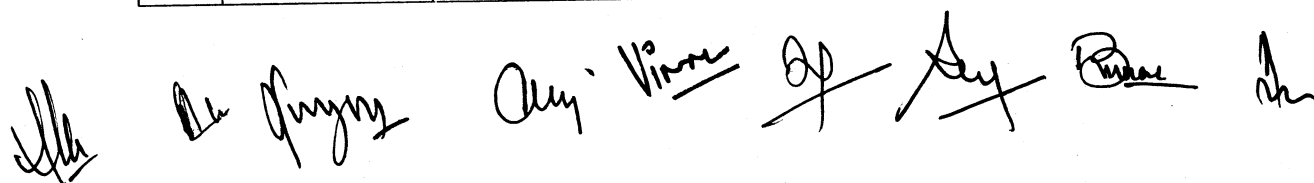


TRIAL DIRECTIVES (TDs) OF
EMERGENCY RESCUE TENDER BIS:949-2012 (Reaffirmed 2017) with latest revision.

SL	Technical Parameter	Qualitative requirements (QRs)	Trial Directives (TDs for BOOs)
1	Purpose	The Multifunctional Emergency Rescue Tender shall be designed specifically for the purpose of use at fires which requires special equipment, rescue and other special service calls such as: 1.1 Large special fires in Cities, Towns and in industries requiring the use of Breathing Apparatus, special equipment, illumination equipment etc. 1.2 Lift, goods transport, railway or machine accidents for which special equipment are required. Major leakages of toxic or dangerous Liquids or gases. 1.3 To fulfill the above duties, the Rescue Tender shall be comprehensively equipped with an electric generator, lifting, cutting, breaking, pulling, pushing gears, oxy-acetylene cutting equipment, portable electrical tools, hydraulic rescue tools, lighting equipment and power driven winch. 1.4 The Rescue Tender shall be fast on road and easily maneuverable in crowded streets and normal sharp corners. The overall dimensions shall not exceed the limit specified herein.	The vehicle shall meet the requirement as per relevant standards and QRs.
02	General requirements	Design construction features, materials and equipment and interpretation of Terminology of specification of Emergency Rescue tender shall be in accordance with IS: 949-2012 (Reaffirmed 2017) with latest revision. 2.1 The appliance shall be designed to carry the equipment listed in Annex "A". The equipment shall be arranged on a manner to allow the	All items shall be physically checked and tested , and shall meet the requirements as per the relevant standards and approved Qualitative Requirements (QRs).

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		crew members to get ready in vehicle itself. 2.2 The appliance shall be suitable 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 in 55 sec. from a standing start, through the gears. 2.2.1 The appliance shall also be capable of being started from rest up a gradient of 1 in 4 when laden.	
3	Material selections and treatment	3.1 The choice of materials to be used in the construction of the appliance super structure shall be Zinc-treated galvanized or extruded Aluminium to provide adequate strength, long term durability and elasticity for absorbing operational stresses, while ensuring effective corrosion resistance and prevention of rusting. 3.2 Timber shall not be used in the body construction 3.3 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 3.4 All metal parts exposed to atmosphere shall be of corrosion resisting material. 3.5 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.	All materials used in the construction of the appliance shall be physically verified and tested and shall conform to the requirements of relevant standards and approved Qualitative Requirements (QRs).
4	Designs and Construction	4.1 The chassis shall be of 4x2, 16T, 130 BHP (minimum), turbo charged air cooled, diesel engine, cowl chassis, Bharat stage -VI/ latest version or latest equivalent chassis. The Emergency Rescue Tender shall be equipped with a factory-fitted air-conditioned	All items shall be physically checked and tested, and shall meet the requirements as per the relevant standards and approved Qualitative Requirements (QRs). Necessary

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		driver-cum-crew cabin in compliance with GSR 886(E) dated 08 December 2023 and the AC system shall conform to IS 14618:2022 requirements and testing procedures, as amended.	material-of-construction certificates from the manufacturer, as per QRs, shall also be checked and verified.
4.2	Engine	The engine (oil fuel type) shall have sufficient cylinders based on finalization of Chassis. 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.	
4.3	Fuel System	4.3.1 The fuel tank shall have a minimum capacity of 140 L/OEM. A fuel tank contents gauge shall be fitted on the instrument panel in the driving compartment. 4.3.2 The filling orifice shall be of ample size, and shall be accessible position. The cap shall be clearly marked to show that it is for fuel.	Shall be checked physically and should meet the requirement as per relevant standards and QRs. Necessary certificates from statutory authority as per QRs, wherever necessary, shall also be checked and verified.
4.4	Electrical System	4.4.1 A heavy-duty alternator/generator shall be fitted to the engine to supply the vehicle 12 or 24 V DC electrical system. The alternator/generator shall be fitted with the necessary control unit. 4.4.2 A trickle charger shall be fitted in the cab and it shall be fitted with socket for connection to 230 V AC electrical systems. A red pilot lamp, to indicate when the battery is being charged from an external supply shall be provided. 4.4.3 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. 4.4.4 In addition, all electrical wiring shall be made of flame retardant automotive wires and routed through conduit piping to minimize the risk of short circuits, enhance safety against accidental damage and facilitate easy inspection and maintenance during fault rectification or routine servicing.	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs.

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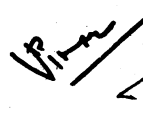
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4.5	Alternator Unit	4.5.1 A 230 V, 50-cycle alternator with its independent engine shall be provided. 4.5.2 The alternator shall be screen protected, continuously rated, self-regulating, self-excited, class 'E' insulation type, having an output of not less than 5 KVA at 0.8 power factor, (4 kW) 220 V Three phase, 50 cycles. 4.5.3 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 unity. 4.5.4 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 (128/0.20 mm) conforming to IS 9968-1: 1988 AMD 3 2016 or IS 694: 2010 Reaffirmed 2015. 4.5.5 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) & switches (MCB's) with single phase connections of min. 20 AMP capacity c) Four sockets (plugs) & switches (MCB's) with single phase connections of min. 10 AMP capacity d) RPM Meter digital - 1 No e) KW meter-1 No f) Ampere meter separate for each phase-Total-3Nos. g) Frequency meter - 1 No h) 32 Amps TPN MCB - 1 No i) Hand throttle control; j) Engine cooling water temperature gauge (if water cooled);	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs.
4.6	Work	4.6.1 Enclosed accommodation for six persons shall be provided in the driver cab-cum-crew compartment including the driver and the in-	Shall be checked physically and should meet the requirement as per relevant standards and QRs.

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		charge of the crew. Both the seats should be independent. The driver's seat should be adjustable and comfortable. a) The rear portion of the compartment of driver's cabin should have one removable seat for full width of cab for 4 (four) crew members b) 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. c) Trap doors for topping up oil etc wherever necessary shall be provided. d) One roof light should be provided in the driver's cabin dwell vision and external rear view mirrors should be fitted to the cab. e) The driver cum crew cabin shall be provided with full four doors, one for driver, and one for officer and two at the crew compartment. f) The doors shall be generously sized for easy embarking /disembarking of crewmembers. All the doors shall be fitted on the super structural members, each hung upon three invisible coach type M.S. stout hinges and fitted with best quality handles. The door handle on outside of driver seat shall have a locking arrangement. Other doors shall be lockable from inside. g) Aluminium tower bolt of 8" shall be provided for all the doors from inside Adequate grab rails shall be provided for easily boarding and alighting from the appliance. h) 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. i) The rubber beading used for fitting glasses and window frame shall be E.P.D.M. rubber.	
4.6.2	Seats	a) The driver seat shall be adjustable type vertically, forward and	Shall be checked physically and should meet the requirement as per relevant

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		backward. The officer seat shall be fixed type. Both the seats shall be rigidly fixed to the flooring by means of nuts and bolts. The seat cushion shall be of latex foam rubber 75 mm thick upholstered in good quality foam leather cloth. b) The back seat shall be of latex foam rubber 50 mm thick upholstered in good quality foam leather cloth. c) 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 fire-fighters, covered with 75 mm x 50 mm cushion latex foam rubber upholstered in good quality foam leather of approved shade. d) 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. e) The super structure of the cabin shall be constructed out of 14-gauge M.S. 45 x 45 x 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 the other members by providing brackets and gussets of 14-gauge M.S. plate securely welded. The details of super structure are as follows: i. Under frame cross members: 100 x 50 x 5 mm ii. Floor longitudinal members: 50 x 50 x 6 mm iii Vertical members on even side: 45 x 45 x 20 mm iv. Skirt member: 45 x 45 x 20 mm V. Waist member: 45 x 45 x 20 mm vi. Top deck longitudinal: 45 x 45 x 20 mm f) The cab and lockers should be of composite construction with sufficient rigidity and reinforcement and shall be kept as light as possible. g) The structure/frame work shall be	standards and QRs.
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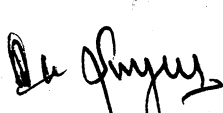
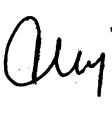
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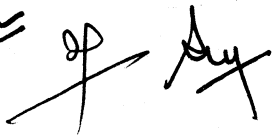
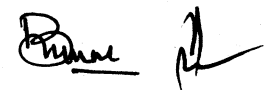
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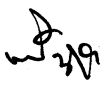
		of welded constructions and made from 2 mm thick MS pressed sections and square tubes. h) The Angles and channels used in the appliance structure shall be of minimum 3 mm thickness and the entire material shall be Zinc-plated galvanized to ensure anti-corrosion protection and long-term durability. i) The plating thickness shall not be less than 20 microns. Two coats of Epoxy paint shall be applied to the completely welded structure. j) The structure shall be so designed to avoid any vibration/ratting / deformation in the intended usage of the vehicle. k) The interior paneling shall be done from 1.22 mm thick Aluminium sheets & the exterior paneling shall be done from 1.60 mm thick Aluminium sheets.	
4.6.3	Cable Winch	a) An electrically operated cable winch of 6-ton capacity should be provided. b) The winch unit should be complete with minimum 5.5 HP 12v DC series wound electric reversible motor for increased pulling power, rope drum, and 90 ft heavy duty galvanized EIPS wire rope with replaceable self-locking clevis hook and shall be mounted on the front bumper of the vehicle with suitable strong supports.	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs. Necessary certificates from statutory authority as per QRs, wherever necessary, shall also be checked and verified.
4.6.4	Telescopic Light Mast:	a) A compact, low profile, roof mounted lighting system, fitted with 4 X 200 watts LED lights, vertically elevated pneumatically up to 15 feet (4.6m) shall be installed on the roof of the vehicle. b) Lighting shall be provided by a 12V or 24V DC with Remote Control, directional lighting system, with rotation & tilt lamps to provide total coverage. c) The remote control unit shall allow a person to operate all the functions of the light mast & accurately aim for complete directional positioning. In addition Auto-show, a one button command, automatically retracts, turnout. the lights and stows the	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs.

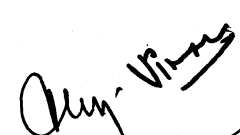
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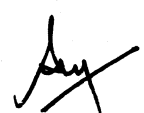
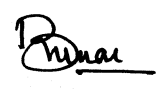




		entire system to the compact transport position shall also be included in the remote controller. d) The complete unit should comprise of handheld remote control with cable, rotation & tilt positioned, mounting frame with built in tilt system.	
4.6.5	Miscellaneous	a) A suitable bumper shall be provided at the rear rigidly fixed to the super structural members by means of nuts and bolts, fabricated from 100 x 50 x 5 mm M.S. channel. b) Two Cat ladders made out of Stainless steel round or square pipe of 1" dia shall be provided c) Two nos. of 1" dia Aluminium pipe railing with sufficient number of Aluminium double socket brackets shall be provided to the rear body over the deck. d) A heavy-duty towing hook shall be provided and fitted with the rear bumper by means of nuts and bolts; e) Quick removable type wire mesh guard made from 1" X1" size MS wire mesh of 16 SWG covered in MS angle frame shall be provided to all the glasses of driver-cum-crew cabin. f) An illuminated 'FIRE AND RESCUE' sign shall also be fitted to the outer centre front of the cab. g) The bodywork shall be designed to enclose as much as possible of the appliance without interfering with necessary accessibility but at the same time, shall have clean lines.	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs.
4.6.6	Lockers:	a) The lockers shall be provided for storage of all equipment listed in the Annexure. The lockers will have drawers as per the latest International Standards i.e. roll in-roll out type with opening in tapered position giving very easy & immediate access to all equipment. b) All equipment should be stowed very scientifically & systematically in the drawers & each piece of equipment shall have its designated location so that at the time of EMERGENCY the	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs. Necessary certificates from statutory authority as per QRs. wherever necessary, shall also be checked And verified.




required equipment can be very easily located & removed for use.

- c) Location of equipment (labels) shall be provided on each drawer for immediate identification.
- d) All the equipment shall be properly clamped and strapped in the drawers to prevent shifting of the equipment while the vehicle is in motion.
- e) The drawer sides shall be constructed from aluminium angles of minimum 100mm X 4mm thickness and the bottom floor of the drawers shall be made from 3 mm thick aluminium sheets and then covered with good quality neoprene rubber sheets.
- f) 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 SS 304 angles of min 2 mm thickness.
- g) The ROLL IN-ROLL OUT drawers shall be made according to the required size of the equipment that is to be stowed.
- h) The lockers shall be covered with Push-Pull type Aluminium Roller Shutters only for faster & smoother rescue operation at the time of emergency.
- i) 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.
- j) The Roller shutters shall be rolled inwards underneath the roof giving unobstructed access to the equipment lockers and the fire fighting material.
- k) 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.
- l) The opening of the roller shutters shall be done by means of a lift bar provided.

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		m) 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. n) 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. o) These roller shutters should be durable, maintenance free, weather and corrosion resistant. p) 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. q) A master switch for isolating the locker lighting circuit shall also be provided.	
4.6.7	Access to the roof of the vehicle.	Grab-rails and non-slip steps be provided wherever necessary. A ladder made out of S.S. round or square pipe of 1" dia shall be provided at the rear of the appliance to provide easy access to the roof of the vehicle.	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs. Necessary certificates from statutory authority as per QRs. wherever necessary, shall also be checked and verified.
4.6.8	Trussed type extension ladder	A 10.5m Aluminium Trussed Type extension ladder as per IS 4571: 1977 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.	Shall be checked physically and should meet the requirement as per relevant standards and QRs.
4.6.9	Stretcher-Ladders	In addition, two stretcher-ladders shall be mounted separately on the appliance in such a way that they shall be removed easily, quickly and independently, when required. Specification of the stretcher-ladders shall be as follows: a) Stretcher ladder- Main ladder section shall be manufactured from Aluminium alloy and shall have following requirements: b) Overall length not less than 2.0 m c) Overall width not less than 600 mm d) Centre of rungs 210 mm approximately	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs.
4.7	Stability	The stability of the appliance shall be	Shall be checked and should meet

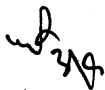




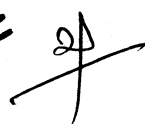




		such that when under fully equipped and loaded conditions (but excluding crew). If the surface on which the appliance stands is tilted to either side, the point at which overturning occurs is not passed at an angle of $27\frac{1}{2}^{\circ}$ from the horizontal.	the requirement as per relevant standards and QRs.
5	Workmanship and finish	5.1 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. 5.2 The complete exterior of the vehicle shall be painted with two finish coat fire-red colour conforming to shade No. 536 of IS 5. The paint shall conform to IS 2932. The Automobile paint (ICI/Dulux/DuPont etc.) shall only be used. 5.3 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. 5.4 All other parts except engine shall be painted black. 5.5 Necessary anti-corrosion and priming coats shall be applied before painting. 5.6 Painting and phosphate of the chassis shall be carried out to withstand the climatic conditions in the tropics. 5.7 The words "Central Industrial Security Force, Fire Service Training Institute." In Hindi & English shall be painted on both sides of vehicle with monogram on the Body of Rescue Tender in a suitable size letters in Golden Yellow paint with Black colour shading. NOTE: The name of "Central Industrial Security Force, Fire Service Training Institute." is given as example, the names of respective organisation will be incorporated accordingly.	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs.
6	Instruction Book	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	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs. Necessary certificates, from statutory authority as per QRs, wherever

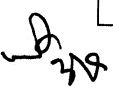


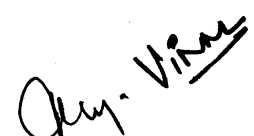




		illustrated spare parts list, giving reference to all the wearing parts.	necessary, shall also be checked and verified.
7	Accessories	The following accessories shall be provided in addition to these normally fitted on the chassis: - One 250 mm diameter bell shall be mounted externally. It can be operated from inside the driving/crew compartment; - Fog lamps- two, low mounted in front of appliance; - Reversing light- one, suitable situated to assist reversing; - LED Light bar min. 1200 mm wide with Aluminium Housing and max. 90 mm height with Blue and Red lighting shall be provided on top of the fire vehicle. - 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; - Wind screen wipers (electrically operated) - of approved design -two; - Tools- All tools required for normal routine maintenance of the appliance, which are not included in the kit for the chassis; - 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; - Spot light- two, adjustable and shall be mounted in convenient position on the roof of the appliance; and - One, 12 volts battery operated siren shall be mounted in a convenient position.	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs.
8.	Marking	Each appliance shall be clearly and permanently marked with the following information: Manufacturer's name or trade-mark,	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs.

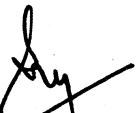






		if any; and b) Year of manufacture.	Necessary certificates from statutory authority as per QRs. wherever necessary. Shall also be checked and verified.
9.	Equipment for Emergency Rescue Tender	List of mandatory equipment for users is enclosed. However the list is not exhaustive, new inventions can also be added according to user requirements.	Shall be checked physically and tested and should meet the requirement as per relevant standards and QRs. Necessary certificates from statutory authority as per QRs. wherever necessary. Shall also be checked and verified.

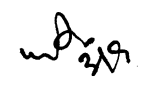

Sh. S K Yadav
(AC/BSF)


Sh. Vimal
(DC/SSB)


Sh. Anil Kapoor
(AC/ITBP)

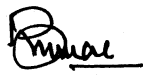

Sh. Sanjay Singh
(AC/NSG)

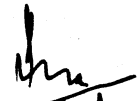

Manoj Kumar
(AC/CRPF)

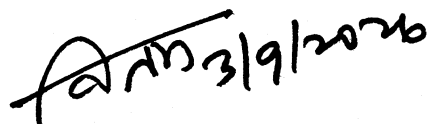

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Sh. Binay Kumar
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Sh. Anil Singh
(DIG/CISF)


Sh. Vijay Prakash, IPS
ADG (HQ)/CISF
Chairman


Director General/CISF