Old circular no. 566 (b)/ New No. **881(a)** Date: 24.11.2015

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 ½” 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:

1. Painting: MS pipes, fire buckets, etc., should be painted with 2 coats primer and 2 coats red enamel.
2. 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 .
3. Air release valve: Gun metal single ball type with threaded male inlet.
4. CP Hose: 63 mm dia with medium duty end couplings (gun metal or SS) bound with 16 SWG GI wire.
5. Branch pipes: 63 mm dia short pipe with nozzle of 16 mm dia bore (gun metal or SS).
6. Hose reel: swinging wall mounted type with 16 mm internal dia. Isolation valve, screw type 25 mm dia.
7. Fire brigade inlet: Gun metal or SS instantaneous inlet male coupling. Header of mild steel.
8. Booster pump: 900 LPM at 35 meters head, mono block 12.5 HP 2900 RPM, 3 phase.
9. Non-return valve: Wafer type cast iron single plate sandwich type with flanges, nut bolts, 3 mm rubber gasket.
10. 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.
11. Pressure switch: Industrial pressure switch model, adjustable internals, 10-215 PSI range, single hold double through, die-cast aluminum alloy enclosure weather proof.
12. Battery: UPS or motorcycle battery 12 V capacity.

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| 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  |
|  |  |  |  |  |  |  -  |
|  | 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 presssure - 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 blots 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 |  |  |  |  |  |

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