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मानक

IS 949 (2012): Emergency (Rescue) Tender - Functional Requirements [CED 22: Fire Fighting]



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Indian Standard EMERGENCY (RESCUE) TENDER — FUNCTIONAL REQUIREMENTS (Third Revision)

ICS 13.220.10

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**BUREAU OF INDIAN STANDARDS** MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG NEW DELHI 110002 Fire Fighting Sectional Committee, CED 22

#### FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

The tender covered in this standard is designed both for use for fires and special service work, such as,

- a) large fires in cities or large towns, difficult or special fires requiring the use of breathing apparatus, special equipment or illumination;
- b) major electrical fires, for example, in power stations and transformers;
- c) house collapse, lift, road transport, railway and machine accidents, etc, for which special equipment is required and is not available locally;
- d) major leakages of toxic or dangerous gases or gaseous liquids; and
- e) ship fires.

This standard was first published in 1959 and revised in 1967 and 1985. This revision is based on the experience gained after publication of standard and availability of new designs and accessories. The position of pump has been shifted from mid-position of the vehicle to rear side to facilitate easy removal. In this revision design and construction details of appliances and list of accessories have also been modified, most of which are normally required to assist in operation (*see* Annex A), and are given for information and guidance.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# Indian Standard

# EMERGENCY (RESCUE) TENDER — FUNCTIONAL REQUIREMENTS

# (Third Revision)

#### **1 SCOPE**

This standard lays down the requirements regarding material, design and construction, workmanship and finish, accessories and equipment of emergency (rescue) tender.

#### **2 REFERENCES**

The standards listed at Annex B contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated at Annex B.

#### **3 GENERAL REQUIREMENTS**

**3.1** The appliance shall be designed to carry the equipments listed in Annex A. The equipment shall be arranged in a manner so as to allow the crew members to get ready in vehicle itself.

**3.2** The appliance shall be suitably geared to provide a road speed of 70 km/h on a level ground. The acceleration shall be such that with a warm running engine, the fully laden appliance shall attain a speed of 64 km/h from a standing start, through the gears.

**3.2.1** The appliance shall also be capable of being started from rest to upward at a gradient of 1 in 4 when laden.

#### **4 MATERIAL SELECTION AND TREATMENT**

**4.1** The choice of materials to be used in the construction of the appliance shall be made with a view to combining lightness with strength and durability.

4.2 Timber shall not be used in the body construction.

**4.3** The appliance shall be required for use in conditions with constant high humidity and heat. This shall be given full consideration while selecting the materials.

**4.4** All metal parts exposed to atmosphere shall either be of corrosion resisting material or treated to resist corrosion.

**4.5** Ferrous metal shall not be used for nickel or chromium plated fittings and the plating of all such fittings shall be of extra heavy quality.

#### **5 DESIGN AND CONSTRUCTION**

**5.1** The chassis shall have the gross vehicle weight of not less than 16 000 kg for small tender and 25 000 kg for large tender, including equipments, crew members, etc, and shall have the following dimensions:

Chassis	Small Tender	Large Tender
Wheel base	not more than	not more than
	4.50 m	5.0 m
Turning circle	not more than	not more than
-	20 m	20 m
Road clearance	not less than	not less than
	0.23 m	0.23 m
Overall width	not more than	not more than
	2.50 m	2.50 m
Height	not more than	not more than
C	3.60 m from	3.60 m from
	ground level	ground level

#### 5.2 Engine

The engine (oil fuel type) shall have 6 cylinders. The engine shall be fitted with quick starting system. The engine shall be capable of driving the fully laden appliance at speed from starting without any preliminary running period, even under abnormally cold atmospheric conditions. The operating temperature of the engine cooling water shall be thermostatically controlled.

#### 5.3 Fuel System

**5.3.1** The fuel tank shall have a minimum capacity of 140 litre for small tender and 250 litre for large tender. A fuel tank contents gauge shall be fitted on the instrument panel in the driving compartment.

**5.3.2** The fitting orifice shall be of ample size, and shall be in accessible position. The cap shall be clearly marked to show that it is for fuel and an anti-flash device shall be incorporated in it, if the engine is petrol driven.

#### 5.4 Electrical System

**5.4.1** A heavy duty alternator/generator shall be fitted to the engine to supply the vehicle 12 V or 24 V dc electrical system. The alternator/generator shall be fitted with the necessary control unit.

**5.4.2** A trickle charger shall be fitted in the cab and it shall be fitted with socket for connection to 230 V ac electrical supply. A red pilot lamp, to indicate when the battery is being charged from an external supply, shall be provided.

**5.4.3** All important electrical circuits shall have separate fuses suitably indicated and grouped into a common fuse box, which shall be located in an accessible position. Provision shall be made to carry spare fuses in this box.

#### 5.5 Alternator Unit

**5.5.1** A 230 V, 50 cycle alternator with its independent engine shall be provided.

**5.5.2** The alternator shall be screen protected, continuously rated, self-regulating, self excited, class 'E' insulation type, having an output of not less than 25 kVA at 0.8 power factor (4 kW) 220 V three phase, 50 cycles.

**5.5.3** The alternator shall be equipped with a direct coupled flange mounted exciter which shall automatically keep the alternator voltage constant and provide an approximately straight line voltage characteristic within 5 percent at all loads, and at any pre-set factor between 0.8 and 1.

**5.5.4** Two cable reels each with 30 m of cable shall be provided. The cable shall be a 3-core duty flexible cords 250 V grade having a conductor of cross-section 4 mm<sup>2</sup> (128/0.20 mm) conforming to IS 9968 (Part 1 or 2) or IS 694.

**5.5.5** Controls shall be mounted near the generator and shall consist of the following:

- a) Three sockets (plugs) and switches with 3 phase connections;
- b) Four sockets (plugs) and switches (MCB's) with single phase connections of minimum 20 A capacity;
- Four sockets (plugs) and switches (MCB's) with single phase connections of minimum 10 A capacity;
- d) RPM Meter digital 1 No.;
- e) kW meter 1 No.;
- f) Ampere meter separate for each phase 3 Nos. (Total);
- g) Frequency meter 1 No.;

- h) 32 A TPN MCB 1 No.;
- j) Hand throttle control; and
- k) Engine cooling water temperature gauge (if water cooled).

#### 5.6 Body Work

**5.6.1** Enclosed accommodation for six persons shall be provided in the driver cab-*cum*-crew compartment including the driver and the in-charge of the crew. Both the seats should be independent. The driver's seat should be adjustable and comfortable. The rear compartment of driver's cabin should have one removable seat for full width of cab for 4 (four) crew members. The cab floor should be covered with 3 mm thick aluminium chequered plate rigidly fixed to the under frame cross members by means of nuts and bolts or riveting. Trap doors for topping up oil, etc, wherever necessary shall be provided.

**5.6.2** One roof light should be provided in the driver's cabin dwell vision and external rear view mirrors should be fitted to the cab.

**5.6.3** The driver-*cum*-crew cabin shall be provided with full four doors, one for driver, one for officer and two at the crew compartment. The doors shall be generously sized for easy embarking/disembarking of crew members. All the doors shall be fitted on the super structural members, each hung upon three invisible coach type mild steel stout hinges and fitted with best quality handles.

**5.6.4** The door handle on out side of driver seat shall have a locking arrangement. Other doors shall be lockable from inside. In addition to the doors locks, aluminum tower bolt of 200 mm shall be provided for all the doors from inside adequate grab rails shall be provided for easily boarding and alighting from the appliance.

**5.6.5** The windscreen glass shall be provided in the two valves and shall be flat in shape. Each glass shall be fitted in E.P.D.M. rubber beading. The glasses shall be 5 mm thick toughened safety glass. The rubber beading used for fitting glasses and window frame shall be E.P.D.M. rubber.

#### 5.6.6 Seats

**5.6.6.1** The driver seat shall be adjustable type vertically, forward and backward. The officer seat shall be fixed type. Both the seats shall be rigidly fixed to the flooring by means of nuts and bolts.

**5.6.6.2** The seat cushion shall be of latex foam rubber 75 mm thick upholstered in good quality foam leather cloth. The back seat shall be of latex foam rubber 50 mm thick upholstered in good quality foam leather cloth.

**5.6.6.3** Below the crew seat, two lockers shall be provided. One locker for battery box to accommodate batteries (2 Nos.) and another for keeping accessories. The extra length of battery cable shall be provided by tenderer.

**5.6.6.4** The crew seat shall be rigidly fixed to floor by means of nuts and bolts, running full width of the vehicle suitable for sitting five fireman, covered with 75 mm  $\times$  50 mm cushion latex foam rubber upholstered in good quality foam leather of approved shade.

**5.6.6.5** Below the crew seat, two lockers shall be provided, one for storage of batteries and another for keeping accessories. The extra length of battery cable shall be provided, if required.

**5.6.7** The super structure of the cabin shall be constructed out of 2 mm mild steel 45 mm  $\times$  45 mm  $\times$  20 mm pressed 'TOP HAT' sections. The super structure shall be strengthened specifically on the members with the lockers doors frames are to be fitted and also the other members by providing brackets and gussets of 2 mm mild steel plate securely welded.

**5.6.7.1** The details of super structure are as follows:

a)	Under frame cross members	: 100 mm × 50 mm × 5 mm
b)	Floor longitudinal members	: 50 mm × 50 mm × 6 mm
c)	Vertical members on even side	: 45 mm × 45 mm × 20 mm
d)	Skirt member	: 45 mm × 45 mm × 20 mm
e)	Waist member	: 45 mm × 45 mm × 20 mm
f)	Top deck longitudinal	: 45 mm × 45 mm × 20 mm

**5.6.7.2** The cab and lockers should be of composite construction with sufficient rigidity and reinforcement and shall be kept as light as possible.

**5.6.7.3** The structure/frame work shall be of welded constructions and made from 2 mm thick mild steel pressed sections and square tubes. The angles and channels used shall be of minimum 3 mm thickness. The complete structure material shall be treated for anti-corrosion by zinc plating. The plating thickness shall not be less than 20  $\mu$  Two coats of epoxy paint shall be applied to the completely welded structure.

**5.6.7.4** The structure shall be so designed so as to avoid any vibration/ratting/deformation in the intended usage of the vehicle.

**5.6.7.5** The interior panelling shall be done from 1.22 mm thick aluminium sheets and the exterior

panelling shall be done from 1.60 mm thick aluminium sheets.

#### 5.7 Cable Winch

An electrical/hydraulically operated cable winch of 6 t capacity should be provided. The winch unit should be complete with compatible HP, dc series wound electric reversible motor for increased pulling power, rope drum, and 27 m heavy duty galvanized EIPS wire rope with replaceable self-locking clevis hook and should be mounted on the front bumper of the vehicle with suitable strong supports.

#### 5.8 Telescopic Light Mast

A compact, low profile, roof mounted lighting system, fitted with  $4 \times 1000$  W metal halide/halogen lamps, vertically elevated pneumatically up to 6 m shall be installed on the roof of the vehicle. Lighting shall be provided by a 12 V or 24 V dc with remote control, directional lighting system with rotation and tilt lamps to provide total coverage. The remote control unit shall allow a person to operate all the functions of the light mast and accurately aim for complete directional positioning. In addition auto-show, a one button command, automatically retracts, turns out the lights and stows the entire system to the compact transport position shall also be included in the remote controller.

The complete unit should comprise of hand held remote control with cable, rotation and tilt positioner, mounting frame with built in tilt system.

#### 5.9 Miscellaneous

**5.9.1** A suitable bumper shall be provided at the rear rigidly fixed to the super structure members by means of nuts and bolts, fabricated from  $100 \text{ mm} \times 50 \text{ mm} \times 5 \text{ mm}$  mild steel channel.

**5.9.2** Two cat ladders made out of stainless steel round or square pipe of 2.5 mm diameter shall be provided.

**5.9.3** Two numbers of 2.5 mm diameter aluminum pipe railing with sufficient number of aluminum double socket brackets shall be provided to the rear body over the deck.

**5.9.4** A heavy duty towing hook shall be provided and fitted the rear bumper by means of nuts and bolts.

**5.9.5** Quick removable type wire mesh guard made from 2.5 mm  $\times$  2.5 mm size mild steel wire mesh of 1.6 mm size covered in mild steel angle frame shall be provided to all the glasses of driver-*cum*-crew cabin.

**5.9.6** An illuminated 'FIRE' sign shall also be fitted to the outer centre front of the cab.

5.9.7 The body work shall be designed so as to enclose

as much as possible of the appliance without interfering with necessary accessibility but at the same time, shall have clean lines.

#### 5.10 Lockers

**5.10.1** The lockers should be provided for storage of all equipments listed in Annex A. The lockers will have drawers as per the latest standards that is, roll inroll out type with opening in tapered position giving very easy and immediate access to all equipments. All equipments should be stowed very scientifically and systematically in the drawers and each piece of equipment shall have its designated location so that at the time of emergency the required equipment can be very easily located and removed for use. Location of equipment (labels) should be provided on each drawer for immediate identification.

**5.10.2** All the equipment should be properly clamped and strapped in the drawers to prevent shifting of the equipments while the vehicle is in motion.

**5.10.3** The drawer sides would be constructed from aluminium angles of minimum 100 mm  $\times$  4 mm thickness and the bottom floor of the drawers will be made from minimum 3 mm thick aluminium sheets and then covered with good quality neoprene rubber sheets.

**5.10.4** The drawers should have self locking system to prevent accidental opening while the vehicle is in motion. The bottom edges of the drawers shall be covered with stainless steel angles of minimum 2 mm thickness. The roll in-roll out drawers should be made according to the required size of the equipment that is to be stowed.

**5.10.5** The lockers should be covered with push pull type aluminium roller shutters only for faster and smoother rescue operation at the time of emergency. The roller shutters shall be made from extruded aluminium sections with suitable roller, spring, guide channels, etc. All aluminium sections used shall be properly anodized. The roller shutters shall be rolled inwards underneath the roof giving unobstructed access to the equipment lockers and the fire fighting material.

**5.10.5.1** These roller shutters should open in every position of the vehicle even in rough terrain. Guide rails shall support the shutters over entire length on both sides to make them absolutely torsion free. The opening of the roller shutters should be done by means of a lift bar provided. This should be of the self locking type so that while the vehicle is moving, the shutters do not open accidentally during movement of vehicle.

**5.10.5.2** Roller shutters shall be made of hollow rectangular shaped aluminium links which shall be

inter-connected with rubber/plastic/PVC profiles sealing the roller shutter watertight when closed. These roller shutters should be durable, maintenance free, weather and corrosion resistant.

**5.10.6** All lockers shall be fitted with internal lighting which shall be capable of being automatically switched 'ON' and 'OFF' by the opening and closing of the roller shutters. A master switch for isolating the locker lighting circuit shall also be provided.

**5.11** Grab-rails and non-slip steps be provided, wherever necessary. A ladder made out of stainless steel round or square pipe of 2.5 mm diameter shall be provided at the rear of the appliance to provide easy access to the roof of the vehicle.

**5.12** A 10.5 m aluminium trussed type extension ladder shall be mounted on suitable gallows fitted with rollers and designed to facilitate easy and quick removal of the ladder from the rear of the appliance.

**5.12.1** In addition, two stretcher-ladders shall be mounted separately on the appliance in such a way that they would be easily, quickly and independently removed, when required. Main ladder section of stretcher-ladders shall be manufactured from aluminium alloy and shall have following requirements:

Overall length	:	not less than 2.0 m
Overall width	:	not less than 600 mm
Centre of rungs	:	210 mm approximately

#### 5.13 Stability

The stability of the appliance shall be such that when under fully equipped and loaded conditions (but excluding crew), if the surface on which the appliance stands is tilted to either side, the point at which overturning occurs is not passed at an angle of  $27.5^{\circ}$ from the horizontal.

#### **6 WORKMANSHIP AND FINISH**

**6.1** The standard of workmanship and finish of all mechanical and other parts shall be such that the parts normally required to be replaced can be supplied and will fit in correctly.

**6.2** The appliance shall be painted fire-red colour conforming to shade No. 536 of IS 5. The paint shall conform to IS 2932.

**6.3** The driving compartment, crew's compartment, inside the vehicle and inside lockers shall be painted cream. Lockers shall be finished in shadow board painting or replica of items to show the position of each piece of equipment.

**6.4** All other parts except engine shall be painted black.

**6.5** Necessary anti-corrosion and priming coats shall be applied before painting.

**6.6** Painting and phosphating of the chasis shall be carried out to withstand the climatic conditions in the tropics.

#### **7 INSTRUCTION BOOK AND ACCESSORIES**

#### 7.1 Instruction Book

Instruction book(s) for the guidance of the user, including both operating and normal maintenance procedures, shall be provided. The book(s) shall include an itemized and illustrated spare parts list, giving reference to all the wearing parts.

#### 7.2 Accessories

The following accessories shall be provided in addition to those normally fitted on the chassis:

- a) One 250 mm diameter bell shall be mounted externally. It can be operated from inside the driving/crew compartment;
- b) *Fog lamps* Two, low mounted in front of appliance;
- c) *Reversing light* One, suitable situated to assist reversing;

- d) Revolving beacon light Two, of blue colour and shall be capable of throwing revolving beams of light round 360° with beams inclined upward, horizontally and downward. These shall be mounted on the cab-roof and second on roof at rear and shall be operated from the vehicle battery;
- e) Wind screen wipers (electrically operated) Two;
- f) *Tools* All tools required for normal routine maintenance of the appliance, which are not included in the kit for the chassis;
- g) Search light Two, adjustable to give flood or beam light and shall be mounted in convenient position on the appliance but at the same time, shall be capable of being readily removed and mounted on tripods away from the appliance. These shall each be supplied complete with tripod and not less than 30 m of TRS cable on reel mounted on the appliance;
- h) *Spot light* Two, adjustable and shall be mounted in convenient position on the roof of the appliance; and
- j) One, 12 V battery operated siren shall be mounted in a convenient position.

# ANNEX A

(Foreword and Clauses 3.1 and 5.10.1)

#### SCHEDULE OF EQUIPMENTS TO BE CARRIED ON THE APPLIANCE

A-1 The user may decide schedule of equipments depending upon local conditions. The size of chassis may be reviewed on the basis of equipments and stowage.

Sl N	lo. Item	Quantity	
1.	Breathing apparatus, positive pressure type with spare cylinders [see IS 10245 (Part 2)]	6 sets	
2.	Protective suits (Proximity/chemical)	4 Nos.	
3.	Ambu bags	1 set	
4.	MFR Kit	2 sets	
5.	Blankets, woolen (see IS 1681)	6	
6.	Oxy-acetylene cutting set, complete with 5 litre cylinders or equivalent and 10 m lengths of tubing, portable or trolley mounted	1 set	

Sl N	lo. Item	Quantity
7.	Oxygen cylinder, spare 5 litre (see Sl No. 1)	1
8.	Gauges for oxy-acetylene cutting plant, spare	2
9.	Leather gloves	2 pairs
10.	Goggles dark glasses	4 pairs
11.	Chain, lifting 5 t, complete with end rings and shackles	6 m
12.	Chain-sling, double leg, complete with rings	1
13.	Chain tackle 2 t (Chain pulley block)	1 set
14.	Tarpaulin 3.5 m $\times$ 3.5 m	2 Nos.
15.	Pulling and lifting machine, lifting 3 t or pulling 5 t and hook	2 sets

Sl I	No. Item	n Quantit	
16.	Half round files 300 mm with wooden handle	2	Nos.
17.	Portable, electrically operated, 300 mm diameter-circular saws, 220 V	1	
18.	Portable, electric drill with different size spare bits, 220 V	1	set
19.	Engineer's tools	1	set
20.	Carpenter's tools	1	set
21.	Special tools for refrigerators, where required	1	set
22.	Set of keys and securing plate for passenger lift	1	set
23.	Fire hook (see IS 927)	1	
24.	Grapnel with wire cable	1	
25.	30 m long 16 mm diameter BOB rope	2	lengths
26.	12 m long 12 mm diameter BOB lashing lines	2	lengths
27.	6 m long 10 mm diameter BOB rope	1	length
28.	30 m long 16 mm diameter wire rope	1	length
29.	Hardwood blocks, assorted, from 75 to 225 mm thick and 300 mm	6	Nos.
30.	Spades	2	Nos.
31.	Shovel [see IS 274 (Parts 1 and 2)]	2	Nos.
32.	Mattocks, handle	2	Nos.
33.	Picks, with handle (see IS 273)	3	Nos.
34.	Axes, felling (see IS 703)	2	Nos.
35.	Crow bars, 1 m long (see IS 704)	2	Nos.
36.	Sledge hammer 10 kg (see IS 841)	1	No.
37.	Hammer, 5 kg (see IS 841)	1	No.
38.	Rake, 3 prong (see IS 5991)	1	No.
39.	Rubber, gloves tested to 25 000 V (see IS 4770)	2	pair
40.	High safety boots, high voltage type (Gum boots)	2	pair
41.	Hydraulic jack with handle 15 t capacity	1	No.
42.	Shears, bolt cropper, large with handle, 900 mm	1	pair
43.	Shears, bolt cropper, small with handle 600 mm	1	pair
44.	Debris baskets	6	Nos.
45.	Fireman's axe with carrying pouch	2	Nos.
46.	Short ladder (Stretcher ladder)	2	Nos.
47.	Plastic folding stretcher	2	Nos.
48.	Electric drill with spare bits battery operated (Rechargeable)	1	No.

Sl N	lo.		Item		Q	uantity
49.	Circular and diar	<sup>.</sup> saw f nond c	or wood or i chain saw for	netal cu r RCC	itting 1	No.
50.	Chippin	g ham	mer		1	No.
51.	Smoke	blower	and exhaust	ter (Sma	all) 1	No.
52.	Electric	ally op	erated chain	saw	2	Nos.
53.	Petrol e	ngine	operated cha	in saw	1	No.
54.	Concret	e breal	ker 39 J		1	No.
55.	Diesel/p 5 kVA	etrol p	oortable gene	erator of	f 1	No.
50.	of work reinforc aramid design, when 2 other, qu double thicknee includin	ing pre ed nitr e rein capab bags a nick co locki ess no g profi	ssure 0.8 M ile rubber w nforcement le of being re placed on nnection wit ng system, t more tha le, resistant t	Pa, mad ith 3 lay non- interloc top of e h autom insert an 25 o ozone	e of yers slip ked each atic ion mm and	set
	followir	or can	enficals, e	10, 01	the	
	1:4	Mini	Minimum	Weight	Our	
	ing Capa- city	mum mum Infla- tion Height	Dimensions	(Not More Than)	ouu- ntity	
	t	mm	mm	ka		
	(1)	(2)	(3)	(4)	(5)	
	10	200	$375 \times 375$	4	1	
	20	275	$500 \times 500$	7	1	
	40	400	$700 \times 700$	16	1	
	60	500	900 × 900	25	1	
	The lifti shall be The airt followir	ng capa accept bags ar ng acce	acities up to - table e to be suppl essories:	+ 25 per-	cent	
	Pressure 0.8 MPa	e reduc	er 30 MPa to	o: 2 N	os.	
	Control 2 airbag	box fo s with	or operating pressure	: 2 N	OS.	
	gauges a	and ca	rrying strap			
	Single c	control	unit	: 4 N	os.	
	Air hose	e 5 m		: 2 N	os.	
	Air hose	e 10 m		: 2 N	os.	
	Shut off	hose	with safety	: 4 N	os.	
	valve		2			
	Connect two air	ion pie cylind	ece to connecters	et: 2 N	os.	

Sl N	lo. Item	Quantity
57.	Jumping cushions size	1 No.
58.	Leak sealing bags	1 set
59.	Hydraulic spreader with pulling chains and adaptors	1 No.
60.	Hydraulic cutter	1 No.
61.	Hydraulic combi tool with pulling chains and adaptors	1 No.
62.	Hydraulic light weight aluminium jack — Lifting capacity minimum 50 t and stroke minimum 50 mm	1 No.
63.	Hydraulic light weight aluminium jack — Lifting capacity minimum 50 t and stroke minimum 100 mm	1 No.
64.	Hydraulic jack with accessories	1 No.
65.	Hydraulic door opener	1 No.
66.	Hydraulic pedal cutter	1 No.
67.	Hydraulic pump for 2 tools simultaneous operation with 15 m long hose	1 No.
68.	Hydraulic foot/hand operated pump with 10 m long hose	1 No.
69.	Shoring system	1 set
70.	Glass breaker (Punch)	1 No.
71.	Evacuation system (Rope rescue with tripod and descenders, etc)	1 set
72.	Wireless set (UHF)	1 No.

Sl N	lo. Item	Quantity
73.	Wireless walkie-talkie sets	6 sets
74.	Search camera	1 No.
75.	Video camera	1 No.
76.	Loud hailer battery operated	1 No.
77.	ac. detectors	1 No.
78.	Inflatable lighting tower	1 No.
79.	MFFR kit	1 set
80.	Pipe wrenches 300 mm and 600 mm	1 each
81.	Wrench adjustable 300 mm	1 No.
82.	Slotted screw drivers	1 set
83.	Orange paint can	1 No.
84.	Measuring tape 3 m	1 No.
85.	Plywood (Marine grade) 1.25 m × 2.5 m	1 No.
86.	Wood wedges	4 Nos.
87.	Nails	100 pcs
88.	Soaking kit	1 No.
89.	Search light (Rechargeable)	1 No.
91.	Inflatable boat for 7 persons with OBM	1 No.
92.	BA compressor 100 litre/min	1 No.
93.	Airline trolley	1 No.
94.	Hydraulic concrete cutter	1 No.
<u>95.</u>	Thermal imaging camera	1 No.

# ANNEX B

# (Clause 2)

### LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
5:2007	Colours for ready mixed paints and enamels ( <i>fifth revision</i> )	704 : 1984	Specification for crow-bars and claw- bars ( <i>second revision</i> )
273 : 1990	Picks and beaters — Specification ( <i>fourth revision</i> )	841 : 1983	Specification for steel hammers (second revision)
274 (Part 1 and Part 2)	Specification for shovels: Part 1 : General purpose shovels; Part 2	927 : 1981	Specification for fire hooks ( <i>second revision</i> )
1981	Heat-treated shovels (third revision)	1681 : 1998	Textiles — Hospital blankets,
694 : 1990	PVC insulated cables for working voltages upto and including 1 100		woolen, dyed — Specification ( <i>third revision</i> )
703 : 1966	V (third revision) Specification for axes (second revision)	2932 : 2003	Enamel, synthetic, exterior: (a) undercoating (b) finishing — Specification ( <i>third revision</i> )

IS No.	Title	IS No.	Title
4770 : 1991	Rubber gloves — Electrical purposes — Specification ( <i>first</i> <i>revision</i> )	(Part 2) : 2002	For working voltages from 3.3 kV up to and including 33 kV ( <i>first revision</i> )
5991 : 1971 9968 (Part 1) : 1988	Specification for ballast rakes Elastomer insulated cables: For working voltages up to and including 1 100 V ( <i>first revision</i> )	10245 (Part 2) : 1994	Respiratory protective devices — Breathing apparatus: Part 2 Open circuit breathing apparatus ( <i>first</i> <i>revision</i> )

### ANNEX C

#### (Foreword)

#### **COMMITTEE COMPOSITION**

#### Fire Fighting Sectional Committee, CED 22

Organization Ministry of Home Affairs, New Delhi

Agni Controls, Chennai Airport Authority of India, New Delhi

ASKA Equipment Ltd, New Delhi Bhabha Atomic Research Centre, Mumbai Bombay Fire Brigade, Mumbai

Building Fire Research Centre, Mysore

Central Building Research Institute, Roorkee

Central Public Works Department, New Delhi

Centre for Fire & Explosive Environment Safety (DIFR), Delhi

Chennai Petroleum Corporation Ltd, Chennai

Chhatariya Rubber & Chemicals Industries, Mumbai

Concord Arai Pvt Limited, Chennai Controllerate of Quality Assurance, Pune

Council of Architecture, New Delhi Defence Research Development Organization, Ministry of Defence, Delhi Delhi Development Authority, New Delhi Delhi Fire Service, New Delhi

Directorate of Fire and Emergency Services, Goa Electricity Consumer Grievances Redressal Forum, New Delhi Engineer-in-Chief's Branch, New Delhi

Engineers India Ltd, New Delhi

F. M. Engineering International India Branch, Bangalore Fire Protection Association of India, Mumbai

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Organization GAIL, New Delhi Government of Maharashtra, Mumbai Gunnebo Steelage Industries Ltd, Chennai

H. D. Fire Protect Co, Thane

In Time Fire Appliances, Mumbai Indian Oil Corporation Limited, Noida Institution of Fire Engineers, New Delhi

Karnataka State Fire and Emergency Services, Bangalore

K. V. Fire Chemicals (India) Pvt Ltd, Navi Mumbai

Kochi Refineries Ltd, Dist Ernakulam National Fire Service College, Nagpur National Thermal Power Corporation, New Delhi NEEPCO Limited, Dibrugarh Newage Industries, Fire Protection Engineers, Surendranagar

Oil Industry Safety Directorate, New Delhi Peter Autokits Pvt Limited, Mumbai Prakash Suraksha Devices, Delhi

Reliance Industries Limited, Jamnagar

S&P Safety Products Pvt Ltd, Kolkata Safex Fire Services Limited, Mumbai

Shah Bhogilal Jethalal & Bros, Ahmedabad

State Bank of India, Mumbai Steel Authority of India, Bokaro

Surex Production and Sales Private Limited, Kolkata Tariff Advisory Committee, Mumbai TYCO Thermal Controls India Pvt Ltd, Mumbai

UL India Pvt Limited, Bangalore

Uttar Pradesh Fire Services, Lucknow

West Bengal Fire and Emergency Service, Kolkata

Zenith Fire Services (India) Pvt Ltd, Mumbai

In personal capacity (P/4 Belgacuta, Kolkata)
In personal capacity (K-33-A Green Park, New Delhi)
In personal capacity (C-127 Kendriya Vihar, Noida)
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