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

31 Fore Street

W A T E R S U P P L Y

STATIC PRESSURE	(psi)	81
RESIDUAL PRESSURE	(psi)	70
RESIDUAL FLOW	(gpm)	1125

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

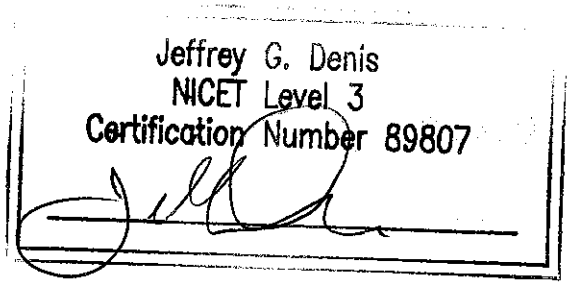
MINIMUM FLOW PER SPRINKLER (gpm) 13

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

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



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SYSTEM ANALYSIS TO SHOW MAXIMUM FLOW
WITH ZERO PRESSURE REMAINING

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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	4.90	39.00	18.53	14.29
51	4.90	39.00	17.99	13.47
52	4.90	39.00	17.04	12.09
53	4.90	39.00	16.62	11.50

THE SPRINKLER SYSTEM FLOW IS 70.17 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 FOLLOWING PRESSURES & FLOWS OCCUR
---> AT REF. PT. 1 <---

STATIC PRESSURE	81.00 psi		
RESIDUAL PRESSURE	70.00 psi	AT	1125.00 gpm
TOTAL SYSTEM FLOW	70.17 gpm		
AVAILABLE PRESSURE	80.94 psi	AT	70.17 gpm
OPERATING PRESSURE	80.94 psi	AT	70.17 gpm
PRESSURE REMAINING	0.00 psi		

THE ABOVE RESULTS INCLUDE 14.00 psi FRICTION LOSS AT REF. PT. # 2 FOR A

[ ] BACKFLOW PREVENTER [ ] METER
[ ] DETECTOR CHECK VALVE [ ] OTHER DEVICE

31 Fore Street

HYDRAULIC CALCULATIONS AT SPECIFIED FLOW

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	4.90	39.00	14.53	8.79
51	4.90	39.00	14.09	8.26
52	4.90	39.00	13.32	7.39
53	4.90	39.00	13.00	7.04

THE SPRINKLER SYSTEM FLOW IS 54.93 gpm

THE OUTSIDE HOSE FLOW AT REFERENCE POINT N0. 1 IS 0.00 gpm
[ ] THE INSIDE HOSE [ ] RACK SPKLR'S.
[ ] YARD HYDT. FLOW IS 0.00 gpm

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

STATIC PRESSURE	81.00 psi		
RESIDUAL PRESSURE	70.00 psi	AT	1125.00 gpm
TOTAL SYSTEM FLOW	54.93 gpm		
AVAILABLE PRESSURE	80.96 psi	AT	54.93 gpm
OPERATING PRESSURE	62.42 psi	AT	54.93 gpm
PRESSURE REMAINING	18.54 psi		

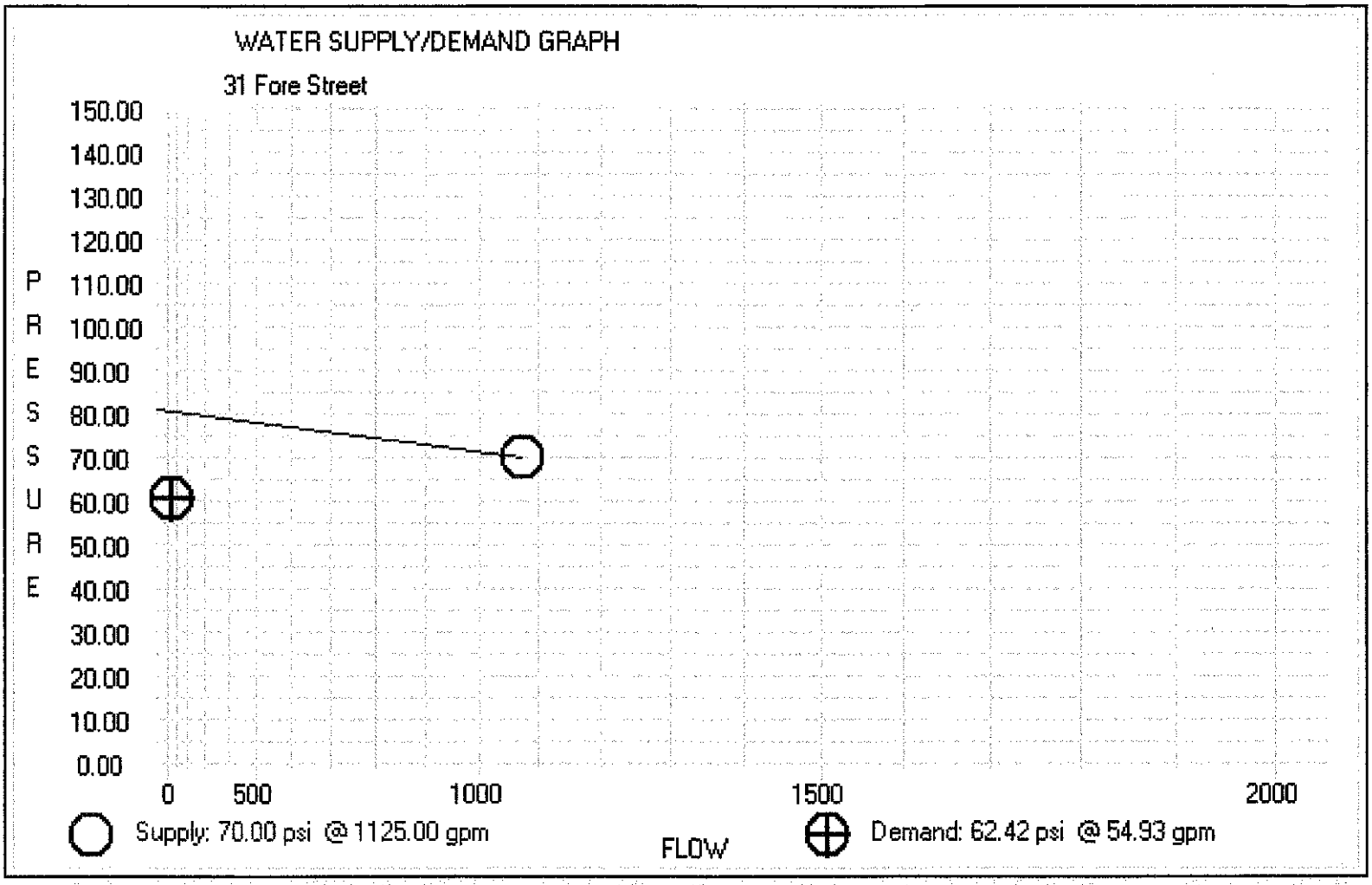
THE ABOVE RESULTS INCLUDE 14.00 psi FRICTION LOSS AT REF. PT. # 2 FOR A

[ ] BACKFLOW PREVENTER [ ] METER
[ ] DETECTOR CHECK VALVE [ ] OTHER DEVICE

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	54.93	85.00	2235	62.34	140	111	4.300	0.001	0.867	62.42	61.45	0.10
2	3	54.93	10.00	22	8.62	120	2	2.157	0.025	2.600	61.45	44.39	14.47
3	4	0.00	12.00	2236	32.60	120	2	2.157	0.000	0.000	44.39	44.39	0.00
4	5	0.00	35.00	2222	17.24	120	2	2.157	0.000	0.000	44.39	44.39	0.00
5	6	0.00	13.00	0	0.00	120	2	2.157	0.000	0.000	44.39	44.39	0.00
5	70	0.00	7.00	3	5.30	120	1	1.380	0.000	0.000	44.39	44.39	0.00
6	71	0.00	7.00	3	5.30	120	1	1.380	0.000	0.000	44.39	44.39	0.00
70	72	0.00	9.00	0	0.00	120	1	1.380	0.000	0.000	44.39	44.39	0.00
71	73	0.00	9.00	0	0.00	120	1	1.380	0.000	0.000	44.39	44.39	0.00
72	74	0.00	9.00	0	0.00	120	1	1.049	0.000	0.000	44.39	44.39	0.00
73	75	0.00	9.00	0	0.00	120	1	1.049	0.000	0.000	44.39	44.39	0.00
74	76	0.00	9.00	0	0.00	120	1	1.049	0.000	0.000	44.39	44.39	0.00
75	77	0.00	9.00	0	0.00	120	1	1.049	0.000	0.000	44.39	44.39	0.00
3	7	54.93	6.00	3	6.57	120	2	1.442	0.179	0.000	44.39	42.14	2.25
7	8	54.93	19.00	222	24.04	150	9	1.400	0.137	3.900	42.14	32.35	5.89
8	9	54.93	22.00	3	6.01	150	9	1.400	0.137	9.533	32.35	18.98	3.83
9	10	54.93	38.00	2223	30.04	150	9	1.400	0.137	0.000	18.98	9.68	9.31
10	50	28.61	2.00	3	5.01	150	9	1.109	0.127	0.000	9.68	8.79	0.89
50	51	14.09	15.00	0	0.00	150	9	1.109	0.034	0.000	8.79	8.26	0.52
10	52	26.32	14.00	2	7.01	150	9	1.109	0.109	0.000	9.68	7.39	2.29
52	53	13.00	12.00	0	0.00	150	9	1.109	0.029	0.000	7.39	7.04	0.35

A MAX. VELOCITY OF 11.44 ft./sec. OCCURS BETWEEN REF. PT. 9 AND 10



Sprinkler-CALC 7.2 Win

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

31 Fore Street

W A T E R S U P P L Y

STATIC PRESSURE	(psi)	81
RESIDUAL PRESSURE	(psi)	70
RESIDUAL FLOW	(gpm)	1125

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)	13
MAXIMUM SPACING OF SPRINKLER LINES	(ft)	9
SPECIFIED DISCHARGE DENSITY	(gpm/sq. ft.)	.15

THIS SPRINKLER SYSTEM WILL DELIVER A DENSITY OF .15 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

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

Jeffrey G. Denis
NICET Level 3
Certification Number 89807

Life Safety Fire Protection
Fire Sprinklers Save Lives

31 Fore Street

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

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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
70	5.60	8.00	27.60	24.28
71	5.60	8.00	27.19	23.57
72	5.60	8.00	25.76	21.16
73	5.60	8.00	25.39	20.55
74	5.60	8.00	22.50	16.14
75	5.60	8.00	22.17	15.67
76	5.60	8.00	21.56	14.82
77	5.60	8.00	21.23	14.37

THE SPRINKLER SYSTEM FLOW IS 193.40 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 0.181 gpm/sq. ft.

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

STATIC PRESSURE	81.00 psi		
RESIDUAL PRESSURE	70.00 psi	AT	1125.00 gpm
TOTAL SYSTEM FLOW	193.40 gpm		
AVAILABLE PRESSURE	80.58 psi	AT	193.40 gpm
OPERATING PRESSURE	80.58 psi	AT	193.40 gpm
PRESSURE REMAINING	0.00 psi		

THE ABOVE RESULTS INCLUDE 14.00 psi FRICTION LOSS AT REF. PT. # 2 FOR A

[ ] BACKFLOW PREVENTER [ ] METER
[ ] DETECTOR CHECK VALVE [ ] OTHER DEVICE

31 Fore Street

HYDRAULIC CALCULATIONS AT SPECIFIED DENSITY

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
70	5.60	8.00	22.96	16.81
71	5.60	8.00	22.62	16.31
72	5.60	8.00	21.41	14.61
73	5.60	8.00	21.09	14.18
74	5.60	8.00	18.64	11.07
75	5.60	8.00	18.34	10.72
76	5.60	8.00	17.80	10.10
77	5.60	8.00	17.55	9.82

THE SPRINKLER SYSTEM FLOW IS 160.40 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 0.150 gpm/sq. ft.

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

STATIC PRESSURE	81.00 psi		
RESIDUAL PRESSURE	70.00 psi	AT	1125.00 gpm
TOTAL SYSTEM FLOW	160.40 gpm		
AVAILABLE PRESSURE	80.70 psi	AT	160.40 gpm
OPERATING PRESSURE	61.73 psi	AT	160.40 gpm
PRESSURE REMAINING	18.97 psi		

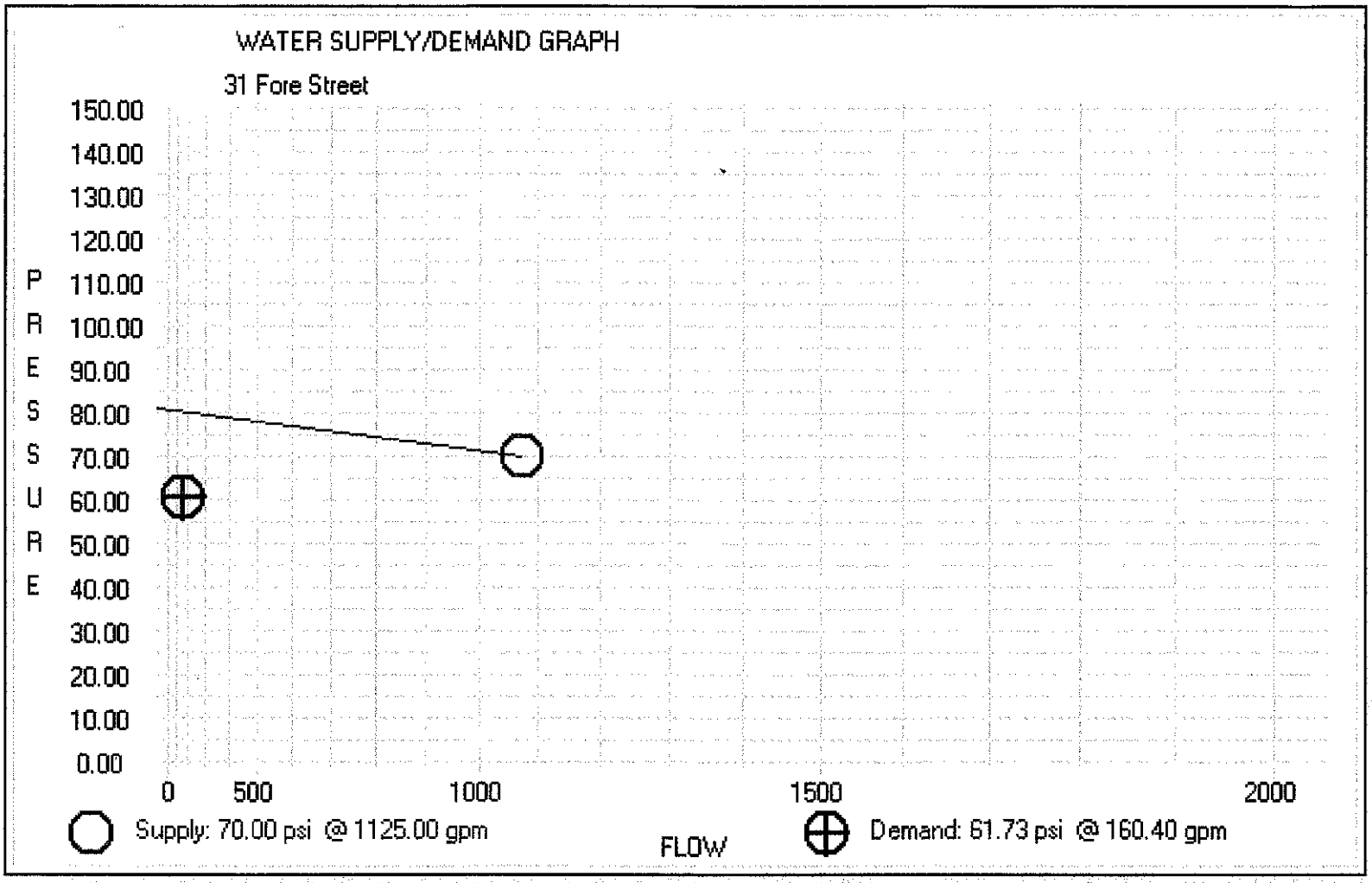
THE ABOVE RESULTS INCLUDE 14.00 psi FRICTION LOSS AT REF. PT. # 2 FOR A

[ ] BACKFLOW PREVENTER [ ] METER
[ ] DETECTOR CHECK VALVE [ ] OTHER DEVICE

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	160.40	85.00	2235	62.34	140	111	4.300	0.005	0.867	61.73	60.16	0.71
2	3	160.40	10.00	22	8.62	120	2	2.157	0.183	2.600	60.16	40.14	17.41
3	4	160.40	12.00	2236	32.60	120	2	2.157	0.183	0.000	40.14	31.96	8.18
4	5	160.40	35.00	2222	17.24	120	2	2.157	0.183	0.000	31.96	22.39	9.57
5	6	79.59	13.00	0	0.00	120	2	2.157	0.050	0.000	22.39	21.73	0.66
5	70	80.81	7.00	3	5.30	120	1	1.380	0.453	0.000	22.39	16.81	5.57
6	71	79.59	7.00	3	5.30	120	1	1.380	0.441	0.000	21.73	16.31	5.42
70	72	57.85	9.00	0	0.00	120	1	1.380	0.244	0.000	16.81	14.61	2.20
71	73	56.97	9.00	0	0.00	120	1	1.380	0.237	0.000	16.31	14.18	2.13
72	74	36.44	9.00	0	0.00	120	1	1.049	0.394	0.000	14.61	11.07	3.54
73	75	35.89	9.00	0	0.00	120	1	1.049	0.383	0.000	14.18	10.72	3.46
74	76	17.80	9.00	0	0.00	120	1	1.049	0.105	0.000	11.07	10.10	0.97
75	77	17.55	9.00	0	0.00	120	1	1.049	0.102	0.000	10.72	9.82	0.90
3	7	0.00	6.00	3	6.57	120	2	1.442	0.000	0.000	40.14	40.14	0.00
7	8	0.00	19.00	222	24.04	150	9	1.400	0.000	3.900	40.14	36.24	-0.00
8	9	0.00	22.00	3	6.01	150	9	1.400	0.000	9.533	36.24	26.71	-0.00
9	10	0.00	38.00	2223	30.04	150	9	1.400	0.000	0.000	26.71	26.71	0.00
10	50	0.00	2.00	3	5.01	150	9	1.109	0.000	0.000	26.71	26.71	0.00
50	51	0.00	15.00	0	0.00	150	9	1.109	0.000	0.000	26.71	26.71	0.00
10	52	0.00	14.00	2	7.01	150	9	1.109	0.000	0.000	26.71	26.71	0.00
52	53	0.00	12.00	0	0.00	150	9	1.109	0.000	0.000	26.71	26.71	0.00

A MAX. VELOCITY OF 17.33 ft./sec. OCCURS BETWEEN REF. PT. 5 AND 70



Sprinkler-CALC 7.2 Win