

Life Safety Fire Protection
Fire Sprinklers Save Lives
97 Lower Jaffrey Road - Dublin NH

H Y D R A U L I C C A L C U L A T I O N S

C O V E R S H E E T

30 Merrill Street

W A T E R S U P P L Y

STATIC PRESSURE (psi) 51
RESIDUAL PRESSURE (psi) 41
RESIDUAL FLOW (gpm) 919

B O O S T E R P U M P S

NUMBER OF BOOSTER PUMPS 0

S P R I N K L E R S

MINIMUM FLOW PER SPRINKLER (gpm) 13
MINIMUM PRESSURE PER SPRINKLER (psi) 7.04

THIS SYSTEM OPERATES AT A FLOW OF 0.00 gpm AT A PRESSURE OF 0.00 psi
AT THE BASE OF THE RISER (REF. PT. 0)

PIPES USED FOR THIS SYSTEM

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111 DUCTILE IRON (350)
002 SCHEDULE 10
001 SCHEDULE 40
009 BLAZEMASTER CPVC

Life Safety Fire Protection
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FITTING Equivalent Length per NFPA 13 1994, 6-4.3

'-' Indicates Equivalent Length. 'T' Indicates Threaded Fitting

1=45 Elbow, 2=90 Elbow, 3='T'/Cross, 4=Butterfly Valve, 5=Gate Valve, 6=Swing Check Valve

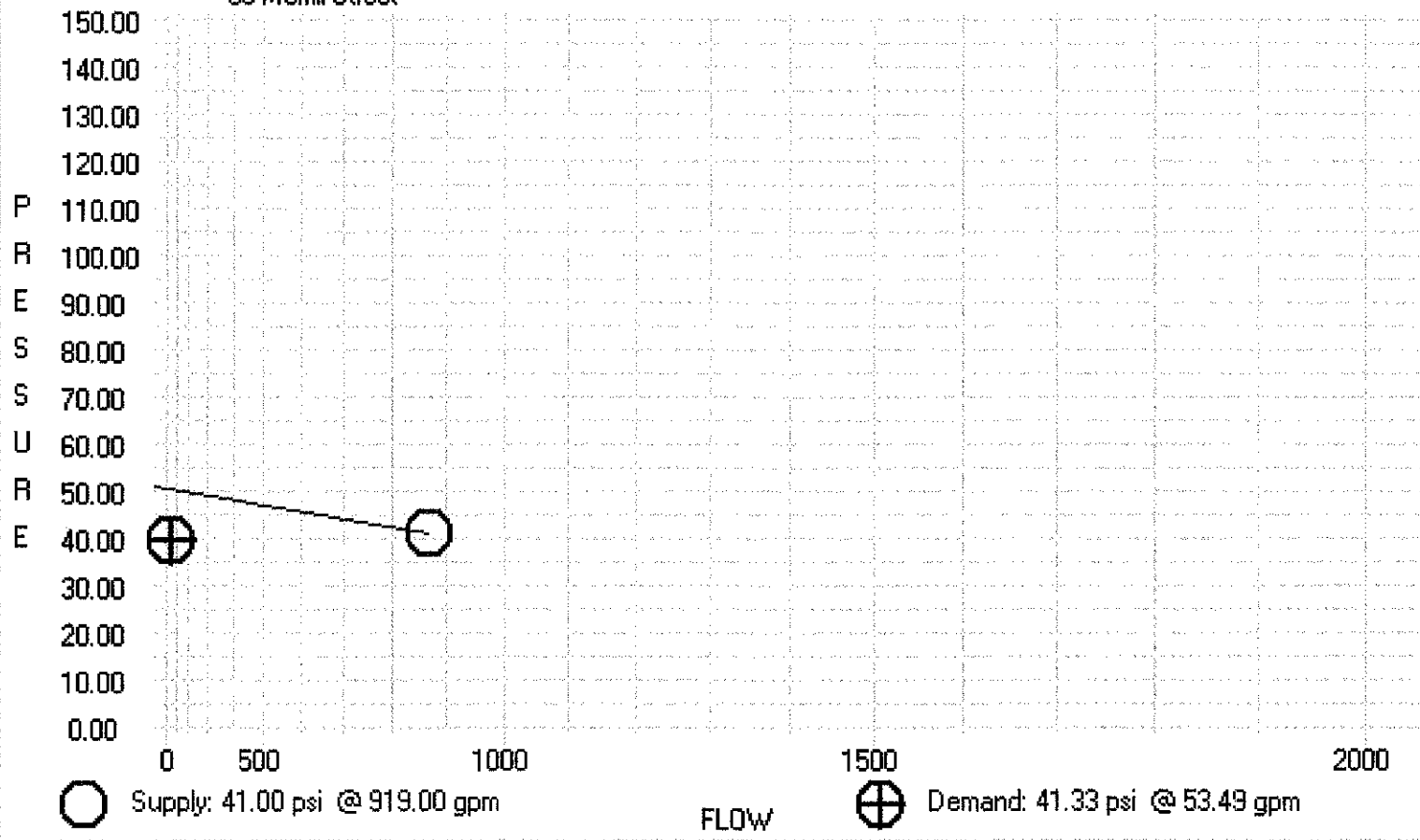
FROM	TO	FLOW (gpm)	PIPE (ft)	FITS	EQV. (ft)	H-W C	PIPE TYPE	DIA. (in)	FRIC. (psi)	ELEV. (psi)	FROM (psi)	TO (psi)	DIFF (psi)
1	2	53.49	35.00	235	51.34	140	111	4.300	0.001	0.000	41.33	41.28	0.05
2	3	53.49	10.00	224	26.80	120	2	3.260	0.003	2.600	41.28	30.56	8.12
3	4	53.49	4.00	22	13.40	120	2	3.260	0.003	0.000	30.56	30.50	0.06
4	5	0.00	6.50	0	0.00	120	2	3.260	0.000	0.000	30.50	30.50	0.00
5	6	0.00	10.00	0	0.00	120	2	3.260	0.000	0.000	30.50	30.50	0.00
6	7	0.00	6.50	0	0.00	120	2	3.260	0.000	0.000	30.50	30.50	0.00
5	50	0.00	13.50	3	7.94	120	2	1.682	0.000	0.000	30.50	30.50	0.00
6	51	0.00	13.50	3	7.94	120	2	1.682	0.000	0.000	30.50	30.50	0.00
50	52	0.00	11.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
51	53	0.00	11.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
52	8	0.00	7.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
8	54	0.00	5.00	3	4.20	120	1	1.049	0.000	0.000	30.50	30.50	0.00
8	55	0.00	4.50	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
55	57	0.00	5.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
53	56	0.00	11.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
56	58	0.00	5.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
7	59	0.00	17.50	3	7.94	120	2	1.682	0.000	0.000	30.50	30.50	0.00
59	60	0.00	8.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
60	61	0.00	8.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
61	62	0.00	8.00	0	0.00	120	2	1.682	0.000	0.000	30.50	30.50	0.00
4	9	53.49	26.50	3	10.45	120	2	2.157	0.024	0.000	30.50	29.62	0.89
9	10	53.49	3.00	23	12.00	120	1	2.067	0.030	0.000	29.62	29.17	0.45
10	11	53.49	22.00	223	32.04	150	9	2.003	0.023	8.667	29.17	19.28	1.23
11	12	53.49	22.50	2223	43.05	150	9	2.003	0.023	8.667	19.28	9.12	1.49
12	13	53.49	3.50	2	11.01	150	9	2.003	0.023	0.000	9.12	8.79	0.33
13	14	39.48	1.50	3	6.01	150	9	1.400	0.074	0.000	8.79	8.24	0.55
13	40	14.01	8.00	33	10.01	150	9	1.109	0.034	0.000	8.79	8.18	0.61
14	41	26.30	3.00	3	5.01	150	9	1.109	0.109	0.000	8.24	7.36	0.87
41	42	13.00	11.00	0	0.00	150	9	1.109	0.029	0.000	7.36	7.04	0.33
14	43	13.18	28.00	3	5.01	150	9	1.109	0.030	0.000	8.24	7.24	1.00

A MAX. VELOCITY OF 8.73 ft./sec. OCCURS BETWEEN REF. PT. 14 AND 41

Sprinkler-CALC Release 7.2 Win
By Walsh Engineering Inc.
North Kingstown R.I. U.S.A.

WATER SUPPLY/DEMAND GRAPH

30 Merrill Street



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STATIC PRESSURE (psi) 51
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B O O S T E R P U M P S

NUMBER OF BOOSTER PUMPS 0

S P R I N K L E R S

MAXIMUM SPACING OF SPRINKLERS (ft) 8
MAXIMUM SPACING OF SPRINKLER LINES (ft) 14
SPECIFIED DISCHARGE DENSITY (gpm/sq. ft.) .2

THIS SPRINKLER SYSTEM WILL DELIVER A DENSITY OF .2 gpm/sq. ft.
FOR A DESIGN AREA OF 900 SQ. FT. OF FLOOR AREA

THIS SYSTEM OPERATES AT A FLOW OF 0.00 gpm AT A PRESSURE OF 0.00 psi
AT THE BASE OF THE RISER (REF. PT. 0)

PIPES USED FOR THIS SYSTEM

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111 DUCTILE IRON (350)
002 SCHEDULE 10
001 SCHEDULE 40
009 BLAZEMASTER CPVC

SPRINKLER SYSTEM ANALYSIS TO SHOW THE MAXIMUM DENSITY AVAILABLE
WITH ZERO PRESSURE REMAINING

THE FOLLOWING SPRINKLERS ARE OPERATING IN:

TEST AREA 1 TEST AREA 2 TEST AREA 3 REMOTE AREA

Elevation of sprinklers = Elevation above water test.

REF. PT.	K	ELEV. ft	FLOW gpm	PRESSURE psi
50	8.00	6.00	33.94	18.00
51	8.00	6.00	35.42	19.60
52	8.00	6.00	30.38	14.41
53	8.00	6.00	32.97	16.99
54	8.00	6.00	26.69	11.13
55	8.00	6.00	28.59	12.77
56	8.00	6.00	31.79	15.78
57	8.00	6.00	28.43	12.63
58	8.00	6.00	31.64	15.64
59	8.00	6.00	34.13	18.20
60	8.00	6.00	32.35	16.35
61	8.00	6.00	31.49	15.49
62	8.00	6.00	31.23	15.24

THE SPRINKLER SYSTEM FLOW IS 409.04 gpm
THE OUTSIDE HOSE FLOW AT REFERENCE POINT NO. 1 IS 0.00 gpm
 THE INSIDE HOSE RACK SPKLR'S.
 YARD HYDT. FLOW IS 0.00 gpm
THE MINIMUM DENSITY PROVIDED BY THIS SYSTEM IS 0.238 gpm/sq. ft.

THE FOLLOWING PRESSURES & FLOWS OCCUR
----> AT REF. PT. 1 <---

STATIC PRESSURE 51.00 psi
RESIDUAL PRESSURE 41.00 psi AT 919.00 gpm
TOTAL SYSTEM FLOW 409.04 gpm
AVAILABLE PRESSURE 48.77 psi AT 409.04 gpm
OPERATING PRESSURE 48.77 psi AT 409.04 gpm
PRESSURE REMAINING 0.00 psi

THE ABOVE RESULTS INCLUDE 6.00 psi FRICTION LOSS AT REF. PT. # 2 FOR A

BACKFLOW PREVENTER METER
 DETECTOR CHECK VALVE OTHER DEVICE

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FITTING Equivalent Length per NFPA 13 1994, 6-4.3

'-' Indicates Equivalent Length. 'T' Indicates Threaded Fitting

1=45 Elbow, 2=90 Elbow, 3='T'/Cross, 4=Butterfly Valve, 5=Gate Valve, 6=Swing Check Valve

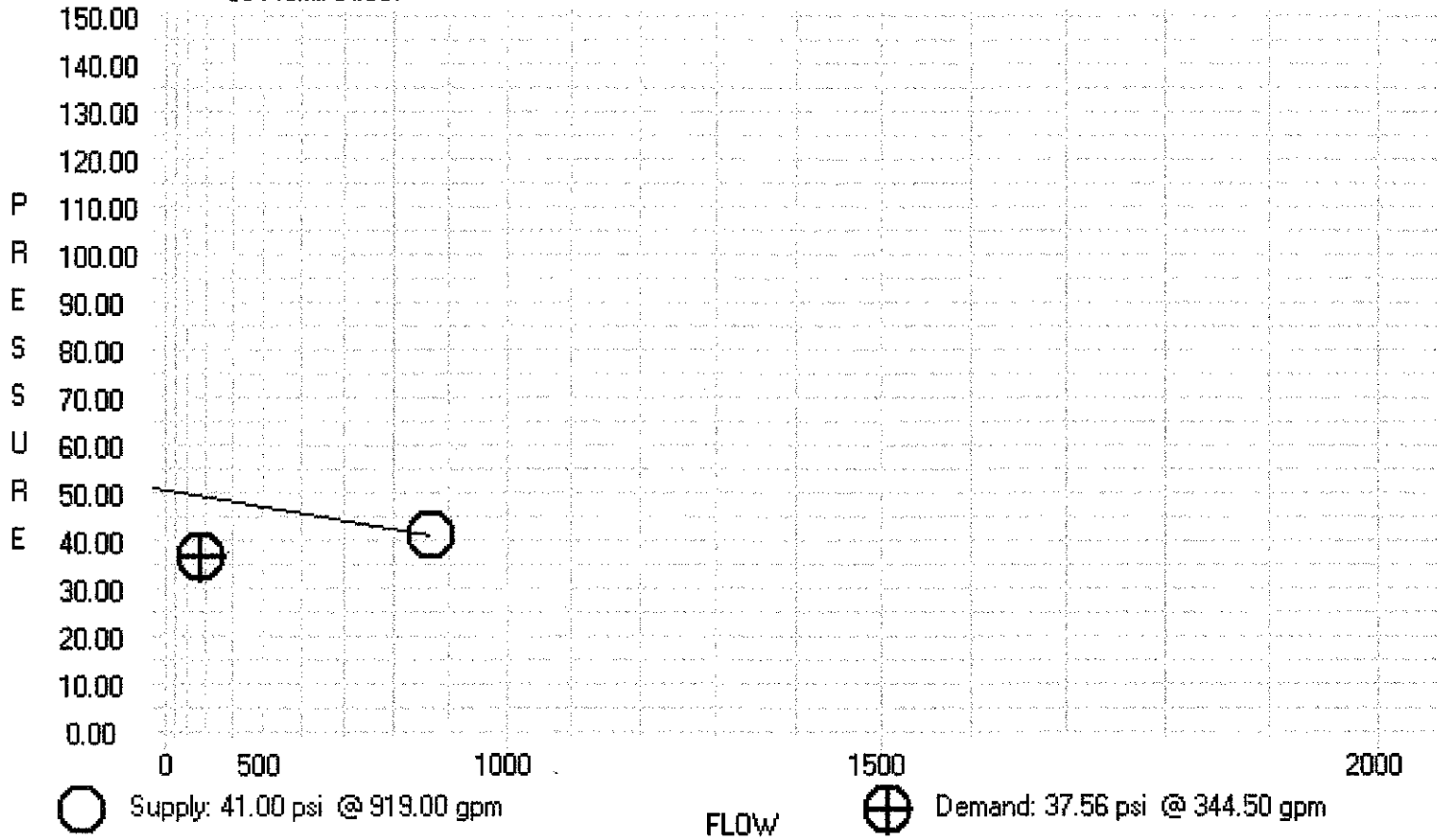
FROM	TO	FLOW (gpm)	PIPE (ft)	FITS	EQV. (ft)	H-W C	PIPE TYPE	DIA. (in)	FRIC. (psi)	ELEV. (psi)	FROM (psi)	TO (psi)	DIFF (psi)
1	2	344.50	35.00	235	51.34	140	111	4.300	0.020	0.000	37.56	35.85	1.70
2	3	344.50	10.00	224	26.80	120	2	3.260	0.101	2.600	35.85	23.54	9.72
3	4	344.50	4.00	22	13.40	120	2	3.260	0.101	0.000	23.54	21.75	1.79
4	5	344.50	6.50	0	0.00	120	2	3.260	0.101	0.000	21.75	21.09	0.66
5	6	219.92	10.00	0	0.00	120	2	3.260	0.044	0.000	21.09	20.65	0.44
6	7	108.83	6.50	0	0.00	120	2	3.260	0.012	0.000	20.65	20.57	0.08
5	50	124.58	13.50	3	7.94	120	2	1.682	0.385	0.000	21.09	12.82	8.26
6	51	111.09	13.50	3	7.94	120	2	1.682	0.312	0.000	20.65	13.96	6.68
50	52	95.93	11.00	0	0.00	120	2	1.682	0.238	0.000	12.82	10.24	2.58
51	53	81.19	11.00	0	0.00	120	2	1.682	0.174	0.000	13.96	12.07	1.89
52	8	70.33	7.00	0	0.00	120	2	1.682	0.134	0.000	10.24	9.30	0.94
8	54	22.40	5.00	3	4.20	120	1	1.049	0.160	0.000	9.30	7.84	1.47
8	55	47.93	4.50	0	0.00	120	2	1.682	0.066	0.000	9.30	9.02	0.29
55	57	23.91	5.00	0	0.00	120	2	1.682	0.018	0.000	9.02	8.93	0.09
53	56	53.39	11.00	0	0.00	120	2	1.682	0.080	0.000	12.07	11.19	0.89
56	58	26.63	5.00	0	0.00	120	2	1.682	0.022	0.000	11.19	11.08	0.10
7	59	108.83	17.50	3	7.94	120	2	1.682	0.300	0.000	20.57	12.94	7.63
59	60	80.05	8.00	0	0.00	120	2	1.682	0.170	0.000	12.94	11.59	1.35
60	61	52.81	8.00	0	0.00	120	2	1.682	0.079	0.000	11.59	10.97	0.62
61	62	26.31	8.00	0	0.00	120	2	1.682	0.022	0.000	10.97	10.81	0.16
4	9	0.00	26.50	3	10.45	120	2	2.157	0.000	0.000	21.75	21.75	0.00
9	10	0.00	3.00	23	12.00	120	1	2.067	0.000	0.000	21.75	21.75	0.00
10	11	0.00	22.00	223	32.04	150	9	2.003	0.000	8.667	21.75	13.08	-0.00
11	12	0.00	22.50	2223	43.05	150	9	2.003	0.000	8.667	13.08	4.41	0.00
12	13	0.00	3.50	2	11.01	150	9	2.003	0.000	0.000	4.41	4.41	0.00
13	14	0.00	1.50	3	6.01	150	9	1.400	0.000	0.000	4.41	4.41	0.00
13	40	0.00	8.00	33	10.01	150	9	1.109	0.000	0.000	4.41	4.41	0.00
14	41	0.00	3.00	3	5.01	150	9	1.109	0.000	0.000	4.41	4.41	0.00
41	42	0.00	11.00	0	0.00	150	9	1.109	0.000	0.000	4.41	4.41	0.00
14	43	0.00	28.00	3	5.01	150	9	1.109	0.000	0.000	4.41	4.41	0.00

A MAX. VELOCITY OF 17.98 ft./sec. OCCURS BETWEEN REF. PT. 5 AND 50

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WATER SUPPLY/DEMAND GRAPH

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