

Sub.: Installation of fire safety equipment

As per terms of sanction the fire safety equipment has to be installed for projects with flats. Basic norms for buildings upto 30 mts height are the same. Details of installation of equipment are given herein. However, details of installation of sprinklers has not been specified here.

Fire safety equipment is of five types:

Down comer

Sprinkler system in basements

Fire alarm

Fire extinguishers

Fire static tank and sump

Down comer: A down comer consists of 4" B class MS pipe running from the parking floor to the overhead fire static tank. At the fire static tank two butterfly valves and one non-return valve must be provided along with a booster pump of 12.5 HP capacity. Immediately after the booster pump provide a 1/2" valve on a branch line for connecting the pressure gauge. Also provide a air release valve. The booster pump can be connected to several down comers.

The down comer should have a provision for a 30 mtr hose reel and a 15 mtr 63 mm dia CP hose on each floor including parking floors. The hose reel should be connected on a branch using a 1" Zoloto valve. Similarly, the 63 mm CP hose must be connected on a branch of about 1 ft, using a 3" B class MS pipe connected to a 3" SS hydrant valve. The CP hose must be enclosed in a hose box along with a 63 mm SS branch pipe connected to one end. On the stilt floor provide a 4 way 100 mm fire brigade inlet.

An automatic control panel for starting the booster pump must be installed in the electrical panel room, connected to the power mains through a generator back-up. Connect the control panel to the booster pump using 3 core 2.5 mm copper armoured cable. A pressure switch connected to the down comer must provide a feed back to the control panel. Use a similar size cable. The panel should be configured such that whenever the pressures drops to less than 7.5 kgs/cm² in the down comer the booster pump must switch on. As such whenever a valve is opened on the down comer the booster pump must switch on. Cabling should be done through a 2" PVC pipe neatly fastened with base-saddle. The pump must be on 24x7.

Sprinkler system in basements: A sprinkler system to be provided in the basement which is connected to the down comer. It consists of MS piping and sprinklers. One sprinkler has to be provided for each car parking and along the passages. The sprinkler system is attached to the down comer using B class MS pipes from 3/4" to 4" in size. Design for the sprinkler system must be made by consultant.

Fire alarm: It consists of a fire alarm control panel (use six zone panel for stilt + 5 floor buildings), hooters and manual call points. The system can be connected using good quality two

pair telephone cables. The fire alarm panel should be placed in the electrical panel room. Manual call points with hooters should be provided on all floors including parking floors. Manual call points should be installed at a height of 6 ft and hooters above 7 ft. In general a set of hooters and call points should be provided for every down comer, a few feet away from the down comer. Ensure that the cabling is neatly done using a 1" PVC pipe appropriately fastened using base – saddle. The panel should have a battery back-up.

Fire extinguishers: One dry type (DCP) fire extinguisher should be provided for every electrical panel room, generator and transformer. Affix the DCP fire extinguisher at a height of 4 ft outside the panel room and near the generator /transformer. One wet type (CO2) fire extinguisher should be provided for all staircases on each floor. The extinguisher can be fixed at a height of 4 ft on every mid-landing of the staircase including parking floors.

Along with fire extinguishers provide 3 nos fire buckets filled with sand on the stilt floor attached to a suitable stand.

Fire static tank and sump: One 25,000 lts overhead fire static tank should be provided to each block and one 25,000 lts underground sump should be provided for each project. The borewater connection to the OHT must be connected through the fire static tank.

The bill of quantities along with indicative price and brand is enclosed herein. Items can be purchased and labour contract can be given for installation. Separate labour contract can be given for fire alarm to our electrical contractor.

Guideline rates for labour charges.

1. Installation of booster pump and down comer on terrace floor including fabrication, erection, painting and commissioning – Rs. 30,000/-
2. Installation of down comer – parking floors + 5 floors including fabrication, erection, painting and commissioning – Rs. 30,000/-
3. Installation of down comer – upper floors including fabrication, erection, painting and commissioning – Rs. 8,000/- per floor.
4. Installation of sprinkler system – basemet floors including fabrication, erection, painting and commissioning – Rs. 1,000/- per sprinkler.
5. Payment terms : advance 20% with WO. Balance 65% in 4 to 6 weekly installments payable on progress of work. 15% on commissioning.

Mr. Mathur shall provide consultancy and drawings. He shall also help obtain NOC from fire department.

Specifications:

- A. Painting: MS pipes, fire buckets, etc., should be painted with 2 coats primer and 2 coats red enamel.
- B. Butterfly valve: Wafer type cast iron with all necessary mating flanges, nuts & bolts and 3 mm thick rubber gasket. Sandwich type, liver operated and by-directional .
- C. Air release valve: Gun metal single ball type with threaded male inlet.
- D. CP Hose: 63 mm dia with medium duty end couplings (gun metal or SS) bound with 16 SWG GI wire.

- E. Branch pipes: 63 mm dia short pipe with nozzle of 16 mm dia bore (gun metal or SS).
- F. Hose reel: swinging wall mounted type with 16 mm internal dia. Isolation valve, screw type 25 mm dia.
- G. Fire brigade inlet: Gun metal or SS instantaneous inlet male coupling. Header of mild steel.
- H. Booster pump: 900 LPM at 35 meters head, mono block 12.5 HP 2900 RPM, 3 phase.
- I. Non-return valve: Wafer type cast iron single plate sandwich type with flanges, nut bolts, 3 mm rubber gasket.
- J. Pressure gauge: Bourdens type, 0 to 10.5 kg/cm range bottom entry direct mounting, weather proof with over range protection with snudber /siphon tune and cork valve.
- K. Pressure switch: Industrial pressure switch model, adjustable internals, 10-215 PSI range, single hold double through, die-cast aluminum alloy enclosure weather proof.
- L. Battery: UPS or motorcycle battery 12 V capacity.

BOQ for fire safety equipment
Circular no. 566(b)
Date: 24.11.2015

Sl. No.	Item Description	Brand	Qty	Units	Rate	Amount
A. BOQ for one down comer - stilt + 5 floors						
1	Labour - Fabrication, installation & painting (lumpsum)		1	LS	30,000	30,000
2	M.S. pipe- 3" - 80 mm - B class		2	Mts	356	712
3	M.S. pipe- 4" - 100 mm - B class		18	Mts	487	8,760
4	MS L angle 1.5" - 6 mm dia for brackets		10	Mts	246	2,460
5	C.P. Hose - 15 mtr - 63 mm dia	Jayashree, CRC	6	Nos	4,580	27,480
6	SS Branch Pipes - 2" - 63 mm dia	Winco, Newage	6	Nos	1,718	10,305
7	Hose Reels - 30 mtrs each	Queen fire	6	Nos	2,519	15,114
8	Internal Hose Box - 4' x 2' x 1'		6	Nos	4,809	28,854
9	Fire Brigade Inlet - 4 way 100 mm dia -SS	Newton/Kartar	1	Nos	7,901	7,901
10	Structural support: Anchor bolts, U clamps, etc.		1	LS	1,000	1,000
11	MS Flanges 100 mm dia x 8 mm thick		1	Nos	131	131
12	MS Flanges 63 mm dia x 8mm thick		6	Nos	116	693
13	Gate Valve 1" brass	Zoloto	6	Nos	1,153	6,918
14	SS Hydrant Vavles 3"	Winco, Newage	6	Nos	4,695	28,167
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	Sub total A					168,495

B. BOQ for one booster pump						
1	Non-return valve - 100 mm dia	Audco, Hawa	1	Nos	1,454	1,454
2	Pressure guage 4" - 100 mm Dia	H- Guru, Gluck	1	Nos	578	578

3	Pressure switch	Indfoss	1	Nos	1,103	1,103
4	Cable - 3 core - 2.5 x 3 sq mm - armoured copper		80	Mts	51	4,116
5	MS Flanges 100 mm dia x 8 mm thick		6	Nos	131	788
6	Booster pump 12.5 HP	Kirloskar	1	Nos	35,022	35,022
7	Pump Control panel - automatic		1	Nos	11,025	11,025
8	Butterfly Valve - 100 mm dia	Audco, Hawa	2	Nos	1,706	3,412
9	Air Release valve - 15 mm dia	Elems	1	Nos	859	859
10	MS pipe- 4" - 100 mm (length)		20	Mts	556	11,129
11	2" PVC pipe for cable	Sudhakar	20	Mts	80	1,596
12	Hardware: Base saddle, PVC bends, etc.		1	LS	200	200
13	Labour - Fabrication, installation & painting (lumpsum)		1	LS	30,000	30,000
	Sub total B					101,281

C. BOQ for fire extinguishers - one staircase (stilt + 5 floors) + one panel room						
1	Fire Extinguishers - DCP - 5 kg - ABC Multipurpose		1	Nos	1,317	1,317
2	Fire Extinguishers - CO2 - 9ltrs - store pressure - ISI15683		6	Nos	1,660	9,962
3	Fire bucket 4 nos with stand		1	Set	1,103	1,103
	Sub Total C					12,381
D. BOQ for fire alarm system						
1	Fire Alarm System - 6 Zone	Agni make	1	Nos	7,350	7,350
2	Manual Call points	Agni make	6	Nos	289	1,733
3	Hooters	Agni make	6	Nos	263	1,575
5	Telephone Cable - 2 pair		2	bundles	601	1,202
6	1" PVC pipe		20	Mts	14	289

7	Hardware PVC beds, etc.		1	LS	210	210
8	Battery - small		1	Nos	683	683
	Sub total D					13,041
	Grand total					295,197
	Note: These rates are inclusive of taxes					

		Brand	Qty	Units	Rate	
Note	Miscellaneous items required					
1	80 mm x 6" MS thread nipple		1	Nos	89.25	89
2	65 mm x 6" MS thread nipple		1	Nos	73.50	74
3	50 mm x 6" MS thread nipple		1	Nos	57.75	58
4	3/4" x 6" MS thread nipple		1	Nos	25.20	25
5	1/2" x 6" MS thread nipple		1	Nos	18.90	19
6	1/2" MS coupling		1	Nos	21.00	21
7	3/4" MS coupling		1	Nos	31.50	32
8	U clamps - 100 mm		1	Nos	21.00	21
9	Anchor bolts - 10 mm - 3"		1	Nos	6.30	6
10	2" base saddle		1	Nos	2.73	3
11	2" PVC bends		1	Nos	19.40	19
12	40 mm x 8 no. SS screws - 100 nos per box		1	Nos	48.30	48
13	Nut bolts for flanges - 5/8 x 5" and 5/8 x 3"		1	Nos	26.25	26
14	6 mm fisher plugs - 100 nos per box		1	Nos	106.05	106
15	2" MS round flat plates		1	Nos	21.00	21
16	1" MS bends for conducting		1	Nos	15.75	16
17	1" MS junction boxes for conducting		1	Nos	15.52	16

18	Red enamel paint, turpentine &redoxide		1	Nos	178.50	179
19	MS pipe - 100 mm - B class		258	mtr	487	125,646
20	MS pipe - 80mm - B class		48	mtr	356	17,088
21	MS pipe - 65mm - B class		24	mtr	276	6,624
22	MS pipe - 50mm - B class		60	mrt	211	12,660
23	MS pipe - 25mm - B class		402	mtr	102	41,004
24	Ms Sprinkler		1	Nos	183.20	183
25	Smoke detector	Agni	1	Nos	683	683
	Note: These rates are inclusive of taxes					