

Results presentation from AACALC9 [16.10.14] for NFPA 13 / 15 Rules

[Q 1] Project Name/Ref = Third Demonstration Example
 [Q 2] Owner/Occupant = Gridded System
 [Q 3] Location = Balanced to specified water supply Q17-19
 [Q 4] Building No/Ref = -
 [Q 5] Hazard = Ordinary
 [Q 6] Contractor/Designer = Alan Ashfield
 [Q 7] Address = -
 [Q 8] Approving Agency = -
 [Q 9] Comments/Limitations = -
 [Q10] Remote Area Ref = -
 [Q11] Design Area m2 [0>1000] = 117.00
 [Q12] Density mm/min [0>100] = 15.00
 [Q13] Max Head Area m2 [0>40] = 9.00
 [Q14] Head "K" factor [2>6000] = 115.0
 [Q15] Spare for future = -
 [Q16] Spare for future = -
 [Q17] Static Pressure bars [0>15] = 6.00
 [Q18] Residual Pressure bars [0>15] = 5.00
 [Q19] At Flow Rate L/min [0>15000] = 3000
 [Q20] Pressure Test Comments = -
 [Q21] Velocity Pressure [Y/N] = No
 [Q22] Start height in m [-20>20] = 0.000

Number of pipes = 79
 Pipe sizes = 40 to 100 mm
 Flow rates = 0.7 to 2432.5 L/min
 Velocities = 0.01 to 4.94 m/s
 Lengths = 1.000 to 29.000 m
 End pressures = 2.546 to 5.322 bar
 Pressure drops = 0.000 to 0.991 bar
 Pressure drops per m run = 0.0 to 69.7 mbar/m

Number of operating heads = 13
 "K" factors = 115.0 to 115.0
 Heights above source = 7.000 to 7.000 m
 Flow rates = 183.5 to 214.7 L/min
 Minimum flow margin = 48.50 to 79.73 L/min
 Pressures = 2.546 to 3.487 bar
 Minimum pressure margin = 1.168 to 2.109 bar

Most remotest head = 12
 Volume of pipework = 1.054 cu.m
 Data file name = aacalc9demo3.aa9

SOURCE DUTY AT PIPE 1 = 2432.5 L/min at 5.322 bar

Operating sprinkler heads / nozzles / hoses / hydrants

Head no	"K" factor	Flows in L/min		Area m2	Density mm/min		Height m	Pipe to head			MRH	Pressures bars		
		Minimum	Actual		Minimum	Actual		No	mm	Vel		Minimum	Normal	Vel
1	115.0	135.0	214.7	9.000	15.00	23.86	7.000	41	40	2.5		1.378	3.487	3.487
2	115.0	135.0	186.3	9.000	15.00	20.70	7.000	46	40	4.7		1.378	2.624	2.624
3	115.0	135.0	184.3	9.000	15.00	20.47	7.000	47	40	2.3		1.378	2.567	2.567
4	115.0	135.0	184.3	9.000	15.00	20.47	7.000	48	40	0.0		1.378	2.567	2.567
5	115.0	135.0	186.3	9.000	15.00	20.70	7.000	49	40	2.3		1.378	2.623	2.623
6	115.0	135.0	185.7	9.000	15.00	20.64	7.000	54	40	4.7		1.378	2.609	2.609
7	115.0	135.0	183.7	9.000	15.00	20.41	7.000	55	40	2.4		1.378	2.551	2.551
8	115.0	135.0	183.7	9.000	15.00	20.41	7.000	56	40	0.0		1.378	2.551	2.551
9	115.0	135.0	185.6	9.000	15.00	20.63	7.000	57	40	2.3		1.378	2.606	2.606
10	115.0	135.0	185.6	9.000	15.00	20.62	7.000	62	40	4.7		1.378	2.605	2.605
11	115.0	135.0	183.5	9.000	15.00	20.39	7.000	63	40	2.4		1.378	2.546	2.546
12	115.0	135.0	183.5	9.000	15.00	20.39	7.000	64	40	0.0	Yes	1.378	2.546	2.546
13	115.0	135.0	185.5	9.000	15.00	20.61	7.000	65	40	2.3		1.378	2.601	2.601

All pipes to above sprinkler heads / nozzles

Pipe no	Size mm	Type	H-W "C"	Bore mm	Flow L/min	Length m	E4LTGGABCAS L5TEVLVVVNT	Total Eq Length m	Vel m/s	Static m	Height m	Pressures bars			
												Start :	Frict:	Vel :	End :
1	100	S40	120	102.26	2432.5	2.000	1	2.610	4.9	2.000	2.000	5.322	-0.067	5.058	
2	100	S40	120	102.26	2432.5	4.000	1	7.660	4.9	4.000	6.000	5.058	-0.198	4.469	
3	100	S40	120	102.26	2432.5	1.000	1	4.050	4.9	0.000	6.000	4.469	-0.105	4.364	
4	40	S40	120	40.90	151.5	1.000	1	3.440	1.9	1.000	7.000	4.364	-0.045	4.221	
5	40	S40	120	40.90	151.5	29.000	2	31.440	1.9	0.000	7.000	4.221	-0.414	3.806	
6	40	S40	120	40.90	151.5	1.000	1	3.440	1.9	-1.000	6.000	3.806	-0.045	3.859	
7	100	S40	120	102.26	2281.0	3.000		3.000	4.6	0.000	6.000	4.364	-0.069	4.295	
8	40	S40	120	40.90	140.3	1.000	1	3.440	1.8	1.000	7.000	4.295	-0.039	4.158	
9	40	S40	120	40.90	140.3	29.000	2	31.440	1.8	0.000	7.000	4.158	-0.359	3.798	
10	40	S40	120	40.90	140.3	1.000	1	3.440	1.8	-1.000	6.000	3.798	-0.039	3.857	
11	100	S40	120	102.26	2140.8	3.000		3.000	4.3	0.000	6.000	4.295	-0.061	4.234	
12	40	S40	120	40.90	130.4	1.000	1	3.440	1.7	1.000	7.000	4.234	-0.034	4.102	
13	40	S40	120	40.90	130.4	29.000	2	31.440	1.7	0.000	7.000	4.102	-0.314	3.788	
14	40	S40	120	40.90	130.4	1.000	1	3.440	1.7	-1.000	6.000	3.788	-0.034	3.851	
15	100	S40	120	102.26	2010.4	3.000		3.000	4.1	0.000	6.000	4.234	-0.054	4.179	
16	40	S40	120	40.90	122.2	1.000	1	3.440	1.6	1.000	7.000	4.179	-0.030	4.051	
17	40	S40	120	40.90	122.2	29.000	2	31.440	1.6	0.000	7.000	4.051	-0.279	3.772	
18	40	S40	120	40.90	122.2	1.000	1	3.440	1.6	-1.000	6.000	3.772	-0.030	3.840	
19	100	S40	120	102.26	1888.2	3.000		3.000	3.8	0.000	6.000	4.179	-0.049	4.131	
20	40	S40	120	40.90	116.2	1.000	1	3.440	1.5	1.000	7.000	4.131	-0.028	4.005	
21	40	S40	120	40.90	116.2	29.000	2	31.440	1.5	0.000	7.000	4.005	-0.254	3.751	
22	40	S40	120	40.90	116.2	1.000	1	3.440	1.5	-1.000	6.000	3.751	-0.028	3.822	
23	100	S40	120	102.26	1772.0	3.000		3.000	3.6	0.000	6.000	4.131	-0.043	4.088	
24	40	S40	120	40.90	112.7	1.000	1	3.440	1.4	1.000	7.000	4.088	-0.026	3.964	
25	40	S40	120	40.90	112.7	29.000	2	31.440	1.4	0.000	7.000	3.964	-0.240	3.724	
26	40	S40	120	40.90	112.7	1.000	1	3.440	1.4	-1.000	6.000	3.724	-0.026	3.795	
27	100	S40	120	102.26	1659.3	3.000		3.000	3.4	0.000	6.000	4.088	-0.038	4.050	
28	40	S40	120	40.90	112.1	1.000	1	3.440	1.4	1.000	7.000	4.050	-0.026	3.926	
29	40	S40	120	40.90	112.1	29.000	2	31.440	1.4	0.000	7.000	3.926	-0.237	3.688	
30	40	S40	120	40.90	112.1	1.000	1	3.440	1.4	-1.000	6.000	3.688	-0.026	3.760	
31	100	S40	120	102.26	1547.2	3.000		3.000	3.1	0.000	6.000	4.050	-0.034	4.016	
32	40	S40	120	40.90	114.4	1.000	1	3.440	1.5	1.000	7.000	4.016	-0.027	3.891	
33	40	S40	120	40.90	114.4	29.000	2	31.440	1.5	0.000	7.000	3.891	-0.247	3.645	
34	40	S40	120	40.90	114.4	1.000	1	3.440	1.5	-1.000	6.000	3.645	-0.027	3.716	
35	100	S40	120	102.26	1432.8	3.000		3.000	2.9	0.000	6.000	4.016	-0.029	3.987	
36	40	S40	120	40.90	119.9	1.000	1	3.440	1.5	1.000	7.000	3.987	-0.029	3.860	
37	40	S40	120	40.90	119.9	29.000	2	31.440	1.5	0.000	7.000	3.860	-0.269	3.591	
38	40	S40	120	40.90	119.9	1.000	1	3.440	1.5	-1.000	6.000	3.591	-0.029	3.659	
39	100	S40	120	102.26	1312.9	3.000		3.000	2.7	0.000	6.000	3.987	-0.025	3.962	
40	40	S40	120	40.90	196.8	1.000	1	3.440	2.5	1.000	7.000	3.962	-0.074	3.791	
41	40	S40	120	40.90	196.8	13.000	1	14.220	2.5	0.000	7.000	3.791	-0.304	3.487	
42	40	S40	120	40.90	-18.0	16.000	1	17.220	0.2	0.000	7.000	3.487	0.004	3.491	
43	40	S40	120	40.90	-18.0	1.000	1	3.440	0.2	-1.000	6.000	3.491	0.001	3.590	
44	100	S40	120	102.26	1116.1	3.000		3.000	2.3	0.000	6.000	3.962	-0.018	3.944	
45	40	S40	120	40.90	371.2	1.000	1	3.440	4.7	1.000	7.000	3.944	-0.238	3.608	
46	40	S40	120	40.90	371.2	13.000	1	14.220	4.7	0.000	7.000	3.608	-0.984	2.624	
47	40	S40	120	40.90	184.9	3.000		3.000	2.3	0.000	7.000	2.624	-0.057	2.567	
48	40	S40	120	40.90	0.7	3.000		3.000	0.0	0.000	7.000	2.567	-0.000	2.567	
49	40	S40	120	40.90	-183.6	3.000		3.000	2.3	0.000	7.000	2.567	0.056	2.623	
50	40	S40	120	40.90	-369.8	7.000	1	8.220	4.7	0.000	7.000	2.623	0.565	3.188	
51	40	S40	120	40.90	-369.8	1.000	1	3.440	4.7	-1.000	6.000	3.188	0.236	3.522	
52	100	S40	120	102.26	744.9	3.000		3.000	1.5	0.000	6.000	3.944	-0.009	3.935	
53	40	S40	120	40.90	372.3	1.000	1	3.440	4.7	1.000	7.000	3.935	-0.239	3.598	
54	40	S40	120	40.90	372.3	13.000	1	14.220	4.7	0.000	7.000	3.598	-0.989	2.609	
55	40	S40	120	40.90	186.6	3.000		3.000	2.4	0.000	7.000	2.609	-0.058	2.551	
56	40	S40	120	40.90	2.9	3.000		3.000	0.0	0.000	7.000	2.551	-0.000	2.551	
57	40	S40	120	40.90	-180.8	3.000		3.000	2.3	0.000	7.000	2.551	0.055	2.606	
58	40	S40	120	40.90	-366.4	7.000	1	8.220	4.6	0.000	7.000	2.606	0.555	3.161	
59	40	S40	120	40.90	-366.4	1.000	1	3.440	4.6	-1.000	6.000	3.161	0.232	3.491	
60	100	S40	120	102.26	372.6	3.000		3.000	0.8	0.000	6.000	3.935	-0.002	3.933	
61	40	S40	120	40.90	372.6	1.000	1	3.440	4.7	1.000	7.000	3.933	-0.240	3.595	
62	40	S40	120	40.90	372.6	13.000	1	14.220	4.7	0.000	7.000	3.595	-0.991	2.605	
63	40	S40	120	40.90	187.0	3.000		3.000	2.4	0.000	7.000	2.605	-0.058	2.546	
64	40	S40	120	40.90	3.5	3.000		3.000	0.0	0.000	7.000	2.546	-0.000	2.546	
65	40	S40	120	40.90	-180.0	3.000		3.000	2.3	0.000	7.000	2.546	0.054	2.601	
66	40	S40	120	40.90	-365.4	7.000	1	8.220	4.6	0.000	7.000	2.601	0.552	3.153	
67	40	S40	120	40.90	-365.4	1.000	1	3.440	4.6	-1.000	6.000	3.153	0.231	3.482	
68	80	S40	120	77.90	-365.4	3.000		3.000	1.3	0.000	6.000	3.482	0.009	3.491	
69	80	S40	120	77.90	-731.9	3.000		3.000	2.6	0.000	6.000	3.491	0.032	3.522	
70	80	S40	120	77.90	-1101.7	3.000		3.000	3.9	0.000	6.000	3.522	0.067	3.590	
71	80	S40	120	77.90	-1119.7	3.000		3.000	3.9	0.000	6.000	3.590	0.069	3.659	
72	80	S40	120	77.90	-999.8	3.000		3.000	3.5	0.000	6.000	3.659	0.056	3.716	
73	80	S40	120	77.90	-885.3	3.000		3.000	3.1	0.000	6.000	3.716	0.045	3.760	
74	80	S40	120	77.90	-773.3	3.000		3.000	2.7	0.000	6.000	3.760	0.035	3.795	
75	80	S40	120	77.90	-660.6	3.000		3.000	2.3	0.000	6.000	3.795	0.026	3.822	

All pipes to above sprinkler heads / nozzles

Pipe no	Size mm	Type	H-W "C"	Bore mm	Flow L/min	Length m	E4LTGGABCAS L5TEVLVVVNT	Total Eq Length m	Vel m/s	Static m	Height m	Pressures bars			
												Start	Frict	Vel	End
76	80	S40	120	77.90	-544.4	3.000		3.000	1.9	0.000	6.000	3.822	0.018		3.840
77	80	S40	120	77.90	-422.1	3.000		3.000	1.5	0.000	6.000	3.840	0.011		3.851
78	80	S40	120	77.90	-291.8	3.000		3.000	1.0	0.000	6.000	3.851	0.006		3.857
79	80	S40	120	77.90	-151.5	3.000		3.000	0.5	0.000	6.000	3.857	0.002		3.859

AACALC9 is in metric units only so not acceptable in America or Burma
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