

Full Hydraulic Calculations Computer Printout Page No 1

Submitted by user number 2076
Smart F M Electromechanical Contracting
Sole Proprietorship LLC
Mussafah M41 Icad Residential
Abu Dhabi 12892
United Arab Emirates

Tel: Fax:

Project: ESKOM ROSTEC
Address: Flammable Store
Number: MM022
Area ref: Flammable Store
Hazard: High Hazard
Authority: NFPA 13 : 2016 - Installation of Sprinkler Systems
Source: 1305.8 l/min @ 2.273 bar
Printout: 16-June-22 at 12:17

Project Data and Design Parameters

Project name : ESKOM ROSTEC
Area reference : Flammable Store
Address / location : Flammable Store
Project number : MM022
Installation number(s) : 1
Drawing number(s) : MM022
Issue no / date : ---
Designers reference : MM
Project Data File : C:\USERS\MAMPHO~1\DOCUME~1\MYFHC~1\PROJECTS\ESKOMR~1
Hazard classification : High Hazard
Design authority : NFPA 13 : 2016 - Installation of Sprinkler Systems
Insurance company : ---
Specified density of discharge : 24.42 mm/min (l/min/m2)
Assumed maximum area of operation : 47.97 m2
Number of operating sprinkler heads : 9
Maximum area covered per head : 5.33 m2
Highest head / nozzle above source : 2.00 m
Number of pipes in system : 13 from 25 to 80 mm
Pressure loss equation used : Hazen-Williams
Fluid : WATER
Pipe Data Table : STD_PIPE.PDT
Maximum fluid velocity : 5.40 m/s in pipe 120 131
Volume of pipework and fittings : 0.05 m3
Elbows are welded for : 0 mm and above
Comment : ---
Checked by & Date :

Source duty = 1305.8 l/min @ 2.273 bar at node no 100

Full Hydraulic Calculations Computer Printout Page No 2

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Operating Sprinkler Heads, Nozzles and Hydrants

Head no	Node no	Size mm	'K' factor	F l o w l/min	A r e a m2	Density Req.d	mm/min Actual	Pressure Min	bar Actual	Heights m	Pipe no
1	150	15.0	115.00	156.6	5.330	24.42	29.38	0.50	1.855	2.000	5
2	160	15.0	115.00	146.4	5.330	24.42	27.47	0.50	1.622	2.000	6
3	170	15.0	115.00	135.6	5.330	24.42	25.45	0.50	1.391	2.000	7
4	141	15.0	115.00	150.4	5.330	24.42	28.22	0.50	1.710	2.000	8
5	151	15.0	115.00	140.6	5.330	24.42	26.37	0.50	1.494	2.000	9
6	161	15.0	115.00	130.2	5.330	24.42	24.42	0.50	1.281	2.000	10
7	131	15.0	115.00	159.2	5.330	24.42	29.87	0.50	1.916	2.000	11
8	142	15.0	115.00	148.9	5.330	24.42	27.93	0.50	1.676	2.000	12
9	152	15.0	115.00	137.9	5.330	24.42	25.88	0.50	1.439	2.000	13

0 heads are under the required density / minimum pressures

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Hydraulically Significant Pipes in System											
NUMBERS		P I P E		F L O W		DIMENSIONS		ANGLE	VALUES	HEIGHT M	PRESSURES BARS
Pipe no	Start	Size	Type	L/min	Length	VJ	Dir.	Eq.	len	Start	Start Frict
no	End	Bore	'C'	Vel m/s	EL	T	VT	Slope	mbar/m	End	End Static
1	100	80mm	MW	1305.8	2.000			Up	2.00	0.000	2.273
	110	80.68	120	4.3	0	0		90.0	25.9	2.000	-0.196
2	110	80mm	MW	446.0	1.280			180	6.70	2.000	2.026
	120	80.68	120	1.5	0	1		0.0	3.6	2.000	-0.024
3	110	80mm	MW	859.8	1.220			0	6.64	2.000	2.026
	130	80.68	120	2.8	0	1		0.0	12.0	2.000	-0.079
4	130	80mm	MW	438.7	2.500			0	2.50	2.000	1.946
	140	80.68	120	1.4	0	0		0.0	3.4	2.000	-0.009
5	140	40mm	MW	438.7	0.300			270	0.98	2.000	1.938
	150	41.86	120	5.3	1	0		0.0	84.1	2.000	-0.082
6	150	32mm	MW	282.1	3.000			270	3.00	2.000	1.855
	160	35.97	120	4.6	0	0		0.0	77.8	2.000	-0.233
7	160	25mm	MW	135.6	3.000			270	3.00	2.000	1.622
	170	27.31	120	3.9	0	0		0.0	76.8	2.000	-0.230
8	130	40mm	MW	421.1	0.300			270	3.02	2.000	1.946
	141	41.86	120	5.1	0	1		0.0	78.0	2.000	-0.235
9	141	32mm	MW	270.7	3.000			270	3.00	2.000	1.711
	151	35.97	120	4.4	0	0		0.0	72.1	2.000	-0.216
10	151	25mm	MW	130.2	3.000			270	3.00	2.000	1.494
	161	27.31	120	3.7	0	0		0.0	71.1	2.000	-0.213
11	120	40mm	MW	446.0	0.300			270	0.98	2.000	2.002
	131	41.86	120	5.4	1	0		0.0	86.7	2.000	-0.085
12	131	32mm	MW	286.8	3.000			270	3.00	2.000	1.917
	142	35.97	120	4.7	0	0		0.0	80.2	2.000	-0.241
13	142	25mm	MW	137.9	3.000			270	3.00	2.000	1.676
	152	27.31	120	3.9	0	0		0.0	79.2	2.000	-0.238
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