

GOVERNMENT OF ARUNACHAL PRADESH  
DIRECTORATE OF FIRE & EMERGENCY SERVICES  
ITANAGAR

No.DIR/F&ES/MT-251/15<sup>TH</sup> FC/2025

Dated Itanagar the 24 July' 2025

**TENDER NOTICE**

Sealed tenders on plain paper are invited by the Director of Fire & Emergency Services, Arunachal Pradesh, Itanagar from the well established and reputed fabricators for supply of Fire Tender with search & rescue equipment, Fire Tender with mist technology, Water Browser, motorcycles with two water mist set, Light Rescue Tender and Educational Van as per enclosed terms & conditions and technical specifications. Tenders will be received up-to **1600 hrs on 11/08/2025** and will be opened **on 12/08/2025 at 1100 hrs**. The tenderers or their representatives may remain present at the time of opening of tenders.

The tender papers containing full details with specification and terms & conditions can be obtained from Directorate of Fire & Emergency Services, Ganga, Itanagar on any working day during office hours w.e.f. **25/07/2025 to 11/08/2025** on payment of Rs.1,000/- (Rupees one thousand) only (non-refundable) as tender fees in the form of Demand Draft/ Bankers Cheque in favour of the Superintendent of Police, Fire & Emergency Services, Itanagar, payable at SBI Itanagar. It may also be downloaded from website [www.arunpol.nic.in](http://www.arunpol.nic.in). The tenderers downloading the documents from website are also required to submit a bank draft of Rs. 1,000/- (Rupees one thousand) only (Non-refundable) as tender fee at the time of submitting tender paper.

In complete tenders are liable to be rejected.



Director  
Fire & Emergency Services  
Arunachal Pradesh  
Itanagar

**NOT TO BE PUBLISHED**

M/No. DIR/F&ES/MT-251/15<sup>TH</sup> FC/2025

Dated Itanagar the 24 July' 2025

Copy to:

1. The I/c Computer Cell, PHQ Itanagar may kindly upload the Tender Notice, Terms & Conditions and 06 (six) copies of Technical Specifications of Fire Appliances on the website [www.arunpol.nic.in](http://www.arunpol.nic.in).
2. Notice board.
3. Office copy.



Director  
Fire & Emergency Services  
Arunachal Pradesh  
Itanagar

**GOVERNMENT OF ARUNACHAL PRADESH  
DIRECTORATE OF FIRE & EMERGENCY SERVICES  
ITANAGAR**

No. DIR/F&ES/MT-251/15<sup>TH</sup> FC/2025

Dated Itanagar the July' 2025

**TERMS AND CONDITIONS**

1. The Director General of Police, Arunachal Pradesh, Itanagar invites sealed tender under two bid system from the well established and reputed fabricators for supply of following Fire Appliance for Arunachal Pradesh Fire & Emergency Services as per the Deptt. specifications as detailed below;

| Sl. No. | Name of item                                 | Quantity | Remarks                                  |
|---------|--|----------|--|
| 1.      | Fire Tender with search and rescue equipment | 04 Nos.  | As per given specification at Annexure-A |
| 2.      | Fire Tender with mist technology             | 04 Nos.  | As per given specification Annexure-B    |
| 3.      | Water Bowser                                 | 04 Nos.  | As per given specification Annexure-C    |
| 4.      | Motorcycle with two water mist set           | 26 Nos.  | As per given specification Annexure-D    |
| 5.      | Light Rescue Tender                          | 01 No.   | As per given specification Annexure-E    |
| 6.      | Educational Van                              | 04 Nos.  | As per given specification Annexure-F    |

Note:- The quantity mentioned above may vary as per the actual availability of fund.

2. The sealed tender will be received up to 1600 hrs. on 11/08/2025 and will be opened on 12/08/2025 at 1130 hrs.
3. Tenderer should submit separate envelopes for each fabrication/supply.

**(A) Envelope, containing tender shall be superscripted in block letters as per details below.**

**(B) Tenderers should write his full address at the bottom of the left side of envelope.**

- 1. "TENDER FOR SUPPLY OF EDUCATIONAL VAN FOR ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES".**
- 2. "TENDER FOR SUPPLY OF RESCUE TENDER FOR ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES".**
- 3. "TENDER FOR SUPPLY OF WATER BOWSER FOR ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES".**
- 4. "TENDER FOR SUPPLY OF MOTORCYCLE WITH TWO WATER MIST SET FOR ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES".**
- 5. "TENDER FOR SUPPLY OF FIRE TENDER WITH SEARCH & RESCUE FOR ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES".**
- 6. "TENDER FOR SUPPLY OF FIRE TENDER WITH WATER MIST TECHNOLOGY FOR ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES".**





4. Tender should be quoted in two bid system, **Part-I Technical Bid** and **Part-II Financial Bid** which should be kept in separate sealed covers. Price should not be indicated in the technical bid. (Rate should be quoted in Indian currency) only.

**Cover-'I'-Technical Bid-** It shall contain scanned copies of eligibility information as under:

- a) Technical bid along with its specifications leaflet, brochure/literature, Law out, Complete drawing of the vehicle to be fabricated, Tank, Pipeline etc. to be submitted along with the Tender.
- b) Tender documents duly completed and signed but without indication of the rates "Quoted".
- c) Earnest Money must be attached in form of TDR/FDR/Demand Draft/NCS/KVP etc of Nationalized/Scheduled Bank/Post offices duly pledged in favor of **the Superintendent of Police, Fire & Emergency Services, Itanagar, Arunachal Pradesh**. The tenderers registered under Micro Small & Medium Enterprises (MSME), Small Scale Industries (SSI) are exempted from pledging Earnest Money. They must submit the relevant copies of the certificate claiming Exemption if any.
- d) Attested copy of PAN.
- e) Attested copy of Registration Certificate such as DIC, Udyam Aadhar, ARAI certificate, NSIC etc.
- f) Attested copy of last three years Audited Income tax return.
- g) Authorization from Chassis/Pump & PTO and equipment manufacturer.
- h) Financially soundness certificate.
- i) All the tender papers must be serialized/ numbered properly, and index/check list be placed at the beginning of the tender papers indicating the pages of the relevant documents else shall be summarily rejected.
- j) Technical compliance statement should be enclosed along with technical bid clearly specifying deviation, if any for the specifications mentioned in the tender.
- k) The Technical Bid and Financial Bid must be submitted in separate envelopes. Not submission in prescribed instruction will be liable for rejection.

**Cover-'II' Financial Bid-** It shall contain documents on Financial Bid. It shall be opened only in respect of the bidder found technically qualified by the Committee/ Board.

#### **GENERAL INSTRUCTIONS:-**

1. The tender received after scheduled date and time will not be entertained. The tenderer or their representatives may remain present at the time of opening of the tender.
2. Tender should be typed or handwritten clearly in block letters. All literature or correspondence in connection with Tender shall be made in English.
3. Tenders must be legible and clear in all respect else it shall be liable to be rejected.
4. Overwriting or cutting in the tender documents will be summarily rejected.



5. The Tenderer/Firms fail to fulfill the eligibility criteria will be summarily rejected.
6. Tender will not be accepted unless properly sealed with LAC SEALING WAX. Tender sending through postal/courier shall reach to the addressee in good condition and within due date. Tender in torn condition and after expire of last date will not be accepted.
7. The separate sealed envelope containing tender documents should be subscribed as Superscripted at Sl. No.-3(A) and sent to **the Superintendent of Police, Fire & Emergency Services, Ganga, Itanagar, District-Papumpare, Arunachal Pradesh, Pin-791113** or drop in the Tender Box on any working day from 0930 hrs to 1600 hrs.
8. The tender papers containing full details with specifications and Terms and Conditions can be obtained from Directorate of Fire & Emergency, Ganga, Itanagar on payment of tender fee Rs.1000.00 (Rupees one thousand only) (Non-refundable through a Bank Draft in favor of Superintendent of Police, Fire & Emergency Services, Arunachal Pradesh, Itanagar payable at State Bank of India, Itanagar) on any working days from 0930 hrs to 1600 hrs. The tender documents may also be downloaded from website [www.arunpol.nic.in](http://www.arunpol.nic.in). The tenderer downloading the documents from the website are also required to submit a bank draft of Rs.1000/- as tender fees. No other mode of payment will be accepted.
9. The successful Tenderer will be required to deposit 3% of the total value of the amount quoted in the tender as performance security money within 10 days from the date of issue of letter of acceptance of tender and tenderer will have to enter into a "DEED OF AGREEMENT" stipulating terms & conditions of the contract. Security deposit will be subject to forfeiture in case of non-fulfillment of any or all the Terms and Conditions of the contract. The 3% of Earnest Money of successful tenderer will be forfeited to the Government in case of failure to furnish security money and execution of "DEED OF AGREEMENT".
10. Liquidated damages will be charge for delay in delivery of vehicles or performance of services will be liable for as under;
  - (i) For first 30 days @ 1% of the value of goods.
  - (ii) For nest 60 days @ 2% of the value of goods.
  - (iii) For delay of 2 months/over & up to 4 months @ 4% of the value of goods.
  - (iv) Beyond 4 months and up-to 6 months @ 5%, of the value of the goods and on expiry of 6 months the contract would automatically get nullified and bank guarantee would be invoked.
11. Rates should be quoted F.O.R Directorate of F&ES, Itanagar. Rates quoted other than F.O.R Directorate of F&ES, Itanagar, shall not be accepted.
12. The rate of GST(as applicable) should be quoted by the tenderers and the GST% and amount be clearly mentioned for all items, else shall be summarily rejected.
13. The Rates should be quoted in Indian currency both in figure as well as in words.
14. In case tender opening date is declared holiday or bandh call at Itanagar, the tender will be opened on next working day at 1130 hrs.
15. The bidder should keep checking the website for any addendum/corrigendum to the notice/bidding documents till the date of submission of bids and the bidder should incorporate the same in his bid documents.



16. Conditional bids and the bids not meeting the qualifying criteria on the date of receipt of bids shall be summarily rejected.
17. Before submission of bids, the bidder must ensure that the scanned copies duly **self-attested** of all necessary documents have been attached with bid.
18. All the required information for the bid must be filled and submitted.
19. The payment for chassis will be released in advance payment to the successful Bidder on furnishing the Performa Invoice along with relevant copy from its authorized dealer. However, final payment will be released only after completion of the fabrication of the vehicles and supplied to the department and satisfactory completion of the Acceptance test by the Board.
20. Bidder must have submitted original Authorization Certificate directly from Original Chassis/Equipment's Manufacturer (OEM). The e-mail and contact number must be written in OEM Certificate. The submission of OEM Certificate by the 3<sup>rd</sup> party will summarily be rejected.
21. The bidder should provide the authorization from the PTO & Pump manufacturer for the supply and after sales service of the PTO & Pump.
22. The Bidder who had been blacklisted by tender inviting authority or by any state which has to be notarized or central government will not be eligible to participate in the tender.
23. Bidders have to submit details of their owned production infrastructure/capacity along with testing facilities available. Photographs with complete details of testing facility available should be attached with the bid. If necessary, the production site will be reviewed by the technical committee.
24. The technical details with complete drawing such as tank, structural view, pump and PTO layout along with printed leaflets/pamphlets of the items mentioning its make, etc. are to be furnished invariably by the Tenderers.
25. Attested copy of firm GST Registration.
26. The Bid shall be accompanied with an affidavit on Rs.100 stamp paper confirming 100% technical compliance as well as all the documents submitted.
27. All vehicular inventory to be supplied shall be covered under warranty of 3 years. The equipment/ items which develop technical fault during the warranty period should be repaired or replaced by the tenderer free of cost. The availability and after sales support of spare parts of vehicles should be 10 years.
24. The successful Tenderer shall have to execute the contract agreement with the Department.
25. Earnest money in respect of unsuccessful Tenderers will be released soon after the finalization of the Tenders. The earnest money of the successful Tenderers will be released after signing of the contract agreement and production of Bank Guarantee in respect of the chassis delivered for fabrication.
26. TDS will be deducted from the bill as per applicable rate.



27. **The fabricator must meet the pre-qualification criteria.**


- a) Only OEM and established manufacturer of fire fighting vehicles are allowed to bid for the tender at Sl No: 1,2,3,5 &6 along with supporting documents.
- b) The Fabricator should be ISO: 9001:2015, ISO 14001:2015 certified and should enclose such valid certificate along with tender documents.
- c) Bidder/Fabricator should have at least three years good experience in fabrication of Fire Tenders (Documents to be submitted as evidence).
- d) **Bidder/Fabricator should have mandatory In-house Testing Facilities such as Endurance Test, Deep lift test, Gradations Test, Stability Test, Tilt Platform test, Flow test etc. for testing of completed vehicles, as per relevant Indian standard. Relevant documents with photograph and videos of testing facilities should be submitted along with the bid documents, else tender are liable to be rejected. The Inspection and testing of vehicles may be conducted in 3(three) stages: -**
  - i. 1<sup>st</sup> stage : Construction of under structure, water tank, placement of tanks, fittings lockers & pump etc.
  - ii. 2<sup>nd</sup> stage : Testing of equipment & systems at workshop
  - iii. 3<sup>rd</sup>/final stage : Final Acceptances Test will be conducted at Itanagar in presence of acceptance board constituted by the Govt. of Arunachal Pradesh.
- e) Tenderer should have their Regional Office/Representative at NE region for immediate response and better after sales and service support.

28. The successful bidder has no right to claim for additional fund in any case.

29. The supply order will be given to the successful tenderer as per availability of fund and considering the urgency in the Deptt..

30. **The Director General of Police, Arunachal Pradesh, Itanagar reserves the right to reject the lowest or all or any of the tender without assigning any reason thereof.**

31. In case of any dispute, legal jurisdiction will be at Itanagar, Arunachal Pradesh.

  
Superintendent of Police  
Fire & Emergency Services  
Arunachal Pradesh  
Itanagar



## TECHNICAL SPECIFICATION OF FIRE TENDER WITH SEARCH AND RESCUE

### 1. OVERVIEW

The Fire tender with search & rescue equipments shall be designed & manufactured in compliance with specifications given below relevant Indian/International standards (wherever applicable) & as per sound engineering practices. It shall be designed to effectively & efficiently carry 3000 Litres of Water, a Pump with a discharge capacity of 2270 LPM @ 7 Bar, driven through suitable Power Take Off (PTO) unit, a Monitor of 1800 LPM @ 7 Bar, equipment and accessories etc. All equipment & accessories will be fixed on appliance in a compact, neat & ergonomic manner & will be easily & readily accessible for immediate use during emergencies. Due care shall be taken to ensure that all aggregates are designed for ease & comfort of the operator.

### 2. CHASSIS

The Fire tender with search & rescue will be fabricated on TATA/Ashok Leyland/MAN/Bharat Benz BS-VI Cab chassis with Minimum 110 HP, GVW- Not Less than 10000 Kg chassis to be supplied by the fabricator. The chassis advance shall be facilitated to the successful fabricator after the placement of the order against submission of Performa Invoice of the chassis authorised dealer. The fabricator will have to submit an Indemnity Bond to the department of equivalent amount of that of chassis. In this regards an authorization from the Chassis OEM to the bidder has to be uploaded with the bid.

### 3. DESIGN AND CONSTRUCTION

The Fire tender with search & rescue shall be designed to be as compact as possible with ease of accessibility. Pump & other equipment controls shall be so arranged that user can operate them easily & conveniently. Lever type valves shall be preferred unless impractical in any way. Material of construction shall be used with a view to combine lightness with strength & durability. No form of wood shall be used anywhere. All parts which form water ways, come in contact with water/foam or are made from materials prone to corrosion, shall be treated with a good quality anti-corrosion system / treatment / paint coating etc.

**Vendor shall submit the General Arrangement Drawings, Pipeline layout, Electrical Drawing along with the technical bid, failing which the offer is liable for rejection.**

### 4. PUMPING SYSTEM

A centrifugal fire pump having CE certification as per EN 1028 shall be mounted at the rear of the vehicle. The pump like FIREFLY/Zigler/Rosenbauer make. *The Certificates of the Standards along with OEM authorization shall be submitted along with the bid, failing to which the bid shall be rejected.* Anti-friction bearings external to the casing be provided so as to avoid any bearings within the pump casing. The impeller(s) of the low-pressure section shall be closed type and shall be dynamically balanced. A drain cock plug shall be provided at the bottom of the casing in a way to prevent the cock being opened due to vibrations. Studs, etc, used in the pump casing coming in contact with the water shall be stainless steel. The castings shall be of Gun Metal without any blow holes, internal cracks, etc. The interior of the casting shall be smooth finished. The castings shall withstand the hydraulic pressure when given. The pump shall be designed to give its rated output with an engine and pump input at shaft speed safe enough to operate the engine. The pump capacity shall be **2270 litre/min at 7 Bar**. The design of the pump shall be such that the normal pressure and high-pressure stages can be operated simultaneously.

The pump shall have suction inlet(s) having 100 mm standard suction connection (see IS 902) with internal strainer(s) and blank cap(s). The strainer(s) shall be retained firmly when in use but shall





be easily removable. The pump shall be provided with two delivery valves having 63 mm standard hose couplings (see IS 903) with screwed wheel type quick closing clack valve (see IS 4928). Blank caps fastened with chains.

#### 5. PRIMING SYSTEM

The pump shall be fitted with twin piston reciprocating type priming system capable of priming the pump from 7 meters in not more than 30 cms at NTP conditions and considering the allowances as stated in IS: 950-2012.

Note: Details of pump such as its make and model with full technical features, supported with catalogues, brochures, drawing etc. shall be attached with the offer. Pump Performance curve & GA drawing of pump to be attached.

#### 6. CONTROL PANEL

The pump panel on the rear shall be provided with following

1. Low Pressure Gauge
2. Compound Gauge
3. Throttle Control
4. Water level indicator Tube type
5. Hydrants Control

#### 7. LOW PRESSURE HOSE REELS :

1 (One) low pressure hose reel shall be provided and mounted on top of the pump. The hose 60 mtr length with suitable nozzle to be provided. The pipeline inlet connection shall be of 20 mm.

#### 8. WATER TANK :

Water tank shall be of 3000 litres to be made out of MS steel of 4 mm bottom, sides, top & baffles, duly die-pressed. Butt-welded joints shall be minimized. It shall be suitably baffled to prevent surge while cornering / braking. Baffles shall be bolted & fasteners shall be SS only. Baffles will be arranged in a manner to facilitate easy cleaning of the tanks. Centre of gravity shall be maintained as low as possible. Suitable hooks / lifting eyes shall be provided on top of the tank for maintenance / repairs. Tank shall have a filling orifice of 250 mm & maintenance manhole of 450 mm with hinged or threaded cover marked "WATER".

Two 63 mm instantaneous Hydrant connection, incorporating a strainer, shall be provided close to the pump panel Control for filling the tank through 75 mm bore pipe work or feeding the hose reel equipment connections will be provided. The line will be designed to ensure that inflow of water into the tank is sufficient to maintain the rated output of the pump while tank is being replenished. These connections shall be fitted with a valve to prevent water leaking through the filling pipe & shall be provided as close to the pump as possible. Valve may be of NRV / Ball / Butterfly type. A 50 mm drain line with a valve will be provided to drain the tank. A cleaning hole of 250 mm will be provided at the bottom of the tank. One overflow pipe of 50mm dia shall be fitted to the tank. The tank shall be hydraulically tested at 0.5 kg/cm<sup>2</sup> pressure. All plumbing shall be reasonably accessible for maintenance purposes. Screwed bends, joints shall be avoided as far as possible. All the joints will be flanged type & shall have O ring sealing.

The Tank shall be connected with the pump and hose reel and valve(s) shall be provided in such a way that any of the following operations are possible.





- a) Hydrant – Tank.
- b) Hydrant – Hose Reel,
- c) Tank – Pump – high and low pressure Hose Reels,
- d) Hydrant – Pump – low pressure Hose Reels
- e) Tank – Pump – Monitor (Water)
- f) Pump – tank – delivery outlet
- g) Off.

9. **POWER TAKE OFF :**

The PTO for driving the pump shall be taken from the vehicle engine & shall be of suitable ratio for the rated output of the pump. The PTO make shall be Firefly/Firehawk. The lever for engaging the PTO will be provided in driver's cabin. Necessary supports for PTO Unit, propeller shaft coupling, universal joints etc. for power input to output from PTO Unit shall be provided by vendor. The drive assembly components (heavy duty shafts, coupling etc.) shall be dynamically balanced vibration at any of the rotary parts shall be minimized. **Vendor is to submit its compliance and an authority letter from its OEM while submitting the bid, failing to which the offer is liable for rejection.**

10. **COOLING SYSTEM:**

In addition to the radiator cooling, an indirect cooling system of the open circuit type shall be provided (if required) to keep the engine from overheating during extended use in tropical climates & when the ambient temperature is over 40° C. The cooling system shall be so designed that the full power output of the engine can be maintained during continuous stationary running without overheating. The operating temperature of the engine cooling water shall be thermostatically controlled. The oil in the sump shall be prevented from overheating. The cooling water outlet pipe from P.T.O. & additional cooling tank shall be connected through a suitable diameter pipe. The end of the pipe shall terminate in a threaded connector.

11. **PIPELINES & VALVES**

The complete pipeline circuit on the vehicle shall be done with galvanised pipes material only. All valves up to 2" size will be lever operated ball valves & all valves above 2" size shall be butterfly valves. Seats of the valves shall be easily replaceable, readily available. All the lines shall be tested hydraulically.

12. **ROOF MONITOR :**

A monitor shall be installed on the roof of the vehicle with Discharge capacity: 800-2000 LPM having different flow settings(800-1200-1600-2000) instantaneously. Horizontal swivel range- 360 deg. Vertical travel-Min 130 deg(-50to + 80deg), Straight let distance-Min 40 mtr at 7 kg/cm<sup>2</sup>, Fog jet distance - Min 20 mtr at 7 kg/cm<sup>2</sup>, Material- Heat treated Aluminium alloy, hard anodized for corrosion resistance(preferably there should be no welded joint).

***OEM Authorization certificate is to be submitted with the bid, failing to which the bid is liable for rejection.***

**13. CABIN:**

Enclosed accommodation for driver and officer in charge shall be provided in a single compartment Chassis OEM provided factory-built cabin. Additionally, one separate crew cabin shall be fabricated by the vendor for sitting arrangement of 4 firemen behind the Chassis cabin. Driver will be provided with large size rear view mirrors on both sides of the cab. A First aid box shall be mounted in the crew cabin at easily accessible location

**14. REAR SUPERSTRUCTURE:**

The rear superstructure shall be fabricated from MS sections / angles / channels & panelled with aluminium plates by means of glue or riveting. Roof panels shall be made of aluminium Chequered. The roof shall be strong enough for being walked-on. Intermediate walls shelves of the lockers shall be constructed from aluminium chequered sheets, which are panelled to the structure by means of glue or riveting. The outer and rear panelling of superstructure will be done from 1.6 mm aluminium sheets. Inner panelling will be done from 1.22 mm aluminium sheets. Complete top of the superstructure shall be covered with 2 mm aluminium chequered or padded plates.

**15. LOCKER:**

Lockers shall be provided for stowage of accessories. Hinged doors shall be provided to the lockers and shall be provided with internal automatic lighting arrangement with master switch in the cabin. The lockers shall be weather proof and self-draining to release all water following a wash down etc. The doors of the lockers shall have efficient means for holding the open door and efficient flush fitting spring loaded locks.

**16. ELECTRICAL EQUIPMENT :**

Adequate lighting arrangement shall be made in all compartments. All wiring will be properly fixed in position & will be protected against heat, oil & physical injury. To the extent possible all wiring will pass through conduits. All wires shall be stranded copper or copper alloy conductors of a gauge rated to carry at least 125 percent of the maximum current for which the circuit is protected.

**17. LIGHT BAR & PA SYSTEM:**

LED Light Bar shall be mounted on top of the driver cabin. The LED shall be suitable for outdoor use. The PA system shall be of minimum three tones. The PA system shall have an integrated mic with volume control.

**18. FITTINGS & ACCESSORIES:**

Following accessories will be provided on the appliance:

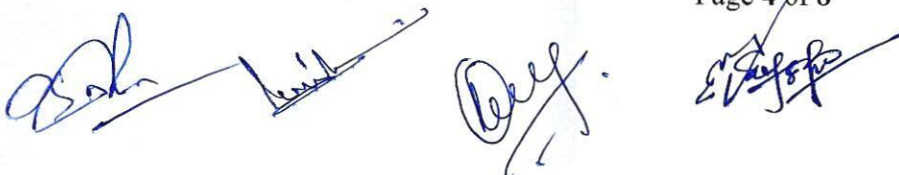
- Two Fog lamps on the Front Bumper
- Fire Bell- 1 No.
- Search light with 30 m cable- 1 No.
- Spot Light on the top - 1 No.
- Locker lights as required.

**19. LADDER WITH GALLOWS:**

The vehicle shall be installed with gallows on the vehicle roof and shall be suitable for fixing a 10.5 m aluminium extension ladder. Aluminium Ladder to be mounted over the vehicle.

**20. PAINTING & MARKING:**

Once the panelling is completed, all the outside surfaces shall be painted with a good quality paint system, like Dupont, Asian Paints or Equivalent etc. This shall be polyurethane (PU) based paint.





The complete vehicle (all exterior surfaces) & monitor shall be painted with at least 2 coats of zinc phosphate primer each of 50 microns DFT & two coats of polyurethane finish paint each coat of 50 microns DFT. The colour for the outside will be as per the latest international & Indian norms for fire brigade vehicles. **The username will be written or stickered on both-sides with yellow/white colour.** Water lines will be epoxied with zinc phosphate epoxy primer each of 50 microns DFT & two coats of polyurethane finished paint each coat of 50 microns DFT. Water lines shall be painted red in colour. The colour for the outside will be as per the latest international & Indian norms for fire brigade vehicles. Reflective stripe(s) shall be affixed to the perimeter of the apparatus. The inside of lockers shall be painted in pale cream / grey colour. Under frame of chassis shall be painted with chlorinated rubber paint. The appliance shall clearly have the following marks at suitable locations.

- (i) Manufacturer's name & trademark.
- (ii) Year of manufacture
- (iii) Pump serial numbers & capacities.
- (iv) Capacity of water tank in litres.
- (v) Engine & chassis number.
- (vi) All instrument control & valves shall be identified with properly itched metallic Name plates.

**21. ACCEPTANCE TEST :**

The acceptance tests as mentioned below will be given to complete satisfaction of inspecting officers. Vendor shall ensure that design of tender will not affect chassis parameters such as speed, turning circle, acceleration etc. All inspections & tests shall be carried out by the vendor to the complete satisfaction of department's representative, who shall have access at all reasonable times to vendor's works. Vendor to also ensure to submit all the photographic evidence of testing facilities in its premises with the offer failing to which the bid is liable for rejection.

**22. ENDURANCE TEST :**

The pump will be tested for a continuous period of four hours non-stop & the water will not be replenished during this test & the engine will not show signs of overheating.

**23. PRIMING TEST:**

The priming will be tested as per the latest standards & the system will be subjected to a test at a suction of 7 metres. The priming shall be achieved in 45 seconds.

**24. ROAD TEST:**

After completion of all the above-mentioned tests, a road test will be carried out where the vehicle will be tested overall.

**25. SIGNAGE/MARKINGS**

All the signage shall be as per international standards and all the markings shall be in "English" language only.

The Fire Service insignia shall be painted on both sides of the appliance in yellow and black lettering "ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES"

**26. Warranty**

The complete vehicle shall be under warranty for a period of 36 calendar months from the date of supply or commissioning of the vehicle, against any manufacturing defects.

27. **EQUIPMENTS :**

The equipment to be supplied on the appliance will be as per the list below.

| <u>Sr. No</u> | <u>Description</u>   | <u>Qty</u> |
|---------------|--|------------|
| i.            | The fire hose of 63mm diameter should be a non-percolating light weight Fire Hose, completely made up of high tenacity polyester yarn with EPDM rubber inner lining for low-friction-loss and outer elastomeric coating for its protection against mild-dew, moisture and some kinds of The hose shall be fitted with 63 mm delivery hose couplings (see IS:903 - 1975). The hose should be 15 mtr in length. Should be approved & listed under UL-19 (U.S.A) and IS 636 type - 2, CE marked with Working Pressure of 18 bar, Proof Pressure of 28 bar and Burst Pressure of 42 bars.<br>OEM authorisation, along with the certificates, need to be attached with the bid  | 10 nos.    |
| ii.           | Suction hose with GM coupling 2.5 meters as per pump suction dia.  | 04 nos.    |
| iii.          | Suction strainer to suit the above-mentioned suction hose  | 01         |
| iv.           | Basket strainer to suit the above-mentioned suction strainer   | 01         |
| v.            | Universal and conventional wrench to tighten the above-mentioned suction hose  | 02 prs     |
| vi.           | Branch pipe 63mm   | 02 nos.    |
| vii.          | Light weight hand control branch pipe (multipurpose)   | 02 nos.    |
| viii.         | Ceiling Hook (6 feet handle)   | 04 nos.    |
| ix.           | 34 mm Fire man insulated Axe   | 04 nos.    |
| x.            | Lifebuoy   | 04 nos     |
| xi.           | Life jackets   | 04 nos.    |
| xii.          | Helmet   | 06 nos.    |
| xiii.         | Leather Hand gloves  | 04 prs.    |
| xiv.          | Single pully   | 04 nos.    |
| xv.           | Double pully   | 02 nos.    |
| xvi.          | Carebina   | 08 nos.    |
| xvii.         | LLG LED Flashlight (Titanium)  | 04 nos.    |
| xviii.        | A Remote Area LED Lighting Solution which should be of compact size and user-friendly design, which can be carried to remote locations in a specially made rugged FRP suitcase with wheels and easy to carry handle. The lighting system shall operate via a li-FePo4 battery, which can be charged as and when required and shall be ideally suited for all types of emergency situations and locations where electricity is not available. The whole unit shall be easily assembled and dismantled with following features:<br>Input Voltage : 24V<br>Rated Power : 2 x 72W LED Light, In total 144W<br>Battery Type & Life : 24V/ 24AH LiFePo4 Life- 5 Years<br>Working Time : High 4.5 Hrs / Middle 9 Hrs / Low 20 Hrs<br>Charging Time : Max 8 Hrs<br>Rated Luminous : Full Intensity- Minimum 13000 lumens<br>Waterproof Rating : IP65<br>Colour Temperature : 6500 K +- 10%<br>Mass Height Extended : 2 Meters<br>Material of case : Case- FRP<br>Material : Telescopic Rods- 2 nos<br>Weight : 15 kg +- 10%<br>Accessories : Charging Cable & Reflective Strip | 01         |



|      |  |    |
|------|--|----|
|      | Features : Linear Dimming- 10% to 100 %  |    |
| xix. | A 3 in 1 manual tools to be used for fire protection and ideal for all types of ground and fuel. The tool head to be made from aluminium & titanium, having individual replaceable cutting blades made from high tensile steel. A tool to be provided with a wooden handle. Weight not more than 2.8 Kg. The technical details and picture of the tools to be submitted with the offer for evaluation purpose  | 01 |
| xx.  | Fire Swatters/beater with flexible handle to be supplied. The manual device should have horizontal and vertical flaps made from multi-layer cotton and rubber for efficient use and faster fire extinguishment. The beater to be provided with a telescopic handle enabling it to be extended upto 2 Mtrs, The manual device to be supplied along with a carrying cover, Weight not more than 1.85 Kg. The technical details and picture of the tools to be submitted with the offer for evaluation purpose- | 01 |
| xxi. | A 20 Ltr autonomous backpack pump to be provided which is ergonomically designed to offer comfort and efficient fire fighting. The backpack should have adjustable straps, Velcro straps to keep manual tools, with inbuilt 20 Ltrs water carrying capacity with double plunger nozzle minimum length 900mm, and reach of more than 8 mtrs. The weight of the nozzle not to be more than 1.2 Kg. The technical details and picture of the backpack along with OEM authorization to be submitted.             | 01 |





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## TECHNICAL SPECIFICATION OF MINI WATER TENDER WITH MIST TECHNOLOGY

### 1. General

The Mist unit will be fabricated on TATA/Ashok Leyland/Bharatbenz/MAN BS-VI Cab chassis with Minimum 110 HP, GVW- Not Less than 10000 Kg chassis to be supplied by the fabricator. The chassis advance shall be facilitated to the successful fabricator after the placement of the order against submission of Performa Invoice of the chassis authorised dealer. The fabricator will have to submit an Indemnity Bond to the department of equivalent amount of that of chassis. In this regards an authorization from the Chassis OEM to the bidder has to be uploaded with the bid.

### 2. Bodywork and Cabin:

- a. The cabin shall be fabricated with one original company made driver's cabs and a second to be fabricated for a crew of 4 people.
- b. Each cabin shall have 2 doors.
- c. The body shall be made of 2mm thick MS pressed section externally paneled with 1.6mm aluminum sheets and internally paneled with 1.2 mm aluminum sheets. Flooring shall be of 2mm thick aluminum sheet. The lockers shall have aluminum roll up shutters. Systematic stowage arrangement shall be made for all the loose equipment and accessories.
- d. The doors on both sides shall have sliding aluminum panel windows. The aluminum panels shall be powder coated.
- e. On both sides of driver rear view mirrors shall be installed. All the glass shall be protected by heavy gauge 1 sq. inch wire mesh.

### 3. Water Tank:

- a. Water tank shall be of 3000 litres to be made out of MS steel of **5 mm bottom, sides, top & baffles**, duly die-pressed. Butt-welded joints shall be minimized. It shall be suitably baffled to prevent surge while cornering / braking. Baffles shall be bolted & fasteners shall be SS only. Baffles will be arranged in a manner to facilitate easy cleaning of the tanks. Centre of gravity shall be maintained as low as possible. Suitable hooks / lifting eyes shall be provided on top of the tank for maintenance / repairs. Tank shall have a filling orifice of 250 mm & maintenance manhole of 450 mm with hinged or threaded cover marked "WATER".
- b. Two 63 mm instantaneous Hydrant connection, incorporating a strainer, shall be provided close to the pump panel Control for filling the tank through 75 mm bore pipe work or feeding the hose reel equipment connections will be provided. The line will be designed to ensure that inflow of water into the tank is sufficient to maintain the rated output of the pump while tank is being replenished. These connections shall be fitted with a valve to prevent water leaking through the filling pipe & shall be provided as close to the pump as possible. Valve may be of NRV / Ball / Butterfly type. A 50 mm drain line with a valve will be provided to drain the tank. A cleaning hole of 250 mm will be provided at the bottom of the tank. One overflow pipe of 50mm dia shall be fitted to the tank. The tank shall be hydraulically tested at 0.5 kg/cm<sup>2</sup> pressure. All plumbing shall be reasonably accessible for maintenance purposes. Screwed bends, joints shall be avoided as far as possible.

#### 4. High Pressure Pump:

- a. The pump shall be of 150 – 160 LPM @ 100 bar rated capacity. It shall be of plunger positive displacement type pump. A by-pass for letting the water back to the tank shall be provided to release excess pressure generated due to shutting of the hand lines.
- b. The pump shall have double seal on each plunger with low pressure intermediate chamber to keep the water seals cool and lubricated. This system shall also permit the recirculation of any leakage from the high pressure back to the pump inlet.
- c. The pump shall have synthesized pistons of ceramic. The connecting rods shall be of special alloys with low attrition coefficient, high wear resistance and high anti - seize properties. The hydraulic structure shall be designed to simplify scheduled maintenance procedures like gasket and valve replacement. The pump suction line shall have inline mesh filters. The pump shall deliver water to the hose reels.

#### 5. High Pressure Hose Reel:

The high-pressure pump shall operate through 2 separate hose reels of 60-meter length each, and shall be provided at a suitable place on the appliance, one on each side. The hose used for the hose reels should be R2 type rated for a minimum working pressure of 270 bars & shall be of min. 16 mm ID. The unit shall be equipped with two Fog Guns which shall be capable of discharging 65-75 LPM @ 100bar in mist mode. The jet range shall be approx. 15 - 20 Mtrs. (in still air condition). This Fog Gun shall have a Jet as well as Fog mode.

#### 6. Power Take off Unit (PTO):

A full torque drive line PTO has to be installed for operating the pump. This PTO shall be of a proper gear ratio to drive the pump at the required RPM without loss of power from the engine and also preventing engine overheating.

**7. Instruments and Controls:** Instruments & Controls: Adequately illuminated pump control panel shall be provided on the appliance housing the RPM meter & panel light. The panel shall be compact & have the following additional controls & gauges:

- a. Pump pressure gauge.
- b. Pump room light switch
- c. Auxiliary throttle control.
- d. Panel light.

**8. Ladder:** A 7.5 mtr aluminum trussed type extension ladder to be provided.

**9. Electrical Accessories:** Following accessories will be provided on the appliance:

- a. Two Spot lights on top
- b. Two Fog lamps on Bumper
- c. One Search Light
- d. Light bar with PA system and Perimeter lights (2 on each side) of reputed make.

#### 10. Workmanship & Finish

The GVW of the appliance will not exceed the rated GVW of the chassis manufacturer with all equipment & crew.



The Fire Service insignia shall be painted on both sides of the appliance in yellow and black lettering "ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES"

**11. Acceptance Test:** Fire Tender shall pass the following acceptance test:

- a. Road test to check chassis, manufacturer's rating for acceleration, maximum speed, braking efficiency & turning circle with appliance fully loaded.
- b. When the vehicle is brought to a stop in 9 m when travelling at 32 km/hr fully loaded & manned on pavement without any adverse effect on mounted equipment.
- c. All IS type testing facilities should be available with the Bodybuilder. Necessary proof to be submitted.

**12. Warranty:** The complete vehicle shall be under warranty for a period of 36 calendar months from the date of supply or commissioning of the vehicle, against any manufacturing defects.

**13. PAINTING & MARKING:**

Once the panelling is completed, all the outside surfaces shall be painted with a good quality paint system, like Dupont, Asian Paints or Equivalent etc. This shall be polyurethane (PU) based paint. The complete vehicle (all exterior surfaces) & monitor shall be painted with at least 2 coats of zinc phosphate primer each of 50 microns DFT & two coats of polyurethane finish paint each coat of 50 microns DFT. The colour for the outside will be as per the latest international & Indian norms for fire brigade vehicles. **The username will be written or stickered on both-sides with yellow/white colour.** Water lines will be epoxied with zinc phosphate epoxy primer each of 50 microns DFT & two coats of polyurethane finished paint each coat of 50 microns DFT. Water lines shall be painted red in colour. The colour for the outside will be as per the latest international & Indian norms for fire brigade vehicles. Reflective stripe(s) shall be affixed to the perimeter of the apparatus. The inside of lockers shall be painted in pale cream / grey colour. Under frame of chassis shall be painted with chlorinated rubber paint. The appliance shall clearly have the following marks at suitable locations.

- a. Manufacturer's name & trademark.
- b. Year of manufacture
- c. Pump serial numbers & capacities.
- d. Capacity of water tank in litres.
- e. Engine & chassis number.
- f. All instrument control & valves shall be identified with properly itched metallic Name plates.



# 18. List of Equipments.

| <u>Sr. No</u> | <u>Description</u>  | <u>Qty</u>  |
|---------------|---|-------------|
| i.            | Delivery hose of 63mm diameter should be a non-percolating light weight Fire Hose completely made up of high tenacity polyester yarn with EPDM rubber inner lining for low-friction-loss and outer elastomeric coating for its protection against mild-dew, moisture and some kinds of The hose shall be fitted with 63 mm delivery hose couplings (see IS:903 - 1975). The hose should be 15 mtr in length. Should be approved & listed under UL-19 (U.S.A) and IS 636, CE marked with Working Pressure of 18 bar, Proof Pressure of 28 bar and Burst Pressure of 42 bars.<br>OEM authorisation, along with the certificates, need to be attached with the bid | 10          |
| ii.           | Suction hose with GM coupling 2.5 meters as per pump suction dia  | 04          |
| iii.          | Suction strainer to suit the above-mentioned suction hose   | 01          |
| iv.           | Basket strainer to suit the above-mentioned suction strainer  | 01          |
| v.            | Universal and conventional wrench to tighten the above-mentioned suction hose   | 02<br>Pairs |
| vi.           | Light weight hand control branch pipe 63mm (multipurpose)   | 02 nos.     |
| vii.          | A 3 in 1 manual tools to be used for fire protection and ideal for all types of ground and fuel. The tool head to be made from aluminium & titanium, having individual replaceable cutting blades made from high tensile steel. A tool to be provided with a wooden handle. Weight not more than 2.8 Kg. The technical details and picture of the tools to be submitted with the offer for evaluation purpose   | 01 No.      |
| viii.         | Fire Swatters/beater with flexible handle to be supplied. The manual device should have horizontal and vertical flaps made from multi-layer cotton and rubber for efficient use and faster fire extinguishment. The beater to be provided with a telescopic handle enabling it to be extended upto 2 Mtrs, The manual device to be supplied along with a carrying cover, Weight not more than 1.85 Kg. The technical details and picture of the tools to be submitted with the offer for evaluation purpose-  | 01 No.      |
| ix.           | A 20 Ltr autonomous backpack pump to be provided which is ergonomically designed to offer comfort and efficient fire fighting. The backpack should have adjustable straps, Velcro straps to keep manual tools, with inbuilt 20 Ltrs water carrying capacity with double plunger nozzle minimum length 900 mm, and reach of more than 8 mtrs. The weight of the nozzle not to be more than 1.2 Kg. The technical details and picture of the backpack along with OEM authorization to be submitted with the offer   |             |
| x.            | Short branch pipe   | 02 Nos.     |
| xi.           | Rake three prong  | 02 Nos.     |
| xii.          | Ceiling Hook ( 6 feet)  | 04 nos.     |
| xiii.         | Fireman Axe   | 04 nos.     |
| xiv.          | Leather Hand Gloves   | 04 pairs    |





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# TECHNICAL SPECIFICATION OF WATER BOWSER

## 1. OVERVIEW

The Water Bowser shall be designed & manufactured in compliance with specifications given below, relevant Indian/International standards (wherever applicable) & as per sound engineering practices. It shall be designed to effectively & efficiently carry **7,000 Litres** of Water, a Pump with a discharge capacity of 2250 LPM @ 7 bar,, driven through suitable Power Take Off (PTO) unit, equipment and accessories etc. All equipment & accessories will be fixed on appliance in a compact, neat & ergonomic manner & will be easily & readily accessible for immediate use during emergencies. Due care shall be taken to ensure that all aggregates are designed for ease & comfort of the operator.

## 2. CHASSIS

The Water Bowser will be fabricated on TATA/Ashok Leyland/MAN/Bharat Benz BS-VI cowl chassis with Minimum 200 HP, GVW- Not Less than 18500 Kg chassis to be supplied by the fabricator. The chassis advance shall be facilitated to the successful fabricator after the placement of the order against submission of Performa Invoice of the chassis authorised dealer. The fabricator will have to submit an Indemnity Bond to the department of equivalent amount of that of chassis.

## 3. DESIGN AND CONSTRUCTION

The Water Bowser shall be designed to be as compact as possible with ease of accessibility. Pump & other equipment controls shall be so arranged that user can operate them easily & conveniently. Lever type valves shall be preferred unless impractical in any way. Material of construction shall be used with a view to combine lightness with strength & durability. No form of wood shall be used anywhere. All parts which form water ways, come in contact with water/foam or are made from materials prone to corrosion, shall be treated with a good quality anti-corrosion system / treatment / paint coating etc.

**Vendor shall submit the Weight Distribution Chart, GA Drawings, Pipeline layout, Electrical Drawing along with the technical bid, failing which the offer is liable for rejection.**

## 4. PUMPING SYSTEM

- i. A centrifugal fire pump having CE certification as per EN 1028 shall be mounted at the rear of the vehicle. The pump like FIREFLY/Zigler/Rosenbauer make. ***The Certificates of the Standards along with OEM authorization shall be submitted along with the bid, failing to which the bid shall be rejected.*** Anti-friction bearings external to the casing be provided so as to avoid any bearings within the pump casing. The impeller(s) of the low-pressure section shall be closed type and shall be dynamically balanced. A drain cock plug shall be provided at the bottom of the casing in a way to prevent the cock being opened due to vibrations. Studs, etc, used in the pump casing coming in contact with the water shall be stainless steel. The castings shall be of Gun Metal without any blow holes, internal cracks, etc. The interior of the casting shall be smooth finished. The castings shall withstand the hydraulic pressure when given. The pump shall be designed to give its rated output with an engine and pump input at shaft speed safe enough to operate the engine. The pump capacity shall be **2270 litre/min at 7 Bar**. The design of the pump shall be such that the normal pressure and high-pressure stages can be operated simultaneously.
- ii. The pump shall have suction inlet(s) having 100 mm standard suction connection (see IS 902) with internal strainer(s) and blank cap(s). The strainer(s) shall be retained firmly when in use but shall be easily removable. The pump shall be provided with two delivery valves having 63 mm standard hose couplings (see IS 903) with screwed wheel type quick closing clack valve (see IS 4928). Blank caps fastened with chains.





## 5. PRIMING SYSTEM

- i. The pump shall be fitted with twin piston reciprocating type priming system capable of priming the pump from 7 meters in not more than 30 cms at NTP conditions and considering the allowances as stated in IS: 950-2012.
- ii. Note: Details of pump such as its make and model with full technical features, supported with catalogues, brochures, drawing etc. shall be attached with the offer. Pump Performance curve & GA drawing of pump to be attached.

## 6. LOW PRESSURE HOSE REELS :

1 (One) low pressure hose reel shall be provided and mounted on top of the pump. The hose 60 mtr length with suitable nozzle to be provided. The pipeline inlet connection shall be of 20 mm.

## 7. WATER TANK :

Water tank shall be of 7,000 litres to be made out of MS plates of **5 mm bottom, sides, top & baffles**, duly die-pressed. Butt-welded joints shall be minimized. It shall be suitably baffled to prevent surge while cornering / braking. Baffles shall be bolted & fasteners shall be SS only. Baffles will be arranged in a manner to facilitate easy cleaning of the tanks. Centre of gravity shall be maintained as low as possible. Suitable hooks / lifting eyes shall be provided on top of the tank for maintenance / repairs. Tank shall have a filling orifice of 250 mm & maintenance manhole of 450 mm with hinged or threaded cover marked "WATER".

Two 63 mm instantaneous Hydrant connection, incorporating a strainer, shall be provided close to the pump panel Control for filling the tank through 75 mm bore pipe work or feeding the hose reel equipment connections will be provided. The line will be designed to ensure that inflow of water into the tank is sufficient to maintain the rated output of the pump while tank is being replenished. These connections shall be fitted with a valve to prevent water leaking through the filling pipe & shall be provided as close to the pump as possible. Valve may be of NRV / Ball / Butterfly type. A 50 mm drain line with a valve will be provided to drain the tank. A cleaning hole of 250 mm will be provided at the bottom of the tank. One overflow pipe of 50mm dia shall be fitted to the tank. The tank shall be hydraulically tested at 0.5 kg/cm<sup>2</sup> pressure. All plumbing shall be reasonably accessible for maintenance purposes. Screwed bends, joints shall be avoided as far as possible. All the joints will be flanged type & shall have O ring sealing.

The Tank shall be connected with the pump and hose reel and valve(s) shall be provided in such a way that any of the following operations are possible.

- a) Hydrant – Tank.
- b) Hydrant – Hose Reel,
- c) Tank – Pump – High and low pressure Hose Reels,
- d) Hydrant – Pump- low pressure hose reels,
- e) Tank – Pump – Hose Reel,
- f) Pump – Tank- delivery outlet
- g) Off.

## 8. POWER TAKE OFF :

The PTO for driving the pump shall be taken from the vehicle engine & shall be of suitable ratio for the rated output of the pump. It shall be of the same manufacturer as that of the pump make. The lever / switch for engaging the PTO will be provided in driver's cabin. Necessary supports for PTO Unit, propeller shaft coupling, universal joints etc. for power input to output from PTO Unit





shall be provided by vendor. The drive assembly components (shafts, coupling etc.) shall be dynamically balanced vibration at any of the rotary parts shall be minimized. **Vendor is to submit its compliance and an authority letter from its OEM while submitting the bid, failing to which the offer is liable for rejection.**

9. **COOLING SYSTEM:**

In addition to the radiator cooling, an indirect cooling system of the open circuit type shall be provided (if required) to keep the engine from overheating during extended use in tropical climates & when the ambient temperature is over 40° C. The cooling system shall be so designed that the full power output of the engine can be maintained during continuous stationary running without overheating. The operating temperature of the engine cooling water shall be thermostatically controlled. The oil in the sump shall be prevented from overheating. The cooling water outlet pipe from P.T.O. & additional cooling tank shall be connected through a suitable diameter pipe. The end of the pipe shall terminate in a threaded connector.

10. **PIPELINES & VALVES**

The complete pipeline circuit on the vehicle shall be done with galvanised pipes material only. All valves up to 2" size will be lever operated ball valves & all valves above 2" size shall be butterfly valves. Seats of the valves shall be easily replaceable, readily available. All the lines shall be tested hydraulically.

11. **CABIN:**

Enclosed accommodation for driver, officer in charge and 4 firemen shall be provided in a single cabin. Driver will be provided with large size rear view mirrors on both sides of the cab & convex round mirrors for overall rear view of the vehicle from top to bottom & left to right. A First aid box shall be mounted in the cabin at easily accessible location.

12. **REAR SUPERSTRUCTURE:**

The rear superstructure shall be fabricated from MS sections / angles / channels & panelled with aluminium plates by means of glue or riveting. Roof panels shall be made of aluminium Chequered / Padded plates. The roof shall be strong enough for being walked-on. Intermediate walls shelves of the lockers shall be constructed from aluminium sheets, which are panelled to the structure by means of glue or riveting. The outer and rear panelling of superstructure will be done from 1.6 mm aluminium sheets. Inner panelling will be done from 1.22 mm aluminium sheets. Complete top of the superstructure shall be covered with 2 mm aluminium chequered or padded plates. Sheets of outer panelling will be glued or riveted to framework. Lockers to be provided with doors.

13. **ELECTRICAL EQUIPMENT :**

Adequate lighting arrangement shall be made in all compartments. All equipment lockers will have internal lighting arrangement automatically switched on off by opening or closing of doors/shutters. All wiring will be properly fixed in position & will be protected against heat, oil & physical injury. To the extent possible all wiring will pass through conduits. All wires shall be stranded copper or copper alloy conductors of a gauge rated to carry at least 125 percent of the maximum current for which the circuit is protected & shall be uniquely identified by colour coding or permanent marking. Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. All electrical circuits will have their own fuses, suitably marked & grouped in a common fuse box, located in an easily accessible position. Provision will be made for min. 4 spare fuses in the box. The battery will be placed in an enclosed box. Power supply shall be provided from vehicle battery.



14. **LIGHT BAR & PA SYSTEM:**

LED Light Bar shall be mounted on top of the driver cabin. The LED shall be suitable for outdoor use. The PA system shall be of minimum three tones & min. 120 decibels. The PA system shall have an integrated mic with volume control.

15. **FITTINGS & ACCESSORIES:**

Following accessories will be provided on the appliance:

- (i) Two high intensity blinker lights in the front
- (ii) Two Fog lamps on the Front Bumper
- Three blinkers of Red and Blue on both sides of the vehicle

16. **PAINTING & MARKING:**

Once the panelling is completed, all the outside surfaces shall be painted with a good quality paint system, like Dupont, Asian Paints or Equivalent etc. This shall be polyurethane (PU) based paint. The complete vehicle (all exterior surfaces) & monitor shall be painted with at least 2 coats of zinc phosphate primer each of 50 microns DFT & two coats of polyurethane finish paint each coat of 50 microns DFT. The colour for the outside will be as per the latest international & Indian norms for fire brigade vehicles. **The username will be written or stickered on both-sides with yellow/white colour.** Water lines will be epoxied with zinc phosphate epoxy primer each of 50 microns DFT & two coats of polyurethane finished paint each coat of 50 microns DFT. Water lines shall be painted red in colour. The colour for the outside will be as per the latest international & Indian norms for fire brigade vehicles. Reflective stripe(s) shall be affixed to the perimeter of the apparatus. The inside of lockers shall be painted in pale cream / grey colour. Under frame of chassis shall be painted with chlorinated rubber paint. The appliance shall clearly have the following marks at suitable locations.

- (i) Manufacturer's name & trademark.
- (ii) Year of manufacture
- (iii) Pump serial numbers & capacities.
- (iv) Capacity of water tank in litres.
- (v) Engine & chassis number.
- (vi) All instrument control & valves shall be identified with properly itched metallic Name plates.

17. **ACCEPTANCE TEST :**

The acceptance tests as mentioned below will be given to complete satisfaction of inspecting officers. Vendor shall ensure that design of tender will not affect chassis parameters such as speed, turning circle, acceleration etc. All inspections & tests shall be carried out by the vendor to the complete satisfaction of department's representative, who shall have access at all reasonable times to vendor's works. Vendor to also ensure to submit all the photographic evidence of testing facilities in its premises with the offer failing to which the bid is liable for rejection.

18. **ENDURANCE TEST :**

The pump will be tested for a continuous period of four hours non-stop & the water will not be replenished during this test & the engine will not show signs of overheating.

19. **PRIMING TEST:**

The priming will be tested as per the latest standards & the system will be subjected to a test at a suction of 7 metres. The priming shall be achieved in 45 seconds.

20. **ROAD TEST:**

After completion of all the above-mentioned tests, a road test will be carried out where the vehicle will be tested overall.

21. **Warranty**

The complete vehicle shall be under warranty for a period of 36 calendar months from the date of supply or commissioning of the vehicle, against any manufacturing defects.



## 22. EQUIPMENTS :

The equipment to be supplied on the appliance will be as per the list below.

| <u>Sr. No</u>        | <u>Description</u>   | <u>Qty</u>                               |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
|----------------------|--|--|---|-----|-------------|---|----------------------------------|---------------------|---|---------------------------------|--------------|---|--|---------------|---|-----------|----------------|---|--------------------------------------|-------------------|---|------|--------------------|---|---------------|----------------------|---|----------|------------------|---|-----------|----------|---|------------------------|--------|---|--------------|-------------|---|-----------------------------------|----------|---|------------------------------|----|
| i.                   | Type 2 fire hose of 63mm diameter should be a non-percolating light weight Fire Hose, completely made up of high tenacity polyester yarn with EPDM rubber inner lining for low-friction-loss and outer elastomeric coating for its protection against mild-dew, moisture and some kinds of The hose shall be fitted with 63 mm delivery hose couplings (see IS:903 - 1975). The hose should be 15 mtr in length. Should be approved & listed under UL-19 (U.S.A) and IS 636 type - 2, CE marked with Working Pressure of 18 bar, Proof Pressure of 28 bar and Burst Pressure of 42 bars. OEM authorisation, along with the certificates, need to be attached with the bid  | 10                                       |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| ii.                  | Suction hose with GM coupling 2.5 meters as per pump suction dia.  | 04                                       |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| iii.                 | Suction strainer to suit the above-mentioned suction hose  | 01                                       |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| iv.                  | Basket strainer to suit the above-mentioned suction strainer   | 01                                       |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| v.                   | Universal wrench to tighten the above-mentioned suction hose   | 01 Pair                                  |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| vi.                  | Branch pipe 63mm   | 02                                       |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| vii.                 | Set of nozzles 12mm,16mm,20mm.   | 01 Set                                   |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| viii.                | <p>A Remote Area LED Lighting Solution which should be of compact size and user-friendly design, which can be carried to remote locations in a specially made rugged FRP suitcase with wheels and easy to carry handle. The lighting system shall operate via a li-FePo4 battery, which can be charged as and when required and shall be ideally suited for all types of emergency situations and locations where electricity is not available. The whole unit shall be easily assembled and dismantled with following features:</p> <table><tr><td>Input Voltage</td><td>:</td><td>24V</td></tr><tr><td>Rated Power</td><td>:</td><td>2 x 72W LED Light, In total 144W</td></tr><tr><td>Battery Type &amp; Life</td><td>:</td><td>24V/ 24AH LiFePo4 Life- 5 Years</td></tr><tr><td>Working Time</td><td>:</td><td>High 4.5 Hrs / Middle 9 Hrs / Low 20 Hrs</td></tr><tr><td>Charging Time</td><td>:</td><td>Max 8 Hrs</td></tr><tr><td>Rated Luminous</td><td>:</td><td>Full Intensity- Minimum 13000 lumens</td></tr><tr><td>Waterproof Rating</td><td>:</td><td>IP65</td></tr><tr><td>Colour Temperature</td><td>:</td><td>6500 K +- 10%</td></tr><tr><td>Mass Height Extended</td><td>:</td><td>2 Meters</td></tr><tr><td>Material of case</td><td>:</td><td>Case- FRP</td></tr><tr><td>Material</td><td>:</td><td>Telescopic Rods- 2 nos</td></tr><tr><td>Weight</td><td>:</td><td>15 kg +- 10%</td></tr><tr><td>Accessories</td><td>:</td><td>Charging Cable &amp; Reflective Strip</td></tr><tr><td>Features</td><td>:</td><td>Linear Dimming- 10% to 100 %</td></tr></table> | Input Voltage                            | : | 24V | Rated Power | : | 2 x 72W LED Light, In total 144W | Battery Type & Life | : | 24V/ 24AH LiFePo4 Life- 5 Years | Working Time | : | High 4.5 Hrs / Middle 9 Hrs / Low 20 Hrs | Charging Time | : | Max 8 Hrs | Rated Luminous | : | Full Intensity- Minimum 13000 lumens | Waterproof Rating | : | IP65 | Colour Temperature | : | 6500 K +- 10% | Mass Height Extended | : | 2 Meters | Material of case | : | Case- FRP | Material | : | Telescopic Rods- 2 nos | Weight | : | 15 kg +- 10% | Accessories | : | Charging Cable & Reflective Strip | Features | : | Linear Dimming- 10% to 100 % | 01 |
| Input Voltage        | :  | 24V                                      |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Rated Power          | :  | 2 x 72W LED Light, In total 144W         |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Battery Type & Life  | :  | 24V/ 24AH LiFePo4 Life- 5 Years          |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Working Time         | :  | High 4.5 Hrs / Middle 9 Hrs / Low 20 Hrs |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Charging Time        | :  | Max 8 Hrs                                |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Rated Luminous       | :  | Full Intensity- Minimum 13000 lumens     |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Waterproof Rating    | :  | IP65                                     |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Colour Temperature   | :  | 6500 K +- 10%                            |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Mass Height Extended | :  | 2 Meters                                 |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Material of case     | :  | Case- FRP                                |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Material             | :  | Telescopic Rods- 2 nos                   |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Weight               | :  | 15 kg +- 10%                             |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Accessories          | :  | Charging Cable & Reflective Strip        |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| Features             | :  | Linear Dimming- 10% to 100 %             |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |
| ix.                  | A 3 in 1 manual tools to be used for fire protection and ideal for all types of ground and fuel. The tool head to be made from aluminium & titanium, having individual replaceable cutting blades made from high tensile steel. A tool to be provided with a wooden handle. Weight not more than 2.8 Kg. The technical details and picture of the tools to be submitted with the offer for evaluation purpose  | 01                                       |   |     |             |   |                                  |                     |   |                                 |              |   |  |               |   |           |                |   |                                      |                   |   |      |                    |   |               |                      |   |          |                  |   |           |          |   |                        |        |   |              |             |   |                                   |          |   |                              |    |



|     |  |    |
|-----|--|----|
| x.  | Fire Swatters/beater with flexible handle to be supplied. The manual device should have horizontal and vertical flaps made from multi-layer cotton and rubber for efficient use and faster fire extinguishment. The beater to be provided with a telescopic handle enabling it to be extended upto 2 Mtrs, The manual device to be supplied along with a carrying cover, Weight not more than 1.85 Kg. The technical details and picture of the tools to be submitted with the offer for evaluation purpose-           | 01 |
| xi. | A 20 Ltr autonomous backpack pump to be provided which is ergonomically designed to offer comfort and efficient fire fighting. The backpack should have adjustable straps, Velcro straps to keep manual tools, with inbuilt 20 Ltrs water carrying capacity with double plunger nozzle minimum length 900mm, and reach of more than 8 mtrs. The weight of the nozzle not to be more than 1.2 Kg. <b>The technical details and picture of the backpack along with OEM authorization to be submitted with the offer.</b> | 01 |

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## **TECHNICAL SPECIFICATION OF MOTORCYCLE POWERED HIGH PRESSURE WATER MIST WITH PUMP PTO**

### **1. SCOPE**

This specification lays down the technical parameters of First Responder Fire Fighting Bike fitted with a High Pressure Pump with Water Mist Technology for fighting fires in a quick and efficient manner as a first response in narrow lanes of urban and rural areas, unapproachable field and highways specially designed keeping in mind the Indian Geographical Conditions on 450cc which can carry at least 40 litres of water tank with 20 meters hose reel (with EN 853 marking on the hose) duly coupled with a Discharge Gun.

The main equipment of bike shall be used to extinguish fire of carbonaceous material such as paper, wood, textiles, cloth, chemical, petrol, plastic and solid combustible.

### **2. BIKE**

The bike shall be Royal Enfield Himalayan 450 and indigenous make which shall carry all the accessories, high pressure pump and hose reel etc.

The engine shall not be less than 450 cc liquid cooled, single cylinder, 4 valves, DOHC petrol engine meeting the latest Bharat Stage emission norms applicable at that time. The engine shall develop a min. of 39.47 HP and torque of not less than 40 Nm. Also, the bike should have a min. of 6 (six) gears.

The frame of the bike should be robust and be able to bear road shocks while responding emergency calls. The handle of bike shall be designed ergonomically for ease of driving with all the controls within easy reach.

The front and rear suspension shall be Upside Down Fork, 43mm and Linkage Type Monoshock respectively and shall be designed to take additional load of the firefighting system and water tank etc. The brakes shall be preferably disc brakes hydraulically operated on rear and front wheels. The min. fuel tank capacity shall be 15-17 litres with lockable cap.

The bike shall be provided with comfortable seating arrangement. It shall have two rear mirrors and other standard fitments.

The electrical system shall be 12v with suitable capacity of battery & alternator for charging the battery. The bike shall have electric starting system.

### **3. WATER TANKS**

The Bike shall be provided with water tank of min. of 40 litres (equally distributed on both sides for better balance) on each side fabricated from Stainless Steel 304 plates or Fibre material. The tank shall be carefully designed considering the profile of bike at the rear and shall be such that the load distribution shall be equal on both sides for balancing of bike and should be interconnected. The tank shall be reinforced at mounting points to take load of water and road shock. The tank shall be provided with a large filling cap having min. 3" dia. and a water outlet connection.

4. **WATER MIST PUMP**

The pump shall be Ultra-High Pressure delivering a minimum of 8-10 litres per minute at not less than 120 bar pressure. The pump shall be Piston plunger type and made from anti corrosive material. The pump shall be provided with pressure unloader valve for releasing the pressure when it exceeds the set limits. The pump shall be reputed imported make only.

5. **ACTIVATION AND DEACTIVATION SYSTEM OF MIST PUMP**

The whole water mist unit shall be easily operated with manual Power Take Off (PTO) unit installed on the bike which is connected to the Motorbike's Engine.

The fire bike should also have the feature of PUMP AND ROLL meaning that it shall be able to perform the firefighting operations while the bike is still in motion.

6. **HOSE REEL WITH DISCHARGE GUN**

One High pressure hose reel shall be provided at suitable location with fog and jet gun. The hose reel shall be provided with 1/4" to 3/8" dia. high pressure hose of min. 20 metres in length.

The hose reel shall have the marking of EN 853 on it and shall be light in weight. Manual winding and unwinding mechanism shall be provided with suitable handle. The fog/jet lance shall be light weight and compact preferably with pistol grip. It should be made from Special Plastic and Stainless-Steel material. The pattern of water from jet to mist and vice versa should be able to be achieved by a simple mechanism.

The lance should be able to work in jet as well as fog mode with throw range of not less than 8-10 meters. The lance design should be such that it should create very fine water mist particles to provide cooling effect to extinguish fire. The gun shall be designed to be used with foam solution premixed with water and shall create foam to handle 'B' class fires.

Suitable strainer shall be provided to pump inlet which can easily be removed for cleaning.

7. **ACCESSORIES**

- |    |                             |   |                |
|----|-----------------------------|---|----------------|
| 1. | PA System with Siren        | : | 1 No.          |
| 2. | Beacon light (Pole mounted) | : | 1 No.          |
| 3. | Standard Tool Kit           | : | 1 No.          |
| 4. | Fire Extinguisher           | : | 1 No.          |
| 5. | Flicker Lights              | : | Minimum 2 nos. |

8. **PAINT**

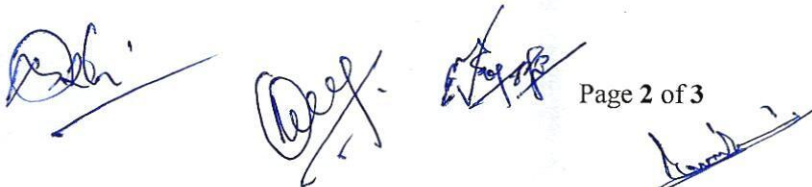
The complete bike shall be painted in Red or Fire Red Colour as per latest standards of the industry.

9. **Warranty**

The complete vehicle shall be under warranty for a period of 36 calendar months from the date of supply or commissioning of the vehicle, against any manufacturing defects.

10. **APPROVAL**

The Complete Bike with firefighting system shall be approved in compliance to AIS-167, Type Approval Certificate shall be submitted along with the Bid.







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## TECHINICAL SPECIFICATION FOR SUPPLY OF FULLY BUILT LIGHT RESCUE TENDER

### 1. SCOPE

This standard lays down the requirement regarding design, material, construction, workmanship, finish, accessories and acceptance test of emergency rescue tender. The specifications are drawn in line with technical specification for emergency rescue tender.

### 2. General:

The fabrication of emergency rescue tender shall be carried on a HCV chassis having gross vehicle weight not less than 10 Ton minimum 110 BHP – BS VI emission norms cab chassis which shall be procured by the tenderer at their cost. The appliance shall have a minimum of tools & equipment to tackle the emergency situations.

### 3. Chassis:

|                    |   |  |
|--------------------|---|--|
| Manufacturer       | : | Ashok Leyland / TATA / MAN/<br>Bharat Benz / SML / Or any equivalent |
| GVW                | : | Not less than 10 tons  |
| Engine horse power | : | Not less than 110 BHP  |
| Wheel base         | : | Not less than 3900 mm  |
| Emission norms     | : | BS-VI  |
| Steering           | : | Power steering   |

### 4. BODY WORK:

#### 4.1. CREW CABIN

Enclosed accommodation for six persons with driver and officer in the front and a separate crew cabin at the rear shall be provided. The driver seat shall be of adjustable type. The design of the crew compartment shall be such that it affords maximum possible vision. Two hinged doors shall be provided on each side of the appliance for easy access to crew members. All doors shall open outward and hung forward.

The locking arrangement shall be with double catch striking plate. Non-slip step and grab rails shall be provided to assist the crew to get in and out. All the seats shall be fitted with 100 mm thick foam cushion. All windows shall have safety glasses and all glasses be fitted with Sliding type.

Flooring of the driver cum crew cabin shall be fabricated out of hard dip galvanized MS angles of 40 x 40 x 4 mm thick which shall be properly welded / bolted to the cross members. The complete external paneling of crew cabin including doors shall be of 16 SWG Aluminium sheet with all the joints riveted and bided except the roof top paneling, which shall be of 2 mm thick aluminium sheet. The domes and the corners shall be as small as possible and shall be of 16 SWG Aluminium sheet with all joints riveted to the super structural members. The roof top plates shall be overlapped by 70 mm and riveted in a double row with solid rivets. The complete flooring of the crew cabin shall be fabricated from 3.15 mm aluminium cheque red plates rigidly fixed to the under frame



cross members by means of nuts and bolts or riveting. Trap doors for topping up wherever necessary shall be provided. Water proofing treatment shall be given to crew's cabin to avoid water leakage inside the cabin.

All the MS super structural members and under frame cross members shall be painted with three coats of rust preventive paint. All the under frame cross members shall be painted with two coats of chassis black paint. The construction of cab shall be such that the roof shall support the weight of two men without damage. A horizontal hand rail shall be fixed in front of the crew member's seat. Inspection / maintenance hatch of removable type shall be provided in the cabin for gaining access to gear box.

Each cross member shall be secured to the chassis framed by "U" clamps with aluminium packing block and self locking nut. Ballato packing of 12mm thickness shall be provided in between the chassis and cross members. Drag hooks/eyes shall be fitted on each chassis member at front and rear and one towing hitch shall be provided at the rear portion for towing one ton trailer

#### **4.2. REAR BODY WORK:**

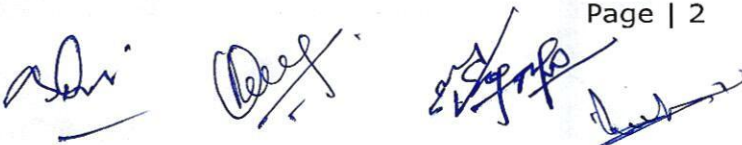
The rear body/ structure work shall be of welded constructions and made from 2mm thick MS pressed sections and square tubes. The angles and channels shall be of 3 mm thickness. The complete structure shall be treated for anti corrosion by Zinc plating. The plating thickness shall not be less than 20 microns. Two coats of anti corrosive paint shall be applied to the welded structure. The structure shall be so designed so as to avoid any vibration/ rattling/ deformation in the intended usage of the vehicle. The under frame cross members shall be done from MS rolled channels of 100 x 50 x 5mm(min) and the floor angles shall be done from 50 x 50 x 6mm. The interior & exterior paneling shall be done from 3 mm thickness aluminum sheets.

#### **4.3. Lockers**

The lockers shall be provided for storage of all equipment mentioned in the below specifications. The lockers shall have drawers as per latest international standards. Roll in roll out type with opening in tapered position giving very easy & immediate access to all equipment. All equipment & tools 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 required location can be very easily located & taken out for use. Location of equipment (labels) should be provided on each drawer for easy identification. All the equipment should be properly clamped / strapped in the drawers to prevent shifting and vibration while the vehicle is in motion.

The drawer sides shall be made from aluminium angles of minimum 100mm x 4 mm thickness and the bottom floor of the drawers will be made from min 3mm thickness aluminium sheets and then covered with good quality neoprene rubber sheets. The drawers shall have self-lock system to prevent accidental opening while vehicle is in motion. The bottom edges of the drawers shall be covered with SS304 angles of min 2mm thickness. The Roll-in & Roll-out drawers shall be made according to the required size suitable for equipment that are to be stowed.

The lockers shall be covered with push-pull type aluminum roller shutters. The roller shutters shall be made from extruded aluminum 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. 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 rolling shutters should be done by means of a lift bar provided. This should be of the self-locking type so that the shutters do not open accidentally while the vehicle is in motion. Roller shutters shall be made of hollow rectangular shaped aluminium links which shall be inter connected with rubber / plastic/ PVC profiles sealing the roller shutters watertight when closed. These roller shutters shall be durable, maintenance free, weather and corrosion resistant, reputed brand like MCD or any equivalent. All lockers shall be fitted with internal lighting which shall be capable of being automatically switched – ON&OFF by the opening and closing of shutters. A master switch for isolating locker lighting circuit shall also be provided in the driver cabin. Grab rails and non-slip steps shall be provided wherever necessary. A ladder made out of SS round or square pipe of 1" diameter shall be provided at the rear of the appliance to provide easy access to the roof of the vehicle.

#### **5. Cable winch**

An electrically operated cable winch which is having not less than 6.5 ton pulling capacity shall be provided. The winch unit should be complete with minimum 5.5 hp, 12v DC series wound electric reversible motor for pulling operations. The motor and solenoid shall be grounded to the battery. It shall have an automatic load holding brake system to hold the load. For free spooling the clutch design shall be easy to use type with spring loaded pull and rotate system. The gear system shall be 3 stage planetary type for faster line speed and the gear reduction ratio shall not be more than 300:1 for maximum duty cycle, the rope drum shall not be of more than 8 inches diameter and shall be supplied with a minimum of 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 and a four way roller fairlead. Weather resistant clutch housing and solenoid assembly for maximum durability under any weather should be provided. Winch shall be provided with a wireless remote control system for ease of operation.

Ladder gallows shall be provided for carrying 10.5 m aluminum extension ladder. The design shall be such that the ladder can be released without difficulty from reasonable access position and shall embody rollers/bearing to permit easy withdrawal by one man. Means shall also be provided for locking the ladders when stored.

#### **6. Workmanship and finish**

All parts of the appliance shall be of good workmanship and shall have streamline finish. All mechanical and other part shall be such that parts normally required to be replaced can be supplied and fit correctly.

#### **7. Painting**

The complete super structural members shall be painted with two coats of Red Oxide primer and two coats of chassis Grey paint. The complete external and internal





aluminium paneling of lockers etc. shall be painted with two coats of aluminium primer. To provide very high corrosive resistance in metal structures; it shall be treated with anti-corrosive treatment.

The complete exterior of the vehicle shall be painted with two finish coats of RAL-3000 colour shade (flame red) reputed brand paint for long lasting glossiness. The names and logos of the department shall be painted on both sides of vehicle at suitable place in consultation with the department officers.

#### **8. Warning beacon lights:**

1 No of Flickering LED Beacon bar light head of Red, Blue and White colour with Hooter & P. A. System shall be mounted on top of the driver cabin.

#### **9. Accessories:**

The following accessories shall be provided in addition to those normally fitted on modern commercial vehicles:

**9.1.** Head lamps — Two.

**9.2.** LED Fog lamps — Four (Not less than 55W).

**9.3.** Reversing light with Industrial type buzzer— Lamp suitably situated to assist reversing.

**9.4.** Stone guards — Situated on the windshield glass and side window glasses

**9.5.** Wind screen wipers.

**9.6.** Siren — Battery operated. BIS 950: 2012

**9.7.** Search light — Adjustable to give flood or beam light, mounted in a convenient position but capable of being readily disconnected and mounted on a tripod away from the appliance, complete with tripod and with not less than 30 m of TRS cable on a reel mounted on the appliance.

**9.8.** Spot light — Adjustable, mounted in a convenient position on the near side of the driving compartment.

**9.9.** Inspection lamp — protected type on wander lead with plug. A socket shall be provided in the control panel in the driver's cab for plugging in the lamp.

**9.10.** Tail lamps — Two of combined stop and tail.

**9.11** Rear reflectors. 3M Reflector tapes (Red colour for rear side, Amber colour for both sides and white colour for front side)

#### **10. MARKING**

Each appliance shall be clearly and permanently marked with the following information:

**10.1.** Manufacturer's name, or trade-mark, if any;

**10.2.** Year of manufacture

## **11. Test of Acceptance**

Physical dimensions, performance and weight check of equipment as given under different items above shall form part of test of acceptance. The appliance shall be inspected in different stages before mounting of the complete unit to the chassis and after mounting of the complete unit on to the chassis. Stage inspections will be carried out from the department during each stage of fabrication. All necessary arrangements shall be arranged by the supplier at the fabrication yard for the proper conduct of such inspections as and when required by the department.

Inspection will be as under:-

**11.1.** Chassis inspection

**11.2.** Structural stage inspection

**11.3.** Finishing inspection for compliance of specification

**11.4.** Final inspection at Itanagar which includes complete functions- operations of all systems, tools & equipment. The stability of the appliance shall be such that when under fully equipped and loaded condition (but excluding crew), if the surface on which the appliance stand is tilted to either side, the point at which over-turning occurs is not passed at an angle of 28 degrees from the horizontal. Vehicles shall be tested for articulation – 200mm alternate gradients & will not show any signs of stress during this test. Also the clearances in the wheel wells shall be checked for tolerances. Water proofing shower test shall be confirming to IS 11865.

## **12. SIGNAGE/MARKINGS**

All the signage shall be as per international standards and all the markings shall be in "English" language only.

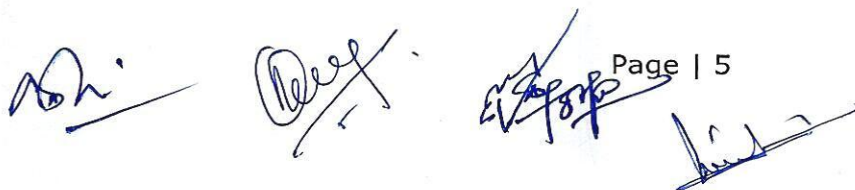
The Fire Service insignia shall be painted on both sides of the appliance in yellow and black lettering "ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES"

## **13. WARRANTY**

The complete vehicle shall be under warranty for a period of 03(three) years from the date of supply of the vehicle against any manufacturing defects. The supplier shall give the guarantee for the supply of spare parts for the Rescue Tender, Equipment etc. for the period of 10 years from the date of supply of vehicle.

## **14. COMMISSIONING AND TRAINING**

The manufacturer's representative shall impart successful commissioning and the training to the F&ES personnel regarding operation, handling, use and maintenance of the appliance. Operating manual shall be given along with each vehicle in both Hindi and English language.









## Annexure-I

LIST OF EQUIPMENT WITH SPECIFICATIONS




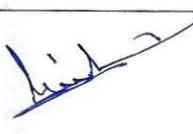
| Sl. No. | Items   | Quantity      |                 |     |  |
|---------|---|---------------|-----------------|-----|--|
| 1.      | Breathing apparatus, open circuit positive pressure type with cylinder made of carbon composite material, having water capacity of 6.8ltrs, 300 bar, 45 min duration, back plate, face mask, lung demand regulator, pressure reducer complete with harness confirming to BIS standards IS 10245 (Part 2)  | 2 Sets        |                 |     |  |
| 2.      | Electrically operated chain saw, Power consumption – 1600W minimum, Voltage 220-250 V, Amperage -7 amp, guide blade length- Arm length- 18 inches minimum, Light weight ,shock proof body, reservoir for lubrication of chains with required accessories and electrical cord, chain.Gide bar, chain should be in closed ring form with spare chain.   | 01            |                 |     |  |
| 3.      | Petrol Drive Power Saw 24inch reputed brand like sharpex / Husquvarna / sthil or any equivalent with spare chain  | 01            |                 |     |  |
| 4.      | Petrol Drive Power Saw 28 inch reputed brand like sharpex / Husquvarna / sthil or any equivalent with spare chain   | 01            |                 |     |  |
| 5.      | Chipping Hammer (Electrical Operated) Bosch/Equivalent 230V 50HZ, Single Phase working at the power rating of 1000 watts, the chiseling impact at the rate of 1900 bpm, the device should have active vibration system, chiseling impact force at 19 joules, electric cord not less than 4m in length 10/15 Amp 3 pin which can be converted into 2 pin also, one 28cm flat bit, one 48cm pointed bit and each Spare bit the material of pit should be height tensile steel, bit diameter should match with size of bit locker of equipment, protective carry case should be supplied which is designed to fully protect the equipment getting damaged and for easy handling of equipment | 01            |                 |     |  |
| 6.      | High pressure pneumatic lifting bags, working pressure 8 bar, made of Kevlar reinforced nitrile rubber with 3 layers aramid reinforcement, non-slip design, capable of being interlocked when 2 bags are placed on top of each other, quick connection with automatic double locking system, centering cross on both sides, reflecting labels, CE-icons for safety insertion thickness not more than 25mm including profile, resistant to ozone and range of chemicals etc of the following capacities:-  | 1 Set         |                 |     |  |
|         | Lifting capacity  | Min inflation | Min             | Qty |  |
|         |   | height(mm)    | Dimensions (mm) |     |  |
|         | 01 tons   | 75            | 100 x 100       | 1   |  |
|         | 05 tons   | 100           | 150 x 150       | 1   |  |
|         | 10 tons   | 150           | 250 x 250       | 1   |  |
|         | 20 tons   | 275           | 500 x 500       | 1   |  |
|         | The air bags are to be supplied with the following accessories  |               |                 |     |  |

|     |   |       |    |
|-----|---|-------|----|
|     | Pressure reducer 300 bar to 8 bar   | 2 nos |    |
|     | Control box for operating 2 airbags with pressure gauges and carrying strap                   | 1 nos |    |
|     | Single control unit   | 2 nos |    |
|     | Air hose 5 mtrs   | 2 nos |    |
|     | Air hose 10 mtrs  | 2 nos |    |
|     | Shut off hose with safety valve   | 4 nos |    |
|     | Connection piece to connect two air cylinders   | 2 nos |    |
| 7.  | 100 ft long 16 mm diameter BOB rope   |       | 02 |
| 8.  | 40 ft length 12 mm diameter BOB lashing lines   |       | 02 |
| 9.  | Spades (IS: 2238-1979)  |       | 01 |
| 10. | Shovel (IS: 12862-1989)   |       | 01 |
| 11. | Lock cutter (Weight - 4 kg, Dimensions LxWxH - 79x24.8x 4.4 cm)                               |       | 01 |
| 12. | Firemen axe – (IS:703-1999)   |       | 01 |
| 13. | Pick axe (IS:273-1973),   |       | 01 |
| 14. | Picks, with handle (IS: 273-1973)   |       | 01 |
| 15. | Axes, felling (IS: 703-1966)  |       | 01 |
| 16. | Crow bars, 1.5 m long (IS: 704-1984)  |       | 01 |
| 17. | Sledge hammer 10 kg (IS: 841-1968)  |       | 01 |
| 18. | Electrical shock proof hand gloves in pairs.  |       | 02 |
| 19. | Shears, bolt cropper, large with handle, 900 mm   |       | 01 |
| 20. | Electric drill with spare bits battery operated 2mm to 10mm (Rechargeable) Bosch / Equivalent |       | 01 |



|     |   |    |
|-----|---|----|
| 21. | Portable Hand-Held LED rechargeable Search Light as per   | 01 |
| 22. | First Aid Box for 10 Persons to be suitably kept at cabin.  | 01 |
| 23. | Long line rope [Manila rope], 25 mm circumference, and minimum breaking strength: 23 KN, 50 m long, attached with quick release karabiner at one side.  | 02 |
| 24. | Long line rope [Manila rope], 40 mm circumference, and minimum breaking strength: 23 KN, 30 m long, attached with quick release karabiner at one side.  | 03 |
| 25. | Fire hook with non-metallic hand grip (IS:927-1981)   | 02 |
| 26. | Fire beater with non-metallic hand grip (IS:8096-1992)  | 02 |
| 27. | Fire resistant blanket - Aluminized fire blanket made of aluminized fiberglass, stitched on all four side with Kevlar thread, Leather loops & eyelets, temperature resistant up to >500 degrees, With Metallic eyelets in all side corner and in middle and Size – 2 x 2 M.   | 02 |
| 28. | Fire resistant blanket non-asbestos high temperature resistant fabric with metallic eyelets, non-asbestos clothing, stitched on all four sides with flame proof threads, temperature resistant up to >600 degrees, With metallic eyelets in all side corner and in middle, 1.2 mm thick, Size – 2 x 2 M. All three pieces shall be kept in suitable plastic cover.  | 02 |
| 29. | Tool Kit box with the following tools:<br>Fixed end "D/E" spanner set (size from 6mm to 30mm): 01 Sets<br>Ring spanner set (size from 6mm to 32mm) :<br>01 Sets Box spanner (Tubular spanner) Size: 8-10mm,10-12mm,12-14mm,14-16 mm: 02 No each.<br>Combination cutting pliers (Size: >150 mm): 1no pliers: 1no<br>Screw driver set insulated (long screw driver, short screw driver, star screw driver – 2no each)<br>Tool box (Suitable to carry all above tools)- 1no<br>Oil can medium size: 2 no | 01 |
| 30. | Safety goggles with scratch resistant   | 06 |
| 31. | Safety Harness (IS 3521 :1999)  | 06 |
| 32. | Spine board stretcher<br>Length in 1840 mm with tolerance $\pm 5$ mm, Width in 450mm with tolerance $\pm 5$ mm, Weight should not more than 6.5 kg , Loading capacity should be 200 kgs, Number of Pins 14 -16  | 01 |
| 33. | Mattocks  | 02 |
| 34. | Loud hailer battery operated  | 01 |

|     |  |       |
|-----|--|-------|
| 35. | Fire Extinguisher (Stored Pressure DCP - 9Kg, 4.5Kg – Co2, 9Liters Stored Pressure Foam)   | 03    |
| 36. | PPE (IS 16890:2018)– Personal Protective Equipment – Protective Clothing for the Firemen completes with gloves, boots, helmets with suitable face shield made out of material capable of reflecting at least 95 percent of radiant heat temperature around 1500 to 2000°C and also afford some protection against direct flame. The suit will be sufficient size to accommodate a breathing apparatus to users   | 02    |
| 37. | Traffic Cone reputed make like Nilkamal or any equivalent  | 10    |
| 38. | Cordon tape  | 100 m |
| 39. | Tarpaulin – 20x20 feet (as per IS 2789:1972)   | 1     |
| 40. | Hand saw (60 cm length as per IS 5098)   | 1     |
| 41. | Angle Grinder (Brass material, Corded electric power source, 750 W input power, 100 mm (4 inch) disc diameter, 11000 RPM speed, 270L X 73W x 300H mm Dimension, BOSCH or equivalent brand)   | 2     |
| 42. | Portable Driller (Battery powered source, 12 volts voltage, 2 Amps amperage, 13 mm max chuck size, 31.6L X 27W x 9H cm Dimension, 1500 RPM speed, 850 watts max power, 30 newton meters torque, variable speed, BOSCH or equivalent brand)   | 1     |
| 43. | Hydraulic jack 20 ton capacity for vehicle as per IS 4552:1993   | 01    |
| 44. | Wheel spanner with lever   | 1 set |
| 45. | A 3 in 1 manual tools to be used for fire protection and ideal for all types of ground and fuel. The tool head to be made from aluminium & titanium, having individual replaceable cutting blades made from high tensile steel. A tool to be provided with a wooden handle. Weight not more than 2.8 Kg. The technical details and picture of the tools to be submitted with the offer for evaluation purpose  | 1     |
| 46. | Fire Swatters/beater with flexible handle to be supplied. The manual device should have horizontal and vertical flaps made from multi-layer cotton and rubber for efficient use and faster fire extinguishment. The beater to be provided with a telescopic handle enabling it to be extended upto 2 Mtrs. The manual device to be supplied along with a carrying cover, Weight not more than 1.85 Kg. The technical details and picture of the tools to be submitted with the offer for evaluation purpose-   | 1     |
| 47. | A 20 Ltr autonomous backpack pump to be provided which is ergonomically designed to offer comfort and efficient fire fighting. The backpack should have adjustable straps, Velcro straps to keep manual tools, with inbuilt 20 Ltrs water carrying capacity with double plunger nozzle minimum length 900mm, and reach of more than 8 mtrs. The weight of the nozzle not to be more than 1.2 Kg. The technical details and picture of the backpack along with OEM authorization to be submitted with the offer | 1     |





## **TECHNICAL SPECIFICATION OF EDUCATIONAL VAN**

This vehicle will be primarily used for education of school children & about fire & life safety.

### **CHASSIS**

The fabrication of mobile training cum education van shall be done on a Cab in chassis (1210 or equivalent)/Force (Traveller)

### **FABRICATION**

1. The overall vehicle shall be fabricated from steel and aluminum sandwich panels duly insulated before bonding with a total thickness of min. 25 mm (side panels) and 30mm (roof panels).
2. The floor shall be made of ply wood, or equivalent material and covered with and easy to clean anti-slip rubber/PVC layer/tiles at the right rear side of the compartment a door shall be installed. The door can be opened from the inside and outside. The door shall be protected against corrosion while the door sealing will prevent water to entering when the door is closed.
3. The Training compartment shall feature three windows fitted in the side panels on the right side of the vehicle, the windows shall be made of protective glass. In the roof 2 hatches shall be provided for ventilation day light and for escape purposes.
4. Body color and stripping shall be as per Fire Brigade norms i.e. PO Red.

### **ELECTRICAL INSTALLATION**

1. The electrical wiring and equipment shall be used/installed and shall have protection level as conforming to IP44. The electrical installation shall be protected against overload and shortcuts. A circuit breaker shall be installed for extra safety.
2. All connectors, control and warning lights will be clearly positioned at the left side of the front wall of the vehicle, a metal clad 220 volts connector with safety cap shall be installed for connection of external power. Suitable cable lead of 60 meters minimum with suitable plug at both ends shall be provided along with the vehicle for connecting external supply of power.
3. The inside of the Training compartment shall be fitted with 220V CFL lights (PHILLIPS or equivalent) installed in protective case above the entrance door on the outside a 230.V lighting unit shall be installed.
4. The training compartment shall be fitted with surge protection and power conditioning, in order to safeguard vulnerable equipments such as computers, communication equipment etc. from power surges, lightning and other power anomalies for air refreshment, an electrical ventilator shall be installed in the wall.

### **GENERATOR**

A Honda make 5.5 KVA silent type of generator will be provided and installed at suitable location on the vehicle.







f. Modular extinguishers 2kg. capacity

Above extinguishers shall be displayed in snap fitting vibration free type display panel in side of the vehicle. Extinguishers shall be easily removable from display panel and clear markings by fixing name plates are provided for easy identification of type of extinguishers. At least 05 refills of all types of above extinguishers shall be provided with each vehicle with a suitable locker for safe and inconspicuous storing of refills. All extinguishers shall be ISI marked.

- iv. Common fluorescent signage's 150 x 300 mm size "EXIT" "STAIRCASE" & "do not use lift in case of fire" - 50 each.
- v. Stowage for Breathing Apparatus - 01 No. with spare cylinder
- vi. Stowage for fire proximity suit - 01 No.
- vii. Sony FDR-AX43 UHD 4K Handycam – 1 no.
- viii. First Aid Box including Demo model of CPR (Child and Adult) 01 nos. each
- ix. Fire alarm system with 02 nos. smoke detectors and 02 nos. heat detectors, which can be used for dual purpose of protection of the vehicle as well as for display purpose. The system shall be fully operational with one no. manual call point, one internal and one external hooter, rechargeable maintenance free battery back-up and shall have provision for simulating fire conditions (Both for smoke as well as for heat) for display purposes.
- x. External Display of Working System: The vehicle shall have a 500 Liter Water tank suitably placed with a 450 LPM. @ 40 m head deliver water through a fire hose of 38 mm diameter and piping permanently connected to 1(one) 38 mm hydrant valve, hose reel and a single sprinkler. The system should be able to simulate fire condition where without any actual fire. The fire can be started with press of a switch and fire glow is shown in fiber glass fabrication. In the process when temp reaches 68 C the sprinkler is operated and falling water on the fiber "extinguishes" the so called fire. The system should be fit only for demonstration and no actual fire should be needed for this purpose. 01 no. 38 mm fire hose 7.5 Meters. length with hose couplings and branch pipe should be provided so that demonstration of this item can be held. Suitable pressure gauge and thermometer near sprinkler should be provided for ease of display. Filling connection for water tank shall be provided.

**TRAINING COMPARTMENT (EXTERIOR)**

- 1. On the exterior of the vehicle, folding gull wing type of doors will be provided, which will have the various procedures of training imprinted on them.
- 2. These doors will be made of robust frame that can support the entire weight of the glass. The doors will be held up by pneumatic/hydraulic jacks that can be operated from inside the vehicle only.



3. The glass doors will have reverse screen-printed vinyl on the backside so that the same is protected from physical damage. Once these glass doors are lifted, they will expose the internal wall of depictions.
4. The internal wall shall be so made that there is minimum projection into the interior compartment. This wall will house the pictograms and the interactive boards of the department.

### **COMPUTER**

Stowage for 6 nos. of computers and peripherals shall be provided. There should be suitable electrical connection, suitable furniture for accommodating provided.

### **SIGNAGE/MARKINGS**

All the signage shall be as per international standards and all the markings shall be in "English" language only.

The Fire Service insignia shall be painted on both sides of the appliance in yellow and black lettering "ARUNACHAL PRADESH FIRE & EMERGENCY SERVICES"

### **Accessibility features**

Must provide easy access to everyone viz wheelchair lift/ramp, handrails at entry points and within the van as necessary.

### **FINISH**

Surface treatment of the Training Vehicle shall be suitable for the working environments under the local climatic conditions.

### **PAINT**

The vehicle shall be coated in a 3 layer high quality coating in color Po Red / Fire Brigade Red and provided with striping as per striping/marketing scheme. Corrosion protection for under coating and hollow space and all other places as required for the protection of any part of vehicle shall be provided.

### **INSTRUCTION PLATES (IF AND WHERE APPLICABLE)**

Instruction plates made from a non-corrosive metal, are to be fixed in such a position that they can be easily read by the driver and crew.

These plates are to indicate in English, any instructions, warnings or precautions necessary for the operation of the vehicle and supporting vehicle. The instructions, warnings or precautions, which affect life and limbs, are to be lettered permanently in Red. All instructions shall be in luminous paint to facilitate ease of reading at night.

Drawings of the vehicle should be submitted and got approved from the department before commencement of fabrication.

**Warranty:** The complete vehicle shall be under warranty for a period of 36 calendar months from the date of supply or commissioning of the vehicle, against any manufacturing defects.



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