L.P. ENGINEERING INC.
PROFESSIONAL FIRE PROTECTION ENGINEERS
11 KATERINA AVENUE THORNHILL, ONTARIO L4J 8H5 (905) 709-5627

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

RIOCAN BLDG. 5 (PETSMART) - OSHAWA 23080 DESIGN AREA '1A'(REV) JUNE 21, 2024

W A T E R S U P P L Y

STATIC PRESSURE	(psi)	60
RESIDUAL PRESSURE	(psi)	52
RESIDUAL FLOW	(gpm)	1424

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)	11.5
MAXIMUM SPACING OF SPRINKLER LINES	(ft)	8.33
SPECIFIED DISCHARGE DENSITY	(gpm/sq. ft.)	.4

THIS SPRINKLER SYSTEM WILL DELIVER A DENSITY OF .4 gpm/sq. ft.
FOR A DESIGN AREA OF 1315.00 SQ. FT. OF FLOOR AREA

THIS SYSTEM OPERATES AT A FLOW OF 596.64 gpm AT A PRESSURE OF 27.68 psi
AT THE BASE OF THE RISER (REF. PT. 11)

PIPES USED FOR THIS SYSTEM
==========
107 PVC BLUE BRUTE (150)
002 SCHEDULE 10

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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
201	11.20	17.00	41.04	13.43
202	11.20	17.00	41.12	13.48
203	11.20	17.00	41.60	13.80
204	11.20	17.00	40.39	13.00
205	11.20	17.00	40.56	13.11
206	11.20	17.00	40.98	13.39
207	11.20	17.00	39.12	12.20
208	11.20	17.00	39.14	12.21
209	11.20	17.00	39.61	12.51
210	11.20	17.00	38.97	12.11
211	11.20	17.00	38.97	12.11
212	11.20	17.00	39.49	12.43
213	11.20	17.00	38.56	11.85
214	11.20	17.00	38.32	11.70
215	11.20	17.00	38.77	11.98

THE SPRINKLER SYSTEM FLOW IS 596.64 gpm

THE OUTSIDE HOSE FLOW AT REFERENCE POINT NO. 1 IS 0.00 gpm
[ ] THE INSIDE HOSE [ ] RACK SPKLR'S.
[ ] YARD HYDT. FLOW IS 500.00 gpm
THE MINIMUM DENSITY PROVIDED BY THIS SYSTEM IS 0.400 gpm/sq. ft.

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

STATIC PRESSURE	60.00 psi		
RESIDUAL PRESSURE	52.00 psi	AT	1424.00 gpm
TOTAL SYSTEM FLOW	1096.64 gpm		
AVAILABLE PRESSURE	56.37 psi	AT	1096.64 gpm
OPERATING PRESSURE	49.98 psi	AT	1096.64 gpm
PRESSURE REMAINING	6.39 psi		

THE ABOVE RESULTS INCLUDE 5.00 psi FRICTION LOSS AT REF. PT. # 11 FOR A

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

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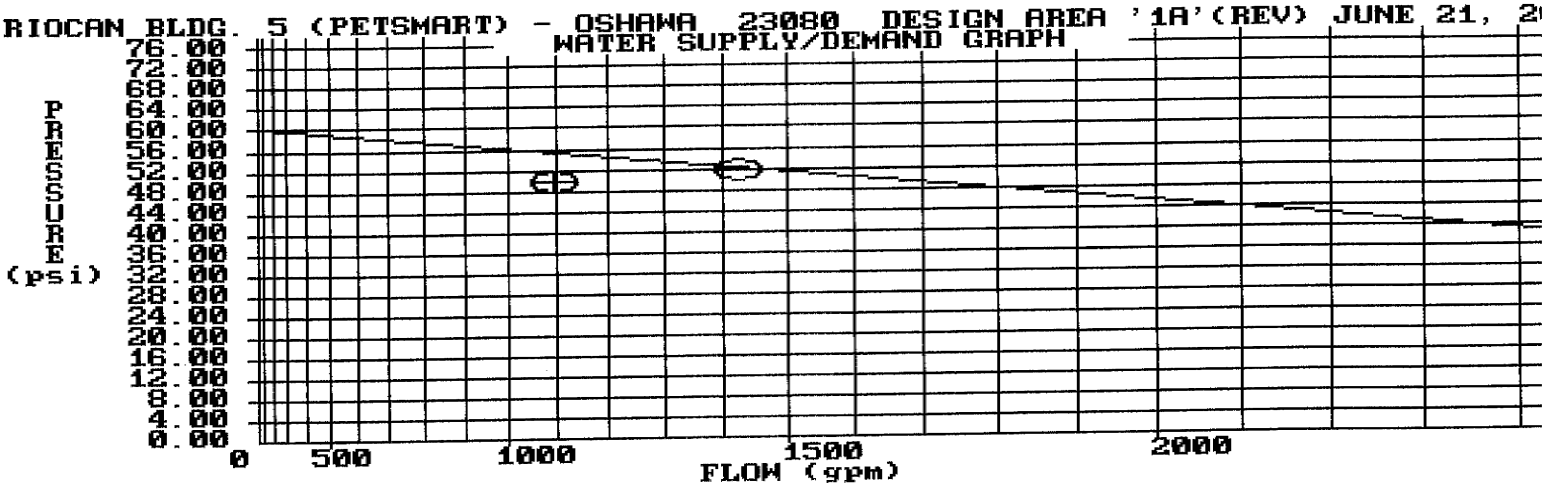
FITTING Equivalent Length per NFPA 13 1994, 6-4.3
'-' Indicates Equivalent Length. 'T' Indicates Threaded Fitting
1=45 Elbow, 2=90 Elbow, 3='T'/Cross, 4=Butterfly Valve, 5=Gate Valve, 6=Swing Check Valve

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	1096.64	66.91	3	52.91	150	107	7.980	0.007	0.000	49.98	49.11	0.87
2	3	1096.64	146.37	32511	105.82	150	107	7.980	0.007	0.000	49.11	47.27	1.84
3	4	1096.64	305.37	2	19.65	150	107	7.980	0.007	0.000	47.27	44.90	2.37
4	5	1096.64	83.16	2522	65.00	150	107	7.980	0.007	0.433	44.90	43.38	1.08
5	6	1096.64	4.83	464	65.26	120	2	6.357	0.033	0.867	43.38	40.18	2.34
6	7	1096.64	7.67	3212	62.90	120	2	6.357	0.033	-0.867	40.18	38.69	2.35
7	8	1096.64	92.95	22	39.31	150	107	7.980	0.007	0.433	38.69	37.29	0.96
8	9	1096.64	228.17	35	58.96	150	107	7.980	0.007	0.000	37.29	35.19	2.10
9	10	1096.64	126.75	3	45.44	150	107	6.090	0.027	0.000	35.19	30.51	4.68
10	11	696.64	143.66	52222	60.14	150	107	6.090	0.012	0.433	30.51	27.68	2.39
11	12	596.64	14.00	446	65.26	120	2	6.357	0.011	6.067	27.68	15.76	5.86
12	13	596.64	4.71	2	8.98	120	2	4.260	0.076	0.000	15.76	14.72	1.04
13	21	596.64	2.00	2	8.98	120	2	4.260	0.076	0.000	14.72	13.89	0.83
21	22	472.88	8.33	0	0.00	120	2	4.260	0.049	0.000	13.89	13.51	0.38
22	23	350.94	11.62	22	17.96	120	2	4.260	0.028	0.000	13.51	12.62	0.89
23	24	233.07	8.33	0	0.00	120	2	4.260	0.013	0.000	12.62	12.51	0.11
24	25	115.64	6.83	0	0.00	120	2	4.260	0.004	0.000	12.51	12.48	0.02
25	26	38.77	3.25	0	0.00	120	2	4.260	0.000	0.000	12.48	12.50	-0.02
201	202	-41.04	10.00	0	0.00	120	2	2.635	0.006	0.000	13.43	13.48	-0.05
202	21	-82.17	5.42	3	14.80	120	2	2.635	0.020	0.000	13.48	13.89	-0.41
203	21	-41.60	4.58	3	14.80	120	2	2.635	0.006	0.000	13.80	13.89	-0.09
204	205	-40.39	10.00	0	0.00	120	2	2.635	0.005	0.000	13.00	13.11	-0.11
205	22	-80.95	5.42	3	14.80	120	2	2.635	0.019	0.000	13.11	13.51	-0.39
206	22	-40.98	4.58	3	14.80	120	2	2.635	0.006	0.000	13.39	13.51	-0.12
207	208	-39.12	11.50	0	0.00	120	2	2.635	0.005	0.000	12.20	12.21	-0.02
208	23	-78.26	7.29	3	14.80	120	2	2.635	0.018	0.000	12.21	12.62	-0.40
209	23	-39.61	4.17	3	14.80	120	2	2.635	0.005	0.000	12.51	12.62	-0.11
210	211	-38.97	11.50	0	0.00	120	2	2.635	0.005	0.000	12.11	12.11	0.00
211	24	-77.94	7.29	3	14.80	120	2	2.635	0.018	0.000	12.11	12.51	-0.40
212	24	-39.49	4.21	3	14.80	120	2	2.635	0.005	0.000	12.43	12.51	-0.08
213	83	-38.56	1.50	2	3.22	120	2	1.682	0.044	0.000	11.85	12.06	-0.21
83	84	-38.56	11.50	0	0.00	120	2	2.635	0.005	0.000	12.06	12.11	-0.06
214	84	-38.32	1.50	3	7.94	120	2	1.682	0.043	0.000	11.70	12.11	-0.41
84	25	-76.87	7.29	3	14.80	120	2	2.635	0.018	0.000	12.11	12.48	-0.37
215	85	-38.77	1.75	3	7.94	120	2	1.682	0.044	0.000	11.98	12.41	-0.43
85	26	-38.77	4.21	3	14.80	120	2	2.635	0.005	0.000	12.41	12.50	-0.09

A MAX. VELOCITY OF 13.42 ft./sec. OCCURS BETWEEN REF. PT. 13 AND 21

Sprinkler-CALC Release 6.3
By Walsh Engineering Inc.
North Kingstown R.I. U.S.A.

RIOCAN BLDG. 5 (PETSMART) - OSHAWA 23080 DESIGN AREA '1A'(REV) JUNE 21, 2