	229.500		0.0	1.5	1T	11.656	17.208	150	45.442	
to						0.0	11.656		0.0	
H	229.500		57.11	1.598		0.0	28.864	0.0772	2.229	Vel = 9.14
			0.0							
H			57.11						47.671	K Factor = 8.27
C	229.500		32.96	1.5	1T	11.656	6.792	150	42.953	
to						0.0	11.656		0.0	
6A	229.500		32.96	1.598		0.0	18.448	0.0279	0.515	Vel = 5.27
6A	229.500		0.0	1.5		0.0	6.000	150	43.468	
to						0.0	0.0		0.0	
D	229.500		32.96	1.598		0.0	6.000	0.0280	0.168	Vel = 5.27
D	229.500		0.0	1.5	1T	11.656	17.792	150	43.636	
to						0.0	11.656		0.0	
E	229.500		32.96	1.598		0.0	29.448	0.0279	0.822	Vel = 5.27
E	229.500		0.0	1.5	1T	11.656	34.875	150	44.458	
to						0.0	11.656		0.0	
F	229.500		32.96	1.598		0.0	46.531	0.0279	1.300	Vel = 5.27

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 ******
F	229.500		0.0	1.5	1E	5.828	34.000	150	45.758	
to					1T	11.656	17.484		0.0	
G	229.500		32.96	1.598		0.0	51.484	0.0280	1.439	Vel = 5.27
G	229.500		0.0	1.5	1T	11.656	5.333	150	47.197	
to						0.0	11.656		0.0	
H	229.500		32.96	1.598		0.0	16.989	0.0279	0.474	Vel = 5.27
H	229.500		57.11	2.5		0.0	3.625	120	47.671	
to						0.0	0.0		0.0	
HH	229.500		90.07	2.635		0.0	3.625	0.0237	0.086	Vel = 5.30
HH	229.500		102.07	2.5	1S	19.22	13.167	120	47.757	
to					1T	16.474	52.168		0.974	
FCV	227.250		192.14	2.635	2E	16.474	65.335	0.0964	6.300	Vel = 11.30
FCV	227.250		0.0	4	1T	26.334	99.834	120	55.031	
to						0.0	26.334		42.263	
J	129.667		192.14	4.26		0.0	126.168	0.0093	1.172	Vel = 4.33
J	129.667		0.0	4	8E	105.337	54.250	120	98.466	
to						0.0	105.337		9.745	
K	107.167		192.14	4.26		0.0	159.587	0.0093	1.483	Vel = 4.33
K	107.167		0.0	4	1E	13.167	22.500	120	109.694	
to						0.0	13.167		0.0	
L	107.167		192.14	4.26		0.0	35.667	0.0093	0.331	Vel = 4.33
L	107.167		0.0	6	3E	52.808	41.250	120	110.025	
to						0.0	52.808		6.136	
BFP	93		192.14	6.357		0.0	94.058	0.0013	0.124	Vel = 1.94
BFP	93		0.0	6	1Zac	0.0	10.000	120	116.285	
to					1S	40.235	52.808		3.096	* * Fixed Loss = 3.096
PO	93		192.14	6.357	1B	12.573	62.808	0.0013	0.084	Vel = 1.94
			0.0							
PO			192.14						119.465	K Factor = 17.58
System Demand Pressure									119.465	
Safety Margin									56.436	
Continuation Pressure									175.901	
Pressure @ Pump Outlet									175.901	
Pressure From Pump Curve									-95.614	
Pressure @ Pump Inlet									80.287	
PI	93		0.0	6	1G	3.772	74.958	120	80.287	
to					1T	37.72	147.108		0.0	
BASE	93		192.14	6.357	6E	105.616	222.066	0.0013	0.293	Vel = 1.94
BASE	93		0.0	6	1L	12.911	50.000	140	80.580	
to					1G	4.304	60.252		-3.032	
TEST	100		192.14	6.16	1T	43.037	110.252	0.0012	0.128	Vel = 2.07
			100.00							Qa = 100.00
TEST			292.14						77.676	K Factor = 33.15