निदेशक,
हरियाणा अग्निशमन एवं आपातकालीन सेवाएं,
बेज न0 55–58, सैक्टर–2, पंचकूला।

अभिरूचि की अभिव्यक्ति

1. हरियाणा अग्निशमन एवं आपातकालीन सेवाएं में हाइड्रोलिक प्लेटफार्म 90 mtr, 70 mtr, 55 mtr, 42 mtr व टर्न टेबल लैडर 55 mtr हाईट के उपलब्ध करवाने हेतु ईच्छुक कम्पनियों/एजेनसियों से अभिरूची की अभिव्यक्ति (Expression of interest / pre Request For Proposal) आमंत्रित करता है।

2. इस सन्दर्भ Hydraulic Platform and Turn Table Ladder को बनाने वाली/आपूर्ति करने वाली इच्छुक कम्पनियों/एजेनसियों के साथ दिनांक 01.08.2023 समय 11:00 बजे निदेशक, हरियाणा अग्निशमन एवं आपातकालीन सेवाएं के कार्यालय में बैठक आयोजित होनी सुनिश्चित है। इसके अतिरिक्त यदि कोई कम्पनी/एजेन्सी ई–मेल के माध्यम से सुझाव देना चाहती है तो वह dfshry@gmail.com पर अपने सुझाव दिनांक 28.07.2023 को सायं 04:00 बजे तक भेज सकती है। यदि कोई भी एजेन्सी/कम्पनी दिये गये समय के बाद ई–मेल करती है तो उस ईमेल पर विचार–विर्मश नहीं किया जायेगा।

विस्तृत विवरण वैबसाईट **ulbharyana.gov.in**

उप निदेशक (तकनीकी),
कृते: निदेशक, हरियाणा अग्निशमन एवं आपातकालीन सेवाएं,
हरियाणा, पंचकूला।

Brief Description of Procuring:

Sr. No.	Description of Stores	Quantity in No.	Place of Delivery
1	**SUPPLY, DELIVERY, MOUNTING, TESTING AND COMMISSIONING OF AERIAL LADDER PLATFORM 90 METERS HEIGHT WITH 03 YEAR DEFECT LIABILITY PERIOD AND 03 YEARS COMPREHENSIVE MAIN TENANCE CONTRACT FOR FIRE FIGHTING AND RESCUE OPERATION. EURO-VI**	**01**	**Anywhere in Haryana**

A. **ELIGIBILITY OF SUPPLIERS**:

1. Bidder should be either manufacturer or Authorized Distributors who have obtained written permission from manufacturers only.
2. Documentary evidence establishing that the manufacturer has supplied minimum 5 Nos. aerial ladder platforms, hydraulic platform of required model with same OR Higher working capacities, specifications and features as specified in the schedule of requirements. (Copy of Supply Order, copy of Certificate regarding satisfactory supply of the items issued by their purchasers, etc. should be enclosed).
3. Copy of the Audited Annual Accounts for the last 5 years to prove an annual turnover of at least Rs. 40 Crores (Rupees Forty Crores only) or equivalent foreign currency in any of the last 5 financial years.
4. The manufacturer should be ISO 9001 Certified Company.
5. Documentary evidence showing that the bidder is manufacturer of the tendered item. If the bidder is an authorized agent, the Manufacturer Certificate in this regard should be enclosed. The Manufacturer has to issue a certificate to the effect that they will take responsibility if Indian agent fails to attend service or if there is any change in Indian Agency during Warranty/CMC period. Certificate from the Manufacturer to continue/accept Service Contract at the rate mentioned in the purchase order in the event of change in Indian Agency to be submitted.
6. Documentary evidence showing that the offered model is approved by appropriate accredited 3rd party authority as per the EN 1777 Standards specified in the Technical Specification.
7. Documentary evidence established in accordance with criteria mentioned at sr. No. 8, that the goods and ancillary services to be supplied by the Bidder confirm to the goods and services as mentioned in the Bidding Documents. Scanned copy of the duly signed specification compliance statement shall be uploaded along with the offer, and the statement should be complete in all the details of specification. The bidder should upload the statement with complete details of specification even though there is no deviation for the product from the Technical Specifications.
8. Pursuant to criteria mentioned at Sr. No. 7, the bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the bidding document of all goods and services which the bidder proposes to supply under the contract.

The documentary evidence of the goods and services eligibility shall consist of statement in the price schedule on the country of origin of the goods and services offered which shall be confirmed by a certificate of origin at the time of shipment.

9. Declaration by the bidder on Stamp Paper worth Rs.100 to the effect that he/his partner/s or any of his directors is not involved in any Vigilance Case registered in connection with any supply made to any Central/State Governments/ Boards/corporations in India (Optional for the bidders from India only).
10. The bidder should not be black listed from any Central/State Governments/ Boards/corporations in India/ any other country or no Criminal Case is registered against the firm or its owner or partners. The bidder will submit self-certification in this regard.

SPECIAL TERMS AND CONDITIONS:-

1. The manufacturer/supplier shall impart necessary training to 6-10 person/fire staff for minimum 30 days at his risk and cost for every vehicle anywhere in Haryana). After completing the successful training period, he will issue a certificate to the trainees in this regard.
2. The manufacturer/ supplier shall supply Aerial ladder platform anywhere in Haryana at consignee's place at the cost of supplier/ Manufacturer.

3. PAYMENT TERMS:-

A. For Imported Item

(i) A irrevocable Letter of Credit (LC) confirmed by the first Class Bank in the seller's country in favour of the supplier for 100% of the CIF amount shall be opened by the purchaser. L/C charges shall be to purchaser's account including confirming charges, which shall be borne by the purchaser out of the 100% payment (AO).

(ii) 90% (Ninety Percent) of the CIF component will be released against submission of documents along with satisfactory certificate of pre-dispatch inspection.

(iii) Remaining 10% (ten percent) payment shall be payable after satisfactory installation/demonstration of the goods at the premises of end-user department and receipt of certificate for same from end user department. In case of LC, all bank charges (including LC confirmation charges) payable outside India would be to Seller's account.

Payment Against the letter of Credit/Wire Transfer for 90% of the value will be available against presentation of the following documents and also on proof of evidencing of shipment.

a. 3+3 Complete set of Original Clean Bill of Lading. The Bill of Lading shall be in the name of Director General, Haryana Fire Services, Bays 53-58, Sector-2, Panchkula 134112, Haryana, India AND MARKED FREIGHT PREPAID.
b. Signed invoice in three copies giving letter of credit No., Order No. and date respectively. The invoice shall be in the name of: Director General, Haryana Fire Services, Bays 53-58, Sector-2, Panchkula 134112, Haryana, India. Invoice shall have goods description, quantity, unit price, total amount.
c. Certificate of satisfactory Pre-dispatch inspection report and Supplier factory inspection report.
d. Certificate showing goods of ORIGIN issued by Chamber of Commerce or Equivalent Body in Duplicate.

e. Specifications and Packing list – three copies.
f. Manufacturer's guarantee certificate – three copies.
g. Certificate from the manufacturer to the effect that the goods conform to the manufacturers standards and are new (Production Month in Year _____) and free from any latent or patent defects and are strictly as per Specifications mentioned in STC's Order.
h. Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies.
i. Copy of FAX MESSAGE / PROPER COMMUNICATION marked to General Imports Division, sent by the seller within 24 hours of issuance of Bill of Lading to buyer notifying the details of the BL No., Goods freighted, total invoice value, Name of the Shipping Line loading port and date of departure of the vessel and expected time of its arrival at the Indian Port.
j. Certificate from the seller that one set of non-negotiable documents mentioned under I to IX above has been airmailed/couriered to the following within 10 Days of departure of the vessel in addition to one set of non-negotiable document sent with the vessel to:

Director General, Haryana Fire Services,
Bays 53-58, Sector-2, Panchkula 134112, Haryana, India

B. **IN CASE MANUFACTURER IS BASED IN INDIA**.

Payment for domestic supply via RTGS for 100% value will be available against presentation of the following documents:-

a. Signed and stamped invoice (Three original) giving details of order number and date. The invoice shall be in the name of the Director General, Haryana Fire Services, Bays 53-58, Sector-2, Panchkula 134112, Haryana, India and end-user department as a consignee. Invoice shall have goods description, quantity, unit price, total amount.
b. Receipt of certificate of satisfactory installation, demonstration & training of the Equipment to be issued by the end-user department.
c. Three copies of Satisfactory Pre-Dispatch Inspection certificate issued by the nominated inspection agency and the Supplier factory inspection report.
d. Specifications and Packing List – Three copies.
e. Authorized Dealers / suppliers guarantee certificate – Three copies.
f. Manufacturer's/Supplier's guarantee certificate – Three copies.
g. Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies.
h. Payment shall be made in Indian rupees or in freely convertible foreign currency for imports. In case of local supply or certain items are locally supplied for an otherwise imported item, the same shall be quoted in INR and the payment for same shall be made in INR only.
i. All the bills relating to custom duty, insurance, warehousing, handling, transportation etc., should be raised in the favour of the Buyer.

4. BID PRICES:-

I. The bidder shall indicate on the appropriate price schedule of the Price bid the unit prices and total bid prices of the goods it proposes to supply under this contract and in case of goods of foreign origin in F.O.B. (free on board) and CIF (cost, insurance and freight) cost. All the columns shown in the price schedule should be filled up as required. If any column

does not apply, the same should be clarified as "NA" by the bidder. In case there is no column for a particular component/item/service in the price schedule, the same should be mentioned by the bidder and price should be accordingly quoted.

a. If offered from within India:
The rate quoted shall be inclusive of all duties, taxes other levies payable by the Firm/Agency as per State /Central Government rules applicable in India. However, the breakup of the price shall be indicated in the price bid. GST and any other statuary duty, tax levy etc., shall be paid to the seller as per the rate applicable on the date of supply on actual basis.

b. If offered from outside India:
The custom duty as applicable shall be paid on actual by the Haryana Fire Services, India (the consignee).

II. Prices indicated on the price schedule shall be entered separately in the following manner: The price of the goods, quoted ex-factory, ex-showroom, ex-warehouse, or off-the-shelf, or delivered, as applicable, including all duties and sales and other taxes including transportation, installation, commissioning at site and all operational and incidental charges etc., However, the breakup of the price shall be distinctly indicated in the price bid.

III. The Bidder's separation of the price components in accordance with Para 4(I)(a) and 4(I)(b) above will be solely for the purpose of facilitating the comparison of bids by the Buyer and will not in any way limit the Buyer's right to contract on any of the terms offered.

IV. Fixed Price: Price quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

C PENALTY

The firm/contractor fail to deliver or dispatch any consignment within the period prescribed for such delivery or dispatch stipulated in the supply order, the delayed consignment will be manufacturer or supplier will be subject 2% penalty per consignment per month recoverable on the value of the stores supplied. The other details will be as per provision contained in **Sr. no. 14 of "Schedule-'B' Condition of Contract" of DIRECTORATE OF SUPPLIES AND DISPOSALS, HARYANA**

5. Bid Currencies:

I. Price shall be quoted in the following currencies:

a. For goods and services which the Bidder will supply from within the Buyer's Country, the prices shall be quoted in Indian Rupees: and
b. For goods and services which the bidder will supply from outside the Buyer's country, the prices shall be quoted either U.S. Dollars or in the freely convertible currency.
c. Payment of services like insurance, warehousing, custom clearance, handling, transportation etc., within India shall be paid as per actual.

II. Further a Bidder expecting to incur a portion of its expenditures in the performance of the Contract in more than one currency, and wishing to be paid accordingly, shall so indicate in his/ her / their bid. In such a case, either (i) the bid shall be expressed in different currencies and the respective amounts in each currency together making up the total price, or (ii) the total bid price shall be expressed in one currency and payments required in other currencies expressed as a percentage of the bid price along with the exchange rate used in such calculation.

6. SCHEDULE OF PRICES AND QUANTITIES:

a) The rate of taxes / duties and custom duties applicable on the date of submission of tender shall be clearly shown in the tender.

b) The charges for transportation/insurance and other incidental expenses for the delivery of the equipment to shall be included in the cost.

c) The cost on account of training to the Officers/official of Haryana Fire Services, India for one week at the factory premises of equipment manufacturer shall be included in the cost.

d) The price and the cost stated in the tender shall be in Indian Currency only.

e) The prices quoted by the bidder shall be fixed and firm during the contract and no other price variation will be allowed under any circumstances. The tender submitted with variable price will be treated as NON RESPONSIVE and will be rejected outright.

7. TAXES AND DUTIES

a) Suppliers shall be entirely responsible for all Central or State (in India & country of origin) or any other taxes, duties, license, levies, duties, fees, etc. incurred until delivery of the contracted goods to the Buyer.

b) The rates quoted by the bidder shall be inclusive of the sales and other taxes that the bidder will have to pay for the performance of this contract. The Buyer will effect the deduction of such taxes at source (TDS) as per applicable law prevalent.

8. **Prices:** The rates are on consignee destinations basis anywhere in Haryana at supplier's risk (FOR),

9. ***Custom DUTY****:- Exclusive, if any*

10. ***Freight Charges:-*** *Inclusive, if any*

11. ***Delivery Period:-*** *Period of Delivery of Equipment / Goods in complete manner as specified: 8 (eight) months from the issue of Letter of Award.*

12. *BREAKDOWNS* DURING WARRANTY:-

Warranty period will be of 36 months of both the superstructure and chassis, the supplier will be responsible to provide service and maintenance during warranty period as and when required at the place of respective instruments stationed The supplier shall attend/rectify the defect within 72 hours of any break down, period for more than 10 calendar days, shall be added to the warranty period. Penalty @ Rs. 25000/- per day for any delay will be applicable on all minor disorders after 7 days of complaint registered by the purchaser whereas for all major breakdowns after 30 days. The supplier should provide the service report (type/cause of break down) to respective officer.

Maintenance and After Sales Services

Your service engineer will service the full vehicle including chassis in every quarter (every 3 months) at purchaser's site free of cost during warranty period. The manufacturer of chassis and as well as superstructure shall also guarantee for the supply of spare parts & service for a minimum period of 15 years from the date of commissioning of vehicle at site.

13. **INSPECTION:**

The Government Authorized representatives (Max.5 persons) will carry out the inspection and the testing of fully built vehicle in factory premises of the vehicle manufacturer prior to dispatch. The travelling and accommodation cost shall be included in the basic cost of the vehicle. It is obligatory to the supplier to provide all the assistance and equipment for the inspection and testing of the vehicle at the premises.

14. AFTER SALES SERVICE PROVIDING

Manufacturer shall have their sales & service network in India through their authorized agency/representative/distributor. That agency/representative/ distributor shall have enough experience in Vehicles segment with full fledge manufacturing/fabricating the Vehicles. If that agency/representative/ distributor is not a manufacturer of vehicle then they should have at least experience of 3 years for servicing of fire and rescue vehicle. If agency/representative /distributor is a manufacturer they have to submit trade license along with tender document otherwise they have to submit the service contract certificate between this agency and the end user to prove their experience. To substantiate, Indian agent/representative/ distributor shall furnish the authorization letter in original with tender documents.

15. R. T. O. REQUIREMENTS:

The vehicle shall be equipped with all the accessories required for registration of the vehicle and shall conforms to Motor Vehicle Act 1988 and Central Motor Vehicle Rules, 1989 or any amendment incorporated from time to time.

The chassis shall be homologated from the appropriate authority in India incase not already an approved model or shall be supplied with COP (Conformity of Production) issued by approved testing agency.

16. DEVIATION:

Any deviation / departure from the above specification shall be pointed out separately with detailed explanation.

17. Special Technical Documents:

1. The documentary evidence of the goods and service's conformity to the bidding documents may be in the form of literature, drawings, data etc. The bidder shall furnish:
2. A detailed description of the goods and the essential technical and performance characteristics of the goods.
3. A clause by clause commentary on the End-user's technical specifications of the goods and services and bidders' offer for the goods and services substantiating compliance to those specifications or deviations and exceptions from / to the Technical specifications.
4. For purpose of the commentary to be furnished pursuant to condition mentioned above, the bidder shall note that standards for workmanship, material and goods, and references to brand names or catalogue numbers designated by the End-user in its technical specifications are intended to be descriptive and indicative only and not restrictive. The bidder may offer alternate standards, brand name and /or catalogue numbers in its bid, provided that the same are to the End-user's satisfaction that the substitutes are substantially equivalent or superior to those designated in the Technical specifications.
5. Documentary evidence of list of work order in hand at the time of submission of tender.

6. Bidder shall attach the Product Brochures, Technical Literature, catalogues, drawings, illustrations etc. in the bid.

Technical specifications of fabrication and supply of Hydraulic Platform of 90 meter height for firefighting and rescue operation with five years comprehensive maintenance contract

1. GENERAL REQUIREMENT:

1.1 This specification covers Hydraulic Platform with height of 90 m. The Hydraulic Platform shall be designed specifically for the purpose of firefighting and rescue to enable firemen to go up over and above the other side of any obstruction. It shall comprise of main boom with Telescopic sections and Articulated Booms with Telescopic sections and cage mounted at the end of the boom and the entire unit shall be mounted on a Turn-Table on a Right hand driven Heavy Duty Diesel-Engine chassis (12x4, 6-axle) and at least 450hp, EURO VI engine with fully factory built cabin and suitable capacity PTO. The Vehicle Chassis shall be BSVI(EUROVI) emission norms compliantand in general shall meet the CMVR normsOR shall have the EC-type approval/Conformity of Production certificate (COP).

1.2 The Hydraulic Platform shall be designed as per the designed, operational stability and structural strength based on the criteria aid in EN1777 and other norms and standards applicable for elevated raised platforms used for Fire Fighting and rescue operations. The manufacturer should be ISO 9001 Certified Company. In last 5 years, the manufacturer should have supplied minimum 02 hydraulic platforms of 90 mtrs and above for fire and rescue operation. Performance certificates for minimum 2 such vehicles, preferably from Fire Services in India, shall be submitted.

1.3 The Hydraulic Platform shall be capable of use at any angle of main boom elevation without any reduction of load capacity of the cage. It shall also rotate 360 degree at any angle of elevation as well as below ground level subject to boom remaining clear of vehicle body and or any obstruction.

1.4 The appliance shall be compact and fast on the road and easily maneuverable in the crowded streets and around sharp corners. The overall dimensions shall not exceed the

limits specified herein.

1.5 Typical weight with chassis, G.V.W. (maximum) with standard specification should be in-between 60-65ton.

1.6 The working height of the Hydraulic Platform shall not be less than 90 meter from the Ground and the Horizontal outreach shall not be less than 25-30 meter at 500 Kg cage load. Working reach below the ground level should not be less than 5 meter

1.7 Safe cage working load without water discharge should not be less than 500 Kg whereas with water discharge should not be less than 300 Kg.

1.8 Nominal water discharge capacity of cage monitor with adequate water supply should not be less than 4000 liters per minute.

1.9 The Hydraulic Platform shall be electro hydraulically controlled, permitting precise and easy operations under the most difficult conditions, with ample reserve strength and stability.

1.10 Full safety interlocks shall be incorporated in the design so as to ensure complete safety in operations and long years of reliable and trouble free service, as far as possible the system shall be fail proof.

1.11 The design of the plat form shall allow a very large safety margin for extreme operating and climatic conditions. The safe working loads ratings shall include an allowance for the weight of water system and the reaction from the monitor jet while operation.

1.12 The Vehicle shall have a leveling system to adjust axial and transverse movement to an angle of minimum 5 degree and it shall be automatic in nature.

1.13 There shall be a full back up system for all boom movements and out rigger movement in case of failure of main system.

1.14 The Complete Movement of the platform shall be computer controlled and the system shall be checked for interference sensitivity.

1.15 The Control system of the platform shall be fully tropicalized and be able to operate in the temperature range up to+60 degree centigrade and in a dusty and Humid condition without reducing the maximum operating limits**.**

1.16 Schedules of technical particulars of Hydraulic Platform of not less than 90 meter height to be provided in Annexure-A

2. CHASSIS:

2.1 The Chassis shall be VOLVO/ MERCEDES BENZ/ MAN/SCANIA/make having suitable axle and Wheel Base with fully factory built cabin and suitable capacity PTO. The Vehicle Chassis shall be a Right Hand Drive and shall comply BSVI (EUROVI) emission norms.

2.2 The Chassis shall be homologated from the appropriate authority in India in case not already an approved model OR shall have the EC-type approval/Conformity of Production certificate (COP).The chassis manufacturer must have production facilities in India to ensure after sales support for the chassis.

2.3 The engine shall be minimum six cylinders, in line, Diesel with direct injection, turbo charged with inter cooler.

2.4 The engine shall develop minimum 450HP.

2.5 The gearbox shall be manual or with automated gear system with suitable Power Take Off to drive the hydraulic pump.

2.6 Rear Axle shall be 4 in no. with suitable sized tyres and differential lock between the

wheels and axles as necessary.

2.7 Chassis frame shall be 'C' Channel section made of high strength steel with cross members.

2.8 The Steering shall be integral power steering with collapsible steering wheel and column.

2.9 The Front and rear Suspension shall be leaf spring type or as suitable for 6-axle chassis.

2.10 The Brakes shall be dual circuit air brakes with parking brakes acting on rear wheels.

2.11 Fuel Tank- Capacity shall be min 300ltrswithlockablefuel cap.

2.12 The Chassis shall be provided with Radial tyres of suitable size as per load on axles with spare tyres one each for dead & live axles.

2.13 The chassis shall be provided with single day type cab with RED colour, made from high strength steel fully trimmed, external panels hot dip galvanized with hydraulic cab tilting mechanism. The Cab suspension shall be provided with coil spring and shock absorber. The cab shall be provided with adequate ventilation, rearview mirrors, windscreen and windows, adjustable driver seat, wiper system and along with all other standard fitments.

2.14 The Electrical system shall be 24V, with suitable capacity batteries & Alternator for charging the batteries.

2.15 The chassis shall be supplied with standard tool kit, hydraulic jack of 20 ton capacity, operator &workshop manuals.

2.16 The Chassis shall be fitted with gearbox mounted, suitable capacity Power Take Off Unit to drive the hydraulic pump for boom movements.

2.17 Suitable power take off unit shall be installed to drive the centrifugal fire pump. The hydraulic pump and fire pump shall work simultaneously.

2.18 The Chassis shall be directly procured by the tenderer confirming to above.

3. MAIN OPERATING DATA

3.1	Min. working height	-	90 m (±2%)
3.2	Min. height to working cage bottom not less than	-	88 m (±2%)
3.3	Min. working outreach at 500 kg cage load not less than	-	25-30 meter
3.4	Min. working reach below the ground level	-	10 m

3.5 Safe working load (without water discharge) 500 kg, (with water discharge – 300 kg)

3.6 Min. Nominal water discharge capacity of water monitor (with adequate supply pressure) 4000 l/min

3.7	Rotation, continuous 360°		
3.8	Transport height (depending on chassis)	-	4.0-4.5 m
3.9	Transport length (depending on chassis)	-	14- 16.50 m max.
3.10	Transport width	-	2.6 m max.
3.11	Typical weight with chassis, G.V.W. (standard specification approx)	-	48-50 t max

3.12 Operations at maximum outreach with Full working load permitted in wind speed up to 10.0 m/sec

3.13 Maximum width of the vehicle when Jacks are fully extended on both sides 8.00 m

3.14 Operating time at full stroke for all operations: EN1777Compliant

4. CONSTRUCTION:

The appliance shall be robust in construction; materials used in construction shall be carefully

selected for lightness and durability. Use of timber shall be restricted in body work and use of rubber shall be avoided as far as possible. Ferrous metal parts shall be treated for anti- corrosion by a method other than electro-plating.

5. BOOMS

5.1 The vehicle shall perform the following functions/operations

5.1.1 Elevation

5.1.2 Depression

5.1.3 Extension &housing of telescopic sections

5.1.4 Rotation360 degree in either direction

5.2 All the operations shall be electro-hydraulically operated with the help of hydraulic cylinders, wire ropes, chain etc. The systems hall be purpose built to provide smooth take off, variable speed range and smooth slow down, based on the criteria laid down under EN 1777

5.3 There shall be three booms, of which the first and the second one are with telescopic, extension providing direct movement. All booms move vertically. The design provides an up-and-over capability of approx. 05 m throughout its vertical movement.

5.4 The booms shall be designed and welded to provide high durability and extreme accuracy. For high strength and minimum flexing of the boom sections only high tensile strength steels are used as load bearing structure.

5.5 The booms shall be welded by the unique plasma welding method to provide high durability and extreme accuracy. For high strength and minimum flexing of the boom sections only high tensile strength steels must be used as load bearing structure. Welding quality certificate of ISO 3834-2 for load bearing steel structures for mobile hydraulic aerial appliances shall be submitted along with the offer from an independent notified certifying agency without which the offer will be rejected.

5.6 The telescopic sections of the booms move synchronized i.e. there are no intermediate jerks when the extension / retracting are operated. All sections are fitted with adjustable guides to provide smooth and accurate movement.

5.7 Different maintenance objects are located well at hand either outside the boom or behind easily removable covers.

5.8 All booms are internally and externally primed and painted for long life span.

6. CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENTS

All boom and rotation movements shall be controlled electro-hydraulically by means of proportional valves. Thanks to the proportional principle the control function is not sensitive to changes of ambient or oil temperature, thus providing smooth, safe and very accurate movements even in most severe operating conditions. All control movements can be performed by the remote control system from both control panels. The side outreach is performed by the position of the outriggers. The variable system contains also displays at all three control stations. The displays give the real-time information about the outreach and the cage position and also show possible movements according to cage position by animated arrows. There shall be different views on each display;

6.1 Outreach preview

6.1.1 Real time outreach and cage position with guidance information

6.1.2 Main outreach with two views (side and up)

6.1.3 Fault finding system

6.1.4 Statistic information

6.1.5 Tools screen (personal settings)

7. HYDRAULIC CYLINDERS:

7.1 The Hydraulic cylinders shall be double acting, fitted with lock valves so as to prevent booms, working cage from lowering or the out riggers from retracting in case of pipe or hose failure.

7.2 The cylinders shall be provided with automatic dampers to prevent the pressure shocks and shall dampen the movement when a mechanical stop is reached.

7.3 Retraction of the outriggers shall be automatically prevented as soon as the booms have been lifted up from their transport position by way of electrical OR Hydraulic interlock system.

7.4 The piston rods of the jack cylinders have to be fully enclosed with in rectangular steel profile in order to protect piston from damage caused by any external impacts.

7.5 Lifting of the booms from the transport position shall be prevented before the outriggers are in support position and there shall be a limiting circuit to prevent damage to the Drivers cabin by the first boom when not clear of the cabin.

7.6 All the movements shall be automatically limited in their extreme position and the working cage shall be prevented from working outside of the permitted working range in any position.

7.7 An emergency stop switch shall be provided on both control panels, which shall switch off the hydraulic pressure of all movements and shall stop the vehicle engine. The unit shall be supplied with a Emergency Hydraulic Back-up System.

8. TURNTABLE

8.1 The turntable shall be a fully integrated steel structure. The centre post containing slip rings with double pins for electrical connections, 100 mm corrosion resistant water way and hydraulic pressure and tank lines allows continuous rotation of the turntable.

8.2 Rotation reduction gear with automatically operating braking system shall he installed at the turntable for easy maintenance and adjustment. The hydraulic motor powering the rotation movement is fitted directly into the gear for high reliability.

8.3 At the left hand side of the turntable there is the lower control station which rotates automatically with the turntable.

8.4 The hydraulic distributor (center post) shall be mounted in the center of the turntable at an accessible position and shall carry the hydraulic pressure and return lines, electrical supply lines &waterline allowing continuous rotation in either direction.

8.5 The fasteners retaining turntable to the rotation mechanism shall be of proper grade and shall be torque properly. The rotation gearbox fastener shall be of proper grade and torque with proper backlash.

8.6 There shall be provision for the manual rotation of turntable in case of failure of hydraulic system.

8.7 Pins securing the hydraulic cylinders to boom and turntable shall be properly installed and secured.

8.8 The hydraulic hoses, tubing and connections provided in the turntable shall be free from kinks, chaffing or leaks.

9. MAIN FRAME

9.1 The main load bearing element of the aerial device shall be the strongmain frame which shall take all the loads caused by the operation of the aerial.

9.2 The main frame shall be fixed onto the chassis frame with bolts in such a way that chassis performance and durability are maintained.

9.3 The front fixing bolts shall be fitted with springs to allow the chassis frame beams to flex when the outriggers are fully down, thus avoiding any stress concentration in the chassis beams.

9.4 The actual main frame shall be fully welded steel structure providing high stiffness and thus maximum comfort ability and operational safety.

10. STABILIZING SYSTEM/JACKING SYSTEM

10.1 The stabilizing system shall consist of four hydraulically powered outriggers mounted in their housings in the main frame. Each housing is fitted with adjustable guides to provide smooth and accurate movement of the outrigger beam. The horizontal beam is a completely closed steel profile enclosing the hydraulic cylinder for the horizontal movement and the hydraulic hoses for the cylinder of the vertical movement thus completely protecting those devices from external damage.

10.2 The cylinder for vertical movement is mounted so that the piston rod is protected inside the vertical beam in order to avoid damages.

10.3 The H-type outriggers have been chosen for their ability to stabilize the vehicle from behind obstacles and to be placed on raised structures as necessary. Each vertical jack is fitted with self-aligning foot plate to distribute the load evenly and to allow operation on uneven ground.

10.4 The stabilizing system also includes a rear axle locking system in such cases where it is required for meeting the stability criteria.

10.5 All controls for the entire stabilizing system are located in dust and water proof locker at the rear of the vehicle. The automatic jacking with a control box assures that the outriggers are always visible to the operator.

10.6 In the middle of the control panel there shall be following additional control devices:

- 10.6.1 starting of chassis engine
- 10.6.2 stopping of chassis engine
- 10.6.3 Outrigger and outreach display with fault finding system
- 10.6.4 Operating hour and rpm-up gauge in the display
- 10.6.5 Switch for the battery driven back-up for the hydraulic system
- 10.6.6 Visual indicators for leveling of the vehicle (longitudinal and transversal)
- 10.6.7 Emergency stop
- 10.6.8 Controls for the automatic jacking

10.7 The locker containing outrigger controls is fitted with an automatically operating door switch and light for night operation.

11. ELECTRONIC SAFETY AND OUTREACH SYSTEM

11.1 The Electronic System shall make it possible to select the working cage load according to working situation. With these variables the system selects automatically the maximum allowed outreach to front, rear, right and left side. Since this is based on calculations and parameters saved in the system it will guarantee exactly the same outreach regardless of

the external influences like wind speed and direction, temperature, friction of the cylinders, etc.

11.2 The display units of the system show maximum possible outreach and position of the working cage in real-time. There are also many additional features included in the display unit All electrical components in the system are doubled.

11.3 The electronic system shall be approved according to the valid standards and directives. Relevant independent test certificates to be submitted with offer.

12. CAGE:

12.1 The working cage shall be fixed to the boom with proper pivoting point so as to provide highest possible degree of natural safety.

12.2 The working cage is made of tubular steel Aluminum profile and welded together The dimensions of the working cage are 1.0 m (length) x 2.0 m (width) x 1 .1 m (height))(with +/-10% tolerance for each) and it is fitted with two doors, one located at the side to enable safe access from the ground in travelling position and the other one located at the front for safe access in case of a rescue. Safe working load is 500 kg when no water is discharged.

12.3 The cage load can be changed from display unit and these lection of load can be possible from turntable and cage control center. The chosen cage load can be displayed by clear symbols and numerically in selected format on all display units. The selected cage load shall be shown preferably by graphic bar.

12.4 When the load selection is made at turntable or cage the system shall automatically show the maximum outreach to all directions with selected cage load and outrigger position.

12.5 The control panel in the cage shall be fitted in such a way that the operator shall see the booms clearly tall the times.

12.6 The working cage shall be kept horizontally leveled in any position of the booms including the travelling position which makes it possible to the firemen to enter the working cage before the booms are lifted. This feature makes it possible to start the operation without losing valuable time by taking the cage on to the ground first.

12.7 The leveling system shall be controlled by an automatic horizon monitoring device with two fully automatic and independent safety circuits in case of an uncontrolled leveling failure. There is a master switch for the automatic leveling system, thus it can be isolated and the manually controlled system activated.

12.8 The leveling movement shall be powered by a hydraulic cylinder connected to a mechanical linkage for transmitting the movement.

12.9 The working cage shall be turned 40-50 degrees to each side from its centre position to provide safety and comfort ability in rescue operations. The movement is powered by a hydraulic cylinder with controls in the working cage and at the turntable control panels.

12.10 The centre position of the cage shall be indicated by a visual indication at both control panels.

12.11 At the front of the working cage there shall be a rescue platform with safety railing to provide additional safety during rescue and firefighting. The dimensions of the rescue platform shall be 1 to 1.5m x 0.5 m and load capacity of minimum 180 kg.

13. HYDRAULIC SYSTEM

13.1 Hydraulic power shall be provided by a reliable and adequate variable displacement double axial piston pump, which is driven by the vehicle power take-off

13.2 Without any operation of the aerial device, the pump rotates on minimum flow and minimum pressure. When one of the movements is operated the control valve shall automatically increases the pressure to a pre-set constant level and the oil flow to the amount that is needed for the movements activated. Due to which the loss of power in the hydraulic system, which normally causes over heating of the hydraulic oil, can be avoided and also the stresses caused to the vehicle transmission and P.T.O. system are minimized. At the same time fuel consumption and exhaust emissions are kept at the minimum.

13.3 By operating several movements simultaneously the oil flow shall increase automatically according to the need in the system thus making all movement speeds independent on each other.

13.4 The constant pressure system with maximum pressure setting prevents overloading of the system and its components e.g. cylinders.

13.5 Inside of the turntable and at the lower valve compartment there shall be instant couplings for the manometer in each pressure line. The manometer shall be fitted as standard equipment.

13.6 The filtration of the oil consists of suction strainer in the suction line, pressure filters with visual indicators in each pressure circuit, return filter in return line and air filter on the reservoir thus providing maximum reliability by protecting the hydraulics against foreign particles.

13.7 The hydraulic cylinders are hard chrome-plated piston rods and they have been fastened by means of self-aligning ball bearings to prevent lateral forces from damaging the seals or piston rods of the cylinders.

13.8 Hydraulic oil tank shall be mounted at the top of the main frame. The tank is fitted with oil level gauge, temperature gauge, suction connections with closing valves for easy maintenance and draining outlet with closing valve.

13.9 There shall be hydraulic oil cooler for continuous use in hot temperature.

13.10 Pressure and temperature of hydraulic oil:

13.11 Platform is equipped with electrical temperature and pressure sensors of the hydraulic oil. The temperature and pressure are shown in every display unit.

14. BACK-UP FOR THE HYDRAULIC SYSTEM

14.1 There shall be a battery driven hydraulic pump which provides an independent means of power in case of failure of the main engine.

14.2 The system should be able to be started from all control panels thus providing an immediate back-up in a case of a failure at an intense fire or similar immediate emergency.

14.3 There shall also be an independent diesel engine driven hydraulic pump system for complete operation of all boom and outrigger movements with slow speed.It shall be possible to start this system from all control panels.

15. CONTROLS AND SAFETY:

15.1 The Electrical supply needed for control system shall be taken from the vehicle battery which shall be charged when the engine is running.

15.2 When the vehicle is in operation yellow flashing warning lights mounted on the outriggers shall automatically remain on.

15.3 The engine starting and stopping switch shall be provided on all control panels and the engine speed shall be increased to the present level as soon as any one of the control lever is operated.

15.4 All boom and rotation movements shall be controlled electro-hydraulically by means of proportional valves. The proportional valve shall not be sensitive to changes of ambient or oil temperature, and shall provide smooth, safe and very accurate movements even in most severe operating conditions.

15.5 The speed of the first boom for lowering and extension shall be automatically reduced at maximum outreach. The first boom lifting speed shall be reduced before the maximum elevation.

15.6 All control movements can be performed by the control system from both control panels and the outreach can be selected by the positioning the outriggers. The variable system shall consist also displays at all three control stations. The display give the real time information about the outreach and the cage position and also show possible movements according to cage positions by animated arrows. In the text display there shall be at least four different views on each display:

15.6.1 Warnings

15.6.2 Emergency situations

15.6.3 Help manual

15.6.4 Fault finding system

15.6.5 Outreach preview

15.6.6 Real time outreach and cage position with guidance information.

15.6.7 Main outreach with two views (Side and up)

15.6.8 Statistics information

15.6.9 Tools Screen (personal settings)

15.6.10 Signal lamps shall be provided for following functions:

15.6.11 For the outriggers, in transport position in driver's cab

15.6.12 For the outriggers working position on all control panels

15.6.13 For the P.T.O. engaged in the driver's cab

15.6.14 For the transport position of the booms in driver's cab

15.6.15 For the middle position of the rotation on the turntable and cage control panel.

15.6.16 For the exceeding of the safe working load in the cage on the turn-table and cage control panels.

16 TURNTABLE AND WORKING CAGE CONTROL PANELS

16.1 The turntable control panel incorporating all control levers (joystick type) and safety system indications is fitted in such a way that it enables good visibility from the control station towards the working cage when the booms are operated.

16.2 The control station shall be fitted with convenient seat to provide comfort even in case of prolonged operation. The platform underneath the control position shall be covered by civil by non-slip Aluminium.

16.3 The working cage control panel incorporating all control levers (joystick type) and safety system indications shall be fitted at the rear of the cage to permit visibility over the booms

and to leave the front of the cage free for rescue and firefighting operations

16.4 Both control panels shall be exactly alike, thus considerably reducing the risk of confusion amongst operators under stress or even panic.

16.5 At the turntable control panel there shall be a change-over switch to select the panel from which the operation is controlled.

16.6 Both control panels shall be fitted with following most important warning, indication and control devices, all marked by clear symbols: Joystick control levers for each movement

16.6.1 joystick control levers for each movement

16.6.2 Buttons for cage slewing

16.6.3 Button for starting and stopping of chassis engine

16.6.4 Buttons for the battery driven and diesel engine driven back-up for the hydraulic system

16.6.5 button for emergency stop

16.6.6 button for overriding of the automatic working cage leveling system

16.6.7 button for manual operation for the working cage leveling system

16.6.8 extra buttons for special features

16.6.9 button for activating the bleed down system

16.6.10 button for automatic drive of booms to transport position

16.6.11 button for approaching speed (lower down speeds of boom movements)

16.6.12 button for work lights

16.6.13 buttons for automatic first boom movements and first boom extension/ retraction

16.6.14 Intercom system

16.6.15 Integrated water monitor controls

16.6.16 Visual and audible indication for exceeding safe working load

16.6.17 Visual warning for activation of working cage collision guard system

16.6.18 visual indication for ground pressure of the outriggers

16.6.19 visual indication diagram containing information on particular movements being restricted or permitted based on real-time information on actual boom configuration

16.6.20 visual indication for the centre position of the booms

16.6.21 Visual indication for the centre position of the working cage

16.6.22 visual indication for wind speed

16.6.23 Visual indication for cab protection

16.6.24 visual indication for tilt alarm

16.6.25 visual indication for Tele-control activated

16.6.26 visual indication for service time reminder

16.6.27 Visual indication for service counters for chassis motor, electric power. Generator and battery pump

16.6.28 information screen for all important alarms and vital information

16.6.29 fault finding screen

17 CONTROLS AND INDICATORS IN DRIVERS CAB

In addition to chassis standard controls and indicators the following items shall be

installed in drivers cab:

17.1 visual warning for the main current and PTO being switched on

17.2 visual warning for any of the equipment lockers being open

17.3 visual warning for the booms not being fully in travelling position

17.4 visual warning for the rear axle being locked (if the feature is installed)

17.5 visual warning for the outriggers not being in horizontal travelling position

17.6 switch with visual indication for rotating beacons

17.7 Switch with visual indication for siren unit.

17.8 microphone for the public address system

18 SAFETY DEVICES

18.1 All load bearing hydraulic cylinders shall be fitted with lock valves directly integrated in to the cylinder structure to prevent the booms, the working cage or the outriggers from retracting in case of a pipe or hose failure.

18.2 Retracting of any of the outriggers shall be automatically prevented as soon as the booms have been lifted from their travelling position.

18.3 Similarly lifting of the booms from the travelling position shall be prevented until the outriggers have reached the support width and ground pressure.

18.4 All boom movements have been limited at their most extreme positions thus making it impossible for the operator to reach an unsafe configuration by normal means of operation. The movements having direct influence on the stability of the aerial have all been fitted with two separate limiting circuits, the first one stopping that particular movement, the second one deactivating the whole electric and hydraulic system should the first circuit not have worked.

18.5 The major movements, lifting of the first and the second boom to their maximum elevation, and extending the telescopic movement or lowering the second boom at the maximum outreach have been fitted with slow-down devices to provide smooth deceleration of the movement.

18.6 Starting of the chassis engine from any of the control panels of the aerial is prevented unless the gear is shifted to neutral.

18.7 Inadvertent damaging of the drivers cab by the first boom has been prevented by a system preventing lowering of the first boom and rotation movement when the first boom is near the drivers cab.

18.8 An overload warning has been fitted to give an audible and visual warning in case of exceeding the safe working load.

18.9 A collision guard (ultrasonic type) has been fitted to provide additional safety when operating in darkness or in dense smoke. This system stops all movements and gives visual warning when activated.

18.10 An emergency stop switch shall be fitted at all control panels to provide immediate and complete "freezing" of all systems in case of an unexpected emergency,

18.11 The control system shall be fitted with dead man switches to provide additional safety.

19 BODYWORK AND EQUIPMENT LOCKERS

19.1 The frame for the body work shall be made of Aluminium/ stainless steel. The elements have been covered by non-slip aluminum plate strong enough to allow free movement of persons on it.

19.2 To provide easy access from the ground level there are steps on both sides of the vehicle and equipment lockers made of aluminum plates, painted and finally bolted onto decking element for easy removal if necessary. All lockers are fitted with automatic switches activating the lights as soon as the door is opened and also activating the warning in driver's cab to indicate that all doors are not fully closed.

20 WATER WAY SYSTEM

20.1 The water way system shall be completely made of non-corrosive material. The nominal diameter of the water way is min 100 mm and it leads from the rear of the vehicle where a 2 x 65 mm (2 .5") inlet one in each side is fitted through the centre post in the turntable up into the working cage where the water monitor is mounted. Along the booms, the piping is fitted between the first and the second booms to have a safe and protected place for it when driving on roads.

20.2 The centre post, which shall be mounted in the center line of the turntable, provides continuous rotation even if water supply is simultaneously used.

20.3 The piping shall be protected from possible over pressure by means of two relief valves mounted underneath of the turntable.

20.4 On the side of the first and second boom there shall be a telescopic water pipe, which is made of corrosion resistant material. Moving sections of this pipe have been externally ground and chromium plated to provide reliable function and long life span.

20.5 Seals between the sections are of low friction type and can be easily tightened if so required. In boom pivoting points flexible, specially reinforced 100 mm pressure hose is used. All those are fixed to the pipe with reliable span-lock connections.

20.6 Piping ends at the right hand side at the front of the working cage where the water monitor is placed. A 75 mm valve is fitted in the cage to isolate the monitor if required.

20.7 There shall be an additional outlet with 65 mm (2.5") closing valve and coupling for water supply from the cage through an extension hose.

20.8 All fire hose couplings are according to customer's requirements.

20.9 There shall be drain cocks fitted in the piping to enable it to be drained after use.

20.10 On the front underneath of the cage there shall be nozzles of water spray curtain system to protect cage occupants from radiant heat. Control valve of water spray curtain system is conveniently located inside of the cage.

20.11 The water line shall be protected from possible over pressure by means of relief valves mounted underneath of the turntable set not less than 16 bar.

20.12 The cage shall be provided with 20 mtrs hose reel with Fog/Jet nozzle and shall be connected to main water line with control valve in the cage.

21 PUMP

22.1 Midship mounted centrifugal type fire pump having 6000 lpm output at 10 bar made from bronze material shall be provided.

22.2 The fire pump shall be driven by suitable PTO having adequate power and torque to meet the output criteria of the pump.

22.3 4x63 mm delivery outlet (02 on each side) as per IS standard.

22.4 1x6” suction inlet (01 on each side) as per IS standard.

22.5 Min 3” line going to the working cage.

22.6 Pressure gauge for the pneumatic system.

22.7 Electric speedometer for the pump shaft.

22.8 Hour meter for the fire pump.

22.9 Pressure/Vaccum gauge

22.10 Pressure governor.

22.11 Fire pump rmp control.

22 WATER MONITOR

Water monitor shall be connected on to the piping system and it is placed at the front side of the cage on the left hand side just outside of the railing. Due to the fact that the monitor is placed outside of the cage the entire cage floor area can be fully utilized in extreme rescue situations. The remote controlled monitor is made up of light alloy and fitted with jet/fog nozzle with maximum nominal capacity of not less than 4000 lpm, provided there is sufficient pressure and flow. The Monitor shall have Horizontal rotational movement to left and right side and also vertical up and down movement.

23 INTERCOM

23.1 There shall be a fully transistorized talk-back intercom system fitted between the turn table and the cage.

23.2 The combined microphone and loudspeaker for hands free operation is located in the cage. The turntable control station shall also be equipped with microphone which is integrated in to the loudspeaker.

23.3 The microphone and the loudspeaker shall be sealed properly and it shall be protected from the ingress of water, dust and humidity.

24 ELECTRIC SYSTEM

24.1 The electric supply shall be taken from the chassis battery which is kept charged when the engine is running. Voltage of the system is 24 V DC and all circuits have to be fitted with their specific uses. When the main current is switched on, yellow flashing warning lights located at each outrigger boom pivoting point and underneath of the working cage are automatically switched on.

24.2 2x24 volts, 70 watts, spotlights with swivel mounting bracket shall be fitted at the cage railing in the front side to provide extra safety during night operation. The switch for the sleights shall either be provided on the light it sells for on both the control panels.

24.3 On each side of the drivers cab roof there shall be rotating beacons in red colour. The main switch for the beacons with suitable signal light is fitted inside of the cab in a convenient position for the driver.

25 SIREN AND PUBLIC ADDRESS SYSTEM

There shall be an electric siren unit fitted on the front bumper or behind the front grille. Control panel of the system is conveniently located for the driver and it includes switches for fast (yelp), slow (wail) and two tone (Hi-Lo) sounds. Command microphone, which is fitted with push-to-talk switch, allows the public address message to override the siren function. Operations shall be controlled by a switch in illuminated non-glare control panel.

26 ROTATING BEACONS

On each side of the drivers cab roof there shall be rotating beacons in red colour. The main switch for the beacons with suitable signal light is fitted inside of the cab in a convenient position for the driver.

27 DISPLAY UNITS

27.1 The system includes 3 full colour displays situated at outrigger center, at turntable and in working cage.

27.1.1 Colour display based on TFT technology, Transflective type. Good visibility in bright daylight and at night time (display is back lighted)

27.1.2 Size 6.5" , ratio 16:9 (wide screen)

27.1.3 400 x 240 RGB pixels, full colours

27.1.4 12 back lighted multi function membrane push buttons

27.1.5 Two warning LEDs

28 FAULT FINDING SYSTEM

28.1 Special attention must be focused on the defect sensitivity. If any way some faults appear, the location of the defective component is shown on the screen. The system shows location and nature of fault on screen. The system has simple test screens to enable testing of the working cage and the turntable control panels. The test covers display unit, push buttons, joysticks and control lamps. For maintenance purposes the following tools are available as standard:

28.1.1 Fault finding system and fault register

28.1.2 Status screens for sensors, switches, hydraulic valves, control lamp, etc.

28.1.3 Total operation and RPM-UP hour meters

28.1.4 Operation and RPM-UP hour meters since last service

28.1.5 Total movement counters for all boom movements (informed as seconds)

28.1.6 Service counters and alarm for general maintenance

28.1.7 Software verification management

29 PAINTING

29.1 Before painting all surfaces of steel structures shall be carefully shoot blasted after which they shall be primed. After the final top paint the dry film thickness of the paint coat is 100 microns. All booms shall be painted from inside.

29.2 To provide very high corrosion resistance hollow structures such as steel profiles of the working cage, cage boom and outrigger beams and housings shall be treated with anti-corrosion protection agent. Paint tones used for standard units are:

29.2.1 Working cage alluminium not painted

29.2.2 Working cage support, boom sections, turntable and related cylinders whiteRAL 9010

29.2.3 Mainframe, outriggers and bodywork red RAL 3000

29.2.4 Outrigger cylinders grey RAL 7046

29.2.5 Chassis frame touch-ups chassis original tone

30 ACCESSORIES

30.1 4 pc wooden outrigger ground pads with brackets

30.2 2 pc Working range diagrams, one at the turntable, one in the cage

30.3 1 pc marking of safe working load in the cage

30.4 2 pc Unit type marked at the boom

30.5 1 set Warning labels and instruction plates

30.6 2 sets Operation and maintenance manuals

30.7 I pc Plug for 24 V working light at the turntable and in the cage

30.8 1 pc 24 V/70 W working light with universal bracket

30.9 1 pc Lifting loop under the working cage, capacity 500 kg

30.10 2 sets Anchor points for safety belts in the working cage

30.11 5 pc Safety belts for cage occupants

30.12 1 pc Hydraulic pressure gauge

30.13 1 pc Quick action hose reel of 20m length with jet mounted at thecage

30.14 1 set Electronic Ultra sensor collision guard

30.15 1 set Stretcher carrier with stretcher

30.16 1 pc Load man Portable Falling Weight Deflectometer to check ground stability

30.17 6 sets three layered fire fighting suits (Blue color) confirming to EN469 with firefighting gloves, confirming to EN659, firefighting boots confirming to EN345, firefighting helmet confirming to EN 443, hood all certified to relevant EN (or equivalent) standards shall be supplied along with necessary test certificates.

31 OTHER ACCESSORIES

31.1 Radio (Wireless) Remote Control

The radio remote control can perform the same standard main functions as the stationary control center including all boom movements, engine start/stop, rpm for boom movement, horn and work lights, emergency stop, all water monitor controls, etc. It weighs about 2 kg including battery. Range is about 100m with standard antenna.

31.2 BREATHING AIR SYSTEM

A breathing air system shall be provided from turntable to working cage. At the cage there shall be a manifold with instantaneous couplings to connect the breathing masks. Air cylinders to supply the breathing air shall be mounted at the turn table. The cylinder capacity shall be such that they provide minimum 7000 L of free air Isolation valve shall be provided at suitable location so that the cylinder can be changed without interrupting the air supply. Pressure regulator as required shall also be incorporated in the system. Suitable face masks (4 nos.) with at least 4 spare face masks for breathing shall be supplied with the unit

32 STANDARD FEATURES INCORPORATED IN THE CONTROL SYSTEM

32.1 Ground pressure alarm:

When one outrigger has not enough ground pressure, the system gives an audible and a visual alarm. If two outriggers loose ground contact, unsafe boom movements are stopped.

32.2 Cab protection:

The cab of the truck can be protected to avoid damage by the booms or working cage. Working in front of the truck close to the cab is also possible. When arriving to the cab protection area, the movements of the booms are slowed down and stopped softly. Leaving the area is done by opposite movements. Cab protection can be override by push button.

32.3 Automatic drive of booms to transport position:

The booms can be lowered back to transport position automatically by pushing a single push button in a pre-set sequence.

32.4 Working cage automatically to middle position:
Working cage can be turned automatically to centre position.

32.5 Approaching speed:
Lower speeds of the boom movements shall have to be maintained for training and for general use by persons not very familiar with Hydraulic platform or when reaching the building very accurately.

32.6 Zero position of joysticks:
All joysticks must be in zero position before activation of RPM for boom movements,

32.7 Automatic switches off for the outrigger pressure:
Push button version of outrigger controls:
Outrigger pressure is automatically switched off if dead man pedal of working cage or turntable is pushed. Outrigger pressure is also automatically switched off after certain time delay.

32.8 Service time reminder:
The system gives an alarm when closing 250h (or every third month) or1000h (yearly) service time. The service time counter can be reset when maintenance is carried out.

32.9 Pressure and temperature of hydraulic oil:
Platform is equipped with electrical temperature and pressure sensors of the hydraulic oil. The temperature and pressure are shown in every display unit.

32.10 Tilt alarm:
If chassis is tilted or the unit is leveled incorrectly, the system gives an audible and a visual alarm in every display unit. The tilt alarm angle shall be adjustable.

32.11 Language and measure units of screens:
The system is based on clear and easy-to-understand symbols. If texts are used on master screens, the language shall be in English.
All measure units of master screens shall be in metric measures and can be changed to locally used format by operator.

32.12 Auto jacking:
Automatic leveling system is easy and fast way to make platform ready for operation. The system is fully automated and enables leveling within less than 40 seconds. The system performs very accurate leveling and has got safety circuits to assure that leveling is proper and platform is ready for safe operation.
This system is controlled by hand held remote control device. The device is equipped with following functions (back-lighted push buttons):

a. Left side outrigger beams out
b. Right side outrigger beams out
c. Automatic leveling
d. Outriggers back to transport position

32.13 Pressure of water in water line:
The platform can be equipped with water pressure sensors (according to customer's need):

a. water pressure in water inlet(>0.0 bar)
b. pumping pressure of water
c. water pressure in water monitor

The water pressure can be seen on water pump screen on every, display unit.

32.14 Water flow rate and total amount of water used:

Actual volume of water in water line shall be indicated. The water volume can be seen on water pump screen on every display unit. The system shows also the total amount of water used at one time (this counter can be reset when needed).

32.15 Wind speed meter:
A wind speed sensor shall be fixed in working cage and shall be at place also during transportation. Wind speed can be seen on every display unit. When wind speed is higher than allowed the system gives audible and visible alarm. The wind speed meter will not limit the use of the platform.

32.16 Indication of low fuel level:
There shall be a system gives an alarm to the operator when the fuel tank is getting empty.

32.17 Hydraulic Oil filters Service Indicator:
If any of hydraulic oil filters needs unscheduled service, a visual indication shall be shown on every display unit.

32.18 Hydraulic tank low oil level alarm:
There shall be a system gives an alarm to the operator when hydraulic oil levelis too low in the oil tank.

32.19 Temperature of cage floor:
There shall be a system of temperature of working cage floor shall be seen on every display unit.

Note - The Committee also recommends that above mentioned technical specifications and other terms & conditions may be got verified /checked at length by Director Supply and Disposal department so that no litigation may arise later on.

Lalit Kumar	**Yadvinder Sharma**	**Rajinder Singh Dahiya**
Fire Station Officer	**Fire Station Officer**	**Assistant Divisional Fire Officer**

Sajjan Kumar	**Niranjan Kumar**	**Gulshan Kalra**
Assistant Divisional Fire Officer	**Works Manager HR**	**Deputy Director (Tech)**

ANNEXURE - A

SCHEDULES OF TECHNICAL PARTICULARS OF AERIAL LADDER PLATFORM 90 METERS HEIGHT

Sr. No.	Technical Details	Remarks
1.	**GENERAL DESCRIPTION**: (a) Make and Model (b) Height (meters) (c) Outreach (meters) (d) Operating media (e) Safety (f) Gross Vehicle weight	
2.	**CHASSIS:** (a) Make (b) Model (c) Wheel base (d) Engine type (e) Rated HP (f) Type of clutch (g) Type of gear box (h) Type of front axle (i) Type of rear axle (j) Type steering system (k) Type of braking system (l) Fuel tank capacity (m) Size of tyres (n) Type of cabin (o) Type of electrical system (p) Type of PTO	
3.	**Constructional details:** **A: Driver Cabin:** (a) Paneling (material) (b) Doors (Nos.) (c)Windows (Nos) (d) Seats (Drivers, attendant, and crew) (e)Capacity **B: Rear Body:** (a)Details of horizontal and vertical cross members (b) Panelling, sides, deck floor (material, size, thickness) (c) Details of lockers (nos, size, material) (d) Overall length in MM (e) Overall width in MM (f) Overall Height in MM (g) Details of Aluminium shutters (size, Nos)	
4.	**4. OPERATING REQUIREMENTS** (a) Safe working loading in cage (Kg) (b) Safe working load with Monitor in cage (Kg) (c) Lifting capacity of the under cage (Kg)	

	(d) Testing suitability at (Kg) (e) Permitted wind speed at the maximum outreach with full working load in the cage (f) Operating time of full stroke (second) • Elevating fist boom / ladder • Elevating second boom/extending ladder • Telescopic • Reaching max height from ground level • For 360 degree rotation • For extending jack one side • For extending jack for both side • For extending all four jacks, elevating, cage to max height and rotation through 360 degree	
5.	5. **DIMENSION OF THE FINISHED APPLIANCE:** **A. In Operating Position:** (a) Max height to working cage bottom (M) (b) Max working height (Mtrs) (c) Max working outreach (Mtrs) (d) Max outreach to cage corner with max safe working load (Mtrs) (e) Max outreach below the ground level working cage bottom with max safe working load (Mtrs) (f) Safe working Load (Kg) (g) Rotation continuous (degree) (h) Levelling capacity (Fore and aft/ sideways) **B: In Transport Position:** (a) Transport height approx (Mtrs) (b) Transport length approx (Mtrs) (c) Transport width approx (Mtrs)	
6.	**6. CONSTRUCTION** (a) Material used (b) Use of timber (c) Use of rubber (d) Treatment of material (e) Painting procedure	
7.	**7. BOOMS** (a) Numbers (b) Telescopic sections (nos) (c) Boom / Ladder length (Mtrs) (d) Movement (e)Location (f) Design (g) Treatment (h) Welding process	
8.	**HYDRAULIC CYLINDERS:** **(a)** Lock valves (b) Hydraulic Dampers (c) Reduction in speed of booms / Ladder (d) Automatic prevention of retracting of outriggers	

	(e) Lifting of Boom / Ladder prevention unless outriggers are in position (f) Limiting circuit to prevent cab damage (g) Emergency stop switches	
9.	**CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENT:** **(a)** Type of control valves (b) Make (c) Model	
10.	**TURNTABLE:** (a) Construction type (b) Fastening (slewing ring) (c) Swivel – in – line (d) Rotation (degree) (e) Movement control (f) Gear unit fastening (g) Location	
11.	**MAIN FRAME:** (a) Frame type (b) Fastening (c) Construction material (d) Non slip aluminium tread plates (e) Steps on both sides (f) Location	
12.	**CAGE:** (a)Material (b) Outer dimensions (MM) (i) Length (ii) Width (iii) Height (c) Doors, Nos., & size in (MM) (d) Max Load (Kg) (e) Fitment to control panel (f) Provision for digital anemometer (g) Levelling device (h) Working cage slewing provision (i) Drop down platform provision (j) Location of drop down platform (k) Max permissible load on drop down platform (Kg) (l) Safety railing provision, height (MM)	
13.	**STABILISING JACKS: OUTRIGGER:** (a) System (b) Controls and Operation (c) Nos. and Location (d) Individual controls (e) Level indicators (f) Self alignment foot plates for outrigger (g) Operation on uneven ground (h) One side jacking provision	

14.	**CONTROL AND SAFETY:** (a) Electric control taken from vehicle battery (b) Voltage (c) All control panels to have engine start/ stop button (d) Signal lamps	
15.	**DETAILS OF SAFETY DEVICES:** (a) Boom/ Ladder and Outrigger cylinder lock valve make & type (b) Isolating system boom/ ladder/ outrigger operation (c) Movement limiting system (d) Cab protection (e) Overload alarm (f) Emergency stop system (g) Dead man switch (h) Bleed down system/other system	
16.	**HYDRAULIC SYSTEM:** (a) Hydraulic power, make & model of pump (b) Pump capacity Ltrs/min and pressure (Kg/cm2) (c) Pump operation (d) Control valve function (e) Oil flow to increase (automatically) (f) Prevention of overloading (g) Instant couplings for manometer (h) Manometer (i) Filtration of oil (j) Filters (k) Hydraulic cylinder type (l) Plating of piston rod (m) Hydraulic cylinder type (n) Fastening (o) Capacity of hydraulic oil type	
17.	**BACKUP FOR HYDRAULIC SYSTEM:** (a) Type (b) Location (c) Operating mode	
18.	**CONTROLFOR STABILISING JACKS:** (a) Location of control panels (b) Change over switch (c) Control levers (d) Emergency lowering valves (e) One side jacking facility	
19.	**WATER PIPING SYSTEM:** (a) Material of piping (b) Diameter of pipe (MM) (c) Water monitor location (d) Piping fitment (e) Protection against over pressure by relief valve (f) Telescopic water pipe (g) Finish & plating	

	(h) Seals (i) Flexible hose (j) Monitor isolating valve (k) Additional outlet with valve and coupling (l) Nozzle and system (water curtain) (m) Control valve location (n) Water monitor (o) Location	
20.	**ELECTRICAL EQUIPMENT:** (a) Slip rings (b) Rating (c) Spotlight (d) Red rear lamps nos. (e) Red/ Orange lamp at boom/ ladder knuckle (f) Illumination of: (i) All control panels (ii) Instruction plates (iii) Leveling indicators (g) Recharging (h) Separate fuses (i) Wiring diagram	
21.	**INSTRUCTION PLATE: DETAILS**	
22.	**BOOM / LADDER:** (a) No of telescopic section (b) Location (c) Min. width at top (MM) (d) Railing height (MM) (e) Folding bridge (f) Material (g) Treatment (h) Controlling system	
23.	**INTER COMMUNICATION SYSTEM:** (a) Type (b) Make (c) Model (d) Operating voltage (e) Location	
24.	**ELECTRIC POWER LINE :**	
25.	**GRAPHICAL DISPLAY MONITOR : (Details)**	
26.	**FAULT FINDING SYSTEM (Details)**	
27.	**EMERGENCY SYSTEM** (a) Make & Model of Engine & pump set (b) Capacity of pump (Ltrs/Min) (c) Make & Model of electric motor operating voltage (d) Make & Model of pump set with capacity (Ltrs/Min) (e) Bleed down system/other system	
28.	**LUBRICATION: Details**	
29.	**BODY WORK**	

	(a) Steps and grab rail (b) Construction (c) Material (d) Siren with two tone hooter + Public Address system (e) Orange beacon lamp	
30.	**FINISH** (a) Painting (b) Visibility	
31.	**TOOL KIT DETAILS: SEPARATELY**	
32.	**STABILITY**	
33.	**TESTING FACILITIES**	

Brief Description of Procuring:

Sr. No.	Description of Stores	Quantity in No.	Place of Delivery
1	**SUPPLY, DELIVERY, MOUNTING, TESTING AND COMMISSIONING OF AERIAL LADDER PLATFORM 70 METERS HEIGHT WITH 03 YEAR DEFECT LIABILITY PERIOD AND 03 YEARS COMPREHENSIVE MAINTENANCE CONTRACT FOR FIRE FIGHTING AND RESCUE OPERATION. EURO-VI**	**03**	**Anywhere in Haryana**

1. **ELIGIBILITY OF SUPPLIERS**:

1. Bidder should be either manufacturer or Authorized Distributors who have obtained written permission from manufacturers only.
2. Documentary evidence establishing that the manufacturer has supplied minimum 5 Nos. aerial ladder platforms, hydraulic platform of required model with same OR Higher working capacities, specifications and features as specified in the schedule of requirements. (Copy of Supply Order, copy of Certificate regarding satisfactory supply of the items issued by their purchasers, etc. should be enclosed).
3. Copy of the Audited Annual Accounts for the last 5 years to prove an annual turnover of at least Rs. 40 Crores (Rupees Forty Crores only) or equivalent foreign currency in any of the last 5 financial years.
4. The manufacturer should be ISO 9001 Certified Company.
5. Documentary evidence showing that the bidder is manufacturer of the tendered item. If the bidder is an authorized agent, the Manufacturer Certificate in this regard should be enclosed. The Manufacturer has to issue a certificate to the effect that they will take responsibility if Indian agent fails to attend service or if there is any change in Indian Agency during Warranty/CMC period. Certificate from the Manufacturer to continue/accept Service Contract at the rate mentioned in the purchase order in the event of change in Indian Agency to be submitted.
6. Documentary evidence showing that the offered model is approved by appropriate accredited 3rd party authority as per the EN 1777 Standards specified in the Technical Specification.
7. Documentary evidence established in accordance with criteria mentioned at sr. No. 8, that the goods and ancillary services to be supplied by the Bidder confirm to the goods and services as mentioned in the Bidding Documents. Scanned copy of the duly signed specification compliance statement shall be uploaded along with the offer, and the statement should be complete in all the details of specification. The bidder should upload the statement with complete details of specification even though there is no deviation for the product from the Technical Specifications.
8. Pursuant to criteria mentioned at Sr. No. 7, the bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the bidding document of all goods and services which the bidder proposes to supply under the contract.

The documentary evidence of the goods and services eligibility shall consist of statement in the price schedule on the country of origin of the goods and services offered which shall be confirmed by a certificate of origin at the time of shipment.

9. Declaration by the bidder on Stamp Paper worth Rs.100 to the effect that he/his partner/s or any of his directors is not involved in any Vigilance Case registered in connection with any supply made to any Central/State Governments/ Boards/corporations in India (Optional for the bidders from India only).
10. The bidder should not be black listed from any Central/State Governments/ Boards/corporations in India/ any other country or no Criminal Case is registered against the firm or its owner or partners. The bidder will submit self-certification in this regard.

SPECIAL TERMS AND CONDITIONS:-

1. The manufacturer/supplier shall impart necessary training to 6-10 person/fire staff for minimum 30 days at his risk and cost for every vehicle anywhere in Haryana). After completing the successful training period, he will issue a certificate to the trainees in this regard.
2. The manufacturer/ supplier shall supply Aerial ladder platform anywhere in Haryana at consignee's place at the cost of supplier/ Manufacturer.

3. PAYMENT TERMS:-

A. For Imported Item

(i) A irrevocable Letter of Credit (LC) confirmed by the first Class Bank in the seller's country in favour of the supplier for 100% of the CIF amount shall be opened by the purchaser. L/C charges shall be to purchaser's account including confirming charges, which shall be borne by the purchaser out of the 100% payment (AO).

(ii) 90% (Ninety Percent) of the CIF component will be released against submission of documents along with satisfactory certificate of pre-dispatch inspection.

(iii) Remaining 10% (ten percent) payment shall be payable after satisfactory installation/demonstration of the goods at the premises of end-user department and receipt of certificate for same from end user department. In case of LC, all bank charges (including LC confirmation charges) payable outside India would be to Seller's account.

Payment Against the letter of Credit/Wire Transfer for 90% of the value will be available against presentation of the following documents and also on proof of evidencing of shipment.

a. 3+3 Complete set of Original Clean Bill of Lading. The Bill of Lading shall be in the name of Director General, Haryana Fire Services, Bays 53-58, Sector-2, Panchkula 134112, Haryana, India AND MARKED FREIGHT PREPAID.
b. Signed invoice in three copies giving letter of credit No., Order No. and date respectively. The invoice shall be in the name of: Director General, Haryana Fire Services, Bays 53-58, Sector-2, Panchkula 134112, Haryana, India. Invoice shall have goods description, quantity, unit price, total amount.
c. Certificate of satisfactory Pre-dispatch inspection report and Supplier factory inspection report.

d. Certificate showing goods of ORIGIN issued by Chamber of Commerce or Equivalent Body in Duplicate.
e. Specifications and Packing list – three copies.
f. Manufacturer's guarantee certificate – three copies.
g. Certificate from the manufacturer to the effect that the goods conform to the manufacturers standards and are new (Production Month in Year 2023) and free from any latent or patent defects and are strictly as per Specifications mentioned in STC's Order.
h. Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies.
i. Copy of FAX MESSAGE/proper communication marked to General Imports Division, sent by the seller within 24 hours of issuance of Bill of Lading to buyer notifying the details of the BL No., Goods freighted, total invoice value, Name of the Shipping Line loading port and date of departure of the vessel and expected time of its arrival at the Indian Port.
j. Certificate from the seller that one set of non-negotiable documents mentioned under I to IX above has been airmailed/couriered to the following within 10 Days of departure of the vessel in addition to one set of non-negotiable document sent with the vessel to:

Director General, Haryana Fire & Emergency Services,
Bays 53-58, Sector-2, Panchkula 134112, Haryana, India

B. IN CASE MANUFACTURER IS BASED IN INDIA.

Payment for domestic supply via RTGS for 100% value will be available against presentation of the following documents:-

a. Signed and stamped invoice (Three original) giving details of order number and date. The invoice shall be in the name of the Director General, Haryana Fire Services, Bays 53-58, Sector-2, Panchkula 134112, Haryana, India and end-user department as a consignee. Invoice shall have goods description, quantity, unit price, total amount.
b. Receipt of certificate of satisfactory installation, demonstration & training of the Equipment to be issued by the end-user department.
c. Three copies of Satisfactory Pre-Dispatch Inspection certificate issued by the nominated inspection agency and the Supplier factory inspection report.
d. Specifications and Packing List – Three copies.
e. Authorized Dealers / suppliers guarantee certificate – Three copies.
f. Manufacturer's/Supplier's guarantee certificate – Three copies.
g. Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies.
h. Payment shall be made in Indian rupees or in freely convertible foreign currency for imports. In case of local supply or certain items are locally supplied for an otherwise imported item, the same shall be quoted in INR and the payment for same shall be made in INR only.
i. All the bills relating to custom duty, insurance, warehousing, handling, transportation etc., should be raised in the favour of the Buyer.

C PENALTY

The firm/contractor fail to deliver or dispatch any consignment within the period prescribed for such delivery or dispatch stipulated in the supply order, the delayed

consignment will be manufacturer or supplier will be subject 2% penalty per consignment per month recoverable on the value of the stores supplied. The other details will be as per provision contained in **Sr. no. 14 of "Schedule-'B' Condition of Contract" of DIRECTORATE OF SUPPLIES AND DISPOSALS, HARYANA**

4. BID PRICES:-

I. The bidder shall indicate on the appropriate price schedule of the Price bid the unit prices and total bid prices of the goods it proposes to supply under this contract and in case of goods of foreign origin in F.O.B. (free on board) and CIF (cost, insurance and freight) cost. All the columns shown in the price schedule should be filled up as required. If any column does not apply, the same should be clarified as "NA" by the bidder. In case there is no column for a particular component/item/service in the price schedule, the same should be mentioned by the bidder and price should be accordingly quoted.

a. If offered from within India:

The rate quoted shall be inclusive of all duties, taxes other levies payable by the Firm/Agency as per State /Central Government rules applicable in India. However, the breakup of the price shall be indicated in the price bid. GST and any other statuary duty, tax levy etc., shall be paid to the seller as per the rate applicable on the date of supply on actual basis.

b. If offered from outside India:

The custom duty as applicable shall be paid on actual by the Haryana Fire Services, India (the consignee).

II. Prices indicated on the price schedule shall be entered separately in the following manner: The price of the goods, quoted ex-factory, ex-showroom, ex-warehouse, or off-the-shelf, or delivered, as applicable, including all duties and sales and other taxes including transportation, installation, commissioning at site and all operational and incidental charges etc., However, the breakup of the price shall be distinctly indicated in the price bid.

III. The Bidder's separation of the price components in accordance with Para 4(I)(a) and 4(I)(b) above will be solely for the purpose of facilitating the comparison of bids by the Buyer and will not in any way limit the Buyer's right to contract on any of the terms offered.

IV. Fixed Price: Price quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

5. BID CURRENCIES:

I. Price shall be quoted in the following currencies:

a. For goods and services which the Bidder will supply from within the Buyer's Country, the prices shall be quoted in Indian Rupees: and

b. For goods and services which the bidder will supply from outside the Buyer's country, the prices shall be quoted either U.S. Dollars or in the freely convertible currency.

c. Payment of services like insurance, warehousing, custom clearance, handling, transportation etc., within India shall be paid as per actual.

II. Further a Bidder expecting to incur a portion of its expenditures in the performance of the Contract in more than one currency, and wishing to be paid accordingly, shall so indicate in his/ her / their bid. In such a case, either (i) the bid shall be expressed in different currencies and the respective amounts in each currency together making up the total price, or (ii) the total bid price shall be expressed in one currency and payments required in other currencies expressed as a percentage of the bid price along with the exchange rate used in such calculation.

6. SCHEDULE OF PRICES AND QUANTITIES:

a. The rate of taxes / duties and custom duties applicable on the date of submission of tender shall be clearly shown in the tender.
b. The charges for transportation/insurance and other incidental expenses for the delivery of the equipment to shall be included in the cost.
c. The cost on account of training to the Officers/official of Haryana Fire & Emergency Services, India for one week at the factory premises of equipment manufacturer shall be included in the cost.
d. The price and the cost stated in the tender shall be in Indian Currency only.
e. The prices quoted by the bidder shall be fixed and firm during the contract and no other price variation will be allowed under any circumstances. The tender submitted with variable price will be treated as NON RESPONSIVE and will be rejected outright.

7. TAXES AND DUTIES

a) Suppliers shall be entirely responsible for all Central or State (in India & country of origin) or any other taxes, duties, license, levies, duties, fees, etc. incurred until delivery of the contracted goods to the Buyer.
b) The rates quoted by the bidder shall be inclusive of the sales and other taxes that the bidder will have to pay for the performance of this contract. The Buyer will effect the deduction of such taxesat source (TDS) as per applicable law prevalent.

8. Prices: The rates are on consignee destinations basis anywhere in Haryana at supplier's risk (FOR).

9. Custom DUTY:- *Exclusive, if any*

10. Freight Charges:- *Inclusive, if any*

11. Delivery Period:- *Period of Delivery of Equipment / Goods in complete manner as specified: 8 (eight) months from the issue of Letter of Award.*

12. *BREAKDOWNS* DURING WARRANTY:-

Warranty period will be of 36 months of both the superstructure and chassis, the supplier will be responsible to provide service and maintenance during warranty period as and when required at the place of respective instruments stationed The supplier shall attend/rectify the defect within 72 hours of any break down, period for more than 10 calendar days, shall be added to the warranty period. Penalty @ Rs. 25000/- per day for any delay will be applicable on all minor disorders after 7 days of complaint registered by the purchaser whereas for all major breakdowns after 30 days. The supplier should provide the service report (type/cause of break down) to respective officer.

Maintenance and After Sales Services

Your service engineer will service the full vehicle including chassis in every quarter (every 3 months) at purchaser's site free of cost during warranty period. The manufacturer of chassis and as well as superstructure shall also guarantee for the supply of spare parts & service for a minimum period of 15 years from the date of commissioning of vehicle at site.

13. INSPECTION:

The Government Authorized representatives (Max.7 persons) will carry out the inspection and the testing of fully built vehicle in factory premises of the vehicle manufacturer prior to dispatch. The travelling and accommodation cost shall be included in the basic cost of the vehicle. It is obligatory to the supplier to provide all the assistance and equipment for the inspection and testing of the vehicle at the premises.

14. AFTER SALES SERVICE PROVIDING

Manufacturer shall have their sales & service network in India through their authorized agency/ representative/distributor. That agency/representative/ distributor shall have enough experience in Vehicles segment with full fledge manufacturing/fabricating the Vehicles. If that agency/representative/ distributor is not a manufacturer of vehicle then they should have at least experience of 3 years for servicing of fire and rescue vehicle. If agency/representative /distributor is a manufacturer they have to submit trade license along with tender document otherwise they have to submit the service contract certificate between this agency and the end user to prove their experience. To substantiate, Indian agent/representative/ distributor shall furnish the authorization letter in original with tender documents.

15. R. T. O. REQUIREMENTS:

The vehicle shall be equipped with all the accessories required for registration of the vehicle and shall conforms to Motor Vehicle Act 1988 and Central Motor Vehicle Rules, 1989 or any amendment incorporated from time to time.

The chassis shall be homologated from the appropriate authority in India incase not already an approved model or shall be supplied with COP (Conformity of Production) issued by approved testing agency.

16. DEVIATION:

Any deviation / departure from the above specification shall be pointed out separately with detailed explanation.

17. SPECIAL TECHNICAL DOCUMENTS:

1. The documentary evidence of the goods and service's conformity to the bidding documents may be in the form of literature, drawings, data etc. The bidder shall furnish:
2. A detailed description of the goods and the essential technical and performance characteristics of the goods.
3. A clause by clause commentary on the End-user's technical specifications of the goods and services and bidders' offer for the goods and services substantiating compliance to those specifications or deviations and exceptions from / to the Technical specifications.

4. For purpose of the commentary to be furnished pursuant to condition mentioned above, the bidder shall note that standards for workmanship, material and goods, and references to brand names or catalogue numbers designated by the End-user in its technical specifications are intended to be descriptive and indicative only and not restrictive. The bidder may offer alternate standards, brand name and /or catalogue numbers in its bid, provided that the same are to the End-user's satisfaction that the substitutes are substantially equivalent or superior to those designated in the Technical specifications.
5. An undertaking from the manufacturer to supply spares required for a minimum period of 15 years from the date of supply of equipment.
6. Documentary evidence of list of work order in hand at the time of submission of tender.
7. Bidder shall attach the Product Brochures, Technical Literature, catalogues, drawings, illustrations etc. in the bid.

Technical specifications of fabrication and supply of Hydraulic Platform of 70 meter height for firefighting and rescue operation with five years comprehensive maintenance contract

1. GENERALREQUIREMENT:

1.1 This specification covers Hydraulic Platform with height of 70 m. The Hydraulic Platform shall be designed specifically for the purpose of firefighting and rescue to enable firemen to go up over and above the other side of any obstruction. It shall comprise of main boom with Telescopic sections and Articulated Booms with Telescopic sections and cage mounted at the end of the boom and the entire unit shall be mounted on a Turn-Table on a Right hand driven Heavy Duty Diesel-Engine chassis and at least 450hp, EURO VI engine with fully factory built cabin and suitable capacity PTO. The Vehicle Chassis shall be BSVI(EUROVI) emission norms compliantand in general shall meet the CMVR norms OR shall have the EC-type approval/Conformity of Production certificate (COP).

1.2 The Hydraulic Platform shall be designed as per the designed, operational stability and structural strength based on the criteria laid in EN1777 and other norms and standards applicable for elevated raised platforms used for Fire Fighting and rescue operations. The manufacturer should be ISO 9001 Certified Company. In last 5 years, the manufacturer should have supplied minimum 05 hydraulic platforms of 70 mtrs and above for fire and rescue operation. Performance certificates for minimum 2 such vehicles; preferably from Fire Services/Emergency services shall be submitted.

1.3 The Hydraulic Platform shall be capable of use at any angle of main boom elevation without any reduction of load capacity of the cage. It shall also rotate 360 degree at any angle of elevation as well as below ground level subject to boom remaining clear of vehicle body and or any obstruction.

1.4 The appliance shall be compact and fast on the road and easily maneuverable in the crowded streets and around sharp corners. The overall dimensions shall not exceed the limits specified herein.

1.5 Typical weight with chassis, G.V.W. (maximum) with standard specification should be in-between 50-55ton.

1.6 The working height of the Hydraulic Plat form shall not be less than 70 meter from the Ground and the Horizontal outreach shall not be less than25meter at 500 Kg cage load. Working reach below the ground level should not be less than 5 meter.

1.7 Safe cage working load without water discharge should not be less than 500 Kg whereas with water discharge should not be less than 300 Kg.

1.8 Nominal water discharge capacity of cage monitor with adequate water supply should not be less than 3000 liters per minute.

1.9 The Hydraulic Platform shall be electro hydraulically controlled, permitting precise and easy operations under the most difficult conditions, with ample reserve strength and stability.

1.10 Full safety interlocks shall be incorporated in the design so as to ensure complete safety in operations and long years of reliable and trouble free service, as far as possible the system shall be fail proof.

1.11 The design of the plat form shall allow a very large safety margin for extreme operating and climatic conditions. The safe working loads ratings shall include an allowance for the weight of water system and the reaction from the monitor jet while operation.

1.12 The Vehicle shall have a leveling system to adjust axial and transverse movement to an angle of minimum 5 degree as per and it shall be automatic in nature.

1.13 There shall be a full back up system for all boom movements and out rigger movement in case of failure of main system.

1.14 The Complete Movement of the platform shall be computer controlled and the system shall be checked for interference sensitivity.

1.15 The Control system of the platform shall be fully tropicalized and be able to operate in the temperature range up to+60 degree centigrade and in a dusty and Humid condition without reducing the maximum operating limits.

1.16 Schedules of technical particulars of Hydraulic Platform of 70 meter height to be provided in Annexure-A

2. CHASSIS:

2.1 The Chassis shall be VOLVO/ MERCEDES BENZ/ MAN/SCANIA make having suitable axle and Wheel Base fully factory built cabin and suitable capacity PTO. The Vehicle Chassis shall be a Right Hand Drive and shall comply BSVI (EUROVI) emission norms.

2.2 The Chassis shall be homologated from the appropriate authority in India in case not already an approved model OR shall have the EC-type approval/Conformity of Production certificate (COP).The chassis manufacturer must have production facilities in India to ensure after sales support for the chassis.

2.3 The engine shall be minimum six cylinders, in line, Diesel with direct injection, turbo charged with inter cooler.

2.4 The engine shall develop minimum 450 hp.

2.5 The gearbox shall be fully or with automated gear system with suitable Power Take Off to drive the hydraulic pump.

2.6 Rear Axle shall be fitted with suitable sized tyres and differential lock between the wheels and axles as necessary.

2.7 Chassis frame shall be 'C' Channel section made of high strength steel with cross members.

2.8 The Steering shall be integral power steering with collapsible steering wheel and column.

2.9 The Front and rear Suspension shall be leaf spring type or as suitable for chassis.

2.10 The Brakes shall be dual circuit air brakes with parking brakes acting on rear wheels.

2.11 Fuel Tank- Capacity shall be min 300 ltrs with lockable fuel cap.

2.12 The Chassis shall be provided with Radial tyres of suitable size as per load on axles with spare tyres one each for dead & live axles.

2.13 The chassis shall be provided with single day type cab with RED colour, made from high strength steel fully trimmed, external panels hot dip galvanizedwith hydraulic cab tilting mechanism. The Cab suspension shall be provided with coil spring and shock absorber.

The cab shall be provided with adequate ventilation, rearview mirrors, windscreen and windows, adjustable driver seat, wiper system and along with all other standard fitments.

2.14 The Electrical system shall be 24V, with suitable capacity batteries & Alternator for charging the batteries.

2.15 The chassis shall be supplied with standard tool kit, hydraulic jack of 20 ton -30 ton capacity, operator &workshop manuals.

2.16 The Chassis shall be fitted with gearbox mounted, suitable capacity Power Take Off Unit to drive the hydraulic pump for boom movements.

2.17 Suitable power take off unit shall be installed to drive the centrifugal fire pump. The hydraulic pump and fire pump shall work simultaneously.

2.18 The Chassis shall be directly procured by the tenderer confirming to above.

3. MAIN OPERATING DATA

3.1	Min. working height	-	70 m (±2%)
3.2	Min. height to working cage bottom	-	68 m (±2%)
3.3	Min. working outreach at 500 kg cage load not less than	-	25-30 meter
3.4	Min. working reach below the ground level	-	05 -8m
3.5	Safe working load (without water discharge) 500 kg, (with water discharge – 300 kg)		
3.6	Min. Nominal water discharge capacity of water monitor (with adequate supply pressure)	-	3000 l/min
3.7	Rotation, continuous 360°		
3.8	Transport height (depending on chassis)	-	4.0-4.2 m
3.9	Transport length (depending on chassis)	-	10-14 m max.
3.10	Transport width 2.6 m max.		
3.11	Typical weight with chassis, G.V.W. (standard specification approx)	-	35-45 ton max
3.12	Operations at maximum outreach with Full working load permitted in wind speed up to	-	10.0 m/sec
3.13	Maximum width of the vehicle when Jacks are fully extended on both sides	-	6-8 mtr.
3.14	Operating time at full stroke for all operations: EN1777Compliant		

4. CONSTRUCTION:

The appliance shall be robust in construction; materials used in construction shall be carefully selected for lightness and durability. Use of timber shall be restricted in body work and use of rubber shall be avoided as far as possible. Ferrous metal parts shall be treated for anti- corrosion by a method other than electro-plating.

5. BOOMS

5.1 The vehicle shall perform the following functions/operations

5.1.1 Elevation

5.1.2 Depression

5.1.3 Extension &housing of telescopic sections

5.1.4 Rotation360 degree in either direction

5.2 All the operations shall be electro-hydraulically operated with the help of hydraulic cylinders, wire ropes, chain etc. The systems hall be purpose built to provide smooth take off, variable speed range and smooth slow down, based on the criteria laid down under EN 1777

5.3 There shall be three booms, of which the first and the second one are with telescopic, extension providing direct movement. All booms move vertically. The design provides an up-and-over capability of approx. 05 m throughout its vertical movement.

5.4 The booms shall be designed and welded to provide high durability and extreme accuracy. For high strength and minimum flexing of the boom sections only high tensile strength steels are used as load bearing structure.

5.5 The booms shall be welded by the unique plasma welding method to provide high durability and extreme accuracy. For high strength and minimum flexing of the boom sections only high tensile strength steels must be used as load bearing structure. Welding quality certificate of ISO 3834-2 for load bearing steel structures for mobile hydraulic aerial appliances shall be submitted along with the offer from an independent notified certifying agency without which the offer will be rejected.

5.6 The telescopic sections of the booms move synchronized i.e. there are no intermediate jerks when the extension / retracting are operated. All sections are fitted with adjustable guides to provide smooth and accurate movement.

5.7 Different maintenance objects are located well at hand either outside the boom or behind easily removable covers.

5.8 All booms are internally and externally primed and painted for long life span.

6. CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENTS

All boom and rotation movements shall be controlled electro-hydraulically by means of proportional valves. Thanks to the proportional principle the control function is not sensitive to changes of ambient or oil temperature, thus providing smooth, safe and very accurate movements even in most severe operating conditions. All control movements can be performed by the remote control system from both control panels. The side outreach is performed by the position of the outriggers. The variable system contains also displays at all three control stations. The displays give the real-time information about the outreach and the cage position and also show possible movements according to cage position by animated arrows. There shall be different views on each display;

6.1 Outreach preview

6.1.1 Real time outreach and cage position with guidance information

6.1.2 Main outreach with two views (side and up)

6.1.3 Fault finding system

6.1.4 Statistic information

6.1.5 Tools screen (personal settings)

7. HYDRAULIC CYLINDERS:

7.1 The Hydraulic cylinders shall be double acting, fitted with lock valves so as to prevent booms, working cage from lowering or the out riggers from retracting in case of pipe or hose failure.

7.2 The cylinders shall be provided with automatic dampers to prevent the pressure shocks and shall dampen the movement when a mechanical stop is reached.

7.3 Retraction of the outriggers shall be automatically prevented as soon as the booms have been lifted up from their transport position by way of electrical OR Hydraulic interlock system.

7.4 The piston rods of the jack cylinders have to be fully enclosed with in rectangular steel profile in order to protect piston from damage caused by any external impacts.

7.5 Lifting of the booms from the transport position shall be prevented before the outriggers are in support position and there shall be a limiting circuit to prevent damage to the Drivers cabin by the first boom when not clear of the cabin.

7.6 All the movements shall be automatically limited in their extreme position and the working cage shall be prevented from working outside of the permitted working range in any position.

7.7 An emergency stop switch shall be provided on both control panels, which shall switch off the hydraulic pressure of all movements and shall stop the vehicle engine. The unit shall be supplied with a Emergency Hydraulic Back-up System.

8. TURNTABLE

8.1 The turntable shall be a fully integrated steel structure. The centre post containing slip rings with double pins for electrical connections, 100 mm corrosion resistant water way and hydraulic pressure and tank lines allows continuous rotation of the turntable.

8.2 Rotation reduction gear with automatically operating braking system shall he installed at the turntable for easy maintenance and adjustment. The hydraulic motor powering the rotation movement is fitted directly into the gear for high reliability.

8.3 At the left hand side of the turntable there is the lower control station which rotates automatically with the turntable.

8.4 The hydraulic distributor (center post) shall be mounted in the center of the turntable at an accessible position and shall carry the hydraulic pressure and return lines, electrical supply lines &waterline allowing continuous rotation in either direction.

8.5 The fasteners retaining turntable to the rotation mechanism shall be of proper grade and shall be torque properly. The rotation gearbox fastener shall be of proper grade and torque with proper backlash.

8.6 There shall be provision for the manual rotation of turntable in case of failure of hydraulic system.

8.7 Pins securing the hydraulic cylinders to boom and turntable shall be properly installed and secured.

8.8 The hydraulic hoses, tubing and connections provided in the turntable shall be free from kinks, chaffing or leaks.

9. MAIN FRAME

9.1 The main load bearing element of the aerial device shall be the strong main frame which shall take all the loads caused by the operation of the aerial.

9.2 The main frame shall be fixed onto the chassis frame with bolts in such a way that chassis performance and durability are maintained.

9.3 The front fixing bolts shall be fitted with springs to allow the chassis frame beams to flex when the outriggers are fully down, thus avoiding any stress concentration in the chassis beams.

9.4 The actual main frame shall be fully welded steel structure providing high stiffness and thus maximum comfort ability and operational safety.

10. STABILIZING SYSTEM/JACKING SYSTEM

10.1 The stabilizing system shall consist of four hydraulically powered outriggers mounted in their housings in the main frame. Each housing is fitted with adjustable guides to provide smooth and accurate movement of the outrigger beam. The horizontal beam is a completely closed steel profile enclosing the hydraulic cylinder for the horizontal movement and the hydraulic hoses for the cylinder of the vertical movement thus completely protecting those devices from external damage.

10.2 The cylinder for vertical movement is mounted so that the piston rod is protected inside the vertical beam in order to avoid damages.

10.3 The H-type outriggers have been chosen for their ability to stabilize the vehicle from behind obstacles and to be placed on raised structures as necessary. Each vertical jack is fitted with self-aligning foot plate to distribute the load evenly and to allow operation on uneven ground.

10.4 The stabilizing system also includes a rear axle locking system in such cases where it is required for meeting the stability criteria.

10.5 All controls for the entire stabilizing system are located in dust and water proof locker at the rear of the vehicle. The automatic jacking with a control box assures that the outriggers are always visible to the operator.

10.6 In the middle of the control panel there shall be following additional control devices:

- 10.6.1 starting of chassis engine
- 10.6.2 stopping of chassis engine
- 10.6.3 Outrigger and outreach display with fault finding system
- 10.6.4 Operating hour and rpm-up gauge in the display
- 10.6.5 Switch for the battery driven back-up for the hydraulic system
- 10.6.6 Visual indicators for leveling of the vehicle (longitudinal and transversal)
- 10.6.7 Emergency stop
- 10.6.8 Controls for the automatic jacking

10.7 The locker containing outrigger controls is fitted with an automatically operating door

switch and light for night operation.

11. ELECTRONIC SAFETY AND OUTREACH SYSTEM

11.1 The Electronic System shall make it possible to select the working cage load according to working situation. With these variables the system selects automatically the maximum allowed outreach to front, rear, right and left side. Since this is based on calculations and parameters saved in the system it will guarantee exactly the same outreach regardless of the external influences like wind speed and direction, temperature, friction of the cylinders, etc.

11.2 The display units of the system show maximum possible outreach and position of the working cage in real-time. There are also many additional features included in the display unit All electrical components in the system are doubled.

11.3 The electronic system shall be approved according to the valid standards and directives.

12. CAGE:

12.1 The working cage shall be fixed to the boom with proper pivoting point so as to provide highest possible degree of natural safety.

12.2 The working cage is made of tubular steel Aluminium profile and welded together The dimensions of the working cage are 1.0 m (length) x 2.0m (width) x 1 .1 m (height) (with +/-10% tolerance for each) and it is fitted with two doors, one located at the side to enable safe access from the ground in travelling position and the other one located at the front for safe access in case of a rescue. Safe working load is 500 kg when no water is discharged.

12.3 The cage load can be changed from display unit and these lection of load can be possible from turntable and cage control center. The chosen cage load can be displayed by clear symbols and numerically in selected format on all display units. The selected cage load shall be shown preferably by graphic bar.

12.4 When the load selection is made at turntable or cage the system shall automatically show the maximum outreach to all directions with selected cage load and outrigger position.

12.5 The control panel in the cage shall be fitted in such a way that the operator shall see the booms clearly tall the times.

12.6 The working cage shall be kept horizontally leveled in any position of the booms including the travelling position which makes it possible to the firemen to enter the working cage before the booms are lifted. This feature makes it possible to start the operation without losing valuable time by taking the cage on to the ground first.

12.7 The leveling system shall be controlled by an automatic horizon monitoring device with two fully automatic and independent safety circuits in case of an uncontrolled leveling failure. There is a master switch for the automatic leveling system, thus it can be isolated and the manually controlled system activated.

12.8 The leveling movement shall be powered by a hydraulic cylinder connected to a mechanical linkage for transmitting the movement.

12.9 The working cage shall be turned 40-50 degrees to each side from its centre position to provide safety and comfort ability in rescue operations. The movement is powered by a hydraulic cylinder with controls in the working cage and at the turntable control panels.

12.10 The centre position of the cage shall be indicated by a visual indication at both control panels.

12.11 At the front of the working cage there shall be a rescue platform with safety railing to provide additional safety during rescue and firefighting. The dimensions of the rescue platform shall be 1 to 1.5 m x 0.5 m and load capacity of minimum 180 kg.

13 HYDRAULIC SYSTEM

13.1 Hydraulic power shall be provided by a reliable and adequate variable displacement double axial piston pump, which is driven by the vehicle power take-off.

13.2 Without any operation of the aerial device, the pump rotates on minimum flow and minimum pressure. When one of the movements is operated the control valve shall automatically increases the pressure to a pre-set constant level and the oil flow to the amount that is needed for the movements activated. Due to which the loss of power in the hydraulic system, which normally causes over heating of the hydraulic oil, can be avoided and also the stresses caused to the vehicle transmission and P.T.O. system are minimized. At the same time fuel consumption and exhaust emissions are kept at the minimum.

13.3 By operating several movements simultaneously the oil flow shall increase automatically according to the need in the system thus making all movement speeds independent on each other.

13.4 The constant pressure system with maximum pressure setting prevents overloading of the system and its components e.g. cylinders.

13.5 Inside of the turntable and at the lower valve compartment there shall be instant couplings for the manometer in each pressure line. The manometer shall be fitted as standard equipment.

13.6 The filtration of the oil consists of suction strainer in the suction line, pressure filters with visual indicators in each pressure circuit, return filter in return line and air filter on the reservoir thus providing maximum reliability by protecting the hydraulics against foreign particles.

13.7 The hydraulic cylinders are hard chrome-plated piston rods and they have been fastened by means of self-aligning ball bearings to prevent lateral forces from damaging the seals or piston rods of the cylinders.

13.8 Hydraulic oil tank shall be mounted at the top of the main frame. The tank is fitted with oil level gauge, temperature gauge, suction connections with closing valves for easy maintenance and draining outlet with closing valve.

13.9 There shall be hydraulic oil cooler for continuous use in hot temperature.

13.10 Pressure and temperature of hydraulic oil:

13.11 Platform is equipped with electrical temperature and pressure sensors of the hydraulic

oil. The temperature and pressure are shown in every display unit.

14 BACK-UP FOR THE HYDRAULIC SYSTEM

14.1 There shall be a battery driven hydraulic pump which provides an independent means of power in case of failure of the main engine.

14.2 The system should be able to be started from all control panels thus providing an immediate back-up in a case of a failure at an intense fire or similar immediate emergency.

14.3 There shall also be an independent diesel engine driven hydraulic pump system for complete operation of all boom and outrigger movements with slow speed.It shall be possible to start this system from all control panels.

15 CONTROLS AND SAFETY:

15.1 The Electrical supply needed for control system shall be taken from the vehicle battery which shall be charged when the engine is running.

15.2 When the vehicle is in operation yellow flashing warning lights mounted on the outriggers shall automatically remain on.

15.3 The engine starting and stopping switch shall be provided on all control panels and the engine speed shall be increased to the present level as soon as any one of the control lever is operated.

15.4 All boom and rotation movements shall be controlled electro-hydraulically by means of proportional valves. The proportional valve shall not be sensitive to changes of ambient or oil temperature, and shall provide smooth, safe and very accurate movements even in most severe operating conditions.

15.5 The speed of the first boom for lowering and extension shall be automatically reduced at maximum outreach. The first boom lifting speed shall be reduced before the maximum elevation.

15.6 All control movements can be performed by the control system from both control panels and the outreach can be selected by the positioning the outriggers. The variable system shall consist also displays at all three control stations. The display give the real time information about the outreach and the cage position and also show possible movements according to cage positions by animated arrows. In the text display there shall be at least four different views on each display:

15.6.1 Warnings

15.6.2 Emergency situations

15.6.3 Help manual

15.6.4 Fault finding system

15.6.5 Outreach preview

15.6.6 Real time outreach and cage position with guidance information.

15.6.7 Main outreach with two views (Side and up)

15.6.8 Statistics information

15.6.9 Tools Screen (personal settings)

15.6.10 Signal lamps shall be provided for following functions:

15.6.11 For the outriggers, in transport position in driver's cab

15.6.12 For the outriggers working position on all control panels

15.6.13 For the P.T.O. engaged in the driver's cab

15.6.14 For the transport position of the booms in driver's cab

15.6.15 For the middle position of the rotation on the turntable and cage control panel.

15.6.16 For the exceeding of the safe working load in the cage on the turn-table and cage control panels.

16 TURNTABLE AND WORKING CAGE CONTROL PANELS

16.1 The turntable control panel incorporating all control levers (joystick type) and safety system indications is fitted in such a way that it enables good visibility from the control station towards the working cage when the booms are operated.

16.2 The control station shall be fitted with convenient seat to provide comfort even in case of prolonged operation. The platform underneath the control position shall be covered by civil by non-slip Aluminium.

16.3 The working cage control panel incorporating all control levers (joystick type) and safety system indications shall be fitted at the rear of the cage to permit visibility over the booms and to leave the front of the cage free for rescue and firefighting operations

16.4 Both control panels shall be exactly alike, thus considerably reducing the risk of confusion amongst operators under stress or even panic.

16.5 At the turntable control panel there shall be a change-over switch to select the panel from which the operation is controlled.

16.6 Both control panels shall be fitted with following most important warning, indication and control devices, all marked by clear symbols: Joystick control levers for each movement

16.6.1 joystick control levers for each movement

16.6.2 Buttons for cage slewing

16.6.3 Button for starting and stopping of chassis engine

16.6.4 Buttons for the battery driven and diesel engine driven back-up for the hydraulic system

16.6.5 button for emergency stop

16.6.6 button for overriding of the automatic working cage leveling system

16.6.7 button for manual operation for the working cage leveling system

16.6.8 extra buttons for special features

16.6.9 button for activating the bleed down system

16.6.10 button for automatic drive of booms to transport position

16.6.11 button for approaching speed (lower down speeds of boom movements)

16.6.12 button for work lights

16.6.13 buttons for automatic first boom movements and first boom extension/ retraction

16.6.14 Intercom system

16.6.15 Integrated water monitor controls

16.6.16 Visual and audible indication for exceeding safe working load

16.6.17 Visual warning for activation of working cage collision guard system

16.6.18 visual indication for ground pressure of the outriggers

16.6.19 visual indication diagram containing information on particular movements being restricted or permitted based on real-time information on actual boom configuration

16.6.20 visual indication for the centre position of the booms

16.6.21 Visual indication for the centre position of the working cage

16.6.22 visual indication for wind speed

16.6.23 Visual indication for cab protection

16.6.24 visual indication for tilt alarm

16.6.25 visual indication for Tele-control activated

16.6.26 visual indication for service time reminder

16.6.27 Visual indication for service counters for chassis motor, electric power. Generator and battery pump

16.6.28 information screen for all important alarms and vital information

16.6.29 fault finding screen

17 CONTROLS AND INDICATORS IN DRIVERS CAB

17.1.1 In addition to chassis standard controls and indicators the following items shall be installed in drivers cab:

17.1.2 visual warning for the main current and PTO being switched on

17.1.3 visual warning for any of the equipment lockers being open

17.1.4 visual warning for the booms not being fully in travelling position

17.1.5 visual warning for the rear axle being locked (if the feature is installed)

17.1.6 visual warning for the outriggers not being in horizontal travelling position

17.1.7 switch with visual indication for rotating beacons

17.1.8 Switch with visual indication for siren unit.

17.1.9 microphone for the public address system

18 SAFETY DEVICES

18.1 All load bearing hydraulic cylinders shall be fitted with lock valves directly integrated in to the cylinder structure to prevent the booms, the working cage or the outriggers from retracting in case of a pipe or hose failure.

18.2 Retracting of any of the outriggers shall be automatically prevented as soon as the booms have been lifted from their travelling position.

18.3 Similarly lifting of the booms from the travelling position shall be prevented until the outriggers have reached the support width and ground pressure.

18.4 All boom movements have been limited at their most extreme positions thus making it impossible for the operator to reach an unsafe configuration by normal means of operation. The movements having direct influence on the stability of the aerial have all been fitted with two separate limiting circuits, the first one stopping that particular movement, the second one deactivating the whole electric and hydraulic system should the first circuit not have worked.

18.5 The major movements, lifting of the first and the second boom to their maximum elevation, and extending the telescopic movement or lowering the second boom at the maximum outreach have been fitted with slow-down devices to provide smooth deceleration of the movement.

18.6 Starting of the chassis engine from any of the control panels of the aerial is prevented unless the gear is shifted to neutral.

18.7 Inadvertent damaging of the drivers cab by the first boom has been prevented by a system preventing lowering of the first boom and rotation movement when the first boom is near the drivers cab.

18.8 An overload warning has been fitted to give an audible and visual warning in case of exceeding the safe working load.

18.9 A collision guard (ultrasonic type) has been fitted to provide additional safety when operating in darkness or in dense smoke. This system stops all movements and gives visual warning when activated.

18.10 An emergency stop switch shall be fitted at all control panels to provide immediate and complete "freezing" of all systems in case of an unexpected emergency,

18.11 The control system shall be fitted with dead man switches to provide additional safety.

19 BODYWORK AND EQUIPMENT LOCKERS

19.1 The frame for the body work shall be made of Aluminium/stainless steel. The elements have been covered by non-slip aluminum plate strong enough to allow free movement of persons on it.

19.2 To provide easy access from the ground level there are steps on both sides of the vehicle and equipment lockers made of aluminum plates, painted and finally bolted onto decking element for easy removal if necessary. All lockers are fitted with automatic switches activating the lights as soon as the door is opened and also activating the warning in driver's cab to indicate that all doors are not fully closed.

20 WATER WAY SYSTEM

20.1 The water way system shall be completely made of non-corrosive material. The nominal diameter of the water way is minimum 75 mm and it leads from the rear of the vehicle where a 2 x 65 mm (2 .5") inlet one in each side is fitted through the centre post in the turntable up into the working cage where the water monitor is mounted. Along the booms, the piping is fitted between the first and the second booms to have a safe and protected place for it when driving on roads.

20.2 The centre post, which shall be mounted in the center line of the turntable, provides continuous rotation even if water supply is simultaneously used.

20.3 The piping shall be protected from possible over pressure by means of two relief valves mounted underneath of the turntable.

20.4 On the side of the first and second boom there shall be a telescopic water pipe, which is made of corrosion resistant material. Moving sections of this pipe have been externally ground and chromium plated to provide reliable function and long life span.

20.5 Seals between the sections are of low friction type and can be easily tightened if so required. In boom pivoting points flexible, specially reinforced 100 mm pressure hose is used. All those are fixed to the pipe with reliable span-lock connections.

20.6 Piping ends at the right hand side at the front of the working cage where the water monitor is placed. A 75 mm valve is fitted in the cage to isolate the monitor if required.

20.7 There shall be an additional outlet with 65 mm (2.5") closing valve and coupling for water supply from the cage through an extension hose.

20.8 All fire hose couplings are according to customer's requirements.

20.9 There shall be drain cocks fitted in the piping to enable it to be drained after use.

20.10 On the front underneath of the cage there shall be nozzles of water spray curtain system to protect cage occupants from radiant heat. Control valve of water spray curtain system is conveniently located inside of the cage.

20.11 The water line shall be protected from possible over pressure by means of relief valves mounted underneath of the turntable set not less than 16 bar.

20.12 The cage shall be provided with 20 mtrs hose reel with Fog/Jet nozzle and shall be connected to main water line with control valve in the cage.

21 WATER MONITOR

Water monitor shall be connected on to the piping system and it is placed at the front side of the cage on the left hand side just outside of the railing. Due to the fact that the monitor is placed outside of the cage the entire cage floor area can be fully utilized in extreme rescue situations. The remote controlled monitor is made up of light alloy and fitted with jet/fog nozzle with maximum nominal capacity of not less than 3500lpm, provided there is sufficient pressure and flow. The Monitor shall have Horizontal rotational movement to left and right side and also vertical up and down movement.

22 Pump

22.1 Midship mounted centrifugal type fire pump having 6000 lpm output at 10 bar made from bronze material shall be provided.

22.2 The fire pump shall be driven by suitable PTO having adequate power and torque to meet the output criteria of the pump.

22.3 4x63 mm delivery outlet (02 on each side) as per IS standard.

22.4 1x6” suction inlet (01 on each side) as per IS standard.

22.5 Min 3” line going to the working cage.

22.6 Pressure gauge for the pneumatic system.

22.7 Electric speedometer for the pump shaft.

22.8 Hour meter for the fire pump.

22.9 Pressure/Vaccum gauge

22.10 Pressure governor.

22.11 Fire pump rmp control.

23 INTERCOM

23.1 There shall be a fully transistorized talk-back intercom system fitted between the turn table and the cage.

23.2 The combined microphone and loudspeaker for hands free operation is located in the cage. The turntable control station shall also be equipped with microphone which is integrated in to the loudspeaker.

23.3 The microphone and the loudspeaker shall be sealed properly and it shall be protected from the ingress of water, dust and humidity.

24 ELECTRIC SYSTEM

24.1 The electric supply shall be taken from the chassis battery which is kept charged when the engine is running. Voltage of the system is 24 V DC and all circuits have to be fitted with their specific uses. When the main current is switched on, yellow flashing warning lights located at each outrigger boom pivoting point and underneath of the working cage are automatically switched on.

24.2 2x24 volts, 70 watts, spotlights with swivel mounting bracket shall be fitted at the cage railing in the front side to provide extra safety during night operation. The switch for the sleights shall either be provided on the light it sells for on both the control panels.

24.3 On each side of the drivers cab roof there shall be rotating beacons in red colour. The main switch for the beacons with suitable signal light is fitted inside of the cab in a convenient position for the driver.

25 SIREN AND PUBLIC ADDRESS SYSTEM

There shall be an electric siren unit fitted on the front bumper or behind the front grille. Control panel of the system is conveniently located for the driver and it includes switches for fast (yelp), slow (wail) and two tone (Hi-Lo) sounds. Command microphone, which is fitted with push-to-talk switch, allows the public address message to override the siren function. Operations shall be controlled by a switch in illuminated non-glare control panel.

26 ROTATING BEACONS

On each side of the drivers cab roof there shall be rotating beacons in red colour. The main switch for the beacons with suitable signal light is fitted inside of the cab in a convenient position for the driver.

27 DISPLAY UNITS

27.1 The system includes 3 full colour displays situated at outrigger center, at turntable and in working cage.

27.1.1 Colour display based on TFT technology, Transflective type. Good visibility in bright daylight and at night time (display is back lighted)

27.1.2 Size 6.5" , ratio 16:9 (wide screen)

27.1.3 400 x 240 RGB pixels, full colours

27.1.4 12 back lighted multi function membrane push buttons

27.1.5 Two warning LEDs

28 FAULT FINDING SYSTEM

28.1 Special attention must be focused on the defect sensitivity. If any way some faults appear, the location of the defective component is shown on the screen. The system shows location and nature of fault on screen. The system has simple test screens to enable testing of the working cage and the turntable control panels. The test covers display unit, push buttons, joysticks and control lamps. For maintenance purposes the following tools are available as standard:

28.1.1 Fault finding system and fault register

28.1.2 Status screens for sensors, switches, hydraulic valves, control lamp, etc.

28.1.3 Total operation and RPM-UP hour meters

28.1.4 Operation and RPM-UP hour meters since last service

28.1.5 Total movement counters for all boom movements (informed as seconds)

28.1.6 Service counters and alarm for general maintenance

28.1.7 Software verification management

29 PAINTING

29.1 Before painting all surfaces of steel structures shall be carefully shoot blasted after which they shall be primed. After the final top paint the dry film thickness of the paint coat is 100 microns. All booms shall be painted from inside.

29.2 To provide very high corrosion resistance hollow structures such as steel profiles of the working cage, cage boom and outrigger beams and housings shall be treated with anti-corrosion protection agent. Paint tones used for standard units are:

29.2.1 Working cage alluminium not painted

29.2.2 Working cage support, boom sections, turntable and related cylinders whiteRAL 9010

29.2.3 Mainframe, outriggers and bodywork red RAL 3000

29.2.4 Outrigger cylinders grey RAL 7046

29.2.5 Chassis frame touch-ups chassis original tone

30 ACCESSORIES

30.1 4 pc wooden outrigger ground pads with brackets

30.2 2 pc Working range diagrams, one at the turntable, one in the cage

30.3 1 pc marking of safe working load in the cage

30.4 2 pc Unit type marked at the boom

30.5 1 set Warning labels and instruction plates

30.6 2 sets Operation and maintenance manuals

30.7 I pc Plug for 24 V working light at the turntable and in the cage

30.8 1 pc 24 V/70 W working light with universal bracket

30.9 1 pc Lifting loop under the working cage, capacity 500 kg

30.10 2 sets Anchor points for safety belts in the working cage

30.11 5 pc Safety belts for cage occupants

30.12 1 pc Hydraulic pressure gauge

30.13 1 pc Quick action hose reel of 20m length with jet mounted at thecage

30.14 1 set Electronic Ultra sensor collision guard

30.15 1 set Stretcher carrier with stretcher

30.16 1 pc Load man Portable Falling Weight Deflectometer to check ground stability

30.17 6 sets three layered fire fighting suits (Blue color) confirming to EN469 with firefighting gloves, confirming to EN659, firefighting boots confirming to EN345, firefighting helmet confirming to EN 443, hood all certified to relevant EN (or equivalent) standards shall be supplied along with necessary test certificates.

31 OTHER ACCESSORIES

31.1 Radio (Wireless) Remote Control

The radio remote control can perform the same standard main functions as the stationary control center including all boom movements, engine start/stop, rpm for boom movement, horn and work lights, emergency stop, all water monitor controls, etc. It weighs about 2 kg including battery. Range is about 100m with standard antenna.

31.2 BREATHING AIR SYSTEM

A breathing air system shall be provided from turntable to working cage. At the cage there shall be a manifold with instantaneous couplings to connect the breathing masks. Air cylinders to supply the breathing air shall be mounted at the turn table. The cylinder capacity shall be such that they provide minimum 7000 L of free air Isolation valve shall be provided at suitable location so that the cylinder can be changed without interrupting the air supply.

Pressure regulator as required shall also be incorporated in the system. Suitable face masks (4 nos.) with at least 4 spare face masks for breathing shall be supplied with the unit.

32 STANDARD FEATURES INCORPORATED IN THE CONTROL SYSTEM

32.1 Ground pressure alarm:

When one outrigger has not enough ground pressure, the system gives an audible and a visual alarm. If two outriggers loose ground contact, unsafe boom movements are stopped.

32.2 Cab protection:

The cab of the truck can be protected to avoid damage by the booms or working cage. Working in front of the truck close to the cab is also possible. When arriving to the cab protection area, the movements of the booms are slowed down and stopped softly. Leaving the area is done by opposite movements. Cab protection can be override by push button.

32.3 Automatic drive of booms to transport position:

The booms can be lowered back to transport position automatically by pushing a single push button in a pre-set sequence.

32.4 Working cage automatically to middle position:

Working cage can be turned automatically to centre position.

32.5 Approaching speed:

Lower speeds of the boom movements shall have to be maintained for training and for general use by persons not very familiar with Hydraulic platform or when reaching the building very accurately.

32.6 Zero position of joysticks:

All joysticks must be in zero position before activation of RPM for boom movements,

32.7 Automatic switches off for the outrigger pressure:

Push button version of outrigger controls:

Outrigger pressure is automatically switched off if dead man pedal of working cage or turntable is pushed. Outrigger pressure is also automatically switched off after certain time delay.

32.8 Service time reminder:

The system gives an alarm when closing 250h (or every third month) or1000h (yearly) service time. The service time counter can be reset when maintenance is carried out.

32.9 Pressure and temperature of hydraulic oil:

Platform is equipped with electrical temperature and pressure sensors of the hydraulic oil. The temperature and pressure are shown in every display unit.

32.10 Tilt alarm:

If chassis is tilted or the unit is leveled incorrectly, the system gives an audible and a visual alarm in every display unit. The tilt alarm angle shall be adjustable.

32.11 Language and measure units of screens:

The system is based on clear and easy-to-understand symbols. If texts are used on master screens, the language shall be in English.

All measure units of master screens shall be in metric measures and can be changed to locally used format by operator.

32.12 Auto jacking:

Automatic leveling system is easy and fast way to make platform ready for operation. The system is fully automated and enables leveling within less than 40 seconds. The system performs very accurate leveling and has got safety circuits to assure that leveling is proper and platform is ready for safe operation.

This system is controlled by hand held remote control device. The device is equipped with following functions (back-lighted push buttons):

a. Left side outrigger beams out
b. Right side outrigger beams out
c. Automatic leveling
d. Outriggers back to transport position

32.13 Pressure of water in water line:

The platform can be equipped with water pressure sensors (according to customer's need):

a. water pressure in water inlet (>0.0 bar)
b. pumping pressure of water
c. water pressure in water monitor

The water pressure can be seen on water pump screen on every, display unit.

32.14 Water flow rate and total amount of water used:

Actual volume of water in water line shall be indicated. The water volume can be seen on water pump screen on every display unit. The system shows also the total amount of water used at one time (this counter can be reset when needed).

32.15 Wind speed meter:

A wind speed sensor shall be fixed in working cage and shall be at place also during transportation. Wind speed can be seen on every display unit. When wind speed is higher than allowed the system gives audible and visible alarm. The wind speed meter will not limit the use of the platform.

32.16 Indication of low fuel level:

There shall be a system gives an alarm to the operator when the fuel tank is getting empty.

32.17 Hydraulic Oil filters Service Indicator:

If any of hydraulic oil filters needs unscheduled service, a visual indication shall be shown on every display unit.

32.18 Hydraulic tank low oil level alarm:

There shall be a system gives an alarm to the operator when hydraulic oil levelis too low in the oil tank.

32.19 Temperature of cage floor:

There shall be a system of temperature of working cage floor shall be seen on every display unit.

Note - The Committee also recommends that above mentioned technical specifications and other terms & conditions may be got verified /checked at length by Director Supply and Disposal department so that no litigation may arise later on.

Lalit Kumar	**Yadvinder Sharma**	**Rajinder Singh Dahiya**
Fire Station Officer	**Fire Station Officer**	**Assistant Divisional Fire Officer**

Sajjan Kumar	**Niranjan Kumar**	**Gulshan Kalra**
Assistant Divisional Fire Officer	**Works Manager HR**	**Deputy Director (Tech)**

ANNEXURE - A

SCHEDULES OF TECHNICAL PARTICULARS OF AERIAL LADDER PLATFORM 70 METERS HEIGHT

Sr. No.	Technical Details	Remarks
1.	**GENERAL DESCRIPTION**: (a) Make and Model (b) Height (meters) (c) Outreach (meters) (d) Operating media (e) Safety (f) Gross Vehicle weight	
2.	**CHASSIS:** (a) Make (b) Model (c) Wheel base (d) Engine type (e) Rated HP (f) Type of clutch (g) Type of gear box (h) Type of front axle (i) Type of rear axle (j) Type steering system (k) Type of braking system (l) Fuel tank capacity (m) Size of tyres (n) Type of cabin (o) Type of electrical system (p) Type of PTO	
3.	**Constructional details:** **A: Driver Cabin:** (a) Paneling (material) (b) Doors (Nos.) (c)Windows (Nos) (d) Seats (Drivers, attendant, and crew) (e)Capacity **B: Rear Body:** (a)Details of horizontal and vertical cross members (b) Panelling, sides, deck floor (material, size, thickness) (c) Details of lockers (nos, size, material) (d) Overall length in MM (e) Overall width in MM	

	(f) Overall Height in MM (g) Details of Aluminium shutters (size, Nos)	
4.	**4. OPERATING REQUIREMENTS** (a) Safe working loading in cage (Kg) (b) Safe working load with Monitor in cage (Kg) (c) Lifting capacity of the under cage (Kg) (d) Testing suitability at (Kg) (e) Permitted wind speed at the maximum outreach with full working load in the cage (f) Operating time of full stroke (second) • Elevating fist boom / ladder • Elevating second boom/extending ladder • Telescopic • Reaching max height from ground level • For 360 degree rotation • For extending jack one side • For extending jack for both side • For extending all four jacks, elevating, cage to max height and rotation through 360 degree	
5.	5. **DIMENSION OF THE FINISHED APPLIANCE:** **A. In Operating Position:** (a) Max height to working cage bottom (M) (b) Max working height (Mtrs) (c) Max working outreach (Mtrs) (d) Max outreach to cage corner with max safe working load (Mtrs) (e) Max outreach below the ground level working cage bottom with max safe working load (Mtrs) (f) Safe working Load (Kg) (g) Rotation continuous (degree) (h) Levelling capacity (Fore and aft/ sideways) **B: In Transport Position:** (a) Transport height approx (Mtrs) (b) Transport length approx (Mtrs) (c) Transport width approx (Mtrs)	
6.	**6. CONSTRUCTION** (a) Material used (b) Use of timber (c) Use of rubber (d) Treatment of material (e) Painting procedure	
7.	**7. BOOMS** (a) Numbers (b) Telescopic sections (nos)	

	(c) Boom / Ladder length (Mtrs) (d) Movement (e)Location (f) Design (g) Treatment (h) Welding process	
8.	**HYDRAULIC CYLINDERS:** **(a)** Lock valves (b) Hydraulic Dampers (c) Reduction in speed of booms / Ladder (d) Automatic prevention of retracting of outriggers (e) Lifting of Boom / Ladder prevention unless outriggers are in position (f) Limiting circuit to prevent cab damage (g) Emergency stop switches	
9.	**CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENT:** **(a)** Type of control valves (b) Make (c) Model	
10.	**TURNTABLE:** (a) Construction type (b) Fastening (slewing ring) (c) Swivel – in – line (d) Rotation (degree) (e) Movement control (f) Gear unit fastening (g) Location	
11.	**MAIN FRAME:** (a) Frame type (b) Fastening (c) Construction material (d) Non slip aluminium tread plates (e) Steps on both sides (f) Location	
12.	**CAGE:** (a)Material (b) Outer dimensions (MM) (i) Length (ii) Width (iii) Height (c) Doors, Nos., & size in (MM) (d) Max Load (Kg) (e) Fitment to control panel	

	(f) Provision for digital anemometer (g) Levelling device (h) Working cage slewing provision (i) Drop down platform provision (j) Location of drop down platform (k) Max permissible load on drop down platform (Kg) (l) Safety railing provision, height (MM)	
13.	**STABILISING JACKS: OUTRIGGER:** (a) System (b) Controls and Operation (c) Nos. and Location (d) Individual controls (e) Level indicators (f) Self alignment foot plates for outrigger (g) Operation on uneven ground (h) One side jacking provision	
14.	**CONTROL AND SAFETY:** (a) Electric control taken from vehicle battery (b) Voltage (c) All control panels to have engine start/ stop button (d) Signal lamps	
15.	**DETAILS OF SAFETY DEVICES:** (a) Boom/ Ladder and Outrigger cylinder lock valve make & type (b) Isolating system boom/ ladder/ outrigger operation (c) Movement limiting system (d) Cab protection (e) Overload alarm (f) Emergency stop system (g) Dead man switch (h) Bleed down system/other system	
16.	**HYDRAULIC SYSTEM:** (a) Hydraulic power, make & model of pump (b) Pump capacity Ltrs/min and pressure (Kg/cm2) (c) Pump operation (d) Control valve function (e) Oil flow to increase (automatically) (f) Prevention of overloading (g) Instant couplings for manometer (h) Manometer (i) Filtration of oil (j) Filters (k) Hydraulic cylinder type (l) Plating of piston rod	

	(m) Hydraulic cylinder type (n) Fastening (o) Capacity of hydraulic oil type	
17.	**BACKUP FOR HYDRAULIC SYSTEM:** (a) Type (b) Location (c) Operating mode	
18.	**CONTROLFOR STABILISING JACKS:** (a) Location of control panels (b) Change over switch (c) Control levers (d) Emergency lowering valves (e) One side jacking facility	
19.	**WATER PIPING SYSTEM:** (a) Material of piping (b) Diameter of pipe (MM) (c) Water monitor location (d) Piping fitment (e) Protection against over pressure by relief valve (f) Telescopic water pipe (g) Finish & plating (h) Seals (i) Flexible hose (j) Monitor isolating valve (k) Additional outlet with valve and coupling (l) Nozzle and system (water curtain) (m) Control valve location (n) Water monitor (o) Location	
20.	**ELECTRICAL EQUIPMENT:** (a) Slip rings (b) Rating (c) Spotlight (d) Red rear lamps nos. (e) Red/ Orange lamp at boom/ ladder knuckle (f) Illumination of: (i) All control panels (ii) Instruction plates (iii) Leveling indicators (g) Recharging (h) Separate fuses (i) Wiring diagram	
21.	**INSTRUCTION PLATE: DETAILS**	
22.	**BOOM / LADDER:**	

	(a) No of telescopic section (b) Location (c) Min. width at top (MM) (d) Railing height (MM) (e) Folding bridge (f) Material (g) Treatment (h) Controlling system	
23.	**INTER COMMUNICATION SYSTEM:** (a) Type (b) Make (c) Model (d) Operating voltage (e) Location	
24.	**ELECTRIC POWER LINE :**	
25.	**GRAPHICAL DISPLAY MONITOR : (Details)**	
26.	**FAULT FINDING SYSTEM (Details)**	
27.	**EMERGENCY SYSTEM** (a) Make & Model of Engine & pump set (b) Capacity of pump (Ltrs/Min) (c) Make & Model of electric motor operating voltage (d) Make & Model of pump set with capacity (Ltrs/Min) (e) Bleed down system/other system	
28.	**LUBRICATION: Details**	
29.	**BODY WORK** (a) Steps and grab rail (b) Construction (c) Material (d) Siren with two tone hooter + Public Address system (e) Orange beacon lamp	
30.	**FINISH** (a) Painting (b) Visibility	
31.	**TOOL KIT DETAILS: SEPARATELY**	
32.	**STABILITY**	
33.	**TESTING FACILITIES**	

Brief Description of Procuring:

Sr. No.	Description of Stores	Quantity in No.	Place of Delivery
1	**SUPPLY, DELIVERY, MOUNTING, TESTING AND COMMISSIONING OF AERIAL LADDER PLATFORM 55 METERS HEIGHT WITH RESCUE LADDER WITH 03 YEAR DEFECT LIABILITY PERIOD AND 03 YEARS COMPREHENSIVE MAIN TENANCE CONTRACT FOR FIRE FIGHTING AND RESCUE OPERATION. EURO-VI**	**02**	**Anywhere in Haryana**

A. ELIGIBILITY OF SUPPLIERS:

1. Bidder should be either manufacturer or Authorized Distributors who have obtained written permission from manufacturers only.
2. Documentary evidence establishing that the manufacturer has supplied minimum 5 Nos. aerial ladder platforms, hydraulic platform of required model with same OR Higher working capacities, specifications and features as specified in the schedule of requirements. (Copy of Supply Order, copy of Certificate regarding satisfactory supply of the items issued by their purchasers, etc. should be enclosed).
3. Copy of the Audited Annual Accounts for the last 5 years to prove an annual turnover of at least Rs. 40 Crores (Rupees Forty Crores only) or equivalent foreign currency in any of the last 5 financial years.
4. The manufacturer should be ISO 9001 Certified Company.
5. Documentary evidence showing that the bidder is manufacturer of the tendered item. If the bidder is an authorized agent, the Manufacturer Certificate in this regard should be enclosed. The Manufacturer has to issue a certificate to the effect that they will take responsibility if Indian agent fails to attend service or if there is any change in Indian Agency during Warranty/CMC period. Certificate from the Manufacturer to continue/accept Service Contract at the rate mentioned in the purchase order in the event of change in Indian Agency to be submitted.
6. Documentary evidence showing that the offered model is approved by appropriate accredited 3rd party authority as per the EN 1777 Standards specified in the Technical Specification.
7. Documentary evidence established in accordance with criteria mentioned at sr. No. 8, that the goods and ancillary services to be supplied by the Bidder confirm to the goods and services as mentioned in the Bidding Documents. Scanned copy of the duly signed specification compliance statement shall be uploaded along with the offer, and the statement should be complete in all the details of specification. The bidder should upload the statement with complete details of specification even though there is no deviation for the product from the Technical Specifications.

8. Pursuant to criteria mentioned at Sr. No. 7, the bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the bidding document of all goods and services which the bidder proposes to supply under the contract.

   The documentary evidence of the goods and services eligibility shall consist of statement in the price schedule on the country of origin of the goods and services offered which shall be confirmed by a certificate of origin at the time of shipment.

9. Declaration by the bidder on Stamp Paper worth Rs.100 to the effect that he/his partner/s or any of his directors is not involved in any Vigilance Case registered in connection with any supply made to any Central/State Governments/ Boards/corporations in India (Optional for the bidders from India only).

10. The bidder should not be black listed from any Central/State Governments/ Boards/corporations in India/ any other country or no Criminal Case is registered against the firm or its owner or partners. The bidder will submit self-certification in this regard.

SPECIAL TERMS AND CONDITIONS:-

1. The manufacturer/supplier shall impart necessary training to 6-10 person/fire staff for minimum 30 days at his risk and cost for every vehicle anywhere in Haryana). After completing the successful training period, he will issue a certificate to the trainees in this regard.
2. The manufacturer/ supplier shall supply Aerial ladder platform anywhere in Haryana at consignee's place at the cost of supplier/ Manufacturer.
3. **PAYMENT TERMS:-**

   A. For Imported Item

   (i) A irrevocable Letter of Credit (LC) confirmed by the first Class Bank in the seller's country in favour of the supplier for 100% of the CIF amount shall be opened by the purchaser. L/C charges shall be to purchaser's account including confirming charges, which shall be borne by the purchaser out of the 100% payment (AO).

   (ii) 90% (Ninety Percent) of the CIF component will be released against submission of documents along with satisfactory certificate of pre-dispatch inspection.

   (iii) Remaining 10% (ten percent) payment shall be payable after satisfactory installation/demonstration of the goods at the premises of end-user department and receipt of certificate for same from end user department. In case of LC, all bank charges (including LC confirmation charges) payable outside India would be to Seller's account.

   Payment Against the letter of Credit/Wire Transfer for 90% of the value will be available against presentation of the following documents and also on proof of evidencing of shipment.

   a. 3+3 Complete set of Original Clean Bill of Lading. The Bill of Lading shall be in the name of Director General, Haryana Fire Services, Bays 53-58, Sector-2, Panchkula 134112, Haryana, India AND MARKED FREIGHT PREPAID.
   b. Signed invoice in three copies giving letter of credit No., Order No. and date respectively. The invoice shall be in the name of: Director General, Haryana Fire Services, Bays 53-58,

Sector-2, Panchkula 134112, Haryana, India. Invoice shall have goods description, quantity, unit price, total amount.

c. Certificate of satisfactory Pre-dispatch inspection report and Supplier factory inspection report.
d. Certificate showing goods of ORIGIN issued by Chamber of Commerce or Equivalent Body in Duplicate.
e. Specifications and Packing list – three copies.
f. Manufacturer's guarantee certificate – three copies.
g. Certificate from the manufacturer to the effect that the goods conform to the manufacturers standards and are new (Production Month in Year 2023) and free from any latent or patent defects and are strictly as per Specifications mentioned in STC's Order.
h. Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies.
i. Copy of FAX MESSAGE/proper communication marked to General Imports Division, sent by the seller within 24 hours of issuance of Bill of Lading to buyer notifying the details of the BL No., Goods freighted, total invoice value, Name of the Shipping Line loading port and date of departure of the vessel and expected time of its arrival at the Indian Port.
j. Certificate from the seller that one set of non-negotiable documents mentioned under I to IX above has been airmailed/couriered to the following within 10 Days of departure of the vessel in addition to one set of non-negotiable document sent with the vessel to:

   Director General, Haryana Fire & Emergency Services,
   Bays 53-58, Sector-2, Panchkula 134112, Haryana, India

B. IN CASE MANUFACTURER IS BASED IN INDIA.

Payment for domestic supply via RTGS for 100% value will be available against presentation of the following documents:-

a. Signed and stamped invoice (Three original) giving details of order number and date. The invoice shall be in the name of the Director General, Haryana Fire Services, Bays 53-58, Sector-2, Panchkula 134112, Haryana, India and end-user department as a consignee. Invoice shall have goods description, quantity, unit price, total amount.
b. Receipt of certificate of satisfactory installation, demonstration & training of the Equipment to be issued by the end-user department.
c. Three copies of Satisfactory Pre-Dispatch Inspection certificate issued by the nominated inspection agency and the Supplier factory inspection report.
d. Specifications and Packing List – Three copies.
e. Authorized Dealers / suppliers guarantee certificate – Three copies.
f. Manufacturer's/Supplier's guarantee certificate – Three copies.
g. Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies.

h. Payment shall be made in Indian rupees or in freely convertible foreign currency for imports. In case of local supply or certain items are locally supplied for an otherwise imported item, the same shall be quoted in INR and the payment for same shall be made in INR only.

i. All the bills relating to custom duty, insurance, warehousing, handling, transportation etc., should be raised in the favour of the Buyer.

C PENALTY

The firm/contractor fail to deliver or dispatch any consignment within the period prescribed for such delivery or dispatch stipulated in the supply order, the delayed consignment will be manufacturer or supplier will be subject 2% penalty per consignment per month recoverable on the value of the stores supplied. The other details will be as per provision contained in **Sr. no. 14 of "Schedule-'B' Condition of Contract" of DIRECTORATE OF SUPPLIES AND DISPOSALS, HARYANA**

4. BID PRICES:-

I. The bidder shall indicate on the appropriate price schedule of the Price bid the unit prices and total bid prices of the goods it proposes to supply under this contract and in case of goods of foreign origin in F.O.B. (free on board) and CIF (cost, insurance and freight) cost. All the columns shown in the price schedule should be filled up as required. If any column does not apply, the same should be clarified as "NA" by the bidder. In case there is no column for a particular component/item/service in the price schedule, the same should be mentioned by the bidder and price should be accordingly quoted.

a. If offered from within India:

The rate quoted shall be inclusive of all duties, taxes other levies payable by the Firm/Agency as per State /Central Government rules applicable in India. However, the breakup of the price shall be indicated in the price bid. GST and any other statuary duty, tax levy etc., shall be paid to the seller as per the rate applicable on the date of supply on actual basis.

b. If offered from outside India:

The custom duty as applicable shall be paid on actual by the Haryana Fire Services, India (the consignee).

II. Prices indicated on the price schedule shall be entered separately in the following manner: The price of the goods, quoted ex-factory, ex-showroom, ex-warehouse, or off-the-shelf, or delivered, as applicable, including all duties and sales and other taxes including transportation, installation, commissioning at site and all operational and incidental charges etc., However, the breakup of the price shall be distinctly indicated in the price bid.

III. The Bidder's separation of the price components in accordance with Para 4(I)(a) and 4(I)(b) above will be solely for the purpose of facilitating the comparison of bids by the Buyer and will not in any way limit the Buyer's right to contract on any of the terms offered.

IV. Fixed Price: Price quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

5. BID CURRENCIES:

I. Price shall be quoted in the following currencies:

a. For goods and services which the Bidder will supply from within the Buyer's Country, the prices shall be quoted in Indian Rupees: and

b. For goods and services which the bidder will supply from outside the Buyer's country, the prices shall be quoted either U.S. Dollars or in the freely convertible currency.

c. Payment of services like insurance, warehousing, custom clearance, handling, transportation etc., within India shall be paid as per actual.

II. Further a Bidder expecting to incur a portion of its expenditures in the performance of the Contract in more than one currency, and wishing to be paid accordingly, shall so indicate in his/ her / their bid. In such a case, either (i) the bid shall be expressed in different currencies and the respective amounts in each currency together making up the total price, or (ii) the total bid price shall be expressed in one currency and payments required in other currencies expressed as a percentage of the bid price along with the exchange rate used in such calculation.

6. SCHEDULE OF PRICES AND QUANTITIES:

a) The rate of taxes / duties and custom duties applicable on the date of submission of tender shall be clearly shown in the tender.
b) The charges for transportation/insurance and other incidental expenses for the delivery of the equipment to shall be included in the cost.
c) The cost on account of training to the Officers /officials of Haryana Fire Services, India for one week at the factory premises of equipment manufacturer shall be included in the cost.
d) The price and the cost stated in the tender shall be in Indian Currency only.
e) The prices quoted by the bidder shall be fixed and firm during the contract and no other price variation will be allowed under any circumstances. The tender submitted with variable price will be treated as NON RESPONSIVE and will be rejected outright.

7. TAXES AND DUTIES

a) Suppliers shall be entirely responsible for all Central or State (in India & country of origin) or any other taxes, duties, license, levies, duties, fees, etc. incurred until delivery of the contracted goods to the Buyer.

b) The rates quoted by the bidder shall be inclusive of the sales and other taxes that the bidder will have to pay for the performance of this contract. The Buyer will effect the deduction of such taxes at source (TDS) as per applicable law prevalent.

8. **Prices:** The rates are on consignee destinations basis anywhere in Haryana at supplier's risk (FOR),
9. ***Custom DUTY:-*** *Exclusive, if any*
10. ***Freight Charges****:-* *Inclusive, if any*
11. ***Delivery Period:-*** *Period of Delivery of Equipment / Goods in complete manner as specified: 8 (eight) months from the issue of Letter of Award.*

12. ***BREAKDOWNS*** **DURING WARRANTY:-**

Warranty period will be of 36 months of both the superstructure and chassis, the supplier will be responsible to provide service and maintenance during warranty period as and when required at the place of respective instruments stationed

The supplier shall attend/rectify the defect within 72 hours of any break down, period for more than 10 calendar days, shall be added to the warranty period. Penalty @ Rs. 25000/- per day for any delay will be applicable on all minor disorders after 7 days of complaint registered by the purchaser whereas for all major breakdowns after 30 days. The supplier should provide the service report (type/cause of break down) to respective officer.

Maintenance and After Sales Services

Your service engineer will service the full vehicle including chassis in every quarter (every 3 months) at purchaser's site free of cost during warranty period. The manufacturer of chassis and as well as superstructure shall also guarantee for the supply of spare parts & service for a minimum period of 15 years from the date of commissioning of vehicle at site.

13. **INSPECTION:**

The Government Authorized representatives (Max.7 persons) will carry out the inspection and the testing of fully built vehicle in factory premises of the vehicle manufacturer prior to dispatch. The travelling and accommodation cost shall be included in the basic cost of the vehicle. It is obligatory to the supplier to provide all the assistance and equipment for the inspection and testing of the vehicle at the premises.

14. AFTER SALES SERVICE PROVIDING

Manufacturer shall have their sales & service network in India through their authorized agency / representative/distributor. That agency/representative/ distributor shall have enough experience in Vehicles segment with full fledge manufacturing/fabricating the Vehicles. If that agency/representative/ distributor is not a manufacturer of vehicle then they should have at least experience of 3 years for servicing of fire and rescue vehicle. If agency/representative /distributor is a manufacturer they have to submit trade license along with tender document otherwise they have to submit the service contract certificate between this agency and the end user to prove their experience. To substantiate, Indian agent/representative/ distributor shall furnish the authorization letter in original with tender documents.

15. R. T. O. REQUIREMENTS:

The vehicle shall be equipped with all the accessories required for registration of the vehicle and shall conforms to Motor Vehicle Act 1988 and Central Motor Vehicle Rules, 1989 or any amendment incorporated from time to time.

The chassis shall be homologated from the appropriate authority in India incase not already an approved model or shall be supplied with COP (Conformity of Production) issued by approved testing agency.

16. DEVIATION:

Any deviation / departure from the above specification shall be pointed out separately with detailed explanation.

17. SPECIAL TECHNICAL DOCUMENTS:

1. The documentary evidence of the goods and service's conformity to the bidding documents may be in the form of literature, drawings, data etc. The bidder shall furnish:
2. A detailed description of the goods and the essential technical and performance characteristics of the goods.
3. A clause by clause commentary on the End-user's technical specifications of the goods and services and bidders' offer for the goods and services substantiating compliance to those specifications or deviations and exceptions from / to the Technical specifications.
4. For purpose of the commentary to be furnished pursuant to condition mentioned above, the bidder shall note that standards for workmanship, material and goods, and references to brand names or catalogue numbers designated by the End-user in its technical specifications are intended to be descriptive and indicative only and not restrictive. The bidder may offer alternate standards, brand name and /or catalogue numbers in its bid, provided that the same are to the End-user's satisfaction that the substitutes are substantially equivalent or superior to those designated in the Technical specifications.
5. Documentary evidence of list of work order in hand at the time of submission of tender.
6. Bidder shall attach the Product Brochures, Technical Literature, catalogues, drawings, illustrations etc. in the bid.

Technical specifications of fabrication and supply of Hydraulic Platform of 55 meter height with rescue ladder for firefighting and rescue operation with five years comprehensive maintenance contract

1. <u>GENERAL REQUIREMENT</u>:

1.1 This specification covers Hydraulic Platform with height of 55 m with rescue ladder. The Hydraulic Platform shall be designed specifically for the purpose of firefighting and rescue to enable firemen to go up over and above the other side of any obstruction. It shall comprise of main boom with Telescopic sections and Articulated Booms with Telescopic sections and cage mounted at the end of the boom and the entire unit shall be mounted on a Turn-Table on a Right hand driven Heavy Duty Diesel-Engine chassis and at least 230-300hp, EURO VI engine with fully factory built cabin and suitable capacity PTO. The Vehicle Chassis shall be BSVI(EUROVI) emission norms compliantand in general shall meet the CMVR normsOR shall have the EC-type approval/Conformity of Production certificate (COP).

1.2 The Hydraulic Platform shall be designed as per the designed, operational stability and structural strength based on the criteria laid in EN1777 and other norms and standards applicable for elevated raised platforms used for Fire Fighting and rescue operations. The manufacturer should be ISO 9001 Certified Company. In last 5 years, the manufacturer should have supplied minimum 05 hydraulic platforms of 55 mtrs and above for fire and rescue operation. Performance certificates for minimum 2 such vehicles; preferably from Fire Services/Emergency services shall be submitted.

1.3 The Hydraulic Platform shall be capable of use at any angle of main boom elevation without any reduction of load capacity of the cage. It shall also rotate 360 degree at any

angle of elevation as well as below ground level subject to boom remaining clear of vehicle body and or any obstruction.

1.4 The appliance shall be compact and fast on the road and easily maneuverable in the crowded streets and around sharp corners. The overall dimensions shall not exceed the limits specified herein.

1.5 Typical weight with chassis, G.V.W. (maximum) with standard specification should be in-between 25-30ton.

1.6 The working height of the Hydraulic Platform shall not be less than 42 meter from the Ground and the Horizontal outreach shall not be less than 16 meter at 500 Kg cage load. Working reach below the ground level should not be less than 5 meter.

1.7 Safe cage working load without water discharge should not be less than 500 Kg whereas with water discharge should not be less than 300 Kg.

1.8 Nominal water discharge capacity of cage monitor with adequate water supply should not be less than 2400 liters per minute.

1.9 The Hydraulic Platform shall be electro hydraulically controlled, permitting precise and easy operations under the most difficult conditions, with ample reserve strength and stability.

1.10 Full safety interlocks shall be incorporated in the design so as to ensure complete safety in operations and long years of reliable and trouble free service, as far as possible the system shall be fail proof.

1.11 The design of the plat form shall allow a very large safety margin for extreme operating and climatic conditions. The safe working loads ratings shall include an allowance for the weight of water system and the reaction from the monitor jet while operation.

1.12 The Vehicle shall have a leveling system to adjust axial and transverse movement to an angle of minimum 5 degree and it shall be automatic in nature.

1.13 There shall be a full back up system for all boom movements and out rigger movement in case of failure of main system.

1.14 The Complete Movement of the platform shall be computer controlled and the system shall be checked for interference sensitivity.

1.15 The Control system of the platform shall be fully tropicalized and be able to operate in the temperature range up to+60 degree centigrade and in a dusty and Humid condition without reducing the maximum operating limits.

1.16 Schedules of technical particulars of Hydraulic Platform of 55 meter height to be provided in Annexure-A

2. CHASSIS:

2.1 The Chassis shall be VOLVO/ MERCEDES BENZ/ MAN/SCANIA /TATA/ASHOK LEYLAND/ EICHER/BHARAT BENZ/MAHINDRA make having suitable axle and Wheel Base fully factory built cabin and suitable capacity PTO. The Vehicle Chassis shall be a Right Hand Drive and shall comply BSVI (EUROVI) emission norms.

2.2 The Chassis shall be homologated from the appropriate authority in India in case not already an approved model OR shall have the EC-type approval/Conformity of Production

certificate (COP).The chassis manufacturer must have production facilities in India to ensure after sales support for the chassis.

2.3 The engine shall be minimum six cylinders, in line, Diesel with direct injection, turbo charged with inter cooler.

2.4 The engine shall develop minimum 370-400 HP.

2.5 The gearbox shall be manual or with automated gear system with suitable Power Take Off to drive the hydraulic pump.

2.6 Rear Axle shall be fitted with suitable sized tyres and differential lock between the wheels and axles as necessary.

2.7 Chassis frame shall be 'C' Channel section made of high strength steel with cross members.

2.8 The Steering shall be integral power steering.

2.9 The Front and rear Suspension shall be leaf spring type or as suitable for chassis.

2.10 The Brakes shall be dual circuit air brakes with parking brakes acting on rear wheels.

2.11 Fuel Tank- Capacity shall be min 300 ltrs with lockable fuel cap.

2.12 The Chassis shall be provided with Radial tyres of suitable size as per load on axles with spare tyres one each for dead & live axles.

2.13 The chassis shall be provided with single day type cab with RED colour, made from high strength steel fully trimmed, external panels hot dip galvanizedwith hydraulic cab tilting mechanism. The Cab suspension shall be provided with coil spring and shock absorber. The cab shall be provided with adequate ventilation, rearview mirrors, windscreen and windows, adjustable driver seat, wiper system and along with all other standard fitments.

2.14 The Electrical system shall be 24V, with suitable capacity batteries & Alternator for charging the batteries.

2.15 The chassis shall be supplied with standard tool kit, hydraulic jack of 20 ton -30 ton capacity, operator &workshop manuals.

2.16 The Chassis shall be fitted with gearbox mounted, suitable capacity PowerTake Off Unit to drive the hydraulic pump for boom movements.

2.17 Suitable power take off unit shall be installed to drive the centrifugal fire pump. The hydraulic pump and fire pump shall work simultaneously.

2.18 The Chassis shall be directly procured by the tenderer confirming to above.

3. MAIN OPERATING DATA

3.1	Min. working height	-	55 m (±2%)
3.2	Min. height to working cage bottom	-	53 m (±2%)
3.3	Min. working outreach at 500 kg cage load not less than	-	25-30 meter
3.4	Min. working reach below the ground level	-	05-8 m

3.5 Safe working load (without water discharge) 500 kg, (with water discharge – 250 kg)

3.6 Min. Nominal water discharge capacity of water monitor (with adequate supply pressure) 2400 l/min

3.7	Rotation, continuous 360°		
3.8	Transport height (depending on chassis)	-	4.0-4.2 m
3.9	Transport length (depending on chassis)	-	10 to 12.5 m max.
3.10	Transport width 2.6 m max.		
3.11	Typical weight with chassis, G.V.W. (Standard specification approx)	-	30-35 ton max
3.12	Operations at maximum outreach with Full working Load permitted in wind speed up to	-	10.0 m/sec
3.13	Maximum width of the vehicle when Jacks are Fully extended on both sides	-	6-7 mtr.
3.14	Operating time at full stroke for all operations	-	EN1777Compliant

4. CONSTRUCTION:

The appliance shall be robust in construction; materials used in construction shall be carefully selected for lightness and durability. Use of timber shall be restricted in body work and use of rubber shall be avoided as far as possible. Ferrous metal parts shall be treated for anti-corrosion by a method other than electro-plating.

5. BOOMS

5.1 The vehicle shall perform the following functions/operations

5.1.1 Elevation

5.1.2 Depression

5.1.3 Extension &housing of telescopic sections

5.1.4 Rotation360 degree in either direction

5.2 All the operations shall be electro-hydraulically operated with the help of hydraulic cylinders, wire ropes, chain etc. The systems hall be purpose built to provide smooth take off, variable speed range and smooth slow down, based on the criteria laid down under EN 1777

5.3 There shall be Minimum two booms, of which the first and the second one are with telescopic, extension providing direct movement. All booms move vertically. The design provides an up-and-over capability of approx. 05 meter m throughout its vertical movement.

5.4 The booms shall be designed and welded to provide high durability and extreme accuracy. For high strength and minimum flexing of the boom sections only high tensile strength steels are used as load bearing structure.

5.5 The booms shall be welded by the unique plasma welding method to provide high durability and extreme accuracy. For high strength and minimum flexing of the boom sections only high tensile strength steels must be used as load bearing structure. Welding quality certificate of ISO 3834-2 for load bearing steel structures for mobile hydraulic aerial appliances shall be submitted along with the offer from an independent notified

certifying agency without which the offer will be rejected.

5.6 The telescopic sections of the booms move synchronized i.e. there are no intermediate jerks when the extension / retracting are operated. All sections are fitted with adjustable guides to provide smooth and accurate movement.

5.7 Different maintenance objects are located well at hand either outside the boom or behind easily removable covers.

5.8 All booms are internally and externally primed and painted for long life span.

6. CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENTS

All boom and rotation movements shall be controlled electro-hydraulically by means of proportional valves. Thanks to the proportional principle the control function is not sensitive to changes of ambient or oil temperature, thus providing smooth, safe and very accurate movements even in most severe operating conditions. All control movements can be performed by the remote control system from both control panels. The side outreach is performed by the position of the outriggers. The variable system contains also displays at all three control stations. The displays give the real-time information about the outreach and the cage position and also show possible movements according to cage position by animated arrows. There shall be different views on each display;

6.1 Outreach preview

6.1.1 Real time outreach and cage position with guidance information

6.1.2 Main outreach with two views (side and up)

6.1.3 Fault finding system

6.1.4 Statistic information

6.1.5 Tools screen (personal settings)

7. HYDRAULIC CYLINDERS:

7.1 The Hydraulic cylinders shall be double acting, fitted with lock valves so as to prevent booms, working cage from lowering or the out riggers from retracting in case of pipe or hose failure.

7.2 The cylinders shall be provided with automatic dampers to prevent the pressure shocks and shall dampen the movement when a mechanical stop is reached.

7.3 Retraction of the outriggers shall be automatically prevented as soon as the booms have been lifted up from their transport position by way of electrical OR Hydraulic interlock system.

7.4 The piston rods of the jack cylinders have to be fully enclosed with in rectangular steel profile in order to protect piston from damage caused by any external impacts.

7.5 Lifting of the booms from the transport position shall be prevented before the outriggers are in support position and there shall be a limiting circuit to prevent damage to the Drivers cabin by the first boom when not clear of the cabin.

7.6 All the movements shall be automatically limited in their extreme position and the working cage shall be prevented from working outside of the permitted working range in any position.

7.7 An emergency stop switch shall be provided on both control panels, which shall switch off the hydraulic pressure of all movements and shall stop the vehicle engine. The unit shall be supplied with a manual Bleed Down System and Emergency Hydraulic Back-up System.

8. TURNTABLE

8.1 The turntable shall be a fully integrated steel structure. The centre post containing slip rings with double pins for electrical connections, 100 mm corrosion resistant water way and hydraulic pressure and tank lines allows continuous rotation of the turntable.

8.2 Rotation reduction gear with automatically operating braking system shall he installed at the turntable for easy maintenance and adjustment. The hydraulic motor powering the rotation movement is fitted directly into the gear for high reliability.

8.3 At the left hand side of the turntable there is the lower control station which rotates automatically with the turntable.

8.4 The hydraulic distributor (center post) shall be mounted in the center of the turntable at an accessible position and shall carry the hydraulic pressure and return lines, electrical supply lines &waterline allowing continuous rotation in either direction.

8.5 The fasteners retaining turntable to the rotation mechanism shall be of proper grade and shall be torque properly. The rotation gearbox fastener shall be of proper grade and torque with proper backlash.

8.6 There shall be provision for the manual rotation of turntable in case of failure of hydraulic system.

8.7 Pins securing the hydraulic cylinders to boom and turntable shall be properly installed and secured.

8.8 The hydraulic hoses, tubing and connections provided in the turntable shall be free from kinks, chaffing or leaks.

9. MAIN FRAME

9.1 The main load bearing element of the aerial device shall be the strong main frame which shall take all the loads caused by the operation of the aerial.

9.2 The main frame shall be fixed onto the chassis frame with bolts in such a way that chassis performance and durability are maintained.

9.3 The front fixing bolts shall be fitted with springs to allow the chassis frame beams to flex when the outriggers are fully down, thus avoiding any stress concentration in the chassis beams.

9.4 The actual main frame shall be fully welded steel structure providing high stiffness and thus maximum comfort ability and operational safety.

10. STABILIZING SYSTEM/JACKING SYSTEM

10.1 The stabilizing system shall consist of four hydraulically powered outriggers mounted in their housings in the main frame. Each housing is fitted with adjustable guides to provide smooth and accurate movement of the outrigger beam. The horizontal beam is a completely closed steel profile enclosing the hydraulic cylinder for the horizontal movement and the hydraulic hoses for the cylinder of the vertical movement thus completely protecting those devices from external damage.

10.2 The cylinder for vertical movement is mounted so that the piston rod is protected inside the vertical beam in order to avoid damages.

10.3 The H-type outriggers have been chosen for their ability to stabilize the vehicle from behind obstacles and to be placed on raised structures as necessary. Each vertical jack is fitted with self-aligning foot plate to distribute the load evenly and to allow operation on uneven ground.

10.4 The stabilizing system also includes a rear axle locking system in such cases where it is required for meeting the stability criteria.

10.5 All controls for the entire stabilizing system are located in dust and water proof locker at the rear of the vehicle. The automatic jacking with a control box assures that the outriggers are always visible to the operator.

10.6 In the middle of the control panel there shall be following additional control devices:

10.6.1 starting of chassis engine

10.6.2 stopping of chassis engine

10.6.3 Outrigger and outreach display with fault finding system

10.6.4 Operating hour and rpm-up gauge in the display

10.6.5 Switch for the battery driven back-up for the hydraulic system

10.6.6 Visual indicators for leveling of the vehicle (longitudinal and transversal)

10.6.7 Emergency stop

10.6.8 Controls for the automatic jacking

10.7 The locker containing outrigger controls is fitted with an automatically operating door switch and light for night operation.

11. ELECTRONIC SAFETY AND OUTREACH SYSTEM

11.1 The Electronic System shall make it possible to select the working cage load according to working situation. With these variables the system selects automatically the maximum allowed outreach to front, rear, right and left side. Since this is based on calculations and parameters saved in the system it will guarantee exactly the same outreach regardless of the external influences like wind speed and direction, temperature, friction of the cylinders, etc.

11.2 The display units of the system show maximum possible outreach and position of the working cage in real-time. There are also many additional features included in the display unit All electrical components in the system are doubled.

11.3 The electronic system shall be approved according to the valid standards and directives.

12. CAGE:

12.1 The working cage shall be fixed to the boom with proper pivoting point so as to provide highest possible degree of natural safety.

12.2 The working cage is made of tubular steel Aluminum profile and welded together The dimensions of the working cage are 1.0 m (length) x 2-m (width) x 1.1 m (height) (with +/-10% tolerance for each) and it is fitted with two doors, one located at the side to enable safe access from the ground in travelling position and the other one located at the front for safe access in case of a rescue. Safe working load is 500 kg when no water is discharged.

12.3 The cage load can be changed from display unit and these lection of load can be possible from turntable and cage control center. The chosen cage load can be displayed by clear symbols and numerically in selected format on all display units. The selected cage load shall be shown preferably by graphic bar.

12.4 When the load selection is made at turntable or cage the system shall automatically show the maximum outreach to all directions with selected cage load and outrigger position.

12.5 The control panel in the cage shall be fitted in such a way that the operator shall see the booms clearly tall the times.

12.6 The working cage shall be kept horizontally leveled in any position of the booms including the travelling position which makes it possible to the firemen to enter the working cage before the booms are lifted. This feature makes it possible to start the operation without losing valuable time by taking the cage on to the ground first.

12.7 The leveling system shall be controlled by an automatic horizon monitoring device with two fully automatic and independent safety circuits in case of an uncontrolled leveling failure. There is a master switch for the automatic leveling system, thus it can be isolated and the manually controlled system activated.

12.8 The leveling movement shall be powered by a hydraulic cylinder connected to a mechanical linkage for transmitting the movement.

12.9 The working cage shall be turned 40-50 degrees to each side from its centre position to provide safety and comfort ability in rescue operations. The movement is powered by a hydraulic cylinder with controls in the working cage and at the turntable control panels.

12.10 The centre position of the cage shall be indicated by a visual indication at both control panels.

12.11 At the front of the working cage there shall be a rescue platform with safety railing to provide additional safety during rescue and firefighting. The dimensions of the rescue platform shall be 1to 1.5 m x 0.5 m and load capacity of minimum 180 kg.

13. HYDRAULIC SYSTEM

13.1 Hydraulic power shall be provided by a reliable and adequate variable displacement double axial piston pump, which is driven by the vehicle power take-off.

13.2 Without any operation of the aerial device, the pump rotates on minimum flow and minimum pressure. When one of the movements is operated the control valve shall automatically increases the pressure to a pre-set constant level and the oil flow to the amount that is needed for the movements activated. Due to which the loss of power in the hydraulic system, which normally causes over heating of the hydraulic oil, can be avoided and also the stresses caused to the vehicle transmission and P.T.O. system are minimized. At the same time fuel consumption and exhaust emissions are kept at the minimum.

13.3 By operating several movements simultaneously the oil flow shall increase automatically according to the need in the system thus making all movement speeds independent on each other.

13.4 The constant pressure system with maximum pressure setting prevents overloading of the system and its components e.g. cylinders.

13.5 Inside of the turntable and at the lower valve compartment there shall be instant couplings for the manometer in each pressure line. The manometer shall be fitted as standard equipment.

13.6 The filtration of the oil consists of suction strainer in the suction line, pressure filters with visual indicators in each pressure circuit, return filter in return line and air filter on the reservoir thus providing maximum reliability by protecting the hydraulics against foreign particles.

13.7 The hydraulic cylinders are hard chrome-plated piston rods and they have been fastened by means of self-aligning ball bearings to prevent lateral forces from damaging the seals or piston rods of the cylinders.

13.8 Hydraulic oil tank shall be mounted at the top of the main frame. The tank is fitted with oil level gauge, temperature gauge, suction connections with closing valves for easy maintenance and draining outlet with closing valve.

13.9 There shall be hydraulic oil cooler for continuous use in hot temperature.

13.10 Pressure and temperature of hydraulic oil:

13.11 Platform is equipped with electrical temperature and pressure sensors of the hydraulic oil. The temperature and pressure are shown in every display unit.

14. BACK-UP FOR THE HYDRAULIC SYSTEM

14.1 There shall be a battery driven hydraulic pump which provides an independent means of power in case of failure of the main engine.

14.2 The system should be able to be started from all control panels thus providing an immediate back-up in a case of a failure at an intense fire or similar immediate emergency.

14.3 There shall also be an independent diesel engine driven hydraulic pump system for complete operation of all boom and outrigger movements with slow speed. It shall be

possible to start this system from all control panels.

15. CONTROLS AND SAFETY:

15.1 The Electrical supply needed for control system shall be taken from the vehicle battery which shall be charged when the engine is running.

15.2 When the vehicle is in operation yellow flashing warning lights mounted on the outriggers shall automatically remain on.

15.3 The engine starting and stopping switch shall be provided on all control panels and the engine speed shall be increased to the present level as soon as any one of the control lever is operated.

15.4 All boom and rotation movements shall be controlled electro-hydraulically by means of proportional valves. The proportional valve shall not be sensitive to changes of ambient or oil temperature, and shall provide smooth, safe and very accurate movements even in most severe operating conditions.

15.5 The speed of the first boom for lowering and extension shall be automatically reduced at maximum outreach. The first boom lifting speed shall be reduced before the maximum elevation.

15.6 All control movements can be performed by the control system from both control panels and the outreach can be selected by the positioning the outriggers. The variable system shall consist also displays at all three control stations. The display give the real time information about the outreach and the cage position and also show possible movements according to cage positions by animated arrows. In the text display there shall be at least four different views on each display:

15.6.1 Warnings

15.6.2 Emergency situations

15.6.3 Help manual

15.6.4 Fault finding system

15.6.5 Outreach preview

15.6.6 Real time outreach and cage position with guidance information.

15.6.7 Main outreach with two views (Side and up)

15.6.8 Statistics information

15.6.9 Tools Screen (personal settings)

15.6.10 Signal lamps shall be provided for following functions:

15.6.11 For the outriggers, in transport position in driver's cab

15.6.12 For the outriggers working position on all control panels

15.6.13 For the P.T.O. engaged in the driver's cab

15.6.14 For the transport position of the booms in driver's cab

15.6.15 For the middle position of the rotation on the turntable and cage control panel.

15.6.16 For the exceeding of the safe working load in the cage on the turn-table

and cage control panels.

16. TURNTABLE AND WORKING CAGE CONTROL PANELS

16.1 The turntable control panel incorporating all control levers (joystick type) and safety system indications is fitted in such a way that it enables good visibility from the control station towards the working cage when the booms are operated.

16.2 The control station shall be fitted with convenient seat to provide comfort even in case of prolonged operation. The platform underneath the control position shall be covered by civil by non-slip Aluminium.

16.3 The working cage control panel incorporating all control levers (joystick type) and safety system indications shall be fitted at the rear of the cage to permit visibility over the booms and to leave the front of the cage free for rescue and firefighting operations

16.4 Both control panels shall be exactly alike, thus considerably reducing the risk of confusion amongst operators under stress or even panic.

16.5 At the turntable control panel there shall be a change-over switch to select the panel from which the operation is controlled.

16.6 Both control panels shall be fitted with following most important warning, indication and control devices, all marked by clear symbols: Joystick control levers for each movement

16.6.1 joystick control levers for each movement

16.6.2 Buttons for cage slewing

16.6.3 Button for starting and stopping of chassis engine

16.6.4 Buttons for the battery driven and diesel engine driven back-up for the hydraulic system

16.6.5 button for emergency stop

16.6.6 button for overriding of the automatic working cage leveling system

16.6.7 button for manual operation for the working cage leveling system

16.6.8 extra buttons for special features

16.6.9 button for activating the bleed down system

16.6.10 button for automatic drive of booms to transport position

16.6.11 button for approaching speed (lower down speeds of boom movements)

16.6.12 button for work lights

16.6.13 buttons for automatic first boom movements and first boom extension/ retraction

16.6.14 Intercom system

16.6.15 Integrated water monitor controls

16.6.16 Visual and audible indication for exceeding safe working load

16.6.17 Visual warning for activation of working cage collision guard system

16.6.18 visual indication for ground pressure of the outriggers

16.6.19 visual indication diagram containing information on particular movements being restricted or permitted based on real-time information on actual boom

configuration

16.6.20 visual indication for the centre position of the booms

16.6.21 Visual indication for the centre position of the working cage

16.6.22 visual indication for wind speed

16.6.23 Visual indication for cab protection

16.6.24 visual indication for tilt alarm

16.6.25 visual indication for Tele-control activated

16.6.26 visual indication for service time reminder

16.6.27 Visual indication for service counters for chassis motor, electric power. Generator and battery pump

16.6.28 information screen for all important alarms and vital information

16.6.29 fault finding screen

17. CONTROLS AND INDICATORS IN DRIVERS CAB

In addition to chassis standard controls and indicators the following items shall be installed in drivers cab:

17.1 visual warning for the main current and PTO being switched on

17.2 visual warning for any of the equipment lockers being open

17.3 visual warning for the booms not being fully in travelling position

17.4 visual warning for the rear axle being locked (if the feature is installed)

17.5 visual warning for the outriggers not being in horizontal travelling position

17.6 switch with visual indication for rotating beacons

17.7 Switch with visual indication for siren unit.

17.8 microphone for the public address system

18. SAFETY DEVICES

18.1 All load bearing hydraulic cylinders shall be fitted with lock valves directly integrated in to the cylinder structure to prevent the booms, the working cage or the outriggers from retracting in case of a pipe or hose failure.

18.2 Retracting of any of the outriggers shall be automatically prevented as soon as the booms have been lifted from their travelling position.

18.3 Similarly lifting of the booms from the travelling position shall be prevented until the outriggers have reached the support width and ground pressure.

18.4 All boom movements have been limited at their most extreme positions thus making it impossible for the operator to reach an unsafe configuration by normal means of operation. The movements having direct influence on the stability of the aerial have all been fitted with two separate limiting circuits, the first one stopping that particular movement, the second one deactivating the whole electric and hydraulic system should the first circuit not have worked.

18.5 The major movements, lifting of the first and the second boom to their maximum elevation,

and extending the telescopic movement or lowering the second boom at the maximum outreach have been fitted with slow-down devices to provide smooth deceleration of the movement.

18.6 Starting of the chassis engine from any of the control panels of the aerial is prevented unless the gear is shifted to neutral.

18.7 Inadvertent damaging of the drivers cab by the first boom has been prevented by a system preventing lowering of the first boom and rotation movement when the first boom is near the drivers cab.

18.8 An overload warning has been fitted to give an audible and visual warning in case of exceeding the safe working load.

18.9 A collision guard (ultrasonic type) has been fitted to provide additional safety when operating in darkness or in dense smoke. This system stops all movements and gives visual warning when activated.

18.10 An emergency stop switch shall be fitted at all control panels to provide immediate and complete "freezing" of all systems in case of an unexpected emergency,

18.11 The control system shall be fitted with dead man switches to provide additional safety.

19 BODYWORK AND EQUIPMENT LOCKERS

19.1 The frame for the body work shall be made of Aluminium/stainless steel. The elements have been covered by non-slip aluminum plate strong enough to allow free movement of persons on it.

19.2 To provide easy access from the ground level there are steps on both sides of the vehicle and equipment lockers made of aluminum plates, painted and finally bolted onto decking element for easy removal if necessary. All lockers are fitted with automatic switches activating the lights as soon as the door is opened and also activating the warning in driver's cab to indicate that all doors are not fully closed.

20 WATER WAY SYSTEM

20.1 The water way system shall be completely made of non-corrosive material. The nominal diameter of the water way is minimum 75 mm and it leads from the rear of the vehicle where a 2 x 65 mm (2 .5") inlet one in each side is fitted through the centre post in the turntable up into the working cage where the water monitor is mounted. Along the booms, the piping is fitted between the first and the second booms to have a safe and protected place for it when driving on roads.

20.2 The centre post, which shall be mounted in the center line of the turntable, provides continuous rotation even if water supply is simultaneously used.

20.3 The piping shall be protected from possible over pressure by means of two relief valves mounted underneath of the turntable.

20.4 On the side of the first and second boom there shall be a telescopic water pipe, which is made of corrosion resistant material. Moving sections of this pipe have been externally ground and chromium plated to provide reliable function and long life span.

20.5 Seals between the sections are of low friction type and can be easily tightened if so required.

In boom pivoting points flexible, specially reinforced 100 mm pressure hose is used. All those are fixed to the pipe with reliable span-lock connections.

20.6 Piping ends at the right hand side at the front of the working cage where the water monitor is placed. A 75 mm valve is fitted in the cage to isolate the monitor if required.

20.7 There shall be an additional outlet with 65 mm (2.5") closing valve and coupling for water supply from the cage through an extension hose.

20.8 All fire hose couplings are according to customer's requirements.

20.9 There shall be drain cocks fitted in the piping to enable it to be drained after use.

20.10 On the front underneath of the cage there shall be nozzles of water spray curtain system to protect cage occupants from radiant heat. Control valve of water spray curtain system is conveniently located inside of the cage.

20.11 The water line shall be protected from possible over pressure by means of relief valves mounted underneath of the turntable set not less than 16 bar.

20.12 The cage shall be provided with 20 mtrs hose reel with Fog/Jet nozzle and shall be connected to main water line with control valve in the cage.

21 WATER MONITOR

Water monitor shall be connected on to the piping system and it is placed at the front side of the cage on the left hand side just outside of the railing. Due to the fact that the monitor is placed outside of the cage the entire cage floor area can be fully utilized in extreme rescue situations. The remote controlled monitor is made up of light alloy and fitted with jet/fog nozzle with maximum nominal capacity of not less than 2400 lpm, provided there is sufficient pressure and flow. The Monitor shall have Horizontal rotational movement to left and right side and also vertical up and down movement.

22 Pump

22.1 Midship mounted centrifugal type fire pump having 4000 lpm output at 10 bar made from bronze material shall be provided.

22.2 The fire pump shall be driven by suitable PTO having adequate power and torque to meet the output criteria of the pump.

22.3 4x63 mm delivery outlet (02 on each side) as per IS standard.

22.4 1x6” suction inlet (01 on each side) as per IS standard.

22.5 Min 3” line going to the working cage.

22.6 Pressure gauge for the pneumatic system.

22.7 Electric speedometer for the pump shaft.

22.8 Hour meter for the fire pump.

22.9 Pressure/Vaccum gauge

22.10 Pressure governor.

22.11 Fire pump rmp control.

23 INTERCOM

23.1 There shall be a fully transistorized talk-back intercom system fitted between the turn table and the cage.

23.2 The combined microphone and loudspeaker for hands free operation is located in the cage. The turntable control station shall also be equipped with microphone which is integrated in to the loudspeaker.

23.3 The microphone and the loudspeaker shall be sealed properly and it shall be protected from the ingress of water, dust and humidity.

24 ELECTRIC SYSTEM

24.1 The electric supply shall be taken from the chassis battery which is kept charged when the engine is running. Voltage of the system is 24 V DC and all circuits have to be fitted with their specific uses. When the main current is switched on, yellow flashing warning lights located at each outrigger boom pivoting point and underneath of the working cage are automatically switched on.

24.2 2x24 volts, 70 watts, spotlights with swivel mounting bracket shall be fitted at the cage railing in the front side to provide extra safety during night operation. The switch for the sleights shall either be provided on the light it sells for on both the control panels.

24.3 On each side of the drivers cab roof there shall be rotating beacons in red colour. The main switch for the beacons with suitable signal light is fitted inside of the cab in a convenient position for the driver.

25 SIREN AND PUBLIC ADDRESS SYSTEM

There shall be an electric siren unit fitted on the front bumper or behind the front grille. Control panel of the system is conveniently located for the driver and it includes switches for fast (yelp), slow (wail) and two tone (Hi-Lo) sounds. Command microphone, which is fitted with push-to-talk switch, allows the public address message to override the siren function. Operations shall be controlled by a switch in illuminated non-glare control panel.

26 ROTATING BEACONS

On each side of the drivers cab roof there shall be rotating beacons in red colour. The main switch for the beacons with suitable signal light is fitted inside of the cab in a convenient position for the driver,

27 DISPLAY UNITS

The system includes 3 full colour displays situated at outrigger center, at turntable and in working cage.

27.1 Colour display based on TFT technology, Transflective type. Good visibility in bright daylight and at night time (display is back lighted)

27.2 Size 6.5" , ratio 16:9 (wide screen)

27.3 400 x 240 RGB pixels, full colours

27.4 12 back lighted multi function membrane push buttons

27.5 Two warning LEDs

28 FAULT FINDING SYSTEM

28.1 Special attention must be focused on the defect sensitivity. If any way some faults appear, the location of the defective component is shown on the screen. The system shows location and nature of fault on screen. The system has simple test screens to enable testing of the working cage and the turntable control panels. The test covers display unit, push buttons, joysticks and control lamps. For maintenance purposes the following tools are available as standard:

28.1.1 Fault finding system and fault register

28.1.2 Status screens for sensors, switches, hydraulic valves, control lamp, etc.

28.1.3 Total operation and RPM-UP hour meters

28.1.4 Operation and RPM-UP hour meters since last service

28.1.5 Total movement counters for all boom movements (informed as seconds)

28.1.6 Service counters and alarm for general maintenance

28.1.7 Software verification management

29 PAINTING

29.1 Before painting all surfaces of steel structures shall be carefully shoot blasted after which they shall be primed. After the final top paint the dry film thickness of the paint coat is 100 microns. All booms shall be painted from inside.

29.2 To provide very high corrosion resistance hollow structures such as steel profiles of the working cage, cage boom and outrigger beams and housings shall be treated with anti-corrosion protection agent. Paint tones used for standard units are:

29.2.1 Working cage alluminium not painted

29.2.2 Working cage support, boom sections, turntable and related cylinders whiteRAL 9010

29.2.3 Mainframe, outriggers and bodywork red RAL 3000

29.2.4 Outrigger cylinders grey RAL 7046

29.2.5 Chassis frame touch-ups chassis original tone

30 ACCESSORIES

30.1 4 pc wooden outrigger ground pads with brackets

30.2 2 pc Working range diagrams, one at the turntable, one in the cage

30.3 1 pc marking of safe working load in the cage

30.4 2 pc Unit type marked at the boom

30.5 1 set Warning labels and instruction plates

30.6 2 sets Operation and maintenance manuals

30.7 I pc Plug for 24 V working light at the turntable and in the cage

30.8 1 pc 24 V/70 W working light with universal bracket

30.9 1 pc Lifting loop under the working cage, capacity 500 kg

30.10 2 sets Anchor points for safety belts in the working cage

30.11 5 pc Safety belts for cage occupants

30.12 1 pc Hydraulic pressure gauge

30.13 1 pc Quick action hose reel of 20m length with jet mounted at thecage

30.14 1 set Electronic Ultra sensor collision guard

30.15 1 set Stretcher carrier with stretcher

30.16 1 pc Load man Portable Falling Weight Deflectometer to check ground stability

30.17 6 sets three layered fire fighting suits (Blue color) confirming to EN469 with firefighting gloves, confirming to EN659, firefighting boots confirming to EN345, firefighting helmet confirming to EN 443, hood all certified to relevant EN (or equivalent) standards shall be supplied along with necessary test certificates.

31 OTHER ACCESSORIES

31.1 Radio (Wireless) Remote Control

The radio remote control can perform the same standard main functions as the stationary control center including all boom movements, engine start/stop, rpm for boom movement, horn and work lights, emergency stop, all water monitor controls, etc. It weighs about 2 kg including battery. Range is about 100m with standard antenna.

31.2 BREATHING AIR SYSTEM

A breathing air system shall be provided from turntable to working cage. At the cage there shall be a manifold with instantaneous couplings to connect the breathing masks. Air cylinders to supply the breathing air shall be mounted at the turn table. The cylinder capacity shall be such that they provide minimum 7000 L of free air Isolation valve shall be provided at suitable location so that the cylinder can be changed without interrupting the air supply. Pressure regulator as required shall also be incorporated in the system. Suitable face masks (4 nos.) with at least 4 spare face masks for breathing shall be supplied with the unit

32 STANDARD FEATURES INCORPORATED IN THE CONTROL SYSTEM

32.1 Ground pressure alarm:

When one outrigger has not enough ground pressure, the system gives an audible and a visual alarm. If two outriggers loose ground contact, unsafe boom movements are stopped.

32.2 Cab protection:

The cab of the truck can be protected to avoid damage by the booms or working cage. Working in front of the truck close to the cab is also possible. When arriving to the cab protection area, the movements of the booms are slowed down and stopped softly. Leaving the area is done by opposite movements. Cab protection can be override by push button.

32.3 Automatic drive of booms to transport position:

The booms can be lowered back to transport position automatically by pushing a single push button in a pre-set sequence.

32.4 Working cage automatically to middle position:

Working cage can be turned automatically to centre position.

32.5 Approaching speed:

Lower speeds of the boom movements shall have to be maintained for training and for general use by persons not very familiar with Hydraulic platform or when reaching the building very accurately.

32.6 Zero position of joysticks:

All joysticks must be in zero position before activation of RPM for boom movements,

32.7 Automatic switches off for the outrigger pressure:

Push button version of outrigger controls:

Outrigger pressure is automatically switched off if dead man pedal of working cage or turntable is pushed. Outrigger pressure is also automatically switched off after certain time delay.

32.8 Service time reminder:

The system gives an alarm when closing 250h (or every third month) or1000h (yearly) service time. The service time counter can be reset when maintenance is carried out.

32.9 Pressure and temperature of hydraulic oil:

Platform is equipped with electrical temperature and pressure sensors of the hydraulic oil. The temperature and pressure are shown in every display unit.

32.10 Tilt alarm:

If chassis is tilted or the unit is leveled incorrectly, the system gives an audible and a visual alarm in every display unit. The tilt alarm angle shall be adjustable.

32.11 Language and measure units of screens:

The system is based on clear and easy-to-understand symbols. If texts are used on master screens, the language shall be in English.

All measure units of master screens shall be in metric measures and can be changed to locally used format by operator.

32.12 Auto jacking:

Automatic leveling system is easy and fast way to make platform ready for operation. The system is fully automated and enables leveling within less than 40 seconds. The system performs very accurate leveling and has got safety circuits to assure that leveling is proper and platform is ready for safe operation.

This system is controlled by hand held remote control device. The device is equipped with following functions (back-lighted push buttons):

a. Left side outrigger beams out
b. Right side outrigger beams out
c. Automatic leveling
d. Outriggers back to transport position

32.13 Pressure of water in water line:

The platform can be equipped with water pressure sensors (according to customer's need):

a. water pressure in water inlet (>0.0 bar)

b. pumping pressure of water

c. water pressure in water monitor

The water pressure can be seen on water pump screen on every, display unit.

32.14 Water flow rate and total amount of water used:

Actual volume of water in water line shall be indicated. The water volume can be seen on water pump screen on every display unit. The system shows also the total amount of water used at one time (this counter can be reset when needed).

32.15 Wind speed meter:

A wind speed sensor shall be fixed in working cage and shall be at place also during transportation. Wind speed can be seen on every display unit. When wind speed is higher than allowed the system gives audible and visible alarm. The wind speed meter will not limit the use of the platform.

32.16 Indication of low fuel level:

There shall be a system gives an alarm to the operator when the fuel tank is getting empty.

32.17 Hydraulic Oil filters Service Indicator:

If any of hydraulic oil filters needs unscheduled service, a visual indication shall be shown on every display unit.

32.18 Hydraulic tank low oil level alarm:

There shall be a system gives an alarm to the operator when hydraulic oil level is too low in the oil tank.

32.19 Temperature of cage floor:

There shall be a system of temperature of working cage floor shall be seen on every display unit.

Note - The Committee also recommends that above mentioned technical specifications and other terms & conditions may be got verified /checked at length by Director Supply and Disposal department so that no litigation may arise later on.

Lalit Kumar	**Yadvinder Sharma**	**Rajinder Singh Dahiya**
Fire Station Officer	**Fire Station Officer**	**Assistant Divisional Fire Officer**

Sajjan Kumar	**Niranjan Kumar**	**Gulshan Kalra**
Assistant Divisional Fire Officer	**Works Manager HR**	**Deputy Director (Tech)**

ANNEXURE - A

SCHEDULES OF TECHNICAL PARTICULARS OF AERIAL LADDER PLATFORM 55 METERS HEIGHT WITH RESCUE LADDER.

Sr. No.	Technical Details	Remarks
1.	**GENERAL DESCRIPTION**: (a) Make and Model (b) Height (meters) (c) Outreach (meters) (d) Operating media (e) Safety (f) Gross Vehicle weight	
2.	**CHASSIS:** (a) Make (b) Model (c) Wheel base (d) Engine type (e) Rated HP (f) Type of clutch (g) Type of gear box (h) Type of front axle (i) Type of rear axle (j) Type steering system (k) Type of braking system (l) Fuel tank capacity (m) Size of tyres (n) Type of cabin (o) Type of electrical system (p) Type of PTO	
3.	**Constructional details:** **A: Driver Cabin:** (a) Paneling (material) (b) Doors (Nos.) (c)Windows (Nos) (d) Seats (Drivers, attendant, and crew)	

	(e)Capacity **B: Rear Body:** (a)Details of horizontal and vertical cross members (b) Panelling, sides, deck floor (material, size, thickness) (c) Details of lockers (nos, size, material) (d) Overall length in MM (e) Overall width in MM (f) Overall Height in MM (g) Details of Aluminium shutters (size, Nos)	
4.	**4. OPERATING REQUIREMENTS** (a) Safe working loading in cage (Kg) (b) Safe working load with Monitor in cage (Kg) (c) Lifting capacity of the under cage (Kg) (d) Testing suitability at (Kg) (e) Permitted wind speed at the maximum outreach with full working load in the cage (f) Operating time of full stroke (second) • Elevating fist boom / ladder • Elevating second boom/extending ladder • Telescopic • Reaching max height from ground level • For 360 degree rotation • For extending jack one side • For extending jack for both side • For extending all four jacks, elevating, cage to max height and rotation through 360 degree	
5.	5. **DIMENSION OF THE FINISHED APPLIANCE:** **A. In Operating Position:** (a) Max height to working cage bottom (M) (b) Max working height (Mtrs) (c) Max working outreach (Mtrs) (d) Max outreach to cage corner with max safe working load (Mtrs) (e) Max outreach below the ground level working cage bottom with max safe working load (Mtrs) (f) Safe working Load (Kg) (g) Rotation continuous (degree) (h) Levelling capacity (Fore and aft/ sideways) **B: In Transport Position:** (a) Transport height approx (Mtrs) (b) Transport length approx (Mtrs) (c) Transport width approx (Mtrs)	

6.	**6. CONSTRUCTION** (a) Material used (b) Use of timber (c) Use of rubber (d) Treatment of material (e) Painting procedure	
7.	**7. BOOMS** (a) Numbers (b) Telescopic sections (nos) (c) Boom / Ladder length (Mtrs) (d) Movement (e)Location (f) Design (g) Treatment (h) Welding process	
8.	**HYDRAULIC CYLINDERS:** **(a)** Lock valves (b) Hydraulic Dampers (c) Reduction in speed of booms / Ladder (d) Automatic prevention of retracting of outriggers (e) Lifting of Boom / Ladder prevention unless outriggers are in position (f) Limiting circuit to prevent cab damage (g) Emergency stop switches	
9.	**CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENT:** **(a)** Type of control valves (b) Make (c) Model	
10.	**TURNTABLE:** (a) Construction type (b) Fastening (slewing ring) (c) Swivel – in – line (d) Rotation (degree) (e) Movement control (f) Gear unit fastening (g) Location	
11.	**MAIN FRAME:** (a) Frame type (b) Fastening (c) Construction material (d) Non slip aluminium tread plates	

	(e) Steps on both sides (f) Location	
12.	**CAGE:** (a)Material (b) Outer dimensions (MM) (i) Length (ii) Width (iii) Height (c) Doors, Nos., & size in (MM) (d) Max Load (Kg) (e) Fitment to control panel (f) Provision for digital anemometer (g) Levelling device (h) Working cage slewing provision (i) Drop down platform provision (j) Location of drop down platform (k) Max permissible load on drop down platform (Kg) (l) Safety railing provision, height (MM)	
13.	**STABILISING JACKS: OUTRIGGER:** (a) System (b) Controls and Operation (c) Nos. and Location (d) Individual controls (e) Level indicators (f) Self alignment foot plates for outrigger (g) Operation on uneven ground (h) One side jacking provision	
14.	**CONTROL AND SAFETY:** (a) Electric control taken from vehicle battery (b) Voltage (c) All control panels to have engine start/ stop button (d) Signal lamps	
15.	**DETAILS OF SAFETY DEVICES:** (a) Boom/ Ladder and Outrigger cylinder lock valve make & type (b) Isolating system boom/ ladder/ outrigger operation (c) Movement limiting system (d) Cab protection (e) Overload alarm (f) Emergency stop system (g) Dead man switch (h) Bleed down system/other system	

16.	**HYDRAULIC SYSTEM:** (a) Hydraulic power, make & model of pump (b) Pump capacity Ltrs/min and pressure (Kg/cm2) (c) Pump operation (d) Control valve function (e) Oil flow to increase (automatically) (f) Prevention of overloading (g) Instant couplings for manometer (h) Manometer (i) Filtration of oil (j) Filters (k) Hydraulic cylinder type (l) Plating of piston rod (m) Hydraulic cylinder type (n) Fastening (o) Capacity of hydraulic oil type	
17.	**BACKUP FOR HYDRAULIC SYSTEM:** (a) Type (b) Location (c) Operating mode	
18.	**CONTROLFOR STABILISING JACKS:** (a) Location of control panels (b) Change over switch (c) Control levers (d) Emergency lowering valves (e) One side jacking facility	
19.	**WATER PIPING SYSTEM:** (a) Material of piping (b) Diameter of pipe (MM) (c) Water monitor location (d) Piping fitment (e) Protection against over pressure by relief valve (f) Telescopic water pipe (g) Finish & plating (h) Seals (i) Flexible hose (j) Monitor isolating valve (k) Additional outlet with valve and coupling (l) Nozzle and system (water curtain) (m) Control valve location (n) Water monitor (o) Location	

20.	**ELECTRICAL EQUIPMENT:** (a) Slip rings (b) Rating (c) Spotlight (d) Red rear lamps nos. (e) Red/ Orange lamp at boom/ ladder knuckle (f) Illumination of: (i) All control panels (ii) Instruction plates (iii) Leveling indicators (g) Recharging (h) Separate fuses (i) Wiring diagram	
21.	**INSTRUCTION PLATE: DETAILS**	
22.	**BOOM / LADDER:** (a) No of telescopic section (b) Location (c) Min. width at top (MM) (d) Railing height (MM) (e) Folding bridge (f) Material (g) Treatment (h) Controlling system	
23.	**INTER COMMUNICATION SYSTEM:** (a) Type (b) Make (c) Model (d) Operating voltage (e) Location	
24.	**ELECTRIC POWER LINE :**	
25.	**GRAPHICAL DISPLAY MONITOR : (Details)**	
26.	**FAULT FINDING SYSTEM (Details)**	
27.	**EMERGENCY SYSTEM** (a) Make & Model of Engine & pump set (b) Capacity of pump (Ltrs/Min) (c) Make & Model of electric motor operating voltage (d) Make & Model of pump set with capacity (Ltrs/Min) (e) Bleed down system/other system	
28.	**LUBRICATION: Details**	
29.	**BODY WORK** (a) Steps and grab rail (b) Construction	

	(c) Material (d) Siren with two tone hooter + Public Address system (e) Orange beacon lamp	
30.	**FINISH** (a) Painting (b) Visibility	
31.	**TOOL KIT DETAILS: SEPARATELY**	
32.	**STABILITY**	
33.	**TESTING FACILITIES**	

Brief Description of Procuring:

Sr. No.	Description of Stores	Quantity in No.	Place of Delivery
1	**SUPPLY, DELIVERY, MOUNTING, TESTING AND COMMISSIONING OF AERIAL LADDER PLATFORM 42 METERS HEIGHT WITH RESCUE LADDER WITH 03 YEAR DEFECT LIABILITY PERIOD AND 03 YEARS COMPREHENSIVE MAIN TENANCE CONTRACT FOR FIRE FIGHTING AND RESCUE OPERATION. EURO-VI**	**03**	**Anywhere in Haryana**

A. ELIGIBILITY OF SUPPLIERS:

1. Bidder should be either manufacturer or Authorized Distributors who have obtained written permission from manufacturers only.
2. Documentary evidence establishing that the manufacturer has supplied minimum 5 Nos. aerial ladder platforms, hydraulic platform of required model with same OR Higher working capacities, specifications and features as specified in the schedule of requirements. (Copy of Supply Order, copy of Certificate regarding satisfactory supply of the items issued by their purchasers, etc. should be enclosed).
3. Copy of the Audited Annual Accounts for the last 5 years to prove an annual turnover of at least Rs. 40 Crores (Rupees Forty Crores only) or equivalent foreign currency in any of the last 5 financial years.
4. The manufacturer should be ISO 9001 Certified Company.
5. Documentary evidence showing that the bidder is manufacturer of the tendered item. If the bidder is an authorized agent, the Manufacturer Certificate in this regard should be enclosed. The Manufacturer has to issue a certificate to the effect that they will take responsibility if Indian agent fails to attend service or if there is any change in Indian Agency during Warranty/CMC period. Certificate from the Manufacturer to continue/accept Service Contract at the rate mentioned in the purchase order in the event of change in Indian Agency to be submitted.
6. Documentary evidence showing that the offered model is approved by appropriate accredited 3rd party authority as per the EN 1777 Standards specified in the Technical Specification.
7. Documentary evidence established in accordance with criteria mentioned at sr. No. 8, that the goods and ancillary services to be supplied by the Bidder confirm to the goods and services as mentioned in the Bidding Documents. Scanned copy of the duly signed specification compliance statement shall be uploaded along with the offer, and the statement should be complete in all the details of specification. The bidder should upload the statement with complete details of specification even though there is no deviation for the product from the Technical Specifications.

8. Pursuant to criteria mentioned at Sr. No. 7, the bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the bidding document of all goods and services which the bidder proposes to supply under the contract.

   The documentary evidence of the goods and services eligibility shall consist of statement in the price schedule on the country of origin of the goods and services offered which shall be confirmed by a certificate of origin at the time of shipment.

9. Declaration by the bidder on Stamp Paper worth Rs.100 to the effect that he/his partner/s or any of his directors is not involved in any Vigilance Case registered in connection with any supply made to any Central/State Governments/ Boards/corporations in India (Optional for the bidders from India only).

10. The bidder should not be black listed from any Central/State Governments/ Boards/corporations in India/ any other country or no Criminal Case is registered against the firm or its owner or partners. The bidder will submit self-certification in this regard.

SPECIAL TERMS AND CONDITIONS:-

1. The manufacturer/supplier shall impart necessary training to 6-10 person/fire staff for minimum 30 days at his risk and cost for every vehicle anywhere in Haryana). After completing the successful training period, he will issue a certificate to the trainees in this regard.
2. The manufacturer/ supplier shall supply Aerial ladder platform anywhere in Haryana at consignee's place at the cost of supplier/ Manufacturer.

3. PAYMENT TERMS/PENALTY:-

A. For Imported Item

(i) A irrevocable Letter of Credit (LC) confirmed by the first Class Bank in the seller's country in favour of the supplier for 100% of the CIF amount shall be opened by the purchaser. L/C charges shall be to purchaser's account including confirming charges, which shall be borne by the purchaser out of the 100% payment (AO).

(ii) 90% (Ninety Percent) of the CIF component will be released against submission of documents along with satisfactory certificate of pre-dispatch inspection.

(iii) Remaining 10% (ten percent) payment shall be payable after satisfactory installation/demonstration of the goods at the premises of end-user department and receipt of certificate for same from end user department. In case of LC, all bank charges (including LC confirmation charges) payable outside India would be to Seller's account.

Payment Against the letter of Credit/Wire Transfer for 90% of the value will be available against presentation of the following documents and also on proof of evidencing of shipment.

a. 3+3 Complete set of Original Clean Bill of Lading. The Bill of Lading shall be in the name of Director General, Haryana Fire & Emergency Services, Haryana, Bays No. 55-58, Sector-2, Panchkula, State Haryana, Postal Pin Code 134112, , India AND MARKED FREIGHT PREPAID.

b. Signed invoice in three copies giving letter of credit No., Order No. and date respectively. The invoice shall be in the name of: Director General, Haryana Fire Services, Bays 55-58, Sector-2, Panchkula 134112, Haryana, India. Invoice shall have goods description, quantity, unit price, total amount.
c. Certificate of satisfactory Pre-dispatch inspection report and Supplier factory inspection report.
d. Certificate showing goods of ORIGIN issued by of Commerce or Equivalent Body in Duplicate.
e. Specifications and Packing list – three copies.
f. Manufacturer's guarantee certificate – three copies.
g. Certificate from the manufacturer to the effect that the goods conform to the manufacturers standards and are new (Production Month in Year 2023) and free from any latent or patent defects and are strictly as per Specifications mentioned in STC's Order.
h. Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies.
i. Copy of FAX MESSAGE/proper communication marked to General Imports Division, sent by the seller within 24 hours of issuance of Bill of Lading to buyer notifying the details of the BL No., Goods freighted, total invoice value, Name of the Shipping Line loading port and date of departure of the vessel and expected time of its arrival at the Indian Port.
j. Certificate from the seller that one set of non-negotiable documents mentioned under I to IX above has been airmailed/couriered to the following within 10 Days of departure of the vessel in addition to one set of non-negotiable document sent with the vessel to:

   Director General, Haryana Fire & Emergency Services,
   Bays 55-58, Sector-2, Panchkula 134112, Haryana, India

B. IN CASE OF MANUFACTURER IS BASED IN INDIA.

Payment for domestic supply via RTGS for 100% value will be available against presentation of the following documents:-

a. Signed and stamped invoice (Three original) giving details of order number and date. The invoice shall be in the name of the Director General, Haryana Fire Services, Bays 55-58, Sector-2, Panchkula 134112, Haryana, India and end-user department as a consignee. Invoice shall have goods description, quantity, unit price, total amount.
b. Receipt of certificate of satisfactory installation, demonstration & training of the Equipment to be issued by the end-user department.
c. Three copies of Satisfactory Pre-Dispatch Inspection certificate issued by the nominated inspection agency and the Supplier factory inspection report.
d. Specifications and Packing List – Three copies.
e. Authorized Dealers / suppliers guarantee certificate – Three copies.
f. Manufacturer's/Supplier's guarantee certificate – Three copies.

g. Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies.
h. Payment shall be made in Indian rupees or in freely convertible foreign currency for imports. In case of local supply or certain items are locally supplied for an otherwise imported item, the same shall be quoted in INR and the payment for same shall be made in INR only.
i. All the bills relating to custom duty, insurance, warehousing, handling, transportation etc., should be raised in the favour of the Buyer.

C PENALTY

The firm/contractor fail to deliver or dispatch any consignment within the period prescribed for such delivery or dispatch stipulated in the supply order, the delayed consignment will be manufacturer or supplier will be subject 2% penalty per consignment per month recoverable on the value of the stores supplied. The other details will be as per provision contained in **Sr. no. 14 of "Schedule-'B' Condition of Contract" of DIRECTORATE OF SUPPLIES AND DISPOSALS, HARYANA**

4. BID PRICES:-

I. The bidder shall indicate on the appropriate price schedule of the Price bid the unit prices and total bid prices of the goods it proposes to supply under this contract and in case of goods of foreign origin in F.O.B. (free on board) and CIF (cost, insurance and freight) cost. All the columns shown in the price schedule should be filled up as required. If any column does not apply, the same should be clarified as "NA" by the bidder. In case there is no column for a particular component/item/service in the price schedule, the same should be mentioned by the bidder and price should be accordingly quoted.

a. If offered from within India:
The rate quoted shall be inclusive of all duties, taxes other levies payable by the Firm/Agency as per State /Central Government rules applicable in India. However, the breakup of the price shall be indicated in the price bid. GST and any other statuary duty, tax levy etc., shall be paid to the seller as per the rate applicable on the date of supply on actual basis.

b. If offered from outside India:
The custom duty as applicable shall be paid on actual by the Haryana Fire & Emergency Services, India (the consignee).

II. Prices indicated on the price schedule shall be entered separately in the following manner: The price of the goods, quoted ex-factory, ex-showroom, ex-warehouse, or off-the-shelf, or delivered, as applicable, including all duties and sales and other taxes including transportation, installation, commissioning at site and all operational and incidental charges etc., However, the breakup of the price shall be distinctly indicated in the price bid.

III. The Bidder's separation of the price components in accordance with Para 4(I)(a) and 4(I)(b) above will be solely for the purpose of facilitating the comparison of bids by the Buyer and will not in any way limit the Buyer's right to contract on any of the terms offered.

IV. Fixed Price: Price quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

5. BID CURRENCIES:

Price shall be quoted in the following currencies:

a. For goods and services which the Bidder will supply from within the Buyer's Country, the prices shall be quoted in Indian Rupees: and

b. For goods and services which the bidder will supply from outside the Buyer's country, the prices shall be quoted either U.S. Dollars or in the freely convertible currency.

c. Payment of services like insurance, warehousing, custom clearance, handling, transportation etc., within India shall be paid as per actual.

Further a Bidder expecting to incur a portion of its expenditures in the performance of the Contract in more than one currency, and wishing to be paid accordingly, shall so indicate in his/ her / their bid. In such a case, either (i) the bid shall be expressed in different currencies and the respective amounts in each currency together making up the total price, or (ii) the total bid price shall be expressed in one currency and payments required in other currencies expressed as a percentage of the bid price along with the exchange rate used in such calculation.

6. SCHEDULE OF PRICES AND QUANTITIES:

a) The rate of taxes / duties and custom duties applicable on the date of submission of tender shall be clearly shown in the tender.
b) The charges for transportation/insurance and other incidental expenses for the delivery of the equipment to shall be included in the cost.
c) The cost on account of training to the Officers/official of Haryana Fire & Emergency Services, India for one week at the factory premises of equipment manufacturer shall be included in the cost.
d) The price and the cost stated in the tender shall be in Indian Currency only.
e) The prices quoted by the bidder shall be fixed and firm during the contract and no other price variation will be allowed under any circumstances. The tender submitted with variable price will be treated as NON RESPONSIVE and will be rejected outright.

7. TAXES AND DUTIES

a) Suppliers shall be entirely responsible for all Central or State (in India & country of origin) or any other taxes, duties, license, levies, duties, fees, etc. incurred until delivery of the contracted goods to the Buyer.

b) The rates quoted by the bidder shall be inclusive of the sales and other taxes that the bidder will have to pay for the performance of this contract. The Buyer will effect the deduction of such taxes at source (TDS) as per applicable law prevalent.

8. **Prices**: The rates are on consignee destinations basis anywhere in Haryana at supplier's risk (FOR),

9. ***Custom DUTY:-*** *Exclusive, if any*

10. ***Freight Charges:-*** *Inclusive, if any*

11. ***Delivery Period:-*** *Period of Delivery of Equipment / Goods in complete manner as specified: 8 (eight) months from the issue of Letter of Award.*

12. *BREAKDOWNS* DURING WARRANTY:-

Warranty period will be of 36 months of both the superstructure and chassis, the supplier will be responsible to provide service and maintenance during warranty period as and when required at the place of respective instruments stationed

The supplier shall attend/rectify the defect within 72 hours of any break down, period for more than 10 calendar days, shall be added to the warranty period. Penalty @ Rs. 25000/- per day for any delay will be applicable on all minor disorders after 7 days of complaint registered by the purchaser whereas for all major breakdowns after 30 days. The supplier should provide the service report (type/cause of break down) to respective officer.

Maintenance and After Sales Services

Your service engineer will service the full vehicle including chassis in every quarter (every 3 months) at purchaser's site free of cost during warranty period. The manufacturer of chassis and as well as superstructure shall also guarantee for the supply of spare parts & service for a minimum period of 15 years from the date of commissioning of vehicle at site.

13. **INSPECTION:** The Government Authorized representatives (max. 7 persons) will carry out the inspection and the testing of fully built vehicle in factory premises of the vehicle manufacturer prior to dispatch. The travelling and accommodation cost shall be included in the basic cost of the vehicle. It is obligatory to the supplier to provide all the assistance and equipment for the inspection and testing of the vehicle at the premises.

14. AFTER SALES SERVICE PROVIDING

Manufacturer shall have their sales & service network in India through their authorized agency/ representative/distributor. That agency/representative/ distributor shall have enough experience in Vehicles segment with full fledge manufacturing/fabricating the Vehicles. If that agency/representative/ distributor is not a manufacturer of vehicle then service engineer should have at least experience of 3 years for servicing of such type of vehicles. If agency/representative /distributor are a manufacturer they have to submit trade license along with tender document otherwise they have to submit the service contract certificate between this agency and the

end user to prove their experience. To substantiate, Indian agent/representative/ distributor shall furnish the authorization letter in original with tender documents.

15. R. T. O. REQUIREMENTS:

The vehicle shall be equipped with all the accessories required for registration of the vehicle and shall conform to Motor Vehicle Act 1988 and Central Motor Vehicle Rules, 1989 or the any amendment incorporated from time to time.

The chassis shall be homologated from the appropriate authority in India incase not already an approved model or shall be supplied with COP (Conformity of Production) issued by approved testing agency.

16. DEVIATION:

Any deviation / departure from the above specification shall be pointed out separately with detailed explanation.

17. SPECIAL TECHNICAL DOCUMENTS:

1. The documentary evidence of the goods and service's conformity to the bidding documents may be in the form of literature, drawings, data etc. The bidder shall furnish:
2. A detailed description of the goods and the essential technical and performance characteristics of the goods.
3. A clause by clause commentary on the End-user's technical specifications of the goods and services and bidders' offer for the goods and services substantiating compliance to those specifications or deviations and exceptions from / to the Technical specifications.
4. For purpose of the commentary to be furnished pursuant to condition mentioned above, the bidder shall note that standards for workmanship, material and goods, and references to brand names or catalogue numbers designated by the End-user in its technical specifications are intended to be descriptive and indicative only and not restrictive. The bidder may offer alternate standards, brand name and /or catalogue numbers in its bid, provided that the same are to the End-user's satisfaction that the substitutes are substantially equivalent or superior to those designated in the Technical specifications.
5. Documentary evidence of list of work order in hand at the time of submission of tender.
6. Bidder shall attach the Product Brochures, Technical Literature, catalogues, drawings, illustrations etc. in the bid.

Technical specifications of fabrication and supply of Hydraulic Platform of 42 meter height with rescue ladder for firefighting and rescue operation with five years comprehensive maintenance contract

1. **GENERALREQUIREMENT**:

1.1 This specification covers Hydraulic Platform with height of 42 m with rescue ladder. The Hydraulic Platform shall be designed specifically for the purpose of firefighting and rescue to enable firemen to go up over and above the other side of any obstruction. It shall comprise of main boom with Telescopic sections and Articulated Booms with Telescopic sections and cage mounted at the end of the boom and the entire unit shall be mounted on a Turn-Table on a Right hand driven Heavy Duty Diesel-Engine chassis 230-300 hp, EURO VI engine with fully factory built cabin and suitable capacity PTO. The Vehicle Chassis shall be BSVI(EUROVI) emission norms compliantand in general shall meet the CMVR norms OR shall have the EC-type approval/Conformity of Production certificate (COP).

1.2 The Hydraulic Platform shall be designed as per the designed, operational stability and structural strength based on the criteria laid in EN1777 and other norms and standards applicable for elevated raised platforms used for Fire Fighting and rescue operations. The manufacturer should be ISO 9001 Certified Company. In last 5 years, the manufacturer should have supplied minimum 05 hydraulic platforms of 42 mtrs with rescue ladder and above for fire and rescue operation. Performance certificates for minimum 2 such vehicles; preferably from Fire Services/Emergency services shall be submitted.

1.3 The Hydraulic Platform shall be capable of use at any angle of main boom elevation without any reduction of load capacity of the cage. It shall also rotate 360 degree at any angle of elevation as well as below ground level subject to boom remaining clear of vehicle body and or any obstruction.

1.4 The appliance shall be compact and fast on the road and easily maneuverable in the crowded streets and around sharp corners. The overall dimensions shall not exceed the limits specified herein.

1.5 Typical weight with chassis, G.V.W. (maximum) with standard specification should be in-between 20-30 ton

1.6 The working height of the Hydraulic Platform shall 42 meter from the Ground and the Horizontal outreach shall not be less than 16 meter at 500 Kg cage load. Working reach below the ground level should not be less than 5 meter.

1.7 Safe cage working load without water discharge should not be less than 500 Kg whereas with water discharge should not be less than 250 Kg.

1.8 Nominal water discharge capacity of cage monitor with adequate water supply should not be less than 2400 liters per minute.

1.9 The Hydraulic Platform shall be electro hydraulically controlled, permitting precise and easy operations under the most difficult conditions, with ample reserve strength and stability.

1.10 Full safety interlocks shall be incorporated in the design so as to ensure complete safety in operations and long years of reliable and trouble free service, as far as possible the system shall be fail proof.

1.11 The design of the platform shall allow a very large safety margin for extreme operating and climatic conditions. The safe working loads ratings shall include an allowance for the weight of water system and the reaction from the monitor jet while operation.

1.12 The Vehicle shall have a leveling system to adjust axial and transverse movement to an angle of minimum 5 degree and it shall be automatic in nature.

1.13 There shall be a full back up system for all boom movements and out rigger movement in case of failure of main system.

1.14 The Complete Movement of the platform shall be computer controlled and the system shall be checked for interference sensitivity.

1.15 The Control system of the platform shall be fully tropicalized and be able to operate in the temperature range up to+60 degree centigrade and in a dusty and Humid condition without reducing the maximum operating limits. The manufacturer of ALP shall submit a undertaking confirming the same**.**

1.16 Schedules of technical particulars of Hydraulic Platform of 42 meter height to be provided in Annexure-A

2. CHASSIS:

2.1 The Chassis shall be VOLVO/ MERCEDES BENZ/ MAN/SCANIA/TATA/ASHOK LEYLAND/ EICHER/BHARAT BENZ/MAHINDRA make having suitable axle and Wheel Base fully factory built cabin and suitable capacity PTO. The Vehicle Chassis shall be a Right Hand Drive and shall comply BSVI (EUROVI) emission norms.

2.2 The Chassis shall be homologated from the appropriate authority in India in case not already an approved model OR shall have the EC-type approval/Conformity of Production certificate (COP).The chassis manufacturer must have production facilities in India to ensure after sales support for the chassis.

2.3 The engine shall be minimum six cylinders, in line, Diesel with direct injection, turbo charged with inter cooler.

2.4 The engine shall develop 230-300 HP.

2.5 The gearbox shall be manual-or with automated gear system with suitable Power Take Off to drive the hydraulic pump.

2.6 Rear Axle shall be fitted with suitable sized tyres and differential lock between the wheels and axles as necessary.

2.7 Chassis frame shall be 'C' Channel section made of high strength steel with cross members.

2.8 The Steering shall be integral power steering.

2.9 The Front and rear Suspension shall be leaf spring type or as suitable for chassis.

2.10 The Brakes shall be dual circuit air brakes with parking brakes acting on rear wheels.

2.11 Fuel Tank- Capacity shall be min 300 ltrs with lockable fuel cap.

2.12 The Chassis shall be provided with Radial tyres of suitable size as per load on axles with spare tyres one each for dead & live axles.

2.13 The chassis shall be provided with single day type cab with RED colour, made from high strength steel fully trimmed, external panels hot dip galvanized with hydraulic cab tilting mechanism. The Cab suspension shall be provided with coil spring and shock absorber. The cab shall be provided with adequate ventilation, rearview mirrors, windscreen and windows, adjustable driver seat, wiper system and along with all other standard fitments.

2.14 The Electrical system shall be 24V, with suitable capacity batteries & Alternator for charging the batteries.

2.15 The chassis shall be supplied with standard tool kit, hydraulic jack of 20 ton -30 ton capacity, operator &workshop manuals.

2.16 The Chassis shall be fitted with gearbox mounted, suitable capacity Power Take Off Unit to drive the hydraulic pump for boom movements.

2.17 Suitable power take off unit shall be installed to drive the centrifugal fire pump. The hydraulic pump and fire pump shall work simultaneously.

2.18 The Chassis shall be directly procured by the tenderer confirming to above.

3. MAIN OPERATING DATA

3.1	Min. working height	-	42 m (±2%)
3.2	Min. height to working cage bottom not less than	-	40 m (±2%)
3.3	Min. working outreach at 500 kg cage load not less than	-	16-20 meter
3.4	Min. working reach below the ground level	-	05-10 m
3.5	Safe working load (without water discharge) 500 kg, (with water discharge – 250 kg)		
3.6	Min. Nominal water discharge capacity of water monitor (with adequate supply pressure) 2400 l/min		
3.7	Rotation, continuous 360°		
3.8	Transport height (depending on chassis)	-	4.0-4.2 m
3.9	Transport length (depending on chassis) up to	-	10-12.5 m max.

3.10 Transport width 2.6 m max.

3.11 Typical weight with chassis, G.V.W. (standard specification approx) - 20-30 ton max

3.12 Operations at maximum outreach with Full working load permitted in wind speed up to 10.0 m/sec

3.13 Maximum width of the vehicle when Jacks are fully extended on both sides 5.5-6 mtr.

3.14 Operating time at full stroke for all operations: EN1777Compliant

4. CONSTRUCTION:

The appliance shall be robust in construction; materials used in construction shall be carefully selected for lightness and durability. Use of timber shall be restricted in body work and use of rubber shall be avoided as far as possible. Ferrous metal parts shall be treated for anti- corrosion by a method other than electro-plating.

5. BOOMS

5.1 The vehicle shall perform the following functions/operations

5.1.1 Elevation

5.1.2 Depression

5.1.3 Extension &housing of telescopic sections

5.1.4 Rotation360 degree in either direction

5.2 All the operations shall be electro-hydraulically operated with the help of hydraulic cylinders, wire ropes, chain etc. The systems hall be purpose built to provide smooth take off, variable speed range and smooth slow down, based on the criteria laid down under EN 1777

5.3 There shall be Minimum two booms, of which the first and the second one are with telescopic, extension providing direct movement. All booms move vertically. The design provides an up-and-over capability of approx. 05 meter–m throughout its vertical movement.

5.4 The booms shall be designed and welded to provide high durability and extreme accuracy. For high strength and minimum flexing of the boom sections only high tensile strength steels are used as load bearing structure.

5.5 The booms shall be welded by the unique plasma welding method to provide high durability and extreme accuracy. For high strength and minimum flexing of the boom sections only high tensile strength steels must be used as load bearing structure. Welding quality certificate of ISO 3834-2 for load bearing steel structures for mobile hydraulic aerial appliances shall be submitted along with the offer from an independent notified certifying agency without which the offer will be rejected.

5.6 The telescopic sections of the booms move synchronized i.e. there are no intermediate

jerks when the extension / retracting are operated. All sections are fitted with adjustable guides to provide smooth and accurate movement.

5.7 Different maintenance objects are located well at hand either outside the boom or behind easily removable covers.

5.8 All booms are internally and externally primed and painted for long life span.

6. CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENTS

All boom and rotation movements shall be controlled electro-hydraulically by means of proportional valves. Thanks to the proportional principle the control function is not sensitive to changes of ambient or oil temperature, thus providing smooth, safe and very accurate movements even in most severe operating conditions. All control movements can be performed by the remote control system from both control panels. The side outreach is performed by the position of the outriggers. The variable system contains also displays at all three control stations. The displays give the real-time information about the outreach and the cage position and also show possible movements according to cage position by animated arrows. There shall be different views on each display;

6.1 Outreach preview

6.1.1 Real time outreach and cage position with guidance information

6.1.2 Main outreach with two views (side and up)

6.1.3 Fault finding system

6.1.4 Statistic information

6.1.5 Tools screen (personal settings)

7. HYDRAULIC CYLINDERS:

7.1 The Hydraulic cylinders shall be double acting, fitted with lock valves so as to prevent booms, working cage from lowering or the out riggers from retracting in case of pipe or hose failure.

7.2 The cylinders shall be provided with automatic dampers to prevent the pressure shocks and shall dampen the movement when a mechanical stop is reached.

7.3 Retraction of the outriggers shall be automatically prevented as soon as the booms have been lifted up from their transport position by way of electrical OR Hydraulic interlock system.

7.4 The piston rods of the jack cylinders have to be fully enclosed with in rectangular steel profile in order to protect piston from damage caused by any external impacts.

7.5 Lifting of the booms from the transport position shall be prevented before the outriggers are in support position and there shall be a limiting circuit to prevent damage to the Drivers cabin by the first boom when not clear of the cabin.

7.6 All the movements shall be automatically limited in their extreme position and the working cage shall be prevented from working outside of the permitted working range in any position.

7.7 An emergency stop switch shall be provided on both control panels, which shall switch off the hydraulic pressure of all movements and shall stop the vehicle engine. The unit shall be supplied with a Emergency Hydraulic Back-up System.

8. TURNTABLE

8.1 The turntable shall be a fully integrated steel structure. The centre post containing slip rings with double pins for electrical connections, 100 mm corrosion resistant water way and hydraulic pressure and tank lines allows continuous rotation of the turntable.

8.2 Rotation reduction gear with automatically operating braking system shall he installed at the turntable for easy maintenance and adjustment. The hydraulic motor powering the rotation movement is fitted directly into the gear for high reliability.

8.3 At the left hand side of the turntable there is the lower control station which rotates automatically with the turntable.

8.4 The hydraulic distributor (center post) shall be mounted in the center of the turntable at an accessible position and shall carry the hydraulic pressure and return lines, electrical supply lines &waterline allowing continuous rotation in either direction.

8.5 The fasteners retaining turntable to the rotation mechanism shall be of proper grade and shall be torque properly. The rotation gearbox fastener shall be of proper grade and torque with proper backlash.

8.6 There shall be provision for the manual rotation of turntable in case of failure of hydraulic system.

8.7 Pins securing the hydraulic cylinders to boom and turntable shall be properly installed and secured.

8.8 The hydraulic hoses, tubing and connections provided in the turntable shall be free from kinks, chaffing or leaks.

9. MAIN FRAME

9.1 The main load bearing element of the aerial device shall be the strong main frame which shall take all the loads caused by the operation of the aerial.

9.2 The main frame shall be fixed onto the chassis frame with bolts in such a way that chassis performance and durability are maintained.

9.3 The front fixing bolts shall be fitted with springs to allow the chassis frame beams to flex when the outriggers are fully down, thus avoiding any stress concentration in the chassis beams.

9.4 The actual main frame shall be fully welded steel structure providing high stiffness and thus maximum comfort ability and operational safety.

10. STABILIZING SYSTEM/JACKING SYSTEM

10.1 The stabilizing system shall consist of four hydraulically powered outriggers mounted in their housings in the main frame. Each housing is fitted with adjustable guides to provide smooth and accurate movement of the outrigger beam. The horizontal beam is a completely

closed steel profile enclosing the hydraulic cylinder for the horizontal movement and the hydraulic hoses for the cylinder of the vertical movement thus completely protecting those devices from external damage.

10.2 The cylinder for vertical movement is mounted so that the piston rod is protected inside the vertical beam in order to avoid damages.

10.3 The H-type outriggers have been chosen for their ability to stabilize the vehicle from behind obstacles and to be placed on raised structures as necessary. Each vertical jack is fitted with self-aligning foot plate to distribute the load evenly and to allow operation on uneven ground.

10.4 The stabilizing system also includes a rear axle locking system in such cases where it is required for meeting the stability criteria.

10.5 All controls for the entire stabilizing system are located in dust and water proof locker at the rear of the vehicle. The automatic jacking with a control box assures that the outriggers are always visible to the operator.

10.6 In the middle of the control panel there shall be following additional control devices:

10.6.1 starting of chassis engine

10.6.2 stopping of chassis engine

10.6.3 Outrigger and outreach display with fault finding system

10.6.4 Operating hour and rpm-up gauge in the display

10.6.5 Switch for the battery driven back-up for the hydraulic system

10.6.6 Visual indicators for leveling of the vehicle (longitudinal and transversal)

10.6.7 Emergency stop

10.6.8 Controls for the automatic jacking

10.7 The locker containing outrigger controls is fitted with an automatically operating door switch and light for night operation.

11. ELECTRONIC SAFETY AND OUTREACH SYSTEM

11.1 The Electronic System shall make it possible to select the working cage load according to working situation. With these variables the system selects automatically the maximum allowed outreach to front, rear, right and left side. Since this is based on calculations and parameters saved in the system it will guarantee exactly the same outreach regardless of the external influences like wind speed and direction, temperature, friction of the cylinders, etc.

11.2 The display units of the system show maximum possible outreach and position of the working cage in real-time. There are also many additional features included in the display unit All electrical components in the system are doubled.

11.3 The electronic system shall be approved according to the valid standards and directives. Relevant independent test certificates to be submitted with offer.

12. CAGE:

12.1 The working cage shall be fixed to the boom with proper pivoting point so as to provide highest possible degree of natural safety.

12.2 The working cage is made of tubular steel Aluminum profile and welded together The dimensions of the working cage are 1.0 m (length) x 2.0 m (width) x 1.1 m (height)(with +/-10% tolerance for each) and it is fitted with two doors, one located at the side to enable safe access from the ground in travelling position and the other one located at the front for safe access in case of a rescue. Safe working load is 500 kg when no water is discharged.

12.3 The cage load can be changed from display unit and the selection of load can be possible from turntable and cage control center. The chosen cage load can be displayed by clear symbols and numerically in selected format on all display units. The selected cage load shall be shown preferably by graphic bar.

12.4 When the load selection is made at turntable or cage the system shall automatically show the maximum outreach to all directions with selected cage load and outrigger position.

12.5 The control panel in the cage shall be fitted in such a way that the operator shall see the booms clearly tall the times.

12.6 The working cage shall be kept horizontally leveled in any position of the booms including the travelling position which makes it possible to the firemen to enter the working cage before the booms are lifted. This feature makes it possible to start the operation without losing valuable time by taking the cage on to the ground first.

12.7 The leveling system shall be controlled by an automatic horizon monitoring device with two fully automatic and independent safety circuits in case of an uncontrolled leveling failure. There is a master switch for the automatic leveling system, thus it can be isolated and the manually controlled system activated.

12.8 The leveling movement shall be powered by a hydraulic cylinder connected to a mechanical linkage for transmitting the movement.

12.9 The working cage shall be turned 40-50 degrees to each side from its centre position to provide safety and comfort ability in rescue operations. The movement is powered by a hydraulic cylinder with controls in the working cage and at the turntable control panels.

12.10 The centre position of the cage shall be indicated by a visual indication at both control panels.

12.11 At the front of the working cage there shall be a rescue platform with safety railing to provide additional safety during rescue and firefighting. The dimensions of the rescue platform shall be 1 to 1.5 m x 0.5 m and load capacity of minimum 180 kg.

13. HYDRAULIC SYSTEM

13.1 Hydraulic power shall be provided by a reliable and adequate variable displacement double axial piston pump, which is driven by the vehicle power take-off. Without any operation of the aerial device, the pump rotates on minimum flow and minimum

pressure. When one of the movements is operated the control valve shall automatically increases the pressure to a pre-set constant level and the oil flow to the amount that is needed for the movements activated. Due to which the loss of power in the hydraulic system, which normally causes over heating of the hydraulic oil, can be avoided and also the stresses caused to the vehicle transmission and P.T.O. system are minimized. At the same time fuel consumption and exhaust emissions are kept at the minimum.

13.2 By operating several movements simultaneously the oil flow shall increase automatically according to the need in the system thus making all movement speeds independent on each other.

13.3 The constant pressure system with maximum pressure setting prevents overloading of the system and its components e.g. cylinders.

13.4 Inside of the turntable and at the lower valve compartment there shall be instant couplings for the manometer in each pressure line. The manometer shall be fitted as standard equipment.

13.5 The filtration of the oil consists of suction strainer in the suction line, pressure filters with visual indicators in each pressure circuit, return filter in return line and air filter on the reservoir thus providing maximum reliability by protecting the hydraulics against foreign particles.

13.6 The hydraulic cylinders are hard chrome-plated piston rods and they have been fastened by means of self-aligning ball bearings to prevent lateral forces from damaging the seals or piston rods of the cylinders.

13.7 Hydraulic oil tank shall be mounted at the top of the main frame. The tank is fitted with oil level gauge, temperature gauge, suction connections with closing valves for easy maintenance and draining outlet with closing valve.

13.8 There shall be hydraulic oil cooler for continuous use in hot temperature.

13.9 Pressure and temperature of hydraulic oil:

13.10 Platform is equipped with electrical temperature and pressure sensors of the hydraulic oil. The temperature and pressure are shown in every display unit.

14. BACK-UP FOR THE HYDRAULIC SYSTEM

14.1 There shall be a battery driven hydraulic pump which provides an independent means of power in case of failure of the main engine.

14.2 The system should be able to be started from all control panels thus providing an immediate back-up in a case of a failure at an intense fire or similar immediate emergency.

14.3 There shall also be an independent diesel engine driven hydraulic pump system for complete operation of all boom and outrigger movements with slow speed. It shall be possible to start this system from all control panels.

15. CONTROLS AND SAFETY:

15.1 The Electrical supply needed for control system shall be taken from the vehicle battery

which shall be charged when the engine is running.

15.2 When the vehicle is in operation yellow flashing warning lights mounted on the outriggers shall automatically remain on.

15.3 The engine starting and stopping switch shall be provided on all control panels and the engine speed shall be increased to the present level as soon as any one of the control lever is operated.

15.4 All boom and rotation movements shall be controlled electro-hydraulically by means of proportional valves. The proportional valve shall not be sensitive to changes of ambient or oil temperature, and shall provide smooth, safe and very accurate movements even in most severe operating conditions.

15.5 The speed of the first boom for lowering and extension shall be automatically reduced at maximum outreach. The first boom lifting speed shall be reduced before the maximum elevation.

15.6 All control movements can be performed by the control system from both control panels and the outreach can be selected by the positioning the outriggers. The variable system shall consist also displays at all three control stations. The display give the real time information about the outreach and the cage position and also show possible movements according to cage positions by animated arrows. In the text display there shall be at least four different views on each display:

15.6.1 Warnings

15.6.2 Emergency situations

15.6.3 Help manual

15.6.4 Fault finding system

15.6.5 Outreach preview

15.6.6 Real time outreach and cage position with guidance information.

15.6.7 Main outreach with two views (Side and up)

15.6.8 Statistics information

15.6.9 Tools Screen (personal settings)

15.6.10 Signal lamps shall be provided for following functions:

15.6.11 For the outriggers, in transport position in driver's cab

15.6.12 For the outriggers working position on all control panels

15.6.13 For the P.T.O. engaged in the driver's cab

15.6.14 For the transport position of the booms in driver's cab

15.6.15 For the middle position of the rotation on the turntable and cage control panel.

15.6.16 For the exceeding of the safe working load in the cage on the turn-table and cage control panels.

16 TURNTABLE AND WORKING CAGE CONTROL PANELS

16.1 The turntable control panel incorporating all control levers (joystick type) and safety

system indications is fitted in such a way that it enables good visibility from the control station towards the working cage when the booms are operated.

16.2 The control station shall be fitted with convenient seat to provide comfort even in case of prolonged operation. The platform underneath the control position shall be covered by civil by non-slip Aluminium.

16.3 The working cage control panel incorporating all control levers (joystick type) and safety system indications shall be fitted at the rear of the cage to permit visibility over the booms and to leave the front of the cage free for rescue and firefighting operations

16.4 Both control panels shall be exactly alike, thus considerably reducing the risk of confusion amongst operators under stress or even panic.

16.5 At the turntable control panel there shall be a change-over switch to select the panel from which the operation is controlled.

16.6 Both control panels shall be fitted with following most important warning, indication and control devices, all marked by clear symbols: Joystick control levers for each movement

16.6.1 joystick control levers for each movement

16.6.2 Buttons for cage slewing

16.6.3 Button for starting and stopping of chassis engine

16.6.4 Buttons for the battery driven and diesel engine driven back-up for the hydraulic system

16.6.5 button for emergency stop

16.6.6 button for overriding of the automatic working cage leveling system

16.6.7 button for manual operation for the working cage leveling system

16.6.8 extra buttons for special features

16.6.9 button for activating the bleed down system

16.6.10 button for automatic drive of booms to transport position

16.6.11 button for approaching speed (lower down speeds of boom movements)

16.6.12 button for work lights

16.6.13 buttons for automatic first boom movements and first boom extension/ retraction

16.6.14 Intercom system

16.6.15 Integrated water monitor controls

16.6.16 Visual and audible indication for exceeding safe working load

16.6.17 Visual warning for activation of working cage collision guard system

16.6.18 Visual indication for ground pressure of the outriggers

16.6.19 Visual indication diagram containing information on particular movements being restricted or permitted based on real-time information on actual boom configuration

16.6.20 visual indication for the centre position of the booms

16.6.21 Visual indication for the centre position of the working cage

16.6.22 visual indication for wind speed

16.6.23 Visual indication for cab protection

16.6.24 visual indication for tilt alarm

16.6.25 visual indication for Tele-control activated

16.6.26 visual indication for service time reminder

16.6.27 Visual indication for service counters for chassis motor, electric power. Generator and battery pump

16.6.28 information screen for all important alarms and vital information

16.6.29 fault finding screen

17 CONTROLS AND INDICATORS IN DRIVERS CAB

In addition to chassis standard controls and indicators the following items shall be installed in drivers cab:

17.1 visual warning for the main current and PTO being switched on

17.2 visual warning for any of the equipment lockers being open

17.3 visual warning for the booms not being fully in travelling position

17.4 visual warning for the rear axle being locked (if the feature is installed)

17.5 visual warning for the outriggers not being in horizontal travelling position

17.6 switch with visual indication for rotating beacons

17.7 Switch with visual indication for siren unit.

17.8 microphone for the public address system

18 SAFETY DEVICES

18.1 All load bearing hydraulic cylinders shall be fitted with lock valves directly integrated in to the cylinder structure to prevent the booms, the working cage or the outriggers from retracting in case of a pipe or hose failure.

18.2 Retracting of any of the outriggers shall be automatically prevented as soon as the booms have been lifted from their travelling position.

18.3 Similarly lifting of the booms from the travelling position shall be prevented until the outriggers have reached the support width and ground pressure.

18.4 All boom movements have been limited at their most extreme positions thus making it impossible for the operator to reach an unsafe configuration by normal means of operation. The movements having direct influence on the stability of the aerial have all been fitted with two separate limiting circuits, the first one stopping that particular movement, the second one deactivating the whole electric and hydraulic system should the first circuit not have worked.

18.5 The major movements, lifting of the first and the second boom to their maximum elevation, and extending the telescopic movement or lowering the second boom at the maximum outreach have been fitted with slow-down devices to provide smooth deceleration of the movement.

18.6 Starting of the chassis engine from any of the control panels of the aerial is prevented unless the gear is shifted to neutral.

18.7 Inadvertent damaging of the drivers cab by the first boom has been prevented by a system preventing lowering of the first boom and rotation movement when the first boom is near the drivers cab.

18.8 An overload warning has been fitted to give an audible and visual warning in case of exceeding the safe working load.

18.9 A collision guard (ultrasonic type) has been fitted to provide additional safety when operating in darkness or in dense smoke. This system stops all movements and gives visual warning when activated.

18.10 An emergency stop switch shall be fitted at all control panels to provide immediate and complete "freezing" of all systems in case of an unexpected emergency,

18.11 The control system shall be fitted with dead man switches to provide additional safety.

19 BODYWORK AND EQUIPMENT LOCKERS

19.1 The frame for the body work shall be made of Aluminium /Stainless steel. The elements have been covered by non-slip aluminum plate strong enough to allow free movement of persons on it.

19.2 To provide easy access from the ground level there are steps on both sides of the vehicle and equipment lockers made of aluminum plates, painted and finally bolted onto decking element for easy removal if necessary. All lockers are fitted with automatic switches activating the lights as soon as the door is opened and also activating the warning in driver's cab to indicate that all doors are not fully closed.

20 WATER WAY SYSTEM

20.1 The water way system shall be completely made of non-corrosive material. The nominal diameter of the water way is min 75 mm and it leads from the rear of the vehicle where a 2 x 65 mm (2 .5") inlet one in each side is fitted through the centre post in the turntable up into the working cage where the water monitor is mounted. Along the booms, the piping is fitted between the first and the second booms to have a safe and protected place for it when driving on roads.

20.2 The centre post, which shall be mounted in the center line of the turntable, provides continuous rotation even if water supply is simultaneously used.

20.3 The piping shall be protected from possible over pressure by means of two relief valves mounted underneath of the turntable.

20.4 On the side of the first and second boom there shall be a telescopic water pipe, which is made of corrosion resistant material. Moving sections of this pipe have been externally ground and chromium plated to provide reliable function and long life span.

20.5 Seals between the sections are of low friction type and can be easily tightened if so required. In boom pivoting points flexible, specially reinforced 100 mm pressure hose is used. All those are fixed to the pipe with reliable span-lock connections.

20.6 Piping ends at the right hand side at the front of the working cage where the water monitor is placed. A 75 mm valve is fitted in the cage to isolate the monitor if required.

20.7 There shall be an additional outlet with 65 mm (2.5") closing valve and coupling for water supply from the cage through an extension hose.

20.8 All fire hose couplings are according to customer's requirements.

20.9 There shall be drain cocks fitted in the piping to enable it to be drained after use.

20.10 On the front underneath of the cage there shall be nozzles of water spray curtain system to protect cage occupants from radiant heat. Control valve of water spray curtain system is conveniently located inside of the cage.

20.11 The water line shall be protected from possible over pressure by means of relief valves mounted underneath of the turntable set not less than 16 bar.

20.12 The cage shall be provided with 20 mtrs hose reel with Fog/Jet nozzle and shall be connected to main water line with control valve in the cage.

21 PUMP

27.1 Midship mounted centrifugal type fire pump having 4000 lpm output at 10 bar made from bronze material shall be provided.

27.2 The fire pump shall be driven by suitable PTO having adequate power and torque to meet the output criteria of the pump.

27.3 4x63 mm delivery outlet (02 on each side) as per IS standard.

27.4 1x4" suction inlet (01 on each side) as per IS standard.

27.5 Min 3" line going to the working cage.

27.6 Pressure gauge for the pneumatic system.

27.7 Electric speedometer for the pump shaft.

27.8 Hour meter for the fire pump.

27.9 Pressure/Vaccum gauge

27.10 Pressure governor.

27.11 Fire pump rmp control.

22 WATER MONITOR

Water monitor shall be connected on to the piping system and it is placed at the front side of the cage on the left hand side just outside of the railing. Due to the fact that the monitor is placed outside of the cage the entire cage floor area can be fully utilized in extreme rescue situations. The remote controlled monitor is made up of light alloy and fitted with jet/fog nozzle with maximum nominal capacity of not less than 2400 lpm, provided there is sufficient pressure and flow. The Monitor shall have Horizontal rotational movement to left and right side and also vertical up and down movement.

23 INTERCOM

23.1 There shall be a fully transistorized talk-back intercom system fitted between the turn table and the cage.

23.2 The combined microphone and loudspeaker for hands free operation is located in the cage. The turntable control station shall also be equipped with microphone which is integrated in to the loudspeaker.

23.3 The microphone and the loudspeaker shall be sealed properly and it shall be protected from the ingress of water, dust and humidity.

24 ELECTRIC SYSTEM

24.1 The electric supply shall be taken from the chassis battery which is kept charged when the engine is running. Voltage of the system is 24 V DC and all circuits have to be fitted with their specific uses. When the main current is switched on, yellow flashing warning lights located at each outrigger boom pivoting point and underneath of the working cage are automatically switched on.

24.2 2x24 volts, 70 watts, spotlights with swivel mounting bracket shall be fitted at the cage railing in the front side to provide extra safety during night operation. The switch for the sleights shall either be provided on the light it sells for on both the control panels.

24.3 On each side of the drivers cab roof there shall be rotating beacons in red colour. The main switch for the beacons with suitable signal light is fitted inside of the cab in a convenient position for the driver.

25 SIREN AND PUBLIC ADDRESS SYSTEM

There shall be an electric siren unit fitted on the front bumper or behind the front grille. Control panel of the system is conveniently located for the driver and it includes switches for fast (yelp), slow (wail) and two tone (Hi-Lo) sounds. Command microphone, which is fitted with push-to-talk switch, allows the public address message to override the siren function. Operations shall be controlled by a switch in illuminated non-glare control panel.

26 ROTATING BEACONS

On each side of the drivers cab roof there shall be rotating beacons in red colour. The main switch for the beacons with suitable signal light is fitted inside of the cab in a convenient position for the driver,

27 DISPLAY UNITS

27.1 The system includes 3 full colour displays situated at outrigger center, at turntable and in working cage.

27.2 Colour display based on TFT technology, Transflective type. Good visibility in bright daylight and at night time (display is back lighted)

27.3 Size 6.5" , ratio 16:9 (wide screen)

27.4 400 x 240 RGB pixels, full colours

27.5 12 back lighted multi function membrane push buttons

27.6 Two warning LEDs

28 FAULT FINDING SYSTEM

28.1 Special attention must be focused on the defect sensitivity. If any way some faults appear, the location of the defective component is shown on the screen. The system shows location and nature of fault on screen. The system has simple test screens to enable testing of the working cage and the turntable control panels. The test covers display unit, push buttons, joysticks and control lamps. For maintenance purposes the following tools are available as standard:

28.2 Fault finding system and fault register

28.3 Status screens for sensors, switches, hydraulic valves, control lamp, etc.

28.4 Total operation and RPM-UP hour meters

28.5 Operation and RPM-UP hour meters since last service

28.6 Total movement counters for all boom movements (informed as seconds)

28.7 Service counters and alarm for general maintenance

28.8 Software verification management

29 PAINTING

29.1 Before painting all surfaces of steel structures shall be carefully shoot blasted after which they shall be primed. After the final top paint the dry film thickness of the paint coat is 100 microns. All booms shall be painted from inside.

29.2 To provide very high corrosion resistance hollow structures such as steel profiles of the working cage, cage boom and outrigger beams and housings shall be treated with anti-corrosion protection agent. Paint tones used for standard units are:

- Working cage alluminium not painted
- Working cage support, boom sections, turntable and related cylinders white RAL 9010
- Mainframe, outriggers and bodywork red RAL 3000
- Outrigger cylinders grey RAL 7046
- Chassis frame touch-ups chassis original tone

30 ACCESSORIES

30.1 4 pc wooden outrigger ground pads with brackets

30.2 2 pc Working range diagrams, one at the turntable, one in the cage

30.3 1 pc marking of safe working load in the cage

30.4 2 pc Unit type marked at the boom

30.5 1 set Warning labels and instruction plates

30.6 2 sets Operation and maintenance manuals

30.7 1 pc Plug for 24 V working light at the turntable and in the cage

30.8 1 pc 24 V/70 W working light with universal bracket

30.9 1 pc Lifting loop under the working cage, capacity 500 kg

30.10 2 sets Anchor points for safety belts in the working cage

30.11 5 pc Safety belts for cage occupants

30.12 1 pc Hydraulic pressure gauge

30.13 1 pc Quick action hose reel of 20m length with jet mounted at the cage set Electronic Ultra sensor collision guard

30.14 1 set Stretcher carrier with stretcher

30.15 1 pc Load man Portable Falling Weight Deflectometer to check ground stability.

30.16 06 sets three layered fire fighting suits (Blue color) confirming to EN469 with firefighting gloves, confirming to EN659, firefighting boots confirming to EN345, firefighting helmet confirming to EN 443, hood all certified to relevant EN (or equivalent) standards shall be supplied along with necessary test certificates.

31 **OTHER ACCESSORIES**

31.1 **Radio (Wireless) Remote Control**

The radio remote control can perform the same standard main functions as the stationary control center including all boom movements, engine start/stop, rpm for boom movement, horn and work lights, emergency stop, all water monitor controls, etc. It weighs about 2 kg including battery. Range is about 100m with standard antenna.

31.2 BREATHING AIR SYSTEM

A breathing air system shall be provided from turntable to working cage. At the cage there shall be a manifold with instantaneous couplings to connect the breathing masks. Air cylinders to supply the breathing air shall be mounted at the turn table. The cylinder capacity shall be such that they provide minimum 7000 L of free air Isolation valve shall be provided at suitable location so that the cylinder can be changed without interrupting the air supply. Pressure regulator as required shall also be incorporated in the system. Suitable face masks (4 nos.) with at least 4 spare face masks for breathing shall be supplied with the unit

32 **STANDARD FEATURES INCORPORATED IN THE CONTROL SYSTEM**

32.1 Ground pressure alarm:

When one outrigger has not enough ground pressure, the system gives an audible and a visual alarm. If two outriggers loose ground contact, unsafe boom movements are stopped.

32.2 Cab protection:

The cab of the truck can be protected to avoid damage by the booms or working cage. Working in front of the truck close to the cab is also possible. When arriving to the cab protection area, the movements of the booms are slowed down and stopped softly. Leaving the area is done by opposite movements. Cab protection can be override by push button.

32.3 Automatic drive of booms to transport position:

The booms can be lowered back to transport position automatically by pushing a single push button in a pre-set sequence.

32.4 Working cage automatically to middle position:

Working cage can be turned automatically to centre position.

32.5 Approaching speed:

Lower speeds of the boom movements shall have to be maintained for training and for general use by persons not very familiar with Hydraulic platform or when reaching the building very accurately.

32.6 Zero position of joysticks:

All joysticks must be in zero position before activation of RPM for boom movements,

32.7 Automatic switches off for the outrigger pressure:

Push button version of outrigger controls:

Outrigger pressure is automatically switched off if dead man pedal of working cage or turntable is pushed. Outrigger pressure is also automatically switched off after certain time delay.

32.8 Service time reminder:

The system gives an alarm when closing 250h (or every third month) or1000h (yearly) service time. The service time counter can be reset when maintenance is carried out.

32.9 Pressure and temperature of hydraulic oil:

Platform is equipped with electrical temperature and pressure sensors of the hydraulic oil. The temperature and pressure are shown in every display unit.

32.10 Tilt alarm:

If chassis is tilted or the unit is leveled incorrectly, the system gives an audible and a visual alarm in every display unit. The tilt alarm angle shall be adjustable.

32.11 Language and measure units of screens:

The system is based on clear and easy-to-understand symbols. If texts are used on master screens, the language shall be in English.

All measure units of master screens shall be in metric measures and can be changed to locally used format by operator.

32.12 Auto jacking:

Automatic leveling system is easy and fast way to make platform ready for operation. The system is fully automated and enables leveling within less than 40 seconds. The system performs very accurate leveling and has got safety circuits to assure that leveling is proper and platform is ready for safe operation.

This system is controlled by hand held remote control device. The device is equipped with following functions (back-lighted push buttons):

a. Left side outrigger beams out
b. Right side outrigger beams out
c. Automatic leveling
d. Outriggers back to transport position

32.13 Pressure of water in water line:

The platform can be equipped with water pressure sensors (according to customer's need):

a. water pressure in water inlet (>0.0 bar)
b. pumping pressure of water
c. water pressure in water monitor

The water pressure can be seen on water pump screen on every, display unit.

32.14 Water flow rate and total amount of water used:

Actual volume of water in water line shall be indicated. The water volume can be seen on water pump screen on every display unit. The system shows also the total amount of water used at one time (this counter can be reset when needed).

32.15 Wind speed meter:

A wind speed sensor shall be fixed in working cage and shall be at place also during transportation. Wind speed can be seen on every display unit. When wind speed is higher than allowed the system gives audible and visible alarm. The wind speed meter will not limit the use of the platform.

32.16 Indication of low fuel level:

There shall be a system gives an alarm to the operator when the fuel tank is getting empty.

32.17 Hydraulic Oil filters Service Indicator:

If any of hydraulic oil filters needs unscheduled service, a visual indication shall be shown on every display unit.

32.18 Hydraulic tank low oil level alarm:

There shall be a system gives an alarm to the operator when hydraulic oil level is too low in the oil tank.

32.19 Temperature of cage floor:

There shall be a system of temperature of working cage floor shall be seen on every display unit.

Note - The Committee also recommends that above mentioned technical specifications and other terms & conditions may be got verified /checked at length by Director Supply and Disposal department so that no litigation may arise later on.

Lalit Kumar	**Yadvinder Sharma**	**Rajinder Singh Dahiya**
Fire Station Officer	**Fire Station Officer**	**Assistant Divisional Fire Officer**

Sajjan Kumar	**Niranjan Kumar**	**Gulshan Kalra**
Assistant Divisional Fire Officer	**Works Manager HR**	**Deputy Director (Tech)**

ANNEXURE - A

SCHEDULES OF TECHNICAL PARTICULARS OF AERIAL LADDER PLATFORM 42 METERS HEIGHT

Sr. No.	Technical Details	Remarks
1.	**GENERAL DESCRIPTION**: (a) Make and Model (b) Height (meters) (c) Outreach (meters) (d) Operating media (e) Safety (f) Gross Vehicle weight	
2.	**CHASSIS:** (a) Make (b) Model (c) Wheel base (d) Engine type (e) Rated HP (f) Type of clutch (g) Type of gear box (h) Type of front axle (i) Type of rear axle (j) Type steering system (k) Type of braking system (l) Fuel tank capacity (m) Size of tyres (n) Type of cabin (o) Type of electrical system (p) Type of PTO	
3.	**Constructional details:** **A: Driver Cabin:** (a) Paneling (material) (b) Doors (Nos.) (c)Windows (Nos) (d) Seats (Drivers, attendant, and crew) (e)Capacity **B: Rear Body:** (a)Details of horizontal and vertical cross members (b) Panelling, sides, deck floor (material, size, thickness) (c) Details of lockers (nos, size, material) (d) Overall length in MM	

	(e) Overall width in MM (f) Overall Height in MM (g) Details of Aluminium shutters (size, Nos)	
4.	**4. OPERATING REQUIREMENTS** (a) Safe working loading in cage (Kg) (b) Safe working load with Monitor in cage (Kg) (c) Lifting capacity of the under cage (Kg) (d) Testing suitability at (Kg) (e) Permitted wind speed at the maximum outreach with full working load in the cage (f) Operating time of full stroke (second) • Elevating fist boom / ladder • Elevating second boom/extending ladder • Telescopic • Reaching max height from ground level • For 360 degree rotation • For extending jack one side • For extending jack for both side • For extending all four jacks, elevating, cage to max height and rotation through 360 degree	
5.	5. **DIMENSION OF THE FINISHED APPLIANCE:** **A. In Operating Position:** (a) Max height to working cage bottom (M) (b) Max working height (Mtrs) (c) Max working outreach (Mtrs) (d) Max outreach to cage corner with max safe working load (Mtrs) (e) Max outreach below the ground level working cage bottom with max safe working load (Mtrs) (f) Safe working Load (Kg) (g) Rotation continuous (degree) (h) Levelling capacity (Fore and aft/ sideways) **B: In Transport Position:** (a) Transport height approx (Mtrs) (b) Transport length approx (Mtrs) (c) Transport width approx (Mtrs)	
6.	**6. CONSTRUCTION** (a) Material used (b) Use of timber (c) Use of rubber (d) Treatment of material (e) Painting procedure	

7.	**7. BOOMS** (a) Numbers (b) Telescopic sections (nos) (c) Boom / Ladder length (Mtrs) (d) Movement (e)Location (f) Design (g) Treatment (h) Welding process	
8.	**HYDRAULIC CYLINDERS:** **(a)** Lock valves (b) Hydraulic Dampers (c) Reduction in speed of booms / Ladder (d) Automatic prevention of retracting of outriggers (e) Lifting of Boom / Ladder prevention unless outriggers are in position (f) Limiting circuit to prevent cab damage (g) Emergency stop switches	
9.	**CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENT:** **(a)** Type of control valves (b) Make (c) Model	
10.	**TURNTABLE:** (a) Construction type (b) Fastening (slewing ring) (c) Swivel – in – line (d) Rotation (degree) (e) Movement control (f) Gear unit fastening (g) Location	
11.	**MAIN FRAME:** (a) Frame type (b) Fastening (c) Construction material (d) Non slip aluminium tread plates (e) Steps on both sides (f) Location	
12.	**CAGE:** (a)Material (b) Outer dimensions (MM) (i) Length	

	(ii) Width (iii) Height (c) Doors, Nos., & size in (MM) (d) Max Load (Kg) (e) Fitment to control panel (f) Provision for digital anemometer (g) Levelling device (h) Working cage slewing provision (i) Drop down platform provision (j) Location of drop down platform (k) Max permissible load on drop down platform (Kg) (l) Safety railing provision, height (MM)	
13.	**STABILISING JACKS: OUTRIGGER:** (a) System (b) Controls and Operation (c) Nos. and Location (d) Individual controls (e) Level indicators (f) Self alignment foot plates for outrigger (g) Operation on uneven ground (h) One side jacking provision	
14.	**CONTROL AND SAFETY:** (a) Electric control taken from vehicle battery (b) Voltage (c) All control panels to have engine start/ stop button (d) Signal lamps	
15.	**DETAILS OF SAFETY DEVICES:** (a) Boom/ Ladder and Outrigger cylinder lock valve make & type (b) Isolating system boom/ ladder/ outrigger operation (c) Movement limiting system (d) Cab protection (e) Overload alarm (f) Emergency stop system (g) Dead man switch (h) Bleed down system/other system	
16.	**HYDRAULIC SYSTEM:** (a) Hydraulic power, make & model of pump (b) Pump capacity Ltrs/min and pressure (Kg/cm2) (c) Pump operation (d) Control valve function (e) Oil flow to increase (automatically)	

	(f) Prevention of overloading (g) Instant couplings for manometer (h) Manometer (i) Filtration of oil (j) Filters (k) Hydraulic cylinder type (l) Plating of piston rod (m) Hydraulic cylinder type (n) Fastening (o) Capacity of hydraulic oil type	
17.	**BACKUP FOR HYDRAULIC SYSTEM:** (a) Type (b) Location (c) Operating mode	
18.	**CONTROLFOR STABILISING JACKS:** (a) Location of control panels (b) Change over switch (c) Control levers (d) Emergency lowering valves (e) One side jacking facility	
19.	**WATER PIPING SYSTEM:** (a) Material of piping (b) Diameter of pipe (MM) (c) Water monitor location (d) Piping fitment (e) Protection against over pressure by relief valve (f) Telescopic water pipe (g) Finish & plating (h) Seals (i) Flexible hose (j) Monitor isolating valve (k) Additional outlet with valve and coupling (l) Nozzle and system (water curtain) (m) Control valve location (n) Water monitor (o) Location	
20.	**ELECTRICAL EQUIPMENT:** (a) Slip rings (b) Rating (c) Spotlight (d) Red rear lamps nos. (e) Red/ Orange lamp at boom/ ladder knuckle	

	(f) Illumination of: (i) All control panels (ii) Instruction plates (iii) Leveling indicators (g) Recharging (h) Separate fuses (i) Wiring diagram	
21.	**INSTRUCTION PLATE: DETAILS**	
22.	**BOOM / LADDER:** (a) No of telescopic section (b) Location (c) Min. width at top (MM) (d) Railing height (MM) (e) Folding bridge (f) Material (g) Treatment (h) Controlling system	
23.	**INTER COMMUNICATION SYSTEM:** (a) Type (b) Make (c) Model (d) Operating voltage (e) Location	
24.	**ELECTRIC POWER LINE :**	
25.	**GRAPHICAL DISPLAY MONITOR : (Details)**	
26.	**FAULT FINDING SYSTEM (Details)**	
27.	**EMERGENCY SYSTEM** (a) Make & Model of Engine & pump set (b) Capacity of pump (Ltrs/Min) (c) Make & Model of electric motor operating voltage (d) Make & Model of pump set with capacity (Ltrs/Min) (e) Bleed down system/other system	
28.	**LUBRICATION: Details**	
29.	**BODY WORK** (a) Steps and grab rail (b) Construction (c) Material (d) Siren with two tone hooter + Public Address system (e) Orange beacon lamp	
30.	**FINISH** (a) Painting (b) Visibility	

31.	**TOOL KIT DETAILS: SEPARATELY**	
32.	**STABILITY**	
33.	**TESTING FACILITIES**	

Sr. No.	Name ofitem	Qty.
1.	**SUPPLY, DELIVERY, MOUNTING, TESTING AND COMMISSCONING OF TURN TABLE LADDER PLATFORM OF 55 MTR. (WORKING HEIGHT) WITH 03 YEAR DEFECT LIABILITY PERIOD AND 03 YEARS COMPREHENSIVE MAINTENANCE CONTRACT FOR FIRE FIGHTING AND RESCUE OPERATION.**	**4 Nos.**

A. <u>ELIGIBILITY OF SUPPLIERS</u>:

1. Bidder should be either manufacturer or Authorized Distributors who have obtained written permission from manufacturers only.
2. Documentary evidence establishing that the manufacturer has supplied minimum 5 Nos. aerial ladder platforms, hydraulic platform of required model with same OR Higher working capacities, specifications and features as specified in the schedule of requirements. (Copy of Supply Order, copy of Certificate regarding satisfactory supply of the items issued by their purchasers, etc. should be enclosed).
3. Copy of the Audited Annual Accounts for the last 5 years to prove an annual turnover of at least Rs. 40 Crores (Rupees Forty Crores only) or equivalent foreign currency in any of the last 5 financial years.
4. The manufacturer should be ISO 9001 Certified Company.
5. Documentary evidence showing that the bidder is manufacturer of the tendered item. If the bidder is an authorized agent, the Manufacturer Certificate in this regard should be enclosed. The Manufacturer has to issue a certificate to the effect that they will take responsibility if Indian agent fails to attend service or if there is any change in Indian Agency during Warranty/CMC period. Certificate from the Manufacturer to continue/accept Service Contract at the rate mentioned in the purchase order in the event of change in Indian Agency to be submitted.
6. Documentary evidence showing that the offered model is approved by appropriate accredited 3rd party authority as per the EN 1777 Standards specified in the Technical Specification.
7. Documentary evidence established in accordance with criteria mentioned at sr. No. 8, that the goods and ancillary services to be supplied by the Bidder confirm to the goods and services as mentioned in the Bidding Documents. Scanned copy of the duly signed specification compliance statement shall be uploaded along with the offer, and the statement should be complete in all the details of specification. The bidder should upload the statement with complete details of specification even though there is no deviation for the product from the Technical Specifications.
8. Pursuant to criteria mentioned at Sr. No. 7, the bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the bidding document of all goods and services which the bidder proposes to supply under the contract.

The documentary evidence of the goods and services eligibility shall consist of statement in the price schedule on the country of origin of the goods and services offered which shall be confirmed by a certificate of origin at the time of shipment.

9. Declaration by the bidder on Stamp Paper worth Rs.100 to the effect that he/his partner/s or any of his directors is not involved in any Vigilance Case registered in connection with any supply made to any Central/State Governments/ Boards/corporations in India (Optional for the bidders from India only).
10. The bidder should not be black listed from any Central/State Governments/ Boards/corporations in India/ any other country or no Criminal Case is registered against the firm or its owner or partners. The bidder will submit self-certification in this regard.

SPECIAL TERMS AND CONDITIONS:-

1. The manufacturer/supplier shall impart necessary training to 6-10 person/fire staff for minimum 30 days at his risk and cost for every vehicle anywhere in Haryana). After completing the successful training period, he will issue a certificate to the trainees in this regard.
2. The manufacturer/ supplier shall supply Aerial ladder platform anywhere in Haryana at consignee's place at the cost of supplier/ Manufacturer.

1. PAYMENTTERMS:-

A. For ImportedItem

(i) A irrevocable Letter of Credit (LC) confirmed by the first Class Bank in the seller's country in favour of the supplier for 100% of the CIF amount shall be opened by the purchaser. L/C charges shall be to purchaser's account including con firming charges, which shall be borne by the purchaser out of the 100% payment(AO).

(ii) 90% (Ninety Percent) of the CIF component will be released against submission of documents along with satisfactory certificate of pre- dispatch inspection.

(iii) Remaining 10 % (ten percent) payment shall be payable after satisfactory installation/demonstration of the goods at the premises of end - user department and receipt of certificate for same from end user department. 1n case of LC, all bank charges (including LC confirmation charges) payable outside India would be to Seller's account.

PaymentAgainsttheletterofCredit/WireTransferfor90%ofthevaluewill beavailableagainstpresentationofthefollowingdocumentsandalsoon proof of evidencing ofshipment.

I. 3 +3 Complete set of Original Clean Bill of Lading. The Bill of Lading shall be in the name of Director General, Haryana Fire Services, Bays 11 -14, Sector-4, Panchkula 134 112, Haryana, India AND MARKED FREIGHT PRE PAID.

II. Signed invoice in three copies giving letter of credit No., Order No. and date respectively. The invoice shall be in the name of: Director General, Haryana Fire Services, Bays 11-14, Sector-4, Panchkula 134112, Haryana, India. Invoiceshall have goods description, quantity, unit price, total amount.

III. Certificate of satisfactory Pre-dispatch inspection report and Supplier factory inspectionreport.

IV. Certificate showing goods ofORIGIN issued by Chamber ofCommerce or Equivalent Body in Duplicate.

V. Specifications and Packing list – three copies for eachTTL

VI. Manufacturer's guarant.ee certificate – three copies for eachTTL.

VII. Certificate from the manufacturer to the effect that the goods conform to the manufacturers standards and are new (Production month in Year …….) and free from any latent or patent defects and are strictly as per Specifications mentioned in STC's Order.

VIII. Insurance Policy/ Certificate showing End-useras beneficiary –oneoriginal and two copies for each TTL.

IX. Copy of FAXMESSAGE/proper communication marked to General Imports Division, sent bythe seller within 24 hours of issuance of Bill of Lading to buyernotifying the details of theBL No., Goods freighted, total invoicevalue, Name of the Shipping Lineloading port and date ofdepartureof the vessel and expected time of its arrival at the Indian Port.

X. Certificate from the seller thatone set of non-negotiable documents mentioned under I to IX above hasbeen airmailed/couriered to the following within 10 Days of departureof the 'vessel in addition to oneset of non-negotiabledocument sent with the vessel to:

B. <u>In case Manufacturer is based in India.</u>

Payment for domestic supply via RTGS for 100% value will be available against

presentation of the following documents: -

(i) Signed and stamped invoice (Three original) giving detailsof order number and date. The invoice shall be in the name of the Director General, Haryana Fire Services, Bays 53-58 Sector-2, Panchkula 134112, Haryana, India and end-user department as a consignee. Invoice shall have goods description, quantity, unit price, total amount.

(ii) Receipt of certificate of satisfactory installation, demonstration & training of the Equipment to be issued by the end-user department.

(iii) Three copies of Satisfactory Pre-Dispatch Inspection certificate issued by the nominated inspection agency and the Supplier factory inspection report.

(iv) Specifications and Packing List - Three copies for each TTL.

(v) Authorized Dealers / suppliers guarantee certificate — Three copies for each TTL.

(vi) Manufacturer's/Supplier's guarantee certificate - Three copies foreach TTL.

(vii) Insurance Policy/ Certificate showing End-user as beneficiary - one original and two copies for each TTL.

(viii) Payment shall be made in Indian rupees or in freely convertible foreign currency for imports. In case of local supply or certain items are locally supplied for an otherwise imported item, the same shall be quoted in INR and the payment for same shall be made in INR only.

(ix) All the bills relating to custom duty, insurance, warehousing, handling, transportation etc., should be raised in the favour of the Buyer.

C PENALTY

The firm/contractor fail to deliver or dispatch any consignment within the period prescribed for such delivery or dispatch stipulated in the supply order, the delayed consignment will be manufacturer or supplier will be subject 2% penalty per consignment per month recoverable on the value of the stores supplied. The other details will be as per provision contained in **Sr. no. 14 of "Schedule-'B' Condition of Contract" of DIRECTORATE OF SUPPLIES AND DISPOSALS, HARYANA**

2. Bid Prices:-

I. The bidder shall indicate on the appropriate price schedule of the Price bid the unit prices and total bid prices of the goods it proposes to supply under this contract and in case of goods of foreign origin in F.O.B. (free on board) and CIF (cost, insurance and freight) cost. All the columns shown in the price schedule should be filled up asrequired. If any column does not apply, the same should be clarifiedas 'NA by the bidder In case there is no column for a particular Component/item/service in the price schedule, the same should be mentioned by the bidder and price should be accordingly quoted.

a) If offered from within India:

The rate quoted shall be inclusive of all duties, taxes other levies payable by the Firm/Agency as per State /Central Government rules applicable in India. However, the breakup of the price shall be indicated in the price bid. GST and any other statuary duty, tax levy etc., shall be paid to the seller as per the rate applicable on the date of supply on actual basis.

b) If offered from outside India:

The custom duty as applicable shall be paid on actual by the Haryana Fire Services, India (the consignee).

II. Prices indicated on the price schedule shall be entered separately in the following manner: The price of the goods, quoted ex -factory, ex- showroom, ex-warehouse, or oft-the-shelf, or delivered, as applicable, including all duties and sales and other taxes including transportation, installation, commissioning at site and all operational and incidental charges etc., However, the breakup of the price shall be distinctly indicated in the price bid.

III. The Bidder‘s separation of the price components in accordance with Para 4 (I) (a) and 4(I)(b) above will be solely for the purpose of facilitating the comparison of bids by the Buyer and will not in any way limit the Buyer's right to contract on any of the terms offered.

IV. Fixed Price: Price quoted by the Bidder shall be fixed during the Bidder’s performance of the contract and not subject to variation on any account, A bid submitted with an adjustable price quotation will be treated as non- responsive and rejected.

3. Bid Currencies:

I. Price shall be quoted in the following currencies:

a) For goods and services which the Bidder will supply from within the Buyer's Country, the prices shall be quoted in Indian Rupees: and

b) For goods and services which the bidder will supply from outside the Buyer's country, the prices shall be quoted either U.S. Dollars or inthe freely convertible currency.

c) Payment of services like insurance, warehousing, custom clearance, handling, transportation etc., within India shall be paid as per actual.

II. Further a Bidder expecting to incur a portion of its expenditures in the performance of the Contract in more than one currency, and wishing to bepaid accordingly, shall so indicate in his/ her / their bid. In such a case, either (i) the bid Shallbe expressed indifferentcurrencies and the respective amounts in each currency together ma king up the total price, or (ii) the total bid price shall be expressed in one currency and payments required in other currencies expressed as a percentage of the bid price along with the exchange rate used in such calculation.

4. Schedule of prices and quantities:

a) The rate of taxes / duties and custom duties applicable on the date of submission of tender shall be clearly shown in the tender.

b) The charges for transportation/insurance and other incidental expenses for the delivery of the equipment to shall be included in the cost.

c) The cost on account of training to the Officers/ official of Haryana Fire Services, India for one week at the factory premises of equipment manufacturer shall be included in the cost.

d) The price and the cost stated in the tender shall be in Indian Currency only.

e) The prices quoted by the bidder shall be fixed and firm during the contract and no other price variation will be allowed under any circumstances. The tender submitted with variable price will be treated as NON RESPONSIVE and will be rejected outright.

5. Taxes and duties

a) Suppliers shall be entirely responsible for all Central or State (in India & country of origin) or any other taxes, duties, license, levies, duties, fees, etc. incurred until delivery of the contracted goods to the Buyer.

b) The rates quoted by the bidder shall be inclusive of the sales and other taxes that the bidder will have to pay for the performance of this contract. The Buyer will effect the deduction of such taxesat source (TDS) as per applicable law prevalent.

6. Prices: The rates are on consignee destinations basis anywhere inHaryana at supplier's risk (FOR),

7. Custom DUTY:- Exclusive, if any

8. Freight Charges:- Inclusive, if any

9. Delivery Period:-Period of Delivery of Equipment/Goods in complete manner as specified: 8 (eight) months fromthe issue of Letter of Award.

10. Breakdowns during warranty:-

Warranty period will be of 36 months of both the superstructure and chassis, the supplier will be responsible to provide service and maintenance during warranty period as and when required at the place of respective instruments stationed

The supplier shall attend/rectify the defect within 72 hours any break down period for more than 10 calendar days, shall be added to the warranty period.Penalty @Rs. 000/- per day for any delay will be applicable on the all minor disorders after 7 days of complaint registered by the purchaser where as for all major breakdowns after 30 days

The supplier should provide the service report (type/cause of break down) to respective officer.

Maintenance and After Sales Services

Your service engineer will service the full vehicle including chassis ladder superstructure in every quarter (every 3 months) at purchaser's site free

of cost during warranty period. The manufacturer shall also guarantee for the supply of spare parts & service for chassis and Turntable Ladder including all systems for a minimum period of 10 years from the date of supply of the vehicle.

11. **INSPECTION:** The Government Authorized representatives (tax.5 persons) will carry out the inspection and the testing of fully built vehicle in factory premises of the vehicle manufacturer prior to dispatch. The travelling and accommodation cost shall be included in the basic cost of the vehicle. It is obligatory to the supplier to provide all the assistance and equipment for the inspection and testing of the Vehicle at the premises.

12. **After sales service providing**

Manufacturer shall have their sales & service network in India through their authorized agency/representative/distributor. That agency/ representative/distributor shall have enough experience in Vehicles segment with full fledge manufacturing/fabricating the Vehicles. If that agency/representative/ distributor is not a manufacturer of vehicle then they should have at least experience of 3 years for servicing of fire and rescue vehicle. If agency/representative / distributor is a manufacturer they have to submit trade license along with tender document otherwise they have to submit the service contract certificate between this agency and the end user to prove their experience. To substantiate, Indian agent/representative/distributor shall furnish the authorization letter in original with tender documents.

13. **R. T. O. REQUIREMENTS:**

The vehicle shall be equipped with all the accessories required for registration of the vehicle and shall conforms to Motor Vehicle Act 1988 and Central Motor Vehicle Rules, 1989 or any amendment incorporated from time to time.

The chassis shall be homologated from the appropriate authority in India incase not already an approved model or shall be supplied with COP (Conformity of Production) issued by approved testing agency.

14. DEVIATION:

Any deviation/departure from the above specification shall be pointed out separately with detailed explanation.

15. Special Technical Documents:

1. The documentary evidence of the goods and service's conformity to the bidding documents maybe in the form of literature, drawings, data etc. The bidder shall furnish:

2. A detailed description of the goods and the essential technical and performance characteristics of the goods.

3. A clause by clause commentary on the End-user's technical specifications of the goods and services and bidders' offer for the goods and services substantiating compliance to those specifications or deviations and exceptions from / to the Technical specifications.

4. For purpose of the commentary to be furnished pursuant to condition mentioned above, the bidder shall note that standards for workmanship, material and goods, and references to brand names or catalogue numbers designated by the End-user in its technical specifications are intended to be descriptive and indicative only and not restrictive. The bidder may offer alternate standards, brand name and /or catalogue numbers in its bid, provided that the same are to the End-user's satisfaction that the substitutes are substantially equivalent or superior to those designated inthe Technical specifications.

5. Documentary evidence of list of work order in hand at the time of submission of tender.

6. Bidder shall attach the Product Brochures, Technical Literature, catalogues,drawings, illustrations etc. in the bid.

TECHNICAL SPECIFICATIONS FOR FABRICATION AND SUPPLY OF TURNTABLELADDER55NETERHEIGHTWITHLIFTINGEYECAPACITYFOR FIRE FIGHTING AND RESCUEOPERATION.

1. GENERALREOUIREMENT:

1.1. The Turntable Ladder shall be designed specifically for the purpose of firefighting and rescue to enable firemen to go up and down. It shall comprise of five or six ladder sections with a cage mounted at the end of top ladder section to rescue people. The entire unit shall be mounted on *a* Turn-Table on a Heavy Duty Diesel - Engine chassis of VOLVO/MERCEDES/MAN/SCANIA make or Equivalent, with suitable Wheel Base and axle with fully factory built cabin and suitable capacity PTO. The Vehicle **Chassis** shall conform **to EURO-VI emission norms.**

1.2. The Turntable as a composite unit (not less than 55mtrs (±2%) TTL ladder) should be completely designed, constructed assembled at Manufacturer OEM site, and complete unit with Turntable Ladder be strictly tested and certified to all EN life safety standards such as (i) certified Electric system to comply with the ruling EEC standard Controls should be IP54 protected to TEC 529 (ii) as per the designed, operational stability and structural strength based on the criteria laid in EN14043/NFPA. Other norms and standards applicable for automatic turntable Ladder used for Fire Fighting and rescue operations and the certificate to that effect issued by the tenderer shall be enclosed with the tender.

1.3. The TTL shall be capable of use at any angle of elevation without any reduction of load capacity of the cage. It shall also rotate 360 degree at any angle of elevation as well as below ground level subject to Ladder remaining clear of vehicle body. The machine shall have rescuecage at the end of the upper ladder.

1.4. The appliance shall be compact and fast on the road and easily maneuverable in the crowded streets and around sharp corners. The overall dimensions shall not exceed the limits specified herein.

1.5. The working height of the Turntable Ladder when fully extended shall not be less than 55 mtrs (±2%). from the ground. The rescue height of the Turntable Ladder shall not be less than 53m (±2%).

1.6. The design of the Turntable ladder shall allow a very large safety margin for extreme operating and climatic conditions. The V safe working loads ratings shall include an allowance for the 1/2 weight of water system and the reaction from the monitor jet while operation.

1.7. The Complete Movement of the TTL shall be computer controlled and the system shall be checked for interference sensitivity according to EN 61000-6:2002 and/or

EMV directive 89/336EWG. The provision for double-monitoring computer system shall be provided to operate safely even in failure of one computer system to regulate safe outreachor according to Japanese safety norms.

1.8. Full safety interlocks shall be incorporated in the design so as to ensure complete safety in operations and long years of reliable and trouble free service, as far as possible the system shall be fail proof.

1.9. The design of the TTL shall allow avery largesafety margin for extreme operating and climatic conditions. The safe working loads ratings shall include an allowance for the weight of water system and the reaction from the monitor jet while operation.

1.10. The Vehicle shall have a leveling system to adjust axial and transverse movement to an angle not less than 10 degrees and up to 7.0 to 7.5degree shall be in automatic in nature by rotating the turn table automatically but not through any plumbing system. The vehicle will measure the absolute horizontal position automatically but not through any plumbing button or system.

1.11. The maximum elevation of ladder shall be possible from -10 to 75 degree. With jack adjustment it shall be possible to elevate ladder -14 degree below ground level.

1.12. There shall be full back up system for all ladder movements and outrigger movement in case of failure of main system. This shall be achieved with the help of electro-hydraulic pump powered by Chassis Battery.

1.13. The Complete Movement of the TTL shall be computer controlled and stabilized and the system shall be checked for interference sensitivity according to standards.

1.14. The Control system of the TTL shall be fully tropicalized and able to operate in the temperature range up to +60 degree centigrade and in a dusty and Humid condition without reducing the maximum operating limits.

1.15. The elevation of ladder shall be possible from —10 to + 75 degree.

1.16. Vehicle shall have a Computer controlled Oscillation damping system which damps the Oscillation in case of excess wind or in case any Evacuee jumps into the cage. (Details of the same shall be submitted along with the offer).

1.17. Schedules of technical particulars of turn table ladder platform of 55 m working height to be provided in Annexure-A.

2. CHASSIS:

2.1. The Chassis shall be either VOLVO/MERCEDES/MAN/SCANIA make with suitable Wheel Base and axle (as per CI IVR 1989) with fully factory built cabin and

suitable capacity PTO. The Vehicle Chassis shall be a Right Hand Drive and shall conform to EURO-VI) or higher emission norms and chassis manufactured should be of same year or advance from the year of tender.

2.2. The Chassis shall be an approved model homologated from the appropriate authority in India otherwise chassis model shall not be accepted.

2.3. The engine shall be six cylinder, inline/'V'type, Diesel with direct injection, turbo charged with intercooler.

2.4. The engine shall develop minimum 370-400 HP.

2.5. The clutch shall be single plate, dry type, air assisted hydraulically operated (if required depending upon the type of transmission used)

2.6. The transmission shall be a shift manual gear box type with the arrangement of suitable capacity PTOs required for driving the hydraulic pump for ladder movements.

2.7. Rear Axle shall be Tandem Bogie type with Hub reduction and differential lock between the wheels and axles.

2.8. Chassis frame shall be 'C* Channel section made of high strength steel with cross members.

2.9. The Steering shall be integral power steering with collapsible steeringwheel and column.

2.10. The Front and the rear Suspension shall be leaf spring type.

2.11. The Brakes shall be dual circuit airbrakes, with parking brakes acting on rear wheels.

2.12. Fuel Tank - Capacity shall be min 300ltrs with lockable fuel cap.

2.13. The Chassis shall be provided with Radial Tyres - with spare tyre of suitable size as per GVW of vehicle.

2.14. The chassis shall be provided with single cab with RED colour made from high strength steel fully trimmed, external panels hot dip galvanized with hydraulic cab tilting mechanism. The cab shall be provided with adequate ventilation, rear view mirrors, windscreenglasses and windows, adjustable driver seat, wiper system, with exhaust pipe, silencer above the driver cabin and along with all other standard fitments. Cab shall meet crash test requirement of ECE R29 norms.

2.15. The Electrical system shall be 24V, with suitable capacity batteries & Alternator for charging the batteries. The standard electric equipmentinstalled on the truck chassis shall include 1 Connection of the operatingplatform electric system with the chassis system in the cab engaged, boom stowed, outriggers 1 retracted and lockers shut. Two amberrotating beacons on the 1 front corners of the cab roof with switch on the cab dashboard A2 tone electronic siren/horn 100W with switch on the cab dash board. Furthermore, an air operated bull horn shall be mounted on the Chassis cab. The switch for the air horn shall be mounted on the dashboard

within easy reach for driver and co-driver.

2.16. The chassis shall be supplied with standard tool kit, hydraulic jack of25-30ton capacity, operator & workshop manuals.

2.17. The Chassis shall be fitted with suitable capacity Power Take Off Unit to drive the hydraulic pump for ladder movements.

2.18. The Chassis shall be directly procured by the tenderer confirming to above specifications and shall be got homologated with the appropriate authority in India. The Transportation responsibility of the chassis up to tenderers manufacturing facility lies with the tenderer. The Chassis shall be insured while in transit.

2.19. The Chassis shall comply all the provisions and enactment of Motor Vehicle Act 1988 and Central Motor Vehicle Rules 1989 and any amendment from time to time.

2.20. Reverse parking assistancewith back and bottom cameras to be provided.

3. OPERATING REQUIREMENTS &DIMENSIONS OF FINISHEDAPPLIANCE:

The Vehicle shall comply the following requirements

3.1.	Working Height	:	min. 55mtrs(±2%)
3.2.	Height to working cage bottom	:	min. 53mtrs (±2%)
3.3.	Working outreach with (full) cage load	:	18-20 mtr
3.4.	Loading capacity of lifting eye under lower ladder set	:	not less than 2000 Kg
3.5.	Rotation – Continuous	:	360 degree
3.6.	Safe working load in the cage on hard level ground with dry monitor	:	min. 270 Kg
3.7.	Safe working load with monitor in the cage delivery up to 2000LPM	:	min. 180 Kg
3.8.	Operations at maximum outreach with full working load permitted in wind speed	:	min 10Mtr/ Sec.
3.9.	Maximum time to jack up for starting operations	:	25 Sec.
3.10.	Safe working load of Elevator/Lifter	:	min. 270 kg
3.11.	Safe working load in simultaneous Operation with fully loaded Basket and fully loaded Lifter	:	300Kgs
3.12.	Operating time at full stroke for all operations	:	As per EN 14043

3.13.	Overall length in traveling position	:	12.50 mtrs max
3.14.	Overall width of the vehicle	:	2.6 mtrs max
3.15.	Overall Height in traveling position	:	4.1 mtrs max
3.16.	Maximum width of the vehicle when max. Jacks are fully extended on both sides	:	5.5mtrs
3.17.	Gross Vehicle Weight (GVW)	:	25-30 tons max.

4. CONSTRUCTION:

4.1. The vehicle shall be robust in construction; materials used in construction shall be carefully selected for lightness and durability. Use of timber shall be restricted in bodywork and use of rubber shall be avoided as far as possible. Ferrous metal parts shall be treated for anti - corrosion by a method other than electro-plating.

4.2. The main load bearing element of the aerial device shall be strong mainframe to take all the loads caused by the operation ofthe aerial. The main frame shall be fixed onto the chassis frame with bolts in such away that chassis performance and durability are maintained. The front fixing bolts shall be fitted without springs to allow the chassis frame beams to flex when the outriggers are fully down thus avoiding any stress concentration in the chassis beams. The actual main frame shall be fully welded rectangular steel structure providing high stiffness and thus maximum comfort ability and operational safety. At each end the main frame there shall be integrated housings for outriggers.

5. LADDER SET:

5.1. The vehicle shall perform the following functions/ operations.

5.1.0. Elevation

5.1.1. Depression

5.1.2. Extension & housing the cage shall be mounted on the upperladder. Removable whenever needed

5.1.3. Rotation 360 degree in either direction. The ladder set shall operate with an auto tracking system which enables the ladder to work in a programmed track without an operator

5.1.4. Elevator/Lifter

5.2. All the operations shall be electro-hydraulically operated with the help of hydraulic cylinders, wire ropes, chain etc. The system shall be purpose built to provide

smooth takeoff, variable speed range and smooth slowdown, based on the criteria laid down under EN 14043 Or NFPA.

5.3. There shall be five/six ladder Sections, with telescopic movement madefrom high grade, corrosion resistant steel and shall have minimum windcatching area. The ladder sections shall be extended and retracted telescopically and simultaneously. Wind sensor to measure the wind speed shall be installed at the ladder tip with warning signal sent to the main control stand. The wind speed shall be digitally displayed on the monitor screen giving a graphic and visual indication.

5.4. Based on the selected outrigger position and cage load, the system selects automatically the maximum outreaches to all directions. Thesystem capacity shall enable various outreach curves for each direction. The size of each sector shall automatically be defined based on position of outriggers. The outreach control system shall practically be infinitely variable.

5.5. The lower ladder section shall be bolted to turntable. The ladder sections shall be welded construction; welding method shall be of latest technology to provide high durability and extreme accuracy. For high strength and minimum flexing of the ladder sections only high tensile strength steels shall be used.

5.6. The ladder elevation and lowering shall be controlled by two hydraulic cylinders that both have their separate safety devices and can alone hold the entire load in case of failure of any one of the cylinders.

5.7. All ladder sections shall move in a synchronized way and there shall not be any intermediate jerks during extension / retraction. Automatic slowdown mechanism at the beginning of the movement as well as end of the movement shall be provided to all ladder movements, All the moving sections shall be fitted with adjustable guides/ rollers to provide smooth and accurate movement. Various maintenance points shall be located well at hand either along with the ladder or behind easily removable covers.

5.8. All ladder shall be internally and externally primed and painted for long life span treated against rust and corrosion.

5.9. All necessary hydraulic, electric, air etc. lines up to the cage shall be installed inside the booms, thus being well protected.

5.10. The extension and retraction cylinders or wire ropes shall be so laid; it should not cause any hindrance for climbing to a fireman. The ladder rungs shall be Antiskid design and extension and retraction cables shall be provided with tension adjustment mechanism.

5.11. The ladder shall be possible to elevate from -10 to +75 degree minimum angle. The rotation movement shall be continuous through 360 degree at all angle of elevation except for the cabin protection area. In driving condition, the ladder set shall be placed on the ladder head rest.

5.12. All the sliding sections shall have maintenance free Nylon/Steel rollersfor sliding movements and means shall be provided for the lubrication of these rollers at an easily accessible position.

5.13. Hook On type additional ladder shall be provided for the access to main ladder assembly from the ground. A lifting eye shall be provided at the head of the main ladder section to lift the load (not less than 1500kg).

5.14. An attachment system shall be provided at the top of ladder and in cagefor fixing water monitor. The monitor attachment shall be quick connecting type without the use of bolts and nuts. The monitor can be kept at some other suitable place on the vehicle. All main ladder operations shall be possible individually and simultaneously. While using simultaneous movements there shall not be reduction in the speed of ladder movements. The ladder leveling (plumbing) movement shall not be required oncestarting a main ladder operation. Theladderleveling shall not be done during any ladder operation to secure the vehicle stability.

5.15. Water monitor shall be permanently installed in cage or can be kept on the suitable place.

5.16. All main ladder movements shall be possible individually andsimultaneously. While using simultaneous movements there shall not be reduction in the speed of ladder movements. The ladder leveling movement shall be automatic in nature. No plumbing button or operation will be allowed.

5.17. All the ladder movements except rotation, just before reaching the limit shall slowed down automatically until rest. In addition to this, the ladder lowering rate shall proportionally be decrease with increasing ladder length in order to avoid excessive swinging of ladder tip when laddermovement stops.

5.18. The functional, ergonomically designed main operating control console shall be provided on the left or right hand side of turntable, with suitable operator seat. The following controls shall be provided on main control.

5.18.0. Lever/joy stick for rotation and elevation and depression.

5.18.1. Lever/joystick for extension and retraction, elevator ascendsanddescend.

5.18.2. Foot pedal for oil pressure ON/OFF (Dead Man type switch)

5.18.3. Indication sign/Button for rungs in alignment.

5.18.4. Button for Two man/Three man/Simultaneous (5 men)selection preferably.

5.18.5. Button for lighting ON/OFF.

5.18.6. Button for emergency stop.

5.18.7. Main switch for main control stand speaker.

5.18.8. Microphone for intercom system.

5.18.9. Lever for emergency operation ladder and jacks.

5.18.10. Button for automatic housing of ladder in the head rest.

5.18.11. Button for vertical and Horizontal ladder operation

5.18.12. Button for memory operation, the recorded route is shown in 3D at display(Optional)

5.18.13. A foldable touch/key panel color display screen. (LCD)

5.19. The operation panel shall be a foldable type to protect the display panel from dust, scratch, and any damage.

5.20. The operation panel shall be installed assisting functions for operator, such as automatic ladder housing, horizontal and vertical ladder operation with single lever, and memory function with 3D etc.

5.21. The ladder set shall be primed and painted for long life span, treated against rust and corrosion.

6. HYDRAULIC CYLINDERS:

6.1. The Hydraulic cylinders shall be double acting, fitted with lock Valves so as to prevent ladder set, working cage from lowering or the outriggers from retracting in case of pipe or hose failure.

6.2. The cylinders shall be provided with automatic dampers to prevent the pressure shocks and shall dampen the movement when a mechanical stop is reached.

6.3. Retraction of the outriggers shall be automatically prevented as soon as the ladder set has been lifted up from their transport position by way of electrical OR Hydraulic interlock system.

6.4. The ladder elevation and lowering has to be controlled by two hydraulic cylinders that both have their separate safety devices and both can alone hold the entire load in case of failure of any one of the cylinders.

6.5. The piston rods of the outrigger cylinders shall be protected suitably in order to protect piston rod from damage caused by any external impacts.

6.6. Lifting of the ladder set from the transport position shall be prevented before the outriggers are in support position and there shall be a limiting circuit to prevent damage to the Drivers cabin when the ladder is not clear of the cabin.

6.7. All the movements shall be automatically limited in their extreme position and the working cage shall be prevented from working outside of the permitted working range in any position.

6.8. An emergency stop switch shall be provided on both control panels, which shall switch off the hydraulic pressure of all movements. The unit shall be supplied with an emergency Back-up System, driven by a separate power generator.

7. TURN-TABLE:

7.1. The turntable shall be fully integrated steel structure containing center post, slip rings, water line, etc. duly fastened to the main frame by means of slewing ring.

7.2. A rotation drive with reduction gear and automatically operating braking system shall be installed on the turntable with easy access for maintenance and adjustment.

7.3. The base control station shall be attached to the turntable so as to rotate with it and be accessible in all positions of the turntable. The main control console must be on the right/left hand side of the ladder for better maneuvering better communication with driver cabin.

7.4. The hydraulic distributor (center post) shall be mounted in the center of the turntable at an accessible position and shall carry the hydraulic pressure and return lines, electrical supply lines & water line allowing continuous rotation in either direction.

7.5. Water shall be delivered through fixed telescopic waterway. The telescopic water way must be fixed under/over the ladder sections. This telescopic fixed waterway shall be fully made of steel or equivalent with anti-corrosion treatment from turntable to basket. This is a life time use, and any replacement shall not be required.

7.6. The fasteners retaining turntable to the rotation mechanism shall be of propergrade and shall be torque properly.

7.7. The rotation gearbox fastener shall be of proper grade and torque with proper backlash.

7.8. There shall be a provision for an electro hydraulic auxiliary pump to rotate turntable in case of failure of hydraulic system.

7.9. Pins securing the hydraulic cylinders shall be properly installed and secured.

7.10. The hydraulic hoses, tubing's and connections provided in the turntable shall be free from kinks, chalking or leaks.

8. BODY WORK & EQUIPMENT LOCKERS:

8.1. The frame for the bodywork shall be made of bolted extruded aluminum structure for maximizing corrosion resistance and minimizing weight. Steel structures shall not be accepted.

8.2. The complete external paneling of the rear body shall be made from Aluminum

sheet and / or GRP fitted to the structural member either by gluing or riveting or screwing.

8.3. The complete flooring of the rear deck shall be made from non – skidaluminum plates.

8.4. For the easy access to the rear deck from ground level, there shall be sufficient numbers of recessed steps on both sides of the 'vehicle provided with suitable grab handles.

8.5. Equipment lockers shall be bolted together from aluminumsheets for easy of repair. All lockers shall be fitted with rollup doors, properlysealed to be water and dust proof. AU doors shall be fitted with automatic switches activating the lights as soon as, the door is opened and also activating the warning in drivers cab to indicate exactly which doors are not fully closed.

8.6. Sufficient numbers of lockers shall be provided on both side of the vehicle for keeping various accessories and equipment that are required to be detached from the cage and stowed. The locker shall be so made that load distribution on both sides is equal.

9. STABILISING/ JACKING SYSTEM:

9.1. The Packing system shall consist of hydraulically operated fouroutriggers mounted in their housings. Each housing shall be fitted with adjustable guides to provide smooth and accurate movement of the outrigger beam. The outrigger piston rods shall be completely protected by closed steel profile.

9.2. The Jacks shall be of any type **'H' or 'X',** each side shall have two separate hydraulic cylinders, the first of which pushes the horizontal outrigger beam out and the second shall push the vertical Jack down.

9.3. The jack shall be provided with ground pressure sensors, which shall be correctly actuated before the ladder set is operated to ensure proper stabilization. Pleasured pressure values from each jack shall be displayed digitally with proper graphics on the control panel screen.

9.4. Each Vertical jack shall be provided with self-aligning footplate to spread the load evenly and allow the operation on uneven ground.

9.5. The jacking system shall be controlled by two separate control panel provided on left and right side of the vehicle at rear end with following controls.

9.5.0. Left side front and rear outrigger beam out.

9.5.1. Right side front and rear outrigger beam out.

9.5.2. Left side and Right side jacks down

9.5.3. Automatic extending switch for outriggers and jacks

9.5.4. A Color Touch/Key Panel Display (LCD)

9.5.5. Cage folding in isolation switch

9.5.6. Emergency stop push button

9.5.7. Automatic axle locking mechanism

9.6. All the jack movements shall be infinitely variable within the full jackingwidth.

9.7. The Jacking systems shall allow operating each jack individually and the jack projection shall be recognized by the controlling system. The minimum and the maximum outreach shall automatically be calculated as per the jack width.

9.8. The stabilizing system shall also incorporate axle-locking mechanism. The jacks shall be controlled individually or in pair with lever/joy stick lever / switch and the control panel shall be situated at rear of the vehicle. The operator will have clear look to the right and left hand side while extending the jacks.

9.9. Yellow LED flashing warning lights shall be provided at the outer most point of the jacks to identify the position of the jacks during night operation.

9.10. Four wooden plates shall be provided for the use, when the vehicle is to be operated on soft ground.

9.11. The Vehicle shall be provided with inclinometer which will measure both fore, aft and sideways inclination of the vehicle up to minimum 7 degree in driver's cabin.

9.12. The stabilizing system shall also preferably incorporate axle-lockingmechanism.

9.13. The outrigger controls shall be closed with flaps. There shall be a lightfor night operation (switched on by the driving light of the chassis).

9.14. The following controls shall be provided on main control.

9.14.0. Emergency stop switch

9.14.1. Button for ladder leveling on/off.

9.14.2. Button for rungs in alignment.

9.14.3. Button for two men/three-men and Five (5) men selection

9.14.4. Button for lighting on/off

9.14.5. Button for emergency stop

9.14.6. Volume control for main control stand speaker and speaker atladder top

9.14.7. Microphone for intercom system

9.14.8. Level for emergency operation ladder

9.14.9. Preferably Graduated arc with pendulum

9.14.10. Button for automatic housing of ladder in headrest.

10. ELECTRONIC SAFETY AND OUTREACH SYSTEM:

10.1. The computer- controlled system shall allowthe Outriggers to be positioned and the system shall be capable to select automatically the maximum allowed outreach to front, rear, right and left side. Based on calculations and parameters saved in the system to guarantee exactly the same outreach regardless of the external influences like wind speed and direction, temperature, friction of the cylinders, etc.

10.2. The CAN Bus system shall permanently calculate the possible out reach of the ladder set to the front, rear, right and left hand side. The real time calculation shall take into consideration:

6.2.1. The actual position and ground pressure of the jacks.

6.2.2. The load of the ladder set (wind load, cage load, additionalload)

6.2.3. The angle of elevation

6.2.4. The extension length of the ladder set

6.2.5. The turning angle of the turret

6.2.6. The load on the ladder set shall be measured by means of three load measuring bolts. In addition the load has to be measured by integrated load measuring sensors in the ground plates of the jacks (black and white switches are not allowed).

10.3. The display units of the system shall show maximum possible outreachand position of the working cage in real-time along with other details.

10.4. The maximum outreach shall be automatically calculated based on jack width. The provision for double-monitoring computer system shall be provided to operate safely even in failure of one computer system to regulate safe outreach.

10.5. The electronic system shall be made in CAN-BUS technology and approved according to the valid standards and directives. The system shall be ENC tested (EU directive 89/336/EEC) and CE type tested by TUV or any other appropriate agency.

11. CAGE:

11.1. The working cage shall be attached to the tip of top section and it shall be foldable. There shall be sufficient space of at least 1 sq. mtr of standing area for three persons and safe working load shall not be less than 270kgs excluding the equipment permanently mounted in the cage. The leveling system shall be controlled by an automatic horizontal level monitoring device with two fully automatic and independent safety circuits in case of an uncontrolled leveling failure. Manual emergency control of the cage leveling system shall be provided from the master control position only. Manual control from the cage shall not be permitted. The cage can be fully loaded at the full extended height whenthe fully loaded lifter will be in operation. The controls for folding over and in working position shall be integrated into the control panel for the jacking system.

11.2. The leveling movement shall be achieved with a cage. The independent leveling systems shall be able to carry the entire safe working load alone. The controls for folding over and in working position shall be integrated into the control panel for

the jacking system. The entrance to the cage shall be provided from the front and rear.

11.3. The cage shall be made of tubular steel/Aluminum profile, welded together and painted with special paint with high durability in case of steel cage. The dimensions of the working cage shall be such that it shall provide sufficient space for minimum three men. The top railing shall be part of the cage door so that entering into the cage without bending is possible.

11.4. The cage shall be designed for not less than 270Kgs working loadand shall be tested for min. 50% overload capacity.

11.5. The cage shall be permanently/quick removable type.

11.6. An emergency cage leveling operation shall be provided in case of failure of electricity by means of Hand or Foot pump.

11.7. The cage control shall allow all ladder movement to be performed infinitely variable. During cage operation, the movement shall be automatically controlled by the safety system. When the ladder is operated from the cage, the speed of movements shall be the same as ladder control from main control consol.

11.8. The location of cage control shall be such that the operator shall haveclear look on all side when operating the ladder from the cage. The Joystick/Levers in the cage shall be identical that of the main console.The cage control panel shall always be visible and accessible, even main the additional equipment is used by the fireman.

11.9. The cage control shall have following controls on the control panel.

- 11.9.1. Lever/joy stick for rotation and elevation and depression.
- 11.9.2. Lever/joy stick for extension and retraction.
- 11.9.3. Foot pedal for oil pressure ON/OFF (Dead Can type switch)
- 11.9.4. Indication sign/ BUTTON for rungs in alignment.
- 11.9.5. Button for Two man/Three/Simultaneous(5man)selection(optional)
- 11.9.6. Button for cage light ON/OFF.
- 11.9.7. Button for emergency stop.
- 11.9.8. Button for automatic housing of ladder in the head rest.
- 11.9.9. Button for memory operation
- 11.9.10. Touch panel color display screen.(LCD)

11.10. Microphone-cum-speaker for intercom system.

11.11. Waterproof One flood light shall be provided in front of the cage for illumination for night operation.

11.12. The cage shall be provided with collision safety device to protect thecage against damage due to impacts while in operation. All ladder movements shall be stopped automatically when the cage collusion system is activated.

11.13.

12. Microphone for intercom system:

12.1. Operation Colour 3D foldable display screen with the following indicators
- 12.1.1. Graphic and audible indication for exceeding safe working load
- 12.1.2. Visual warning for activation of working cage / boom collision
- 12.1.3. Graphical indication for fully extended left outriggers
- 12.1.4. graphical indication for fully extended right outriggers
- 12.1.5. graphical indication for the rescue ladder ”safe to climb“
- 12.1.6. digital reading of actual rescue height
- 12.1.7. digital reading of remaining outreach
- 12.1.8. digital reading of remaining cage load
- 12.1.9. digital reading of actual wind speed
- 12.1.10. Button for cage light ON/OFF.

12.2. One talkback audio system shall be present

12.3. All ladder movements shall be stopped automatically when the cage collision system is activated

12.4. The machine shall be equipped with ’Wall Climb’ facility which allows automatic raising or lowering of the cage alongside a wall subject to the path of travel being clear of obstructions.

12.5. The machine shall be equipped with a feature that works in such a way that the route travelled by the cage to reach a particular position maybe retraced automatically for a number of times. This mechanism shall be activated by push button on the cage/main control panel.

13. HYDRAULIC SYSTEM:

13.1. The Hydraulic power shall be provided by a reliable and adequate capacity variable displacement axial piston pump, which shall be driven by the vehicle power take off. The power provided shall not be less than 50 kW ensuring high speed operations

13.2. When no operation of the ladder is activated, the pump shall rotate on minimum flow and minimum pressure. When the control lever or oil pressure foot paddle is pressed, the engine should automatically go to preset limit and also activate the necessary hydraulic oil supply to all the circuits. Such load sensing system, shall prevent the loss of power in the hydraulic system, which normally causes over heating of the hydraulic oil. It also shall reduce the stresses caused to the vehicle transmission and P.T.O. system. At the same time fuel consumption and exhaust emissions shall be kept at the minimum. By operating several movements

simultaneously the oil flow shall increase automatically according to the need in the system thus making all movement speeds independent on each other. The constant pressure system with max. Pressure setting shall prevent overloading of the system and its components e.g. cylinders

13.3. There shall be a provision of instant couplings for attachment ofmanometer in each pressure line for checking pressure of each circuit.

13.4. The suitable filtration system of the hydraulic oil shall be provided onthe vehicle to insure a good quality of oil entering into the system.

13.5. All hydraulic cylinders shall be double acting with hard chrome plated piston rods and shall be fastened by means of preferably self-aligning ball bearings to prevent lateral forces from damaging the seals orpiston rods of the cylinders.

13.6. Hydraulic oil tank shall be provided into the turntable of suitably capacity. There shall be a proper heat dissipation system. The tank shall be fitted with oil level gauge, and suction connections with closing valves for easy maintenance and draining outlet with closing valve.

14. BACK-UP FOR THE HYDRAULIC SYSTEM:

14.1. The hydraulic power for all necessary ladder movements shall provide via a separate electro hydraulic auxiliary pump. The hydraulic pump shall be provided at suitably place safe and easy operation.

14.2. A mechanism, such as auxiliary hydraulic pump driven by secondary engine/Power Generator or vehicle battery, shall be provided for the housing of the ladder and the outriggers in case of main engine failure.

14.3. In case of failure of main control panel system, emergency operationof all ladder movements shall be possible. All the ladder movements shall be safely controlled with hydraulic system from the main control consol.

15. CONTROLS AND SAFETY:

15.1. The Electrical supply needed for control system shall be taken from the vehicle battery which shall be charged when the engine is running.

15.2. When the vehicle is in operation yellow flashing warninglightsmounted on the outriggers shall automatically remain on.

15.3. All ladder movements shall be controlled electro-hydraulically by means of proportional valves.The proportional valve shall not be sensitive to changes of ambient or oil temperature, and shall provide smooth, safe and very accurate movements even in most severe operating conditions. All control movements shall

be performed by theremote control system from both control panels. The control system shall be consisting of a Controller Area Network(CAN) wiring system linking individual control modules and displays.

15.4. For the stability of the ladder, the speed of all the movements shall slow down smoothly and automatically before reaching the finalposition and automatically stop all movements in the defined final position. The limiting system of the aerial must meet safety standardEN954-1 and Electromagnetic compatibility must be certified by EMC test certification. An overload warning shall be fitted to give and audible and visual warning in case of exceeding the safe working load.

15.5. Retracting of any of the outriggers shall be automatically prevented as soon as the booms have been lifted from their travelling position. Similarly lifting of the booms from the travelling position shall be prevented until the outriggers have reached the support width and ground pressure.

15.6. The emergency starting and stopping switch shall be provided on all four control panels. And an emergency stop switch shall be fitted at both boom control panels and both jacking control panels to provide immediate and complete ”freezing“ of all systems in case of an unexpected emergency

15.7. The control system shall have the capability to record and retract the previous travel path of the cage.

15.8. There shall be two independent drive elements to secure the ladder set of which each is capable of keeping the ladder in its present position during the ladder movements.

15.9. There shall be an interlock, only permits the ladder sets to be lifted from the head rest and thereafter other movements are possible.

15.10. Allboom movements shall be electronically monitored and limited at their most extreme positions thus making it impossible for the operator to reach an unsafe configuration by normal means of operation. The movements having direct influence on y the stability of the aerial shall all be fitted with two separate limiting circuits, the first one stopping that particular movement, the second one deactivating the whole electric and hydraulic stem should the first circuit not have worked.

15.11. All load bearing hydraulic cylinders shall be fitted with lock valves directly integrated into or onto the cylinder structure to prevent the booms, the working cage or the outriggers from retracting in case of a pipe or hose failure.

15.12. No bleed down system shall be allowed for safety reasons, system shall be either manually retracted with electric or manual driven emergency pumps and manual control of servo Valves.

15.13. The major movements, including lifting of the first boom to its maximum elevation and extending the telescopic movement or lowering the first boom at the

maximum outreach shall be fitted with slow-down devices to provide smooth deceleration of the movement. If maximum outreach is achieved, only a retraction or rotation shall be possible.

15.14. There shall be a driver‘s cabin protection mechanism which will stop respective ladder movement to avoid collision of ladder with cabin.

15.15. There shall be an impact cut out which will stop all ladder movements

15.16. An automatic hydraulically operated and electronically control leveling system (plumbing) shall be active all elevation and horizontal up to angle of 7.0 to 7.5°. The plumbing mechanism can be switch off/on from the main control console.

15.17. There shall be a sensing system for stability and security of the ladder parts. The ladder movements shall stop automatically due to projection and / or additional load such as Fescue persons, in conjunction with the jacking widths and the actual remaining loads.

15.18. An operating range display shall continuously show the total working range and the present load situation.

15.19. For the stability of the ladder, the speed of all the movements shall slow down smoothly and automatically before reaching the final position and automatically stop all movements in the defined final position.

15.20. All control movements can be performed by the control system from both control panels. The system shall consist of two displays, the graphical display and real time information about the outreach and the cage position and also to show possible movements according to cage position. In the text display there shall be main texts for:

- Warnings
- Emergency situations Help manual
- Fault finding system

15.21. When the ladder reaches to its operational limits. There shall be automatic final stopping of all ladder movements except for retraction and rotation.

15.22. There shall be a driver‘s cabin protection mechanism which will stoprespective ladder movement to avoid collision of ladder with cabin.

15.23. There shall be an impact cut out which will stop all ladder movements.

16. OPEART1NG RANGE DISPLAY:

16.1. An operating range display shall be provided at main control console, and cage control console, which shall provide information to the operator. The various signals coming from the sensors, computer shall be processed and visually represented in the form of text or symbol on the display.

16.2. A scale down representation of the actual available range of operation shall be displayed showing exactly the ladder position, projection, ladder length, height and angle of elevation.

16.3. A microprocessor shall control and monitor all ladder movements and safety system. If the safe operating limit is reached, the ladder movement shall be blocked automatically and a corresponding massage / indicator shall be shown on display screen.

16.4. Display shall show text massage of operational faults including its consequences.

16.5. The operating range display shall be illuminated suitably for easyreading during the night operation.

17. CONTROLS AND INDICATORS IN DRIVERS CAB:

The following control and indicators shall be provided in drivers cabin.

17.1. Visual warning for any of the equipment lockers being open

17.2. Switch with visual indication for rotating beacons

17.3. Switch with visual indication for siren unit

17.4. Microphone for the public address system

18. MIDSHIP MOUNTED FIRE FIGHTING PUMP

18.1. A mid-ship mounted centrifugal fire pump driven by vehicle's PTO shall be provided. Pump shall be made in corrosion proof light alloy or equivalent material c/w automatic priming system.

18.2. 1 pump suction dia. Minimum 4", and 2 outlets dia. $2^{1/2}$" c/W BSS coupling shall be provided in the pump compartment.

18.3. Pump minimum capacity 3000lpm at 10bar.

18.4. Pump control panel shall include at least the following controls:

18.5. Medium pressure manometer - Vacuometer - Pump hour counter - Hand throttle control - Engine re-start control - Engine oil pressure gauge.

19. THE WATER MONITOR:

19.1. The remote controlled monitor shall be connected with a telescopic fixed waterway directly or attached to the rescue cage with appropriate inlet connection.

19.2. The output of the monitor shall not be less than 2400 LPM at 7 bar and throw range shall be approx. 40 mtrs.

19.3. The monitor shall be moveable upward, downward, horizontally and vertically can be moved vertically upward and downward up to -150 to+ 600. The horizontal movement up to 150 left side and right side each.

19.4. The monitor shall be fed with water through nylon delivery hose of 63 mm internal dia. meter of 60mtrs. in length with instantaneous male and female couplings or permanently connected with telescopic water way to commence firefighting quickly.

20. INTER COMMUNICATION SYSTEM:

20.1. There shall be transistorized talk back intercommunication system fitted between operation seat at turntable and the cage. In addition, there shall be intercommunication system between operation seat at turntable and elevator.

20.2. The system shall be combined microphone and loudspeaker for hands free operation and shall be located in the cage. The turntable control station is also equipped with microphone, which shall be integrated in the loudspeaker with volume control.

20.3. The microphone and the loudspeaker shall be sealed properly and it shall be protected from the ingress of water, dust and humidity.

21. ELECTRIC SYSTEM:

21.1. The electrical supply shall be taken from the vehicle batteries, which are kept charged when the engine is running. Voltage of the system shall be 24 V DC and all circuits shall be provided with specific fuses depending on the current consumption of that circuit.

21.2. When the P.T.O. is switched on, yellow flashing warning lights located at each outrigger and ladder set pivoting point shall automatically be switched on.

21.3. 1x 24 volts, 60 watts, spotlight with swivel mounting bracket shall be fitted at the cage railing in the front side to provide extra safety during night operation. The switch for these Rights shall either be provided on the light itself or on both the control panels.

21.4. Two rotating beacon lights shall be provided on each side of the drivers cab roof with Amber colour lens. The switch for switching the beacons on and off with suitable signal light shall be integrated in the control panel of siren cum public address system.

21.5. A socket for operating electrical rescue tools shall be provided at cage compatible to recue tools.

22. SIREN AND PUBLIC ADDRESS SYSTEM:

22.1. There shall be an electric siren unit fitted on the roof of the vehicle cabin or at a suitable place with the control unit mounted conveniently inside the driver cabin. It shall have the fast and slow sound modes integrated switch for rotating beacon lights.

22.2. Command microphone, which is fitted with push-to-talk switch, allows the public address message to override the siren function. Operations are controlled by non-glare-illuminated push buttons of different colors on control panel shall be provided with 1 Km range.

23. RESCUE LIFT:

23.1. The vehicle shall be equipped with a rescue lift, attached to the top of the ladder set. The rescue lift shall be designed for min. 300 kg and its hall be operated from the main control console as well as from the lift itself.

23.2. The ladder shall be designed in such a way that there is a safe rescueway from the Power position of the rescue lift to the working deck of the vehicle on the L/H side of the turntable for uninterrupted rescue operation. Because the main control console will be on the right hand side of the ladder section

23.3. With the rescue lift it shall be possible to rescue maximum persons within minimum time from not less than 55mtrs rescue height.

23.4. In transport position the rescue lift shall be folded, so that the height of the vehicle is kept at a minimum, as specified herein.

23.5. The rescue lift shall be operated by an electro-hydraulic operatedcable winch. The rescue lift shall have automatic safety devices, stopping the lift in case on winch failure.

23.6. Preferably for quick and safe rescue operations the ladder shall bedesigned in such a way that there can be one firefighter along with two person in the rescue cage, while two persons are entering the rescue lift at 55m working height. In a nut shell at the time of simultaneous operation the loaded cage with loaded lifter can be operated at 55 mtr. working height also. The total load capacity will be 450 kg at the time of simultaneous operation even at the height of 5 5 mtrs also. There should be five men selection switch for simultaneous operation. Simultaneous operation is completely optional.

24. ROTATING BEACONS:

24.1. One each side of the drivers cab roof there shall be rotating beacon in yellow color the switch for switching the beacons on/off with suitable signal light shall be fitted inside of the cab.

25. PAINTING:

25.1. Before painting all surfaces of steel structures shall be carefully shot blasted after which they shall be primed and then applied the coat of approved paint. All the ladder set shall also be painted from all the sides.

25.2. For very high corrosion resistance of hollow structures such as steel profiles of the working cage, ladder set, outrigger beams and housings shall be treated with anti-corrosion protection.

25.3. The following Paint shades shall be used:

25.3.1. Ladder support, Turntable and related Cylinders	:	Red RAL 3000
25.3.2. Body work including cabin	:	Red RAL 3000
25.3.3. Chassis frame touch-ups	:	Chassis original tone

26. ACCESSORIES:

26.1. Wooden outrigger ground pads/ plates with brackets	-	4 Nos.
26.2. Working range diagrams, at turntable &in the cage	-	2 Nos.
26.3. Marking of safe working load in the cage	-	1 No
26.4. Warning labels and instruction plates	-	1 set
26.5. Operation and maintenance manuals for TTLand Chassis.	-	2 sets
26.6. Plug for 24 V working light at the working cage	-	1 No
26.7. Hydraulic pressure gauge	-	1 No
26.8. Set of tools & accessories required forthe repairs& Maintenance of TTL, chassis, & other systems	-	1 set
26.9. Safety belts for cage occupants	-	7 Nos.
26.10. Stretcher carrier with stretcher	-	1 set
26.11. Rear working lights 1000 lumen (LED)/24V located on the decking	-	2 sets
26.12. Flood lights in cage 230V, SOOW each	-	3 nos.
26.13. Reversing color camera with 7” color display wide screen in cabinWith integrated weather protection shield	-	1 no.
26.14. Automatic descending life line (emergency escape equipment’s) oflength 70 mtrs or above fitted for operation in the cage.	-	4 Nos.

26.15. Xenon searchlights on the decking (Specification complying with Marine usage) - 2 Nos.

26.16. Service laptop with all accessories compatible to system - 1 No.

26.17. Load man Portable Falling Weight Deflect meter to check ground stability - 1 pc

26.18. Three layered firefighting suits (Blue color) confirming to EN469 with firefighting gloves, confirming to EN659, firefighting boots confirming to EN345, firefighting helmet confirming to EN 443, hood all certified to relevant EN (or equivalent) standards shall be supplied along with necessary test certificates. - 6sets

26.19. Load man Portable Falling Weight Deflect meter to check ground stability - 1 pc

27. INSTRUCTION MANUALS:

27.1. Two sets of complete instruction manual for the operation and maintenance of Turntable Ladder unit (including all systems), stand by systems, chassis and itemized spare parts list shall be supplied along with electrical circuit diagrams, hydraulic circuit diagrams shall be provided with the vehicle.

27.2. All the manuals, circuit diagrams, literature etc. shall be in English language.

28. DRAWINGS:

28.1. The complete detailed drawings of Turntable Ladder duly mounted on chassis specified herein shall be submitted along with the tender.

28.2. The working range diagram along with all the details shall also be submitted along with the tender.

29. STABILITY:

The stability of the vehicle (in traveling position) when fully equipped and loaded (excluding crew member), with ladder resting on the resting stand and without extending the stabilizing jacks shall be such that it shall remain stable and shall not overturn even if the surface on which the vehicle stands has inclination on either side from the horizontal as per the standards stipulated under EN 14043. The tenderer shall specifically mention the angle of overturning in their offer. The manufacturer to that effect shall furnish a certificate at the time of supply.

30. TRAINING:

30.1. The manufacturer's service engineer shall undertake the training for two weeks in the operations, repair and maintenance of the Turn Table Ladder for the operational staff of the HARYANA FIRE SERVICE. Cost on this account shall be

included in the offer.

30.2. The training regarding the repairs, maintenance, of the chassis and Turntable Ladder including all systems shall be imparted to the officer of the Fire Brigade department for a period of two week at the factory premises of the equipment manufacturer. The successful tenderer shall supply free of cost all the tools and accessories required for the training. The cost on account of to & for air travel, transportation & boarding and lodging accommodation fortwo weeks shall be included in the basic cost of vehicle.

30.3. Service engineer shall impart training for in the operations, repair and maintenance of the chassis and Turn Table Ladder for the operational staff of the HARYANA FIRE SERVICE during the time of vehiclecommissioning at the place specified by the Director, Haryana Fire Service, Panchkula. A complete training package in CD-format for internalre-training of the operating personal must be supplied. For technical assistance and operation full time one technical person preferably an engineer should be deputed by company at the place of deploying machine in field for one month exclusively.

Note - The Committee also recommends that above mentioned technical specifications and other terms & conditions may be got verified /checked at length by Director Supply and Disposal department so that no litigation may arise later on.

Lalit Kumar	**Yadvinder Sharma**	**Rajinder Singh Dahiya**
Fire Station Officer	**Fire Station Officer**	**Assistant Divisional Fire Officer**

Sajjan Kumar	**Niranjan Kumar**	**Gulshan Kalra**
Assistant Divisional Fire Officer	**Works Manager HR**	**Deputy Director (Tech)**

ANN EXURE – A

SCHEDULESOFTECHNICALPARTICULARSOPTURNTABLELADDERPLATFORMOF 55 m WORKINGHEIGHT

Sr. No.	Technical Details	Remarks
1.	GENERAL DESCRIPTION : (a) Make andModel (b) height(hatters) (c) Outreach(meters) (d) Operatingmedia (e) Safety (f) Gross Vehicleweight	
2	CHASSIS: (a) Make (b) Model (c) Wheelbase (d) Enginetype (e) RatedHP (f) Type o l'clutch (g) Type of gearbox (h) Type of frontaxle (i) Type of rearaxle (j) Type steeringsystem (k) Type of brakingsystem (l) Fuel tankcapacity (m) Size of tyres (n) Type ofcabin (o) Type of electricalsystem (p) TofPTO	
3	Constructional details: A: Driver Cabin: (a) Paneling(material) (b) Doors(Nos.) (c) Windows (Nos.) (d) Seats (Drivers, attendant, andcrew) (e) Capacity B: Rear Body:	

	(a) Details of horizontal and vertical crossmembers (b) Paneling,sides,deckfloor(material,size,thickness) (c) Details of lockers (nos. site, material) (d) Overall length in MM (e) OverallwidthinMM (f) Overall Height inMM (g) Details of Aluminum shutters (size, Nos.)	
4	OPERATING **REQUIREMENTS** (a) Safeworkingloadingincage(Kg) (b) SafeworkingloadwithMonitorincage(Kg)(c)Liftingcapacityoftheu ndercage(Kg) (d) Testing suitability at(Kg) (e) Permittedwindspeedatthemaximumoutreachwithfull workingloadinthecage (f) Operatingtimeoffullstroke(second) • Elevating fist boom /ladder • Elevating second boom/extendingladder • Telescopic • Reaching max height from groundlevel • For 360 degreerotation • For extending jack oneside • For extending jack for bothside • Forextendingallfourjacks,elevating,cage to max height and rotation through 360 degree	
5	**DIMENSION OF THE FINISHEDAPPLIANCE:** **A. In Operating Position:** (a) Maxheighttoworkingcagebottom(M) (b) Max working height(Mtrs) (c) Max working outreach (Mtrs) (d) Maxoutreachtocagecornerwithmaxsafeworkingload(Mtrs) (e) MaxoutreachbelowtheBoundlevelworkingcagebottomwithmaxsafewor kingload(Mtrs) (f) Safe working Load(Kg) (g) Rotation continuous(degree)	

	(h) Levelingcapacity(Foreandaft/sideways) **B: In Transport Position:** (a)transport height approx.(Mtrs) (b)Transportlengthapprox.(Mtrs) (c)Transport width approx. (Mtrs)	
6	CONSTRUCTION (a) Materialused (b) Useoftimber |c) Use of rubber {d) Treatment of material (e) Painting procedure	
7	BOOMS (a) Numbers (b) Tales copied sections(nos.) (c) Boom / Ladder length (MI i s) (d) Movement (e) Location (f) Design (g) Treatment (h) Weldingprocess	
8	HYORAULIC CYLINDERS: (a) Lock valves (b) Hydraulic Dampers (c) Reduction in speed of booms / Ladder (d) Automaticpreventionofretractingofoutrigger (e) LiftingofBoom/Ladderpreventionunlessoutriggersareinposition (f) Limitingcircuittopreventcabdamage (g) emergency stop switches	
9	CONTROL SYSTEM FOR BOOM AND ROTATION MOVEMENT: (a)Type of controlvalves (b)Make (c) Model	
10	TURNTABLE: (a)Constructiontype (b)fastening (slewingring) (c) swivel — in — line (d) rotation(degree) (e) Movement control (f) Gear unithastening (g) Location	

11	MAINFRAME: (a) Fametype (b) Fastening (c) Construction material (d) Non s lip aluminum tread plates (e) Steps on both sides (f) Locations	
12	CAGE: (a) Material (b) Outerdimensions (MM) (i) Length (ii) Width (iii) Height (c) Doors, Nos., &size in (MM) (d) Max Load (Kg) (e) Fitment to Control Panel (f) Provision for digitalanemometer (g) Levelingdevice (h) Working cage slewingprovision (i) Drop down plat formprovision (j) Location of drop downplatform (k) MAX permissible load on drop down platform(Kg) (l) Safety Railing provision height ((MM)	
13	**STABILISING JACKS:OUTRIGGER:** (a) System (b) Controls andOperation (c) Nos. andLocation (d) Individualcontrols (e) Levelindicators (f) Self alignmentfoot plates for outrigger (g) Operation on unevenground (h) One side jackingprovision	
14	**CONTROL ANDSAFETY:** (a) Electric control taken from vehiclebattery	

	(b) voltage (c) All control panels to have engine start/ stopbutton (d) Signallamps	
15	DETAIL OF SAFETY DEVICE: (a) Boom/LadderandOutriggercylinderlockvalvemake&type (b) Isolating system boom/ ladder/ outriggeroperation (c) Movement limitingsystem (d) Cabprotection (e) Overloadalarm (f) Emergency stopsystem (g) Dead manswitch (h) 8leed down system/othersystem	
16	**HYDRAULICSYSTEM:** (a) *Hydraulic* power, *make* &model ofpump (b) Pump capacity Ltrs/min and pressure(Kg/cm2) (c) Pump operation (d) Control valvefunction (e) Oil flow to increase(automatically) (f) Prevention ofoverloading (g) Instant couplings formanometer (h) Manometer (i) Filtration ofoil (j) Filters (k) Hydraulic cylindertype (l) Plating of pistonrod (m) Hydraulic cylindertype (n) Fastening (o) Capacity of hydraulic oiltype	
1	**BACKUP FOR HYDRAULICSYSTEM:**	

7	(a) Type (b) Location (c) Operatingmode	
18	**CONTROLFOR STABILISING JACKS:** (a) Location of control panels (b) Change overSwitch (c) Controllevers (d) Emergency loweringvalves (e) One side jackingfacility	
19	**WATER PIPINGSYSTEM:** (a) Material ofpiping (b) Diameter of pipe(MM) (c) Water monitorlocation (d) Pipingfitment (e) Protection against over pressure by reliefvalve (f) T elescupicwaterpipe (g) Finish &plating (h) Seals (i) Flexiblehose (j) Monitor isolatingvalve (k) Additionaloutletwithvalveandcoupling (l) Nozzle and system (watercurtain) (m) Control valvelocation (n) Watermonitor (o) Location	
20	**ELECTRICAL** EQUIPMENT: (a) Slip rings (b) Rating (c) Spotlight (d) Red rear lampsnos.	

	(e) Red/Orange lamp at boom/ladder knuckle (f) Illumination of: (i) All control panels (ii) Instruction plates (iii) Leveling indicators (8) Recharging (h) Separate fuses (i) Wiring diagram	
21	**INSTRUCTION PLATE: DETAILS**	
22	**BOOM / LADDER:** (aj No of telescopic section (b) Location (c) Min. width at top (MM) (d) Railing height (MM) (e) Folding bridge (f) Material (g) Treatment (h) Controlling system	
23	**INTER COMMUNICATION SYSTEM:** (a) Type (b) Make (b) Model (c) Operating voltage (d) Location	
24	ELECTRIC POWER LINE :	
25	GRAPHICAL OISPLAY MONITOR : (Details)	
26	**FAULT FINDING** SYSTEM **(Details)**	
27	EMERGENCY **SYSTEM** (a) Make&Model of Engine &pumpset	

	(b) Capacity of pump(Ltrs/Min) (c) Make&Modelofelectricmotoroperatingvoltage (d) Make&Modelofpumpsetwithcapacity(Ltrs/Min) (e) Bleed down system/othersystem	
28	LUBRICATION: Details	
29	BODY WORK (a) Steps and grabrail (b) Construction (c) Material (d) Siren with two tone hooter + Public Address system (e) Orange beacon lamp	
30	FINISH (a) Painting (b) Visibility	
31	**TOOL KIT DETAILS:** SEPARATELY	
32	**STABILITY**	
33	TESTING **FACILITIES**	