दि फ़र्टिलाईज़र्स एण्ड केमिकल्स
ट्रावनकोर लिमिटेड
FACT
THE FERTILISERS AND CHEMICALS
TRAVANCORE LIMITED
(भारत सरकार का उद्यम) / (A GOVERNMENT OF INDIA ENTERPRISE)
CORPORATE MATERIALS
PD ADMINISTRATIVE BUILDING
UDYOGAMANDAL - 683 501, KOCHI, KERALA, INDIA
GST No : 32AAACT6204C1Z2
Phone : 0484-2546778
2546629 / 2545222

निर्घ केलिऐ अनुरोध/REQUEST FOR QUOTATION

Detailed Specification

Enquiry:MM/172/G29845

Contact Details

Name: Binduja Menon
Phone: 0484 2568253 , 0484 2568204
Email ID: binduja@factltd.com

Please submit your offer for supply of the following items as per the instructions, technical specifications and other terms and conditions specified herein/ attached.

Note:
1. The delivery period mentioned in the BoQ is our indicative requirement. You may offer your earliest delivery period.

Please refer our above referred enquiry number in all correspondence

SL No.	Material Code	Detailed Specification/s	Quantity	Unit of Measure
1	601915550	FOAM FIRE TENDER: Design, Body Building cum Fabrication and supply of Foam Fire tender on a chassis with equipments, accessories, tools, electrical items, mandatory pump and PTO spare parts as per the attached TPS No: FACT CD / FIRE AND SAFETY -FT/24/01	1	Number

SPECIAL CONDITIONS

1. Offer shall be as per the TPS FACT CD / FIRE AND SAFETY - FT/24/01 provided.

2. Pre Bid Meeting Required and shall be conducted one week prior to the bid opening.

3. Pre Qualification criteria is provided and only Pre qualified bids shall be considered for Technical Evaluation.

4. Performance Guarantee and Warranty required as per the TPS provided.

5. Pre Despatch Inspection is required as per the TPS.

6.Performance Bank Guarantee for 10 % of contract value for a period of 18 months from the date of delivery shall be submitted by the successful Bidder in the Proforma provided as per TPS conditions.

7. Security Deposit: A Security Deposit Bank Guarantee of 5% shall be furnished as per the FACT proforma (applicable for orders of value above Rs. 5,00,000.00) post placement of Purchase Order.

8 .As per TPS , after supply of Fire Tender, the Bidder shall provide one week training on operation & maintenance at owner's site & charges for the same shall be included in the quoted price.

9.Payment for Chassis will be made at actuals against documentary evidence, subject to the max.amount quoted by bidder in the Price Bid.Other specified conditions apply.

10. Complete Fire Tenders per the TPS provided shall be delivered within 6 months from the issuance date of Purchase Order.

PRE-QUALIFICATION CRITERIA

TENDER No. MM/172/G29845 Dated 01-08-2024

Sl No	Pre-Qualification Criteria (PQC) Conditions	Documents to be submitted along with bid	Remarks	Bidders compliance
1	Bidder shall be in the business of manufacturing /fabrication/assembly of Fire Tenders for more than 5 (five) years' ending on the date of NIT	Copy of 'Certificate of Incorporation', NSIC or equivalent Certificate specifying the nature of business of the firm and showing the date of incorporation .		
2	Bidder should have fabricated, supplied and proved performance of **minimum one number** (1 No) Foam Fire Tender having water pump capacity of **at least 4000 LPM** at a pressure of 10 Kg/cm square built on **minimum 25** Ton GVW Chassis during the last 5 years ending on the date of NIT.	Copy of Purchase Order with detailed technical specifications, date of supply etc and corresponding Performance Certificate (min. 1 year) from the client to prove satisfactory performance of the supplied fire tender.	Relevant documents required	
3	The Bidder should have manufacturing/ fabricating / assembling facilities and adequate testing/quality assurance facilities of Fire Tender.	Self declaration by bidder specifying the machinery, equipment and testing facilities in their firm.	Relevant documents required	
4	a) Average annual turnover of the bidder for the last three financial years ending on 31-03-2023 shall be at least Rs. 190 /- Lakhs or above and b) Annual turnover for each year shall be at least Rs. 29 /- lakhs or above during the last three financial years ending on 31-03-2023	Annual report (audited balance sheet and profit & loss account) of the last three financial years ending on 31-03-2023 , duly authenticated by a Chartered Accountant/Cost Accountant in India or equivalent in relevant countries.	Relevant documents required	

Note:-

1) FACT shall have liberty to verify the references submitted by the Bidders with users or customers and accept/reject the bids based on the feedback.
2) Pre-Qualified bids will only be considered for Technical Evaluation. Technically and Commercially Acceptable Bids will only be considered for Price Bid opening.
3) Copies of documents submitted shall be sealed and duly attested by the bidder. Submission of authentic documents for meeting the above technical and financial criteria is the prime responsibility of the bidder. Wherever FACT has concern or apprehension regarding the authenticity/ correctness of any document, FACT reserves the right of getting the documents cross verified from the document issuing authority. In case of ambiguity or incomplete documents, FACT reserves the right to reject the Bidders Bid without assigning any reason.
4) IMPORTANT: In case of ambiguity or incomplete or non submission of required relevant documents along with bid, FACT reserves the right, at its option, to reject the Bidders Bid without assigning any reason and without notice.

PTR

List of clients to whom Fire Tenders were supplied to be submitted, along with the following details-

a) Purchase Order No with date

b) Detailed specification of Fire Tender

c) Name of the Organization

d) Quantity

e) Date of Supply

FACT
प्रगति के पथप्रदर्शक
PIONEERS IN PROGRESS

TECHNICAL PROCUREMENT SPECIFICATION

FOAM FIRE TENDER

TPS NO.	FACT CD/ FIRE AND SAFETY - FT/24/01
ORIGINATING DEPT	FIRE AND SAFETY
CLIENT	THE FERTILISERS AND CHEMICALS TRAVANCORE LTD – COCHIN DIVISION
ITEM	FOAM FIRE TENDER
DESCRIPTION	FOAM FIRE TENDER WITH CAPACITY OF 6000L WATER, 1000L FOAM
QTY.	1 No.
PLANT	FACT – COCHIN DIVISION
REVISION	0
DATE	04.01.2024

PREPARED -	CHECKED -	APPROVED -
Praveen Nelson DM(F&S)CD	SM(F&S)CD	DGM(TS)CD

Contents

1. INTRODUCTION

This Technical Procurement Specification (TPS) is for Design, Body Building cum Fabrication and Supply of one no. of Foam Tender as specified on a Chassis with equipments, accessories, Electrical items /Tools and Mandatory list of pump and PTO spare parts as per attached Annexures. The Fire Tender shall be fabricated with the best material and good workmanship, ensuring effective and efficient operation of the Tender

The Prime mover with chassis for the Foam Tenders shall be procured by the BIDDER in the name of M/s **The Fertilisers and Chemicals Travancore Limited, Cochin Division** The cost of the chassis is to be included in the offer separately.

All work / activities covered in the TPS including design, procurement of chassis, fabrication, body building, procurement of equipments, fitment, exterior/interior work, supply of accessories, tools, electrical fittings, water pump and PTO spares, inspection and testing, documentation, transportation, supply and delivery of multipurpose fire tender complete in all respects to FACT – Cochin Division with necessary documents required for permanent registration in Kerala is in the scope of the BIDDER and to be arranged and carried out by the BIDDER at his own cost.

Also any other requirements which are not covered under this TPS, but may be necessary to complete the Fire Tenders and/ or to fulfil the operation/performance requirements shall be provided by the BIDDER at his cost, to the full satisfaction of M/s FACT.

Certain items, clauses, stipulations etc. by virtue of their importance may be repeated in the TPS / documents to avoid slippage under any circumstances.

The vehicles shall conform in all respect of the provisions contained in the M.V. Act 1988 and M.V. Rules 1989, RTO rules etc. applicable in Kerala State, applicable emission norms and to any other statute modifications or re-enactments thereon from time to time

The Fire tenders shall be generally designed, fabricated/manufactured as per the relevant clauses under IS 10460: 1983 reaffirmed in 2000 and OISD 115 and with best material and good workmanship, for ensuring effective and efficient operation of the fire tender.

Other relevant IS Standards, Other Standards and Statutory rules / regulations in India and Kerala State as noted in the TPS / applicable are also to be followed by the BIDDER.

The BIDDER shall strictly comply to the acceptable makes specified. There shall be no deviation on the specified makes for chassis, water pumps and Power Take Off (PTO), other equipment's units.

For other items with makes specified in the TPS, in case the BIDDER requests to include an additional reputed make (s), this shall be taken up by the BIDDER to FACT with full credentials of the proposed make in accordance with the procedure noted under Clarification/ Deviation requests by the bidder. The decision of FACT shall be final and binding. Subsequent requests in future may not be entertained.

For makes of other items not specified in the TPS, only reputed makes shall be used with the prior approval of FACT. No cost / time implication is permitted in this regard.

Deviations if any from any of the clauses in this Technical Procurement Specification (TPS) / enclosures / codes referred in this Technical Procurement Specification etc. shall be clearly mentioned point wise with reasons for deviations by the BIDDER in the Compliance Statement (Technical) in the enclosed format and to be submitted by the BIDDER along with the bid.

The BIDDER shall also submit along with the bid duly filled in Technical Check list in the enclosed format as reply / confirmation to the Technical queries sought by the client.

However, to avert the possibility of rejection of the offer after opening of bids, it is recommended that the deviations shall be taken up with FACT as noted under Sl No 1.1 below so that their Bid is in total compliance to Bidding Document without any deviations.

1.1 Clarification/ Deviation Requests by Bidder

The details presented in this TPS have been compiled with all reasonable care. However, it is the Bidders responsibility to ensure that the information provided is adequate, clearly understood and it includes all documents.

Bidder shall examine the TPS thoroughly in all respects and if any conflict, discrepancy, error or omission is observed, Bidder may request clarification/ deviation up to 3 days prior to pre bid meeting date or at least fifteen days before the last date of submission of bid in case the bidder is unable to attend the pre bid meeting. Such Clarification / deviation requests shall be directed to the emails/ contact details mentioned in the enquiry.

Response to queries/ clarifications/ deviations raised shall be sent as expeditiously as possible in case such clarifications are considered to be given. The response shall not form part of Bidding Document unless issued as an Amendment/ corrigendum. Any modification of the bidding document shall be issued as an Amendment / corrigendum at the discretion of FACT. The decision of FACT shall be final and binding under all circumstances.

Bidders are expected to resolve all their clarifications/ queries to the Bidding Document and submit their Bid in total compliance to Bidding Document without any deviation/ stipulation/clarification

1.2 **Conflicts between documents**

In the event of conflict between various documents, the following order of preference shall govern:

a. Statutory rules / regulations in India and Kerala State applicable.
b. The clauses in this Technical Procurement specifications
c. Codes and Standards under reference

In case of such conflict between the various documents above, this may be taken up in FACT in accordance with the procedure noted under Clarification/ Deviation requests by the bidder. In all cases, the decision of FACT shall be final.

2. GENERAL REQUIREMENTS:

2.1 All the equipment and accessories shall be fixed on the appliance in a compact and neat manner and shall be so placed that each part is easily and readily accessible for use and maintenance. The centre of gravity shall be kept as low as possible

2.2 **All materials/items shall be BIS marked & where BIS is not available the material shall be of high quality from reputed manufacturer.**

2.3 **Drawing / documents to be submitted along with the offer**

The BIDDER /manufacturer shall provide the following documents / particulars along with BID Documents for examination by FACT:

a. Chassis Manufacturer's Product catalogue of the offered chassis model with full details (Power @ rpm, torque @ rpm, wheel base, turning circle diameter, braking system, permissible FAW, RAW, GVW etc.)
b. Load distribution chart, determination of operational FAW, RAW, GVW, and permissible FAW, RAW, GVW etc. of the chassis manufacturer and ensure suitability of the offered chassis for the specified duty.
c. Relevant Calculations for suitability of PTO for drive line and matching of pumps with PTO and Engine power / torque with sketch (as noted in the TPS).
d. General assembly drawing showing the location of subassemblies e.g. PTO, Pump, primer and its linkages with main Gear Box, Water Tank, Foam Tank.

e. Flow diagram of water and foam lines with foam proportionate arrangement –Low and High pressure pump.
f. Drawings with details of sub frames with metacone mounting for water tank, foam tank and any others to chassis
g. Details of critical raw materials used in the fabrication of superstructure, components, sub-assemblies and their relevant national standards.
h. Make, Model and Technical details of bought out items with their catalogues.
i. Makes of other major items with details
j. Pump out put with performance and characteristics curves.
k. Details of super structure of the body of fire tender.
l. Mandatory list of Spare parts for Water pump and PTO spares as per Annexure-3
m. Un priced bid in the format enclosed indicating Quoted/ Not Quoted along with the Techno commercial bid
n. Other Recommended Spare parts by the BIDDER for water pump and PTO for two years' operation sheets (unpriced along with the techno commercial bid and priced separately along with the price bid)

2.4 Drawing / documents to be submitted after LOI/ Order

The bidder/manufacturer should submit the following documents / drawings after receipt of LOI/Order within 15 days for approval of FACT:

a. Detailed layout drawing for under structure and super structure indicating all the major components and sizes, specifications, quantity, BOM etc.
b. Water tank & Foam Tank detailed drawings.
c. Detailed Flow diagram of water and foam lines and sizes, valves and their specifications with foam proportionate arrangement including Low and High pressure pump.
d. Electrical circuit drawing indicating major electrical equipments
e. Full details of super structure of the body of fire tender.
f. Detailed Quality Assurance plan (QAP) for fire tender in conformity to the specification

Notes:

a. Proof of source of supply to be furnished during inspection by FACT.
b. Only after due approval of drawings / documents by FACT, BIDDER shall start the fabrication Job.
c. Comments / Approval given by the client (FACT) or their authorised representative on the BIDDER's drawings / documents / procedures/ plans etc. or acceptance/ approvals given by the client at any stage does not relieve the BIDDER of the responsibility to comply with the order conditions.
d. No extra claim shall be entertained for any changes, which may arise during review / approval stage by the client of BIDDER's drawings / documents / procedures.
e. The Completed fire tenders shall be not be dispatched or transported until all the stage inspections and final inspection and acceptance tests are successfully completed,

submission of necessary documentation and inspection release certificates (IRC) from the purchaser is obtained. Also any statutory tests/ approvals as necessary at the pre dispatch stage is to be obtained by the BIDDER before the fire tenders are dispatched.

f. Details of delivery, transportation etc. are dealt subsequently in the TPS which shall be followed.

g. Two nos soft and six nos hard copies of all documents, instruction manual, all drawings, documents, manuals, inspection reports, certificates, CCE/ PESO approvals and other approvals applicable, shall be submitted along with supply.

h. Details of documentation / certificates required are delibe rated subsequently in the TPS.

i. Even if the QAP is approved by the client or the inspection and tests are carried out and accepted by the client (or their authorised representative) or inspection is waived during any stage of the order by the client at their discretion, the BIDDER is not absolved to any degree of his responsibilities to ensure that the fire tenders supplied comply strictly with the requirements specified in the order.

3. CHASSIS

3.1 The Fire Tenders shall be fabricated and built on the **chassis of Ashok Leyland / TATA / Bharat Benz / Mahindra** (Chassis shall be procured along with OEM made Air conditioned cabin) which shall be bought by BIDDER only from OEM authorized dealer **on behalf of M/s FACT within 30 days of placement of P.O**. The requirement shall be as follows The requirement of chassis shall be as follows:

• Engine	: Diesel engine with min 6 forward and 1 reverse speed gearbox.
• Wheel Base	: Not Less Than 5000 mm
• GVW	**: Not less than 25 Ton.**
• Turning Circle Diameter	: Not more than 25 m
• Road Clearance	: Not less than 230 mm
• Overall width	: Not more than 2600 mm
• Power	: Not less than 180kW@2200 rpm
• Torque	: Not less than 850Nm @ 1200 – 1600 rpm
• Emission Compliance	: BS VI or latest compliance as applicable
• Drive	: Right Hand Drive
• Steering	: Power Assisted Steering, Tilt/Telescopic
• Braking system	: ABS

a) The Chassis shall not be older than six months as on date of LOI. The Fire Tender & assemblies/tanks etc. shall be new & of recent manufacture (not older than one year as on date of shipment/inspection of the complete unit, whichever is later).

b) Make and model of proposed chassis shall be in conformity to the specification requirement.

c) The fire tenders shall be fabricated in a manner such that load distribution confirm to chassis manufacturer's recommendation

3.2 The chassis shall be supplied with standard tools kit and spare wheel and its assembly.

3.3 **BIDDER shall arrange necessary temporary registration/permit and insurance till vehicles are delivered at Fertilizers and Chemicals Travancore Limited, Cochin Division, Ambalamedu as specified in the order at their risk & cost.**

3.4 The BIDDER shall confirm that the chassis selected is capable of taking the pay load as recommended by the chassis manufacturer and shall be able to meet other duty requirements. Any restrictions on performance of chassis, observed during execution of order due to increase by BIDDER in pay load and other duty parameters shall have to be corrected by BIDDER in consultation with M/s FACT Limited and chassis supplier. Such correction shall be at no extra cost to M/s FACT Limited.

3.5 **The chassis shall be procured by the bidder on behalf of the client. Payment for Chassis will be made at actual against documentary evidence, subject to the maximum amount quoted by BIDDER on submission of bank guarantee of equal value.**

4. PUMPING SYSTEM

4.1 Water Pump

The multipurpose Fire Tenders shall be mounted with centrifugal type, **CE marked, UL listed and complying to EN 1028 standards,** fire water pump with priming system. The pump shall be rear mounted and shall be accessible and readily removable for repairs and maintenance. The fire pump shall be of **Rosenbauer / Godiva make only**, and shall be of High-Low Pressure type capable of delivering low pressure output of minimum **4000 LPM @ 10 kg/cm2 and** a high pressure output of **minimum 250 LPM @ 40 kg/cm2** and powered through the Chassis Engine via PTO.

The pump shall be mounted at the rear side of the vehicle connected to P.T.O. by propeller shafts.

The engine and the PTO shall provide sufficient horse power, torque and rpm to enable the pumps to meet and exceed the specified performance.

The normal (low) pressure pump volute and other castings shall be made from gunmetal / bronze. The normal (low) pressure impeller shall be made of gun metal to resist wear accurately machined and balanced. The bearings used in the pump shall be of reputed make.

The High pressure pump body, cover plate and impeller shall be of SS316/410.

The low pressure and high-pressure impellers shall be mounted on a single shaft in SS 316/410.

The pump shaft is to be rigidly supported by rolling element bearings for minimum deflection and end float. **The shaft shall be made from Stainless steel of reputed international codes.**

Operation of low pressure to high pressure or vice-a-versa shall be possible by actuation of single lever (or any other convenient means of manual operation) and shall be easily accessible.

The pump construction shall be such as to facilitate easy maintenance for removal of impellers, wear rings, sealing devices, pump bearings etc.

The entire pump both suction and discharge passages shall be hydrostatically tested to the requisite pressure as per manufacturer's standards. Necessary Test certificates are to be furnished.

The pump shall be provided with water seal of self-adjusting mechanical seal type as per pump manufacturer's standard designs. However, it shall be designed to withstand rigors of harsh use, dirty water, capable of running dry for long periods without damage etc. Packing glands are not acceptable.

The pump shall be provided in built Pressure Relief Valve (PRV) which shall operate automatically and shall not allow the high pressure to increase beyond the specified limits set by the pump manufacturer.

The pump shall be provided in built Thermal Relief Valve (TRV) which shall operate automatically and shall not allow the water temperature to go beyond the specified limits set by the pump manufacturer.

The pump shall be provided with an inbuilt filter of easily removable type, which shall filter the water before entering into the high-pressure stage impeller.

The pump shaft shall be sealed with oil seals to prevent road dirt and water out of the bearing housing. The bearing housing shall be of sufficient size and rigidity to withstand the torque of the engine during firefighting operations.

The discharge of the pump shall be routed to the outlets for hand lines and monitor fitted on the top.

Suitable draining provisions shall be provided at the bottom of casing. A provision for easy lubrication should also be provided.

Operating manuals of the pump shall be supplied.

Priming system: The complete priming assembly shall be of the pump manufacturer (OEM) only. The priming system shall be of reciprocating/ exhaust ejector / water-ring type. The primer should be capable of lifting water **at least from a depth of 7.0 m at a rate of not less than 30 cm per second.**

The operation of primer shall be manual.

The pump shall be of rigid construction & modularly designed for ease of maintenance. It shall be capable of delivering its full performance with all strainers (external & internal).

primer

Pump shall be guaranteed for at least 2 years.

Mandatory Spare Parts for water pumps (with Primer) and PTO: Please ref Annexure 3 and shall be considered for evaluation.

Other recommended spare parts list (with part Nos) for two years' normal operation shall be furnished along with the offer of Fire Tenders. (Will not be considered for evaluation; however, FACT shall have the discretion to procure or not and also to the extent required)

4.1.1 **Mandatory list of Water Pump and PTO Spare parts (Ref Annexure 3):**

The mandatory list of spare parts for Water pumps (including primer) and PTO (Power take off unit as deliberated in subsequent paragraph) shall include the listed Spare parts as enclosed in Annexure 3.

The prices of mandatory spares for water pumps (including primer) and PTO shall be considered for evaluation.

Bidder may include other spare parts also (For pump and PTO) under the list of other recommended spare parts list (excluding mandatory list of spare parts specified above) **for two years' normal operation** which shall be included under separate head by the BIDDER and **will not be considered for evaluation and purchaser shall have the discretion to procure to the extent required.**

4.2 **Suction Inlet:**

A suction inlet shall be provided for taking water from outside water sources. The gunmetal suction inlet with 100/150 mm (as recommended by the OEM of the pump) suction hose coupling **as per IS 902** in Gun Metal (LTB Gr.2 of IS 318) with internal strainer and gunmetal blank cap fastened with chain. The strainer shall be retained firmly when in use but shall be

readily removable. The suction connection from water tank to pump shall be sized to allow full pumping at rated output. A butterfly valve shall be fitted between pump suction inlet & water tank.

4.3 **Discharge Outlets:**

There shall be min four numbers of 63mm delivery outlets at rear side with **stainless steel ball valves** fitted with female instantaneous couplings as per IS 903 in Gun Metal (LTB Gr.2 of IS 318).

4.4 **Monitor outlet:**

One connection shall be taken from the manifold to the monitor discharge outlet. This shall have suitable sized flanged connection with the manifold. A suitable isolation valve shall be fitted at the starting point of the water flow to the monitor. A second valve shall be provided at a suitable place near the base of the monitor to ensure failsafe operations.

4.5 **Mounting:**

The pump shall be rear mounted to ensure max. hydraulic efficiency. It shall be mounted in such a way that vibrations from the drive line (if any) are not transmitted to the control panel. It shall have at least four mounting points to ensure even distribution of complete load. The mounting shall be done on heavy 'C' channel/plates only & secured to the chassis members by bolting. Welding shall be strictly avoided. The rotating drive flange shall be provided with a cover/guard so that injury is minimized during operation or maintenance of the pump. The guard shall be bolted & easily removable.

4.6 **Pump Control and operation:**

The pump control / operation area shall be designed keeping in mind ease of operation & maintenance at the rear side of the fire tender. The system shall be of open architecture type & ensure that both scheduled operation as well as preventive maintenance is affected easily. It shall be ergonomically designed to ensure that all controls come to hand easily & intuitively. All valves shall be of lever-operated type and shall be made of SS304/316 with teflon seats. **The entire area shall be covered by roller shutter of Fireco / MCD make.** An operating instruction plate and flushing cut instruction plate shall be displayed at the prominent location.

Smart electronic digital display indicating water level, foam level, pump RPM, Pump temperature, High pressure gauge, low pressure gauge, compound gauge, Pump running hours and other necessary parameter (if any) shall be provided, it shall have electronic throttle control to adjust pump outlet pressure. Smart electronic display shall be made by OEM of the pump /make recommended by the OEM of the Pump, it shall be IP 65 certified.

Smart electronic display shall be located on the rear pump control panel in such a manner that the Operator / Firemen can easily view the tank levels while being away from the vehicle.

The following control valve shall be provided for the complete operation of the pump:

1	Pump to each delivery outlet
2	Pump to monitor
3	Pump to tank filling
4	Foam proportionating system
5	Pump to cooling line
6	Water tank to pump
7	Foam tank to pump
8	Foam flushing
9	Cooling water circuit control

Auxiliary mechanical throttle control for the engine rpm control shall also provide in addition to electronic system.

Adequate LED lighting system of MCD / OSS same as provided in the locker system shall also be provided inside the pump locker.

In addition to the items mentioned above, any other items that may be essential shall also be provided. Any of these items, which are also required in the driver's cabin, shall be provided at suitable locations in the driver's cabin.

5. POWER TAKE OFF UNIT (PTO):

The power takes off unit for water pump shall be of make **VAS / SYALL / WEBSTER / MARTIN HARPER only**. The power take off unit of suitable gear ratio to match the engine & pump characteristics shall be provided. PTO shall be operated pneumatically with push button/lever in crew cabin. The drive assembly components (shaft, couplings etc.) shall be dynamically balanced and vibration of any parts should be minimum. **Necessary support for PTO Unit, Propeller Shaft, Couplings, and Universal Joints etc. shall be provided. A suitable cooling system (copper coil) shall be inbuilt in the PTO to cool the oil.** The details of the PTO such as its make, name of the manufacturer etc., supported with catalogue/ drawing and shall be submitted along with the offer. the torque calculation and ratio stability with full technical justification shall be submitted along with offer. **The bidder shall submit a sketch showing the arrangement of PTO Unit for taking power from main engine on chassis to water pump.**

Prior concurrence shall be taken from the chassis manufacturer for carry out modifications on drive system.

6. COOLING SYSTEM

In addition to the radiator cooling, an indirect cooling system of the open circuit type consisting of heat exchanger with good quality copper tubes shall be provided if required to keep the engine from overheating during extended use in tropical climates & when the ambient temperature is over 40°C.

Also the cooling system would be so designed that the full power output of the engine can be maintained during continuous stationary running without overheating.

The operating temperature of the engine cooling water shall be thermostatically controlled.

The oil in the sump shall be prevented from overheating & the pump characteristics shall be chosen in a manner so that the engine does not run at its max. speed for the required output.

Suitable gauge for cooling water & glow lamp for lubricating system shall be provided in the driver's cab. This shall be marked with operating temperature.

The cooling water outlet pipe from PTO & additional cooling system shall be connected through a suitable dia pipe. The end of the pipe shall terminate in a threaded connector.

Cooling water line shall be provided with isolation valve of ball type at pump control panel.

A flexible pipe, at least 10 Mtrs. long shall be provided as spare, so that waste-cooling water can be discharged away from vehicle. The pipe shall have threaded end connectors.

7. WATER TANK

7.1 The Water tank shall be of **min. 6000 L capacity** & shall be suitably mounted on the chassis in such a way that the weight distribution is optimized. Tank shall be modular in rectangular in shape. In addition, a 2% expansion space shall be made in the tank over & above the water capacity. **The tank shall be fabricated out of Stainless Steel grade SS304/316 sheet minimum 6mm thickness for bottom, and minimum 5 mm for sides & tops. The baffles shall be of minimum 5mm thickness.** The tank shall be of welded construction & shall be die-pressed on all sides to prevent distortion & to ensure torsional rigidity. Welding shall be done using TIG welding only. The tank should have adequate SS angle reinforcement.

7.2 Baffles:

The tank shall be suitably baffled to prevent surge when the vehicle is cornering or braking. The baffle plates shall be of min. 4 mm thickness **SS304/316 plate** & shall be bolted type. **The fasteners used shall be of SS material only so that they do not freeze due to rusting**. The nuts shall be tack welded to the baffle plates. The baffles would be so designed that they do not distort / buckle under any circumstances during braking & cornering.

7.3 Connections for Filling:

The tanks have a filling orifice of 200 mm and an inspection & maintenance manhole of 450 mm at the top. The cover for the filling orifice shall be threaded type and shall be clearly marked with the words (either etched or raised) 'WATER'. This port shall be used for filling the water tank from overhead storage tanks.

Apart from the above, four more filling connections shall be provided on the sides of the truck (two connections on each side), diameter of the pipe line shall be suitability designed, prior approval shall be taken from M/s FACT before fabrication, filling connection shall be terminating with of 63 mm male inst. couplings made of GM or SS material incorporated with a strainer and a blank cap. Ball valve with lever also shall be provided at each filling connection for complete isolation.

The header from tank to pump shall be suitably designed to ensure that the flow of the water into the pump is sufficient to maintain the output of pump. These connections shall be fitted with a butterfly valve (lever operated) near pump side.

One connection shall also be provided for filling the tank from the pump itself. The connection shall be taken from the pump manifold & shall be controlled by a shut-off valve.

7.4 **Draining, Cleaning & Repairs:**

The Tank shall be fitted with sludge trap with a cleaning hole of 250 mm shall be provided at the bottom of the tank. The bottom of the tank shall have a slight slope towards the sludge trap. The cleaning hole shall be provided with a 50 mm dia. drain line **with a ball valve** terminating at the side of vehicle for easy access. Suitable lifting lugs shall be provided on the shell of the tank to enable it to be lifted off the vehicle for repairs/replacement as necessary.

7.5 **Overflow:**

One overflow pipe of suitable dia. shall be fitted to the tank. The dia. of the overflow pipe shall be determined as per the filling connections provided. However, it shall not be less than 100mm dia. in any case to ensure the tank does not get pressurized. The discharge end shall be taken below the chassis without reducing the effective ground clearance.

7.6 **Miscellaneous:**

The tank shall be connected to the pump with a butterfly valve for ease of operation. The tank shall be hydraulically tested at **0.5 Kg/cm2 pressure** to find out if there are any leakages. This test may be carried out in the presence of the inspecting officers or done by bidder as per their own internal quality program. However due care must be taken to keep all records of such tests for verification at the time of final inspection.

The inlet line in the tank shall have an adequately strong deflector plate, which shall avoid the incoming jet of water from hitting the tank side/roof. All plumbing shall be reasonably

accessible for maintenance purposes. Screwed bends, joints shall be avoided as far as possible. All the joints shall be flanged type & shall have O ring sealing. Rubber gaskets shall not be used anywhere in the plumbing. All the outlets and inlets from the tank shall be taken by installing nozzles of suitable length and with reinforcement pads.

8. FOAM TANK

8.1 The Foam tank shall be of min. 1000 L capacity & shall be suitably mounted on the chassis in such a way that the weight distribution is optimized. In addition, a 2% expansion space shall be made in the tank over & above the water capacity. Tank shall be modular rectangular in shape.

The tank will be fabricated out of **SS 316 plates of min. 5mm thick all around except the top plates, which will be of 4mm.**

The tank shall be of welded construction & shall be die-pressed on all sides to prevent distortion & to ensure torsional rigidity. Due care would be taken to ensure that butt-weld joints are minimized. Wherever butt joints are unavoidable, they shall be radio graphically tested.

The test films & reports shall be submitted at the time of stage inspection. All other joints shall be DP tested for soundness of weld joints. Complete welding shall **be TIG welding process using only SS316 compatible electrodes.**

8.2 **Baffles:**

The tank shall be suitably baffled to prevent surge when the vehicle is cornering or braking. The baffle plates shall be of min. **4 mm thickness SS 316 plate & shall be bolted type. The fasteners used shall be of SS** material only. The nuts shall be tack welded to the baffle plates. The baffles would be so designed that they do not distort / buckle under any circumstances during braking & cornering.

8.3 **Construction:**

The sides of the tank would be die-pressed to give additional strength & stiffness so that it does not distort due to chassis flexion. The welding of the tank shall be done using inert gas (argon) welding only to ensure a controlled & clean weld joint. The tank shall be constructed in such a way that it is easy to clean from inside.

8.4 **Connections for Filling:**

The tank shall be provided with a filling orifice of 150 mm and an inspection & maintenance manhole of 450 mm on the top of the tank. The cover for the filling orifice shall be threaded type and shall be clearly marked (either etched or raised) 'Foam'. This port shall be used to fill the foam tank from overhead storage tanks. and shall have a removable funnelling arrangement.

Apart from this one more filling pipe shall be provided which shall be of approximate 63mm

dia & connected to the Foam tank from the side. The pipe shall be so sized that filling from outside sources is possible & that the foam inflow can be maintained while the pump is discharging at its rated output & while foam is being replenished from other vehicles. The lines shall be fitted with a suitable coupling made of GM or SS & incorporated with strainer and a blank cap. This connection shall be fitted with a ball valve to prevent foam leaking through the filling pipe. The filling inlet shall be provided as close to the tank as possible.

8.5 **Draining & Cleaning**:

The Tank shall be fitted with sludge trap with a cleaning hole **of 250 mm dia.** The cleaning hole shall be provided with a 50 mm dia. drain line **with a ball valve** terminating at the side of vehicle for easy access. .

The bottom of the tank shall have a slight slope towards the sludge trap. The connection shall be taken down to a point well below the chassis without reducing the effective clearance. The connection shall ensure that the foam is easy to collect in barrels placed on the ground through a flexible pipe. Suitable flexible pipe with adequate connection fittings shall also be provided.

The tank shall be constructed in such a way that it is easy to clean from the inside. In case it is not physically possible to get into the tank due to its dimensions, it shall be possible to clean the tank from the outside through the cleaning hole provided at the top of the tank.

8.6 **Miscellaneous**:

The tank shall be connected to the Pumping system **with a ball valve.** The Foam tank shall be hydraulically tested **at 0.5 kg/cm2 pressure** to find out if there are any leakages. During this test, the tank shall show no signs of leakages. This test may be carried out in the presence of the inspecting officers or done by us as per our own internal quality program. However due care must be taken to keep all records of such tests for verification at the time of final inspection.

Internal test certificate shall be furnished along with all the other documents at the time of delivery of the vehicle. All piping shall be reasonably accessible for maintenance purposes. All piping shall be reasonably accessible for maintenance purposes. Screwed bends, joints shall be avoided as far as possible. All the joints shall be of flanged type.

All the outlets & inlets from the tank shall be taken by installing nozzles of SS304/316 of suitable length & shall have suitable reinforcement pads of SS304/316.

9. AUXILIARY LEVEL INDICATORS FOR WATER TANK & FOAM TANK

Repeater Secondary Level Indicators shall be provided in the driver's cab to help the crew members to check the fluid level from the cab while travelling. **Graduated glass / pyrex tube indicators shall be provided near pump as standby.**

10. TANK MOUNTING

The water tank and Foam tank shall be mounted on the vehicle on a sub frame. **This sub frame shall be made from Hot Dip Galvanized MS 4" section and shall be bolted with the chassis using the high tensile bolts**. The tank shall be mounted on the vehicle using **Metacone** mountings/ flexible mounting pads (depending on the manufacturer's standard mounting procedures) which shall prevent distortion due to chassis flexion. The bidder shall provide the full technical load details and suitability of the Metacone mountings based on the tank load. The bidder shall provide drawing of the sub frame and Metacone mounting along with the bid.

Suitable eyes bolts shall be provided on the shell of the tank to enable it to be lifted off the vehicle for repair /replacement as necessary. **The bottom of the hooks shall be suitably reinforced with pads to avoid stress on the tank top plate.**

The mounting shall permit the full contents of tank to flow into the pump. The bottom of the tank shall be slightly sloped towards the tank to pump connection. Sides of tank would be die-pressed to give additional strength & stiffness so that it does not distort due to chassis flexion.

11. AUTOMATIC FOAM PROPORTIONING SYSTEM

An automatic around the pump Foam Proportioning system with a selector valve to **induce 3 to 6% of foam compound shall be provided**. The proportioner shall be installed in such a way that it shall not be liable to mechanical or other failures**.** The linkages of this purpose shall be as simple as possible to avoid distortion due to chassis flexion. It shall be reliable & shall not require frequent calibration checks.

The selector valve should have variable setting between ON & OFF positions. It shall be calibrated for hose & monitor operation and combination operation. Make, model and literature of foam proportioned to be submitted with offer.

Total foam proportionating system shall be of make OEM of the pump / make recommended by the OEM of the pump.

Auxiliary Connection: Auxiliary connection for foam pickup tube with strainers shall be provided to enable the foam compound to be induced into the pump directly from the drums or outside source. Two numbers of 3 m pick up tube with 600 mm length SS 304 dip pipe & strainer shall also be provided for this purpose.

System shall provide with ball valve operated foam flushing mechanism.

12. WATER CUM FOAM MONITOR

The water cum monitor shall be Akron / Protek / Elkhart Brass brand with discharge capacity of min 2500 lpm and shall have a Jet/spray type nozzle. The material shall be Stainless Steel / Gunmetal. The monitor shall have an effective waterway if 75 mm and It shall have minimum horizontal throw of 60 Meters for water 50 Meters for foam. The monitor shall be

capable of 360 deg horizontal movement and min. 135 deg vertical movement.

The entire assembly shall be hydraulically tested to a pressure of 2.3 N/mm2 as per Sl No 10.1 and 10.2 of IS 8442-2008 for ensuring conformity to the leakage test. After the above test is carried out, the performance test as given above shall be performed and assembly shall meet the requirements specified. The water cum foam monitor will be provided at a suitable location on the top of the vehicle. Note: Manufacturer's catalogue of the offered model of the monitor along with the MOC, performance, dimensions etc. shall be provided along with the bid.

Note: Manufacturer's catalogue of the offered model of the monitor along with the MOC, performance, dimensions etc. shall be provided along with the bid.

13. WATER HOSE REEL

Two high-pressure hose reels to facilitate operation of the high-pressure section of the Fire Pump shall be provided and mounted on either side so as to be accessible for use from either side of the appliance. The hose shall be prevented from kink. **Working pressure of hose shall not be less than 40 Kg/cm2 .** The high-pressure hose reel shall hold 60 meter of hose in one length, terminating in a high-pressure Jet fog nozzle of make firefly (model: NXT200) or protek (Style 302, High pressure nozzle with trigger shutoff and pistol grip). Plumbing between the pump and hose reel shall have clean and unobstructed water way. Diameter of the hose reel hose shall be in accordance with high-pressure Jet fog nozzle inlet size recommended by the OEM of the nozzle. jet range shall be minimum 25m.
Hose reel hose shall have geared winding system for easy rolling and provision shall be given to fix jet and fog nozzle without any movement while not in use.

14. PIPING & VALVES

Total pipeline circuit on the vehicle including water lines & fittings shall be of SS 304/316 material only. All valves up to 2" size shall be lever operated SS304/316 ball valves & all valves above 2" size shall be normal ball/butterfly valves but made of SS304/316. The ball valves shall be of three-piece design to ensure that maintenance & repairs are easy. The seats of the valves shall be easily replaceable. All socket welded lines shall be DP tested and butt welded joints shall be radio graphically tested. All the lines shall be tested hydraulically for at least 3 times the working pressure or 1.5 times the working pressure of the pump.

The piping should be flanged for ease of maintenance. However, flange joints shall be kept minimum. Nut and bolt used in any part of the fire tender shall be of SS304/316.

All valves used in fire tender fabrication shall be SS316/304 of make **Audco / L&T / KSB only**.

A flow chart and schematic diagram shall be made and submitted with the technical bid.

15. BODY WORK

15.1 Cabin Extension:

The original cabin of chassis manufacturer to be extended to accommodate driver, officer in charge & four fire men and shall be strictly as per guidelines of chassis manufacturer. The complete cabin shall be duly treated for corrosion by two pack epoxy treatment. In case it is not possible to do the extension, a separate cabin shall be built at the rear side of the original cabin with a communication window between the two cabins. In this case the structure and paneling work shall be done strictly as per the guidelines for the rear superstructure mentioned below

The cabin shall have four doors (2 each side). The door shall open outwards. Cabin doors shall be provided with splinter proof power assisted window. Front doors shall be of OEM make and the same door handle with lock shall be used for door of fire crew cabin.

First aid box shall be provided and fitted in the cabin at suitable location for 8 persons & contents as per The Factories Act. Cabin lights provided by OEM of the chassis shall be retained in addition to that extra cabin light shall be provided at fire crew cabin/extended portion. Non-slip type steps and rails near all doors shall be provided to assist the crew members to get in and out. Grab bar to be provided in center of cabin for rear seat users.

15.3 Interiors of the cabin:

The cabin would be internally lined with a good quality PVC coated aluminum sheets. Alternatively, other systems of Interiors shall be accepted provided the same is on par with the latest trends in the international markets & as per the newer norms. However due care must be taken that the design/fabrication is of the highest order & in no case shall it compromise on the function & aesthetics of the modern day interiors of cabins. The entire floor of the crew cabin shall be provided with 3M good quality anti-skid type vinyl matting. Cabin shall have two roof light of OEM provided. Two numbers of large sun visors shall also be provided on each side. The mat shall be removable for cleaning the cabin. Non-slip type steps and rails near all doors shall be provided to assist the crew members to get in and out. Additionally, front wheels shall be fitted with step on rings. The crew cabin structure shall be so designed so as to avoid any vibration/rattling/deformation in the intended usage of vehicle.

15.4 Structure and Paneling:

The entire structure of appliance including that of driver's cabin shall be welded structure made from anticorrosion treated made of min 2mm x 1.5" x 1.5" MS pressed section and channels structural steel (IS 2062). The cross members and supported channels should be zinc electroplated 50 microns for the channels ad 20 microns for supports. The outer

paneling of the cabin shall be in line with the chassis manufacturer's recommendations. The paneling of the rear super structure shall be done from 3 mm aluminum sheets & the internal paneling shall be done from 3 mm aluminum sheets / chequered plates. The top of floor / deck shall be provided with 3 mm thick aluminum chequered plates. Grab rails on top of the vehicle over entire length on both sides shall be provided. The vehicle shall have rainwater channel on both sides. The openings for equipments shall be sealed properly to ensure no water goes inside. Lockers, roof joints shall be sealed properly to avoid water ingress and corrosion. The sheets of outer panels shall NOT be bolted/screwed to framework.

Roof panels shall be made of aluminum padded plates. The roof should be strong enough for being walked-on and must be sufficiently supported. Grab rails on top pf the vehicle over entire length on both sides shall be provided.

15.5 Seating:

The driver & officer seat shall be provided by chassis OEM; driver seat shall be height adjustable. The crew shall have individual seating, with each seat fitted with brackets for placement of Breathing Apparatus in an upright position. The seats shall be of the wear & walk away type so that when the crew disembarks from the vehicle the BA sets should easily come off the seats with them. The seat bottom will be theatre type, which will automatically flip up when the fireman gets up, thereby freeing up the space for easy embarking & disembarking. The seats shall have integrated seat springs to isolate shock while in motion. The seat shall accommodate all types of SCBA. The seats shall have right shoulder seat belt release and a chrome swivel bezel. The seats shall be of HO Bostrom (Model: Tanker 450ABTS or higher specification). Verification of documents (as required) shall be done at the time of stage inspections.

15.6 Lockers:

All the compartments lockers for stowage of equipment shall be covered with **MCD France / Fireco** make **aluminum roller shutters with bar lift handle**. These smooth operating shutters shall be made of extruded aluminum profiles duly powder coated.

Size and number of lockers shall be designed such that on either side minimum 6 nos of 15m length fire hoses and 2 nos of 30 m length fire hoses can be easily accommodated in single layer and other equipments may be accommodated in maximum two layers. Sufficient nos. of lockers shall be provided for storage of all accessories listed in Annexures and for other equipments which are necessary for Foam Fire Tender but not given in Annexures. Additionally, lockers shall also be provided to accommodate 8 nos DCP Extinguishers of 9 Kg capacity in upright position. Provision shall be provided to hold the cylinder in upright position and avoid disorientation during truck movement.

Roller shutters shall have locking arrangements to prevent accidental opening during movement of vehicle.

Each compartments of all the lockers shall be fitted with good quality LED lighting of make MCD France/ OSS (On scene solutions). which shall be capable of being automatically switched "ON" and "OFF" by the opening of shutters.

lockers to be provided with heavy duty drawers as per the latest international standards giving easy access to the equipments. Drawers shall have self-locking system to prevent accidental opening while the vehicle is motion. drawers shall be robust enough withstand the load without any deformations. Corrosion resistant heavy duty handle shall be provided for drawers, sliding system of all drawers shall be of reputed brands.

A dedicated compartment inside locker for storing branches and nozzles shall be provided with pull out drawer system and fixed instantaneous female coupling (63mm, Material: Gunmetal / SS, minimum 10 nos) with single lug shall be provided at bottom of the locker to hold the nozzles in upright position inside the compartment to avoid disorientation.

All the space on sides of the vehicle, below the chassis frame level shall be utilized for stowing equipment, If required. lower lockers shall be provided with flap type doors opening downwards. Heavy duty SS 304 chain and SS hinges shall be provided on these doors so that these doors can be used as steps for access to upper lockers. Adequate grab handles shall be provided in upper lockers at convenient height for easy access, lock for this lower lockers shall be flap type lock with pull to open. All lockers shall have arrangements for self-draining of any water entering inside.

Locker shall provide with at least two Vertical drawer system with handle, stopper quick mount clip & vertical variable mount, for stowing tools such as axes, spade, shovel, Extension applicator etc. it shall be strong enough to handle cantilever loads when pulled out.

Four numbers of cylinder brackets for storing scba cylinders of 6.8L capacity shall be provided in the main locker. Suitable locking mechanism shall be provided to hold the cylinder in position.

The intermediate walls and shelves shall be constructed from aluminum sheets paneled to the structure without any welding work. Complete flooring shall be of 3 mm and the inside of lockers shall be done from 3 mm aluminum Plain Sheet.

All drawers, Brackets and mountings and its parts shall be of aluminum or SS304.

All the lockers shall be provided with 4 mm thick, vulcanized synthetic rubber mat at bottom and sides. Location of equipment (labels) shall be provided on lockers for immediate identification.

Following spare parts for rolling shutter shall be provided by the bidder long with supply.

Sl No	Part Name	Quantity
1.	Round Aluminum Tube (length as per design)	5 Nos
2.	Left handle lever	5 Nos
3.	Right Handle lever	5 Nos
4.	Central Handle Lever	5 Nos
5.	Plastic Stop System	5 Pair
6.	Bottom Bar Blocking striker	5 pair
7.	Lock for the lower lockers	5 Nos
8.	Side channel	5 Pairs

15.7 Air Conditioning

Chassis shall be procured along with Air-conditioned cabin. Air-conditioning provided by the chassis manufacturer shall be suitably extended by the vendor for the complete cabin with prior concurrence from chassis manufacturer. And it shall not affect the warranty of the system.

15.8 Stowage System

Arrangement shall be provided for secure, scientific and systematic stowage of all accessories within the fire tender. Each equipment shall have its designated location so that it can be easily located during emergency situations. Suitable clamps, brackets, holders etc. shall be provided for major accessories as per the requirement. The accessories should be **properly clamped / strapped/ Brackets/ holders/ coupling** to prevent shifting of the equipment while the vehicle is in motion and thereby avoiding damage to the panelling of the vehicle. Suitable arrangement /Bracket for four nos of 2.5-meter length suction hoses shall be provided at the roof of fire tender. All materials shall be of good quality and rust proof.

15.9 Other Works:

Cabin shall be provided with OEM make rear view mirrors on both sides, Additional two blind spot mirrors shall be provided on top of left side door, left side of front wind shield, all mirror shall be arranged in a position to provide maximum view to the driver.

The crew cabin structure shall be so designed so as to avoid any vibration/rattling/deformation in the intended usage of vehicle. Two numbers of large sun

visors and rear view mirrors shall be provided on each side. The entire floor of the crew cabin shall be provided with **3M-make Vinyl sheet flooring of minimum 4 mm thickness with anti-skid features.** Additional 6mm rubber mat shall be provided for entire floor The mat shall be removable for cleaning the cabin.

No part of the bodywork should reduce the ground clearance to less than 36 cm or increase the overall width more than 2.6 m. The highest part of the appliance with the ladder and monitor mounted on it should not exceed 3.6 m from ground level. The construction of superstructure should not reduce the angles of approach and departure below 30°.

All steel screws, bolts, studs, nuts, rivets etc. shall be zinc coated or shall have rust proof coats by a recognized process. Self-fastening bolts shall be strictly avoided.

16. ELECTRICAL SYSTEM

All wiring shall be properly fixed in position & shall be protected against heat, oil & physical injury. To the extent possible all wiring shall pass through conduits. The wires used in the vehicle shall be stranded copper or copper alloy conductors of a gauge rated to carry **at least** 125% of the max. current for which the circuit is protected. Voltage drops in all wiring from the power source to the using device shall not exceed 10%. The use of star washers for circuit ground connections shall not be permitted.

All the electrical circuits shall have their own separate fuses, suitably marked & grouped in a common fuse box, located in an easily accessible position. Provision shall be made for min. 4 spare fuses in the box which shall be provided in drive's cabin. All the controls for electrical system shall be provided near the driver's seat. The battery shall be placed in a totally enclosed box. Radio suppression of the electrical system, which is sufficient to ensure positive operation of radio equipment without interference, would be provided. Provision shall be made on dashboard for installation of VHF set with separate power supply.

All equipment's lockers shall have individual lights and these shall be operated by means of a **master switch** on the dash board in the driver's cabin. The switch of the siren shall be provided on the left corner of the dash board (Near front left side). Two inbuilt fog lamps shall be provided in front bumper and the fog lamp shall be of chassis manufacturer.

A rear view camera with LED display of reputed make such as Blaupunkt in the crew cabin shall be provided for aiding reversing of the vehicle. precaution shall be taken to avoid fogging due to water droplets.

Reverse lights with on-off buzzer, on either side shall be fixed suitably at the rear of the appliance with wire mesh in such a manner to prevent accidental damage by the firemen while mounting the tank top. The light bar with integrated PA system on top of the cabin

shall be suitably protected with grills/mesh to avoid damage from hitting low lying obstructions.

Fabricator shall ensure that the power distribution is sufficient for all electrical equipments / devices to be used at a time. Extra battery backup may be provided if required.

The switches used inside pump control panel shall be good quality and water resistant

Head light, Fog lamp, Cabin light, Blinker and Brake light shall be OEM(chassis) make.

AIS 140 Approved GPS tracking system of reputed make shall be provided. Application for locating the fire tender via gps shall be available in both android and iOS platforms. Subscription fee if any shall be under the scope of vendor for at least one year.

The list of electrical fittings /Tools which shall be provided on the appliance at suitable locations as per Annexure-2:

17. LADDER & LADDER GALLOWS

Ladder gallows shall be provided for **carrying Firescape / King 35 feet Truss Type Aluminium Double Extension ladder as per JCDD/10 standards.**

Ladder gallows of roller type shall be provided on the roof of the vehicle for easy placing/removal of 10.5m aluminum extension ladder. There shall be suitable gallows fitted with rollers and designed to facilitate easy & quick removal of the ladder by one man from the rear of the appliance. Means shall be provided for locking the ladder when stowed. Nut / bolts used shall be of SS304, Design of the gallows shall be submitted and due approval shall be taken from FACT – Cochin Division before fabrication.

18. WORKMANSHIP & FINISH

The gross vehicle weight of the Fire Tender with all equipments, consumable & crew should be approximately below 85% of permissible axle load of chassis manufacturer's specification. The weight distribution diagram, equipment layout shall be submitted along with the offer.

General appearance of the vehicle shall not show any evidence of poor workmanship. The following shall be reason for rejection

1. Rough, sharp or unfinished edges, burrs, seam, sharp corners, joints, cracks and dents noticed in the vehicle.
2. Non uniform panels, Edges those are not filleted, bevelled etc.
3. Paint runs sags, orange peel, etc. and any other imperfection or lack of complete coverage.
4. Misalignment of body fasteners, glasses, viewing panels or light housings, etc.

5. Improper body design or interface with chassis that could cause injury during normal use.
6. Improperly fabricated and routed wiring or harnesses.
7. Improperly supported or secured hoses, wires, wiring harnesses, mechanical controls.
8. Loose, vibrating, abrading body parts, components, subassemblies, hoses, wiring harness or trim.
9. Noise, panel vibrations etc.
10. Sagging, non-form fitting upholstery or padding.
11. Incomplete or incorrect application of rust proofing.
12. Inappropriate or incorrect use of hardware, fasteners, components or methods of construction.
13. Incomplete or improper welding, riveting.
14. Unsealed appurtenances or other body components, gaskets, etc.

In addition, any deviation from specification requirements or any other item, whether or not stipulated herein, that affects form, fit function, durability, reliability, safety, performance or appearance shall be cause for rejection. Defective components shall not be furnished. **Parts, equipment and assemblies which have been repaired or modified to overcome deficiencies shall not be furnished without the approval of FACT Ltd. Welded, bolted and riveted construction utilized shall be in accordance with the highest standards of industry. Component parts and units shall be manufactured to definite standard dimensions with proper fits, clearances and uniformity.**

19. PAINTING & MARKING:

19.1 **Marking:** - The Vehicle shall be clearly and permanently marked with the following, preferably on a metal plate attached in the driver's cabin & also near the pump operating control panel.

- Manufacturer's Name & Trademark
- Year of Manufacture
- Capacity of Pump in LPM
- Capacity of Water, Foam and Diesel Tank in Liters
- Engine & Chassis Nos.
- Vehicle operating instructions in cabin.
- Pump & PTO operating instructions at rear.
- Flow Diagram for Water-Foam Piping
- Capacity of Vessel & other relevant details

19.2 External body of the appliance shall be painted with **PU paint** of **3M / Dupont / ESDEE / AKZO**, fire red colour (shade no. 536 of BIS 5-1978) and paint conforming to BIS 2932-1974

and thickness of 0.12 to 0.2 mm using double coat spray painting on outside. Application - PU putty, PU primer, PU Surfacer, Under Coating and final paint. (All ingredients in PU base only.) This paint shall be life of min. 10 years. The bidder shall guarantee fade resistance of min. 5 years from date of supply even if the vehicles are kept in the open.
Necessary anti-corrosion and priming coat shall be applied before painting in order to achieve gloss finish.

Under frame of Chassis as well as the body shall be painted with epoxy paint. The chassis frame shall be painted black. Structural members shall be treated with phosphate chemical (Rust Remover) and after fabrication, structure shall be painted with epoxy paint.

All vinyl / reflective stickers/ films of **LG, 3M** or equivalent shall be used on the exterior body shell. Details of the graphics shall be finalized after due approval of FACT Ltd

The Company name with Logo – Fertilizers and chemical Travancore Limited (Govt. of India Undertaking) Cochin Division shall be written on both sides with golden yellow colour in Hindi and English and also Mirror image letters of FIRE shall be stickered in golden yellow colour on front side of the vehicle.

Printed matter shall be finalized with FACT representative prior to painting of Fire Tender.

All the painting shall be as per RTO Rules.

All the lockers/cabins shall be provided with stainless steel nameplates with letter itched on it boldly indicating the content.

Water line should be painted red and foam line in yellow colour paint.

Reflective stripes: Reflective stripe(s) shall be affixed to the perimeter of the apparatus. The stripe or combination of stripes shall be a min. of 4" in total width & shall conform to the min. requirements of ASTM D 4956, Standard Specification for Retro-reflective Sheeting for Traffic Control, Type I, Class 1 or Class 3. At least 50% of the cab & body length on each side, at least 50% of the width of the rear, & at least 25% of the width of the front of the apparatus will have the reflective material affixed to it. Design of the reflective stripes shall be finalized after due approval of FACT Ltd

20. GENERAL REQUIREMENTS

The vehicle shall conform in all respect of the provisions contained in the M.V. Act 1988 and M.V. Rules 1989 or to any other statute modifications or re-enactments thereon from time to time. All the equipments / documents necessary for R.T.O."s clearance shall be provided on vehicles

1. Rear view mirrors on either side shall be provided on the vehicle at suitable location.
2. Mudguards shall be provided on the wheel.

3. Before final painting of the Fire tender, two coats of anti-corrosion and primer coat and one coat of epoxy paint shall be applied on the chassis and fabricated body, except external body where PU painting is to be done.

4. Hand railing of Good quality shall be provided near all the doors in the Drivers cabin and crew cabin at both the sides.

5. Holes shall be to the flooring of Fire Tender (including all lockers) at suitable locations so that accumulated water shall be draining out easily while washing of the vehicle from inside.

6. The rear platform of the fire tender shall be fabricated (with a convenient space) in such a way that two firemen can stand on it comfortably.

21. PERFORMANCE GUARANTEE:

Manufacturer shall guarantee the design, material, workmanship and performance of complete Unit including the pump, pipelines, storage tanks, stowage system, Ladder and ladder gallows, electrical system, PTO and power transition system to pump for a period of 24 **months** from the date of supply of the vehicle in writing. Any operational or mechanical defects and faulty workmanship during this period shall be rectified by the bidder at FACT site without any extra cost to FACT.

22. WARRANTY:

The chassis and driveline shall have minimum standard warranty of six years provided by the OEM from the date of purchase and the same shall be ensured by the bidder.

Warranty certificate for branches & nozzles, Power tools, Lights and other equipments and tools listed in Annexure1, Annexure2 and Annexure 4, supplied by the OEM for not less than 1 year shall be given along with the supply.

23. INSTRUCTION MANUALS, SPECIFICATION AND DRAWINGS

The instruction books/manuals, drawings for the guidance of the user including both operation and normal maintenance, shall be supplied for the pump/PTO installed by the BIDDER. The manual shall include item wise spare parts list with part numbers.

24. INSPECTION AND FINAL ACCEPTANCE TESTS

24.1 The successful tenderer shall have the work inspected and approved at the following stages by the purchaser/ indenter or his authorized representative.

The inspections as noted below shall be done by FACT and intimation shall be given in advance period of 15 days. All Inspections shall be arranged by the BIDDER at his cost

Inspection shall be carried out in stages as per QAP submitted by the BIDDER in conformity with the TPS, approved drawings, standards specified in the specification and approved by FACT

STAGE-1

After purchase of Chassis by the BIDDER the visual inspection and verification of documents shall be carried out by the inspection authority at the firm premises.

After completion of under structure:

a. Check material Test Certificates (MTC), components / sub-assemblies' identification, before fabrication.
b. Check dimensions of under structure on chasses, fabricated components as per specifications & approved drawings.
c. Check all documents including documents of imported items.
d. Check welding procedure, welder qualifications as per relevant ASME codes / standard.

STAGE-2

After completion of panelling: -

a. Check overall dimensions, body work, cab interior fittings.
b. Check NDT / NDT records of welded joints as per ASME Sec, V, and extent of NDT as per specifications.
c. Check construction details of Water Tank and Foam Tank and carry out hydro test at 0.5 kg/cm2. Check sheet thickness and chemical composition of metal for SS 304/316 as applicable. Check capacity of both the tanks. check all piping / fittings, internals bolts & nuts of the tanks is SS04/316. Leakage test for both the Tanks for 24 hours. LP piping system shall be hydraulically pressure tested at 15 kg/cm2 for a minimum 30 minutes for any leak., low pressure pump shall hydraulically pressure tested at 21Kg/cm2 and high pressure pump shall be pressure tested at 60kg/cm2.
d. Check location / placement of control panel, Instruments, controls, other equipment & accessories etc.
e. Test power take off unit (PTO).
f. Test the foam induction & foam compound proportionator system.
g. Verify monitor position and its movements.
h. Carry out hydrostatic test of pump (centrifugal) as per specification.

STAGE-3:

After completion of fitment & painting:

a. Check stability of the unit after mounting all equipment and accessories. It should be free from undue rattling and vibration.
b. Each appliance shall be clearly and permanently marked.

c. Check proper functioning of all types of signal lights, alarms, etc.
d. Check quality of workmanship.
e. Painting of exterior/Interior of Foam Tender, Fire Service Insignia conforming to IS.
f. Check completeness of equipment for any deficiency in quantity to standard quality or non-conformation to specification should be rechecked.
g. Check calibration of instruments, gauges, tools, accessories etc.
h. Check operation of various levers, locks, caps, fitment of tanks, linkages, markings and work.
i. Check storage space for adequacy

24.2 PERFORMANCE TEST:

The following performance test shall be carried out at BIDDER' site.
(i) Pump Test: The Pump shall be run for a period of four hours non-stop delivering the rated output with a lift of 3 Meters. During the test all parameter like cooling system, temperature of the engine, oil, PTO sump oil temperature shall match as per manufacturers recommendation.
(ii) The pump casing (LP side) shall be subjected to a hydraulic pressure as per the manufacturer's standards for any leakage.
(iii) Priming Test: The primer should be capable of lifting water at least from a depth of 7.0 m at a rate of not less than 30 cm per second.
(iv) High Pressure Hose Reel: to be tested at a Hydraulic Pressure of 60 kg / cm^2.
(v) Foam making system:–
Induction 3% at the specified settings.
Throw: Monitor / branch.
Expansion: 8-time monitor & branch.

24.3 **FUNCTIONAL TESTS:**

(i) Complete assembly shall be pressure tested for pressure soundless of joints & connections with the discharge parameters as specifies.
(ii) Carry out leakage test and performance tests of foam cum water monitors specified.
(iii) Test the working of monitor and pump proportionator system for making foam. Meanwhile check for satisfactory working of control panels, gauges, instruments, valves and other mechanism. For the above test foam compound shall be provided free of cost by BIDDER.

24.4 ACCEPTANCE TESTS AND ROAD TESTS

After successful completion of all the tests previously mentioned, the following acceptance tests shall be offered to the complete satisfaction of the user without any extra

cost.

24.4.1 Stability:

The stability of the appliance when under fully equipped and loaded condition should be such that if the surface on which the appliance stands is tilted to either side, the point at which over turning occurs is beyond an **angle of 27°.**

When the vehicle is brought to a stop in 9 m when travelling at 32 KM/hr. fully loaded and manned on pavement without any adverse effect on the mounted equipments.

24.4.2 Gradient:

The appliance shall be capable of being started from rest on a gradient of 1 in 4.(BIS 10460-1983 Sl No 2.2 d).

24.4.3 Pump Test:

Pump test to be carried out to check pump manufacturer's rated output at varying pump pressure for a continuous period of 4 hours. During this test, the temperature of engine should not exceed the rated temperature and that of lubricating oil 79°C.

24.4.4 Priming Test:

The primer should be capable of lifting water at least from a depth of 7.0 m at a rate of not less than 30 cm per second.

24.4.5 Articulation Test:

The vehicles shall be tested for articulation & shall not show any signs of stress during this test as per IS 13506 – 2013.

24.4.6 Hydraulic Testing:

All the LP delivery piping system shall be tested at a hydraulic **test pressure of 15 Kg/cm2**. In case of the high pressure section, it shall be tested at a min. of 60 Kg/cm2.

24.4.7 Shower Test:

After completion of the fabrication, the vehicle shall be subjected to shower test as per the norms laid down under BIS. The appliance shall not show any signs of leakages during this test as per IS 11865 – 2006.

24.4.8 Road Tests:

After completion of all the above mentioned tests, road tests shall be carried out to check chassis, manufacturer's rating for acceleration, maximum speed, braking efficiency and turning circle with appliance fully loaded

Also when travelling at 48 km/h on a level dry surface the foot brake shall be capable of stopping the vehicle within a distance of 15 m from the point at which the brake is applied. The hand brake shall be capable of holding the fully laden appliance on a dry surface gradient of 1 in 4 when in neutral gear.

24.4.09 NOTE: - The bidder shall arrange suitable facilities for carrying out all the tests, specified

above.

24.4.10: All certificates as specified and necessary documents against proof of source of supply shall be submitted by the BIDDER for review and acceptance by FACT during inspection at BIDDER s works.

24.4.11: The Multipurpose Fire tenders shall be dispatched only after successful completion of all inspection and acceptance tests by FACT and Inspection Release Certificates (IRC) obtained.

25. TRAINING

After supply of Fire Tender, the BIDDER shall provide one-week training on operation & maintenance at owner's site & charges for the same shall be included in the quoted price.

26. DEVIATIONS:

There shall be no deviation to the specification unless agreed by owner in writing. In case there are any deviations from the above mentioned specifications / tender Documents, the BIDDER shall give the same separately for the scrutiny of the technical committee. In case, there are any valid reasons for deviations, these may be considered by the client. However, the technical committee of the client shall have absolute power & may reject the offer without assigning any reasons whatsoever.

27. PERFORMANCE BANK GUARANTEE.

Successful Bidder shall submit Performance Bank Guarantee in prescribed Format for 10% of contract value to cover defect liability period of **18 months** from the date of delivery.

28. DELIVERY.

1. Complete Fire Tenders as per the above scope shall be delivered **within 6 months** from the issuance date of purchase order.

2. Fire Tenders shall be delivered at Fertilizers and chemical Travancore Limited (Govt. of India Undertaking) Cochin Division, 682303 as complete unit after completing all the works and with necessary documents required for permanent registration in Kerala without any additional charges.

29. TRANSPORTATION

Transportation of chassis from chassis manufacturer/dealer to the party's site and after fabrication work, the delivery of the Fire Tender to, M/s Fertilizers and Chemicals Travancore Limited, Cochin Division, 682303 shall be in BIDDER's scope.

30. FINAL APPROVAL FOR FABRICATION

1. After issue of Work Order/Purchase Order, successful bidder has to confirm and get approval of the drawing from FACT prior to actual starting of fabrication work.

2. After due approval of drawings by FACT, BIDDER shall start the fabrication Job

31. DOCUMENTATION:

(i) Certification that the Fire Tender has been designed manufactured and tested to meet the specified requirement.
(ii) Test certificates from OEM for pump and PTO unit.
(iii) Performance test certificate.
(iv) Certificate for roadworthiness of Fire Tender.
(v) Warranty / Guarantee Certificate.
(vi) CCE approval as required.
(vii) Operation and Maintenance Manual, Spare Parts list and drawing of Pump, PTO, piping diagram, etc.
(viii) Temporary Registration and Insurance, Sale Letter and other documents as required under MV act for onward registration of Fire Tender in Kerala

32. ANNEXURES:

ANNEXURE - 1: Accessories for fire tender

ANNEXURE - 2: Tools and Electrical Fittings

ANNEXURE - 3: Mandatory Spare parts list for Fire Tender

ANNEXURE - 4: Description of tools

ANNEXURE I		
Sl. No	**Details Of Accessories**	**Qty**
1.	Firescape / King 35 feet Truss Type Aluminum Double Extension ladder as per JCDD/10 standards (As per clause 17)	1 Nos
2.	PVC suction hoses in 2.5 Mtrs Length fitted with round threaded male & female couplings, heavy duty, made of GM of conformed to IS:902 and dia shall suit with pump suction inlet.	4 Nos
3.	Suction Metal strainer for item-2 as per IS:907	1 No
4.	Basket strainer for item-2 as per IS:3582	2 Nos
5.	SS Dividing breaching with control valve as per IS: 5131.	4 Nos
6.	SS Collecting breaching 63 mm size as per IS:905	4 Nos
7.	Universal suction wrenches	2 Pairs
8.	Fully Imported **Drager / Scott / Honewell make light weight Type II Self Contained Breathing Apparatus (SCBA)** Set with carbon composite air cylinder (45 min duration of 6.8 ltrs 300 bar pressure shall be CE marked to EN 137. Air Cylinder & valve of the cylinder shall be as per EN 144-2, shall have NOC from CCE-Nagpur) back plate with Kevlar or other Para aramid straps, Night glowing pressure gauge with warning whistle at 55 bar pressure, full face mask with speech diaphragm and voice communication system with walkie talkie compatibility, quick release coupling shall be provided on hose connection with demand valve and pressure reducer. SCBA set shall confirm to relevant NFPA standard. Suitable moulded rigid case shall be provided. Test certificates shall be submitted along with the item	6 Set
9.	Fire Hose-Type 3, IS 636, 63 mm, 15m length RRL Fire Hoses with couplings	10 Nos
10.	Fire Hose-Type 3, IS 636, 63 mm, 30m length RRL Fire Hoses with couplings	5 Nos
11.	Water curtain hose of make Newage (15m Length)	3 Nos
12.	Foam branch FB10X fitted with 63mm GM male coupling and spray control	3 Nos
13.	Medium expansion foam branch, 50X	1 No
14.	Inline inductor	2 Nos
15.	Triple purpose nozzle, 63mm, SS, as per IS:2871	2 Nos
16.	Pistol grip diffuser nozzle, with 63mm male instantaneous coupling, selectable gallonage 350 to 750 LPM, light weight alloy, ball valve for flow control, EN15182 CE certified / NFPA 1964 compliant. Make shall be Akron / Protek.	4 Nos
17.	Foam tube for pistol grip diffuser nozzle (Item No:16)	4 Nos
18.	Special branch pipe with fog head (IS: 952) with 3 meter long applicator made of light weight material and male coupling	2 Nos
19.	Jumbo Water Curtains made of SS.	5 Nos
20.	Double female adapter.	2 Nos

21.	Double male adapter.	2 Nos
22.	Water-Jel Blanket/ burn shield blanket 6ft X 5ft	2 Nos
23.	Spine board stretcher with head immobilizer, straps and related accessories	1 No
24.	Ceiling Hook as per IS 927	1 No
25.	Portable telescopic light of Wolfiite/Pelican/Nightsearcher/Nightstick Battery and AC operated, self-standing, min 3hr runtime, Min 10000 Lumen, Min 2m height, Min IP65, with case, charger and other necessary accessories.	1 No
26.	Intrinsically safe torch (LED) of Wolfiite/Pelican/Nightsearcher/Nightstick with minimum 120 lumens, area classifications rating for Zone-0 application (IEC/ATEX/UL approved).	2 Nos
27.	Intrinsically safety rechargeable hand lamp (LED) of Wolflite/Pelican/Nightsearcher/Nightstick with minimum light output of 350 lumens, area classifications rating for Zone-1 application (IEC/ ATEX / UL approved).with charger	2 Nos
28.	Inflatable Rescue Path of make Vetter/sava - 3 piece each with min length 6m each, for shore to vessel access, with inflation accessories such as BA set adapter (compatible with EN 144-2) with pressure safety valve , storage case/bags and puncture repair kit.	1 Set
29.	Battery operated multi-mode LED Head lamp of Wolflite/Pelican/Nightsearcher/Nightstick with elastic strap and minimum 300lumen output at highest mode with charger	6 Nos
30.	Portable and Compact 22 ft A Type Aluminium Telescopic Ladder with 16 Steps (6.6 Meter) of make corvids	1 No
31.	Electric motor operated barrel type foam transfer Pump of reputed make (MOC of body, shaft, rotor impeller shall be SS 304, Discharge: 40-50 lpm approx. at discharge head 5 M).	1 No
32.	Cryogenic Suit (make Scilabub or other reputed brands with ENISO13688 and EN511 level 2 certification), Set shall include coat, trouser, gloves and hood with visor, suit shall give protection against cryogenic liquids up to – 120 degree Celsius, Size shall be confirmed after consultation with M/s FACT	1 Set
33.	Felling axe, large as per IS:703	1 No
34.	Hand axe as per IS:703	1 No
35.	Fireman axe as per IS:926	4 Nos
36.	Pick axe as per IS:273	1 No
37.	Halligan tool	4 Nos
38.	Crow bar with bend chisel and point end as per IS: 704	2 Nos
39.	Sledge hammer 6.5 Kgs as per IS: 841	1 No
40.	Good quality spade	4 No
41.	Good quality Sickle	4 Nos

42.	Good quality bill hook	4 Nos
43.	Heavy duty bolt cutter	1 No
44.	Hydraulic jack 40 Ton capacity	1 No
45.	Hose ramps	6 Nos
46.	Rope, hemp/manila, 50mm circumference, 15 meter long	2 Nos
47.	Li-ion battery operated rechargeable hand held thermal imaging camera of make Bosh/Fluke with charger, and case	1 Nos
48.	Kernmantle rope, 12mm dia, 30m long, spliced/stiched ends, as per EN1891	2 Nos
49.	Kernmantle rope, 12mm dia, 15m long, spliced/stiched ends, as per EN1891	2 Nos
50.	Three in one Storage box of make Stanley (model: Essential Rolling Workshop with Metal Latches STST1-80151)	2 Nos
51.	50L Job Chest with wheel of make Stanley (model: Essential job chest with metal latches STST1-80150)	3 Nos
52.	9L Compressed air foam back pack system with jet and fog gun, ss container and light weight 2L high pressure air cylinder (Min 200 Bar) of make **Minimax or AFT,** valve of the cylinder shall be as per EN 144-2, Test certificate shall be submitted along with the item.	1 Nos
53.	Hand held rechargeable Megaphone with Li-ion battery, hand held microphone, inbuilt siren, shoulder strip, Message recording, charger and case shall be supplied.(make shall be Ahuja or superior brands)	1 Nos
54.	Non-contact voltage tester, range 12-1000v, of make kaiweets / Fluke / Reputed brands.	1 Nos
55.	Tool Kit (Detailed Specification attached As Annexure 4)	1 Set

NOTES:

1. Accessories with ISI mark to be supplied wherever available. Otherwise bidder shall endorse certificate that accessories confirm to applicable standards if any.
2. Any other accessory not included above, which makes the appliance more efficient & useful to be supplied / installed on the Multipurpose Fire Tender.
3. All branches and nozzles (except item No:15), FMBP, breaching's and adaptors shall be of make Newage/AAAG/firefly.
4. The prices of accessories (Annexure 1 including Annexure 4) shall be considered for evaluation.
5. AC Charger for all rechargeable items shall be supplied and all items shall be in good working condition without any damage when receiving FACT – Cochin Division
6. Test certificate for all item as per relevant standard shall be submitted along with supply.

ANNEXURE 2
Tools / Electrical Fittings

Sl. No	Item	Qty.
1.	Fog Lamps (shall be inbuilt in bumper by Chassis manufacturer)	2 Nos
2.	Twin coloured LED warning flashers to be provided 2 sides and rear (3+3+2)	8 Nos
3.	Grand LED Light Bar 44" with Inbuilt 75W PA System with Multi-tone Siren & Hooter in one unit. Speakers shall be weather proof, shall be provided with protective mesh.	1 No
4.	Rear view camera with LED display in the crew cabin (as per clause 16)	1 Set
5.	LED Search Light with –100 meter Cable Reel of not less than 500 Lumen and 200 meter Range with tripod etc.	1 No
6.	Articulated spot light.	1 No
7.	Reverse Lights /Lamp and Buzzer/Horn to assist reversing Shall be provided with protective mesh	1 Set
8.	Tail lamps - Two of combined stop and tail Shall be provided with protective mesh	1 Set
9.	Cabin light (OEM supplied)	2 Nos
10.	Equipment locker LED lights (as per clause 15.6)	As required
11.	Rear reflectors	1 Set
Note: The prices of Tools / Electrical fittings (Annexure 2) shall be considered for evaluation, all lights shall be water proof.		

ANNEXURE-3

Mandatory Spare parts list for Fire Tender

Sl No	Description	UOM	Quantity
A	**For Water Pump and Primer**		
1	Renewable wear rings	Set	1
2	Bearings	Set	1
3	Mechanical seal assembly	Set	1
4	Normal (Low pressure) impeller	No	1
5	High pressure impeller(s)	Set/ No*	1
6	Oil Seals	Set	1
7	Gaskets / O-rings	Set	1
8.	Common pump shaft (LP and HP)	No	1
B	**For Power Take OFF (PTO) unit**		
1	Bearings	Set	1
2	Oil Seals	Set	1
3	Cooling Coil	No	1
4.	Gaskets / o rings	Set	1
C	**others**		
1	OEM Recommended DeF Solution	L	80
2	OEM Recommended Windshield Washer	L	2
3	Door Handle	No	5
4	Stepney including tyre, rim, tube and flap	Set	1

NOTES:

1. BIDDER shall submit **detailed list** of mandatory spares for water pumps (including primer) and PTO **as per the above with Part Nos** and drawing along with techno commercial bid for review by FACT.
2. The prices of mandatory spares for water pumps (including primer) and PTO (Annexure 3) shall be considered for evaluation.

ANNEXURE-4

Description of Tools

Sl No	Description of material	Quantity
1.	Set of pipe wrench of sizes: - 8",10",12",14",18",24",36".	01 Set
2.	Double open end spanner (set of 6 mm to 32 mm) 6x7,8x9, 10x11, 12x13, 14x15, 16x17, 18x19, 20x22, 21x23, 22x24, 24x26, 24x27, 25x28, 30x32	01 Set
3.	Ring spanner set (06 mm to 32 mm) 6x7, 8x9, 10x11, 12x13, 14x15, 16x17, 18x19, 20x22, 21x23, 24x26, 24x27, 25x28, 30x32 (Total 13 Nos.)	01 Set
4.	Adjustable slide wrench (04 Nos.) (150 mm, 200, 250 mm & 300 mm)	01 Set
5.	Allen keys (in L' shape) & (size in MM) 1.5, 2, 2.5, 3, 04, 05, 06, 07, 08, 09, 10 & 12 (12 Nos.)	01 Set
6.	Combination pliers (02 nos.) 150 mm & 200 mm.	01 Set
7.	Flat file (02 Nos.) 150 mm & 200 mm, Half round file (200 mm).	01 Each
8.	Hack saw frame with handle (for 12" long blade) along with 10 Nos. of blades.	01 Set
9.	Screw drivers (in mm) 04 Nos. 50x3, 100x4, 125x6, 150x8.	01 Set
10.	Cordless angle grinder (100 mm), min 18V, with spare battery, charger and moulded carrying case	01 No.
11.	Cordless drill, min 18V, with different type and different size drill bits, with spare battery, charger and moulded carrying case	01 No.
12.	Cordless Chainsaw (guide bar length minimum 35cm), power output min 2000 watts , with spare battery, charger and carrying soft case (Make Dewalt/Makita)	01 No.
13.	Oil Can 1/2-pint capacity.	01 No.
14.	Steel measuring tape (05 meter long).	01 No.
15.	Nose plier 150 mm	01 No.
16.	Rivet Gun 2.4mm to 4.8 mm capacity	01 No.
17.	Hammer, .9 – 1Kg	01 No.
18.	Claw hammer, 400- 500g	01 No.
19.	Heavy duty pie wrench 24", IS4001(part – 2)type	01 No.
20.	Chain Pipe wrench	01 No.
21.	½" socket wrench set, 8-32mm sockets, with sliding bar handle, small and large extension and heavy duty reversible ratchet with rigid carry case.	01 No.
Note: 1. All hand tools shall be of Taparia / Jhalani / Everest make. 2. All power tools shall be of Bosch/ Stanley / Dewalt/ Makita make		

TECHNICAL CHECK LIST

BIDDER's Name: M/s _____

ENQUIRY No: _____

BIDDER's Offer Ref No &Date:_____

Contact Person:_____E-mail_____

1. ALL CORRESPONDENCE MUST BE IN **ENGLISH** LANGUAGE ONLY.

2. DULY SIGNED & STAMPED COPIES OF THIS "TECHNICAL CHECK LIST", WITH ALL THE CLAUSES DULY CONFIRMED/ PRECISELY REPLIED TO BY THE BIDDER, SHALL BE ENCLOSED.

3. **FAILURE ON PART OF THE BIDDER IN SUBMITTING THIS DULY FILLED-IN "TECHNICAL CHECK LIST" WITH UN-PRICED BID AND / OR SUBMITTING INCOMPLETE REPLIES MAY LEAD TO REJECTION OF BIDDER'SBID.**

Sl. No.	DESCRIPTION	BIDDER'S CONFIRMATION / ANSWER
1.	This Technical Check list with categorical confirmation against each of the clauses of the TPS shall be furnished along with the bid. Deviation(s), if any, against the TPS or applicable specifications, codes or other technical documents etc. attached shall be duly consolidated under the **"COMPLIANCE STATEMENT (TECHNICAL)"** enclosed. In case no deviations are furnished, it will be presumed that all requirements are fully met. Any deviations/ deletions/ corrections made by the BIDDER elsewhere will not be taken cognizance of and all such deviations shall be deemed to have been withdrawn by the BIDDER. Confirm compliance.	
2.	Confirm that all work / activities covered in the TPS including design, procurement of chassis, fabrication, body building, procurement of equipments, fitment, exterior/interior work, supply of accessories, tools, electrical fittings, water pump and PTO spares, inspection and testing, documentation, transportation, supply and delivery of Foam fire tenders complete in all respects to FACT –Cochin Division with necessary documents required for permanent registration in Kerala is in the scope of the BIDDER and to be arranged and	

	carried out by the BIDDER at his own cost. Also any other requirements which are not covered under this TPS , but may be necessary to complete the Fire Tenders and/ or to fulfill the operation/performance requirements shall be provided by the BIDDER at his cost , to the full satisfaction of M/s FACT- CD	
3.	The vehicles shall conform in all respect of the provisions contained in the M.V. Act 1988 and M.V. Rules 1989, RTO rules etc. applicable in Kerala State, applicable emission norms and to any other statute modifications or re-enactments thereon from time to time. Also All the equipments / documents necessary for R.T.O's clearance shall be provided on the vehicles.	
4.	The BIDDER shall coffer strict compliance to the acceptable makes specified. There shall be no deviation on the specified makes for chassis, pump and Power Take Off (PTO) units.	
5.	All materials/ items shall be BIS marked & where BIS is not available the material shall be of high quality from reputed manufacturer.	
6.	**Documents / Drawings along with Bid:** Confirm submission of all documents/ drawings along with the bid as per Sl No 2.3 of the TPS	
7.	**Documents / Drawings after LOI / Order:** Confirm submission of all documents/ drawings within 15 days after LOI/ Order as per Sl No 2.4 of the TPS	
8.	Two nos soft and Six Nos hard copies of all documents, instruction manual, all drawings, documents, manuals, inspection reports, certificates, CCE/ PESO approvals and other approvals applicable, shall be submitted along with supply .	
9.	Confirm that after issue of Purchase Order, bidder has to confirm and get approval of the drawing from FACT- CD before starting fabrication work. Only after due approval of drawings from FACT- CD, BIDDER shall start the fabrication work.	
10.	No extra claim will be entertained for any changes, which may arise during review / approval stage by the client of BIDDER's drawings / documents / procedures. BIDDER to confirm.	
11.	Make and model no of Chassis offered.	
12.	Catalogue of the Make / Model of the chassis manufacturer with full details submitted. Please confirm submission	

13.	BIDDER shall arrange necessary temporary registration/permit and insurance till vehicles are delivered at Fertilizers and Chemicals Travancore Limited, Cochin division as specified in the order at their risk & cost.	
14.	The chassis shall be procured by the bidder on behalf of the client. Payment for Chassis will be made at actual against documentary evidence, subject to the maximum amount quoted by BIDDER on submission of bank guarantee of equal value.	
15.	Load distribution chart, determination of operational FAW, RAW, GVW, and permissible FAW, RAW, GVW etc. of the chassis manufacturer and ensure suitability of the offered chassis for the specified duty. Please confirm submission with calculations.	
16.	Make and model no of water pump with primer offered.	
17.	Catalogue of the Make / Model of the Water Pump manufacturer showing Material of construction, Capacity, Pressure and other relevant details to be submitted. Please confirm submission	
18.	Confirm that the suction and delivery outlets, monitor outlets, mounting, control panels etc. shall be provided as specified in the TPS	
19.	Confirm that PTO and cooling system shall be provided as specified in the TPS.	
20.	Make, Model No and manufacturer's catalogue of PTO. Please confirm submission	
21.	Confirm that the engine and the PTO shall provide sufficient horse power, torque and rpm to enable the pumps to meet and exceed the specified performance.	
22.	Relevant Calculations for suitability of PTO for drive line and matching of pumps with PTO and Engine power / torque with sketch (as noted in the TPS). Please confirm submission with calculations.	
23.	Confirm that Water tank and foam tank shall be provided of the specified capacities, material of construction, thickness etc. with smart electronic level indicators and other provisions as specified.	
24.	Confirm that the water tank and Foam tank shall be mounted on the vehicle on a sub frame using Metacone mountings/ flexible mounting pads (depending on the manufacturer's standard mounting procedures)	

25.	Confirm submission of drawings with details of sub frames with meta cone mounting for water tank, foam tank and any others to chassis along with the bid.	
26.	Confirm that automatic foam proportioning system shall be provided as specified.	
27.	Confirm that foam cum water monitor of the specified capacity, horizontal throw, Material of construction (MOC) etc. with aspirating type nozzle confirming to IS 8442- 2008 which shall be provided as specified including conformity to performance requirements in the TPS.	
28.	Please indicate the capacity, horizontal throw (water and foam) and MOC with size of foam cum water monitor offered.	
29.	Make, model and catalogue showing all relevant details, size, performance, MOC etc. of foam cum water monitor offered. Please confirm submission	
30.	Confirm that water hose reel etc. shall be provided as per TPS	
31.	Confirm that Piping and Valves, MOC, Makes, testing etc. shall be provided / carried out as per TPS.	
32.	Confirm submission of Flow diagram of water and foam lines with foam proportionate arrangement –Low and High pressure pump along with the bid.	
33.	Please confirm that body work, stowage, lockers, Electrical system, ladder and ladder gallows, painting and marking, workmanship and finish of the vehicle etc. shall be as specified in the TPS.	
34.	Confirm all stage inspections, performance tests, functional and final acceptance tests, road tests, all other specified tests shall be carried out by the BIDDER as specified in the TPS and at BIDDER's own cost	
35.	All certificates as specified and necessary documents against proof of source of supply shall be submitted by the BIDDER for review and acceptance by FACT during inspection at BIDDER's works. Please confirm.	
36.	The Foam Fire tenders shall be dispatched only after successful completion of all inspection and acceptance tests by FACT and Inspection Release Certificates (IRC) obtained. Please confirm.	
37.	Confirm acceptance to guarantee/ performance guarantee requirements specified.	
38.	Confirm that you will supply the accessories as listed in Annexure -1 of the TPS	

39.	Confirm that you will supply the Electrical fittings as listed in Annexure -2 of the TPS	
40.	Confirm that you will supply the mandatory spare parts of water pump (with primer and PTO) as listed in Annexure -3 of the TPS	
41.	Confirm that you have submitted **detailed list** of mandatory spares for water pumps (including primer) and PTO as per **Annexure 3 with Part Nos and drawing along with techno commercial bid** for review by FACT.	
42.	Confirm submission of all documentation as specified in the TPS.	
43.	Confirm submission of un priced bid in the format enclosed indicating Quoted/ Not Quoted along with the Techno commercial bid	
44.	Confirm submission of other Recommended Spare parts with Part NOs, drawings and details by the BIDDER for water pump and PTO for two years' operation in separate sheets (Separate unpriced along with the techno commercial bid and priced along with the price bid).	
45.	Confirm submission of Compliance Statement duly filled, signed and sealed by the BIDDER along with the bid.	

Notes:

1. Please read the TPS in detail before filling up.
2. Only major activities / items are dealt in this check list. Full conformity to TPS is therefore required.

FORMAT FOR COMPLIANCE STATEMENT (TECHNICAL)

ENQUIRY No: --

DATE: ---

We state that our Bid No……………………………………is in full compliance with the documents issued against the TPS No: ………………….and other attached technical documents except for the deviations listed below: -

LIST OF DEVIATIONS (TECHNICAL)

Sl. No	Description	Reasons for Deviation

Name of Bidder:

Signature with Seal / Stamp

Date:

COMPLIANCE STATEMENT

Sl. No.	Terms	Bidder confirmation
1	Offer shall be as per the TPS FACT CD / FIRE AND SAFETY - FT/24/01 provided.	
2	Pre Bid Meeting Required and shall be conducted one week prior to the bid opening.	
3	Pre Qualification criteria is provided and only Pre qualified bids shall be considered for Technical Evaluation.	
4	Performance Guarantee and Warranty required as per the TPS provided.	
5	Pre Despatch Inspection is required as per the TPS.	
6	Performance Bank Guarantee for 10 % of contract value for a period of 18 months from the date of delivery shall be submitted by the successful Bidder in the Proforma provided as per TPS conditions.	
7	Security Deposit: A Security Deposit Bank Guarantee of 5% shall be furnished as per the FACT proforma (applicable for orders of value above Rs. 5,00,000.00) post placement of Purchase Order.	
8	As per TPS , after supply of Fire Tender, the Bidder shall provide one week training on operation & maintenance at owner's site & charges for the same shall be included in the quoted price.	
9	Payment for Chassis will be made at actuals against documentary evidence, subject to the max.amount quoted by bidder in the Price Bid.Other specified conditions apply.	
10	Complete Fire Tenders per the TPS provided shall be delivered within 6 months from the issuance date of Purchase Order.	
11	Please confirm : Price Basis – FOR FACT Stores (as per Gem T & C)	
12	Please confirm : Taxes and Duties - The Price offered in GEM is all inclusive of TAX. (as per Gem T & C)	
13	Please confirm : Payment Terms : 100% payment will be released within 10 days of the issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills as per GEM terms and conditions. (as per Gem T & C)	
14	Please confirm : Liquidated Damages: As per GeM – "@ 0.5% of the contract value of delayed quantity per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value of delayed quantity without any controversy/dispute of any sort whatsoever"(as per GeM T & C)	

Note : All the above columns shall be filled properly, without leaving blanks. Please upload / return this document duly filled-in, along with your bid.