



**GOVERNMENT OF KERALA  
POLICE DEPARTMENT**

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[www.keralapolice.gov.in](http://www.keralapolice.gov.in)

**H3/115676/2021/PHQ**

Dated: 12/10/2021

**e-Government Procurement (e-GP)  
NOTICE INVITING TENDER**

The State Police Chief, Kerala Police Department, Government of Kerala invites online bids from reputed manufacturers/ authorized dealers or reputed vendors for the **SUPPLY OF FULLY BUILT WATER CANNON VEHICLE**. The bidders should comply with the following general conditions in addition to the additional conditions of the instant tender.

**General**

1. The Bidder should be a reputed Original Equipment Manufacturers (OEM) or authorized dealer of OEM, who is having an Authorization Certificate from the OEM to participate in the tender floated by Kerala Police. Certificate from the OEM for sales and service, to be produced.
2. One bidder can not represent two suppliers/OEMs or quotes on their behalf in a particular tender.
3. The OEM/Bidder should have a well equipped service centre functioning in India (preferable in Kerala) to cater to immediately after sales requirement; copy of Service Centre details must be enclosed along with Tender document. (Preferably bidder should have a Service Centre in Kerala/South India).
4. A reputed vendor can participate in the tender provided the vending outfit is functioning in the market for at least 10 years.
5. The Bidder should have valid GST registration. Copy of GST registration certificate should be enclosed along with the tender.

6. The bidder should have valid PAN/Taxation Index Number. Copy of PAN/Taxation Index Number allocation letter should be enclosed along with the tender.
7. The Bidder must fulfil the following minimum qualification criteria to prove the techno-commercial competence and submit the documents in support thereof:
  - a). Valid Authorization letter from the OEM to attend this particular Tender.
  - b). Certificate of Registration/Incorporation Certificate of the Bidder.
  - c). Last 3 year's financial status of the Bidder's/P&L and Balance Sheet/audit report of last 3 years.
  - d). The bidder (authorized dealer/distributor) should have the dealership/distributionship for at least 3 (three) continuous consecutive years with the OEM.
  - e). The Bidder has to submit a letter specifying the warranty period.
  - f). In case of a propriety item, a certificate by the OEM to be attached.

1	Tender No. & Date	KPET/25/2021/PHQ Dated 12.10.2021
2	Item	<b>SUPPLY OF FULLY BUILT WATER CANNON VEHICLE</b>
3	Quantity	2 No.
4	Estimated Amount	<b>Rs. 132 Lakh</b>
5	Tender Fees (through online mode only)	Rs. 22,770/- (Rupees Twenty two thousand Seven hundred and Seventy only) (GST extra)  18% GST amount on tender fees mentioned above shall be paid to GST Department directly by the bidder.
6	Earnest Money Deposit (through online mode only)	Rs. 1,32,000/- (Rupees. One Lakh and thirty two thousand only)
7	Specifications	Attached in tender document

8	Date and time of publication of e-Tender	13/10/2021, 06:00 PM
9	Date of submission of e-Tender	13/10/2021, 06:00 PM To 09/11/2021,12:00 NOON
10	Last date and time for online submission of e-tender	<b>09/11/2021, 12:00 NOON</b>
11	Date and time of opening of e-Tender	11/11/2021, 3:00 PM
12	Place of opening	Police Headquarters, Thiruvananthapuram
13	Date, Time and Place of Technical Evaluation	<b>16/11/2021</b> , 10.30 AM, Police Headquarters, Thiruvananthapuram
14	Bid Validity (Total Number of Days up to which the rates are to be firm)	180 days
15	Warranty & AMC	Two years warranty. Charges for AMC/ATS for a period of three years after warranty period should be quoted in the financial Bid.
16	Address of Tender Inviting Authority	State Police Chief, Kerala, Vazhuthacaud, Thiruvananthapuram - 695010 Ph: 0471-2722566 Mobile No. 9497996998 Fax: 0471-2722566 e-mail: aig2phq.pol@kerala@gov.in Website: <a href="http://www.keralapolice.gov.in">www.keralapolice.gov.in</a>

**8. Mode of submission of bids: - Online.** All Bid documents shall be submitted only in online procedure through the e-GP website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) in their designated online covers. Details of covers are given separately. No other mode of submission shall be accepted and such tenders will be rejected outright.

**9. Cover details: -** No. of covers - 2. i) Technical Bid ii) Financial Bid. The AMC/ATS after warranty period also to be quoted in the Financial Bid. In the case of Foreign Equipments, the rate must be quoted in Indian Rupees. The documents to be uploaded under each online covers are specified in the website.

**10. Downloading of e-Tender documents:** - The tender document can be downloaded from the e-GP website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) from the date and time of publication of e-tender onwards to last date and time for online submission of e-tender. Downloading of tender documents will not be possible after the date specified above.

**11. Submission of e-Tender documents:** - The digitally signed tender document and other specified documents shall be submitted online through the e-GP website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) well in advance before the last date and time mentioned above. No submission shall be allowed after the last date mentioned above.

**12. Payment of Tender Fees:** - A non-refundable tender fee shall be paid in online mode through the e-GP website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) at the time of bid submission. No other mode of payment shall be accepted. **THE TENDERS OF BIDDERS WHO DO NOT REMIT FEES THROUGH ONLINE WILL BE REJECTED OUTRIGHT.**

**13. Payment of Earnest Money Deposit (EMD):** - The EMD shall be paid in online mode through the e-GP website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) at the time of bid submission. No other mode of remittance shall be accepted.

**14. Exemption from payment of EMD:** - Bidders who are registered with Store Purchase Department, Kerala or National Small Scale Industries Corporation Ltd., New Delhi (for the items tendered) are exempted from submission of EMD. Those bidders claiming exemption shall submit valid registration certificate from the SPD, Kerala or NSSIC, New Delhi.

**Tenders of bidders who do not remit EMD online or do not upload documental proof (digitally signed) for exemption of EMD will be rejected outright.**

**15. Withdrawal and re-submission of e-Tender:** - The Bidders are at liberty to withdraw the submitted tender/documents and to submit fresh tender/documents till the last date and time of submission of the e-Tender after which withdrawal/re-submission will not be allowed.

**16. Opening of e-Tenders:** - The bids shall be opened online through the e-GP website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) at the Police Headquarters, Vazhuthacaud, Thiruvananthapuram on the date and time mentioned above in the presence of the Bidders/ authorized representatives who wish to attend at the above address. If the tender opening date happens to be a holiday or non-working day due to any valid reason, the tender opening process will be done on the next working day at the same time and place specified. Any change in the opening date/time/venue due to other reasons shall be informed by way of Corrigendum published in the e-GP website. The Technical Bids will be evaluated by a Technical Evaluation Committee and those that do not conform to the specifications or to the satisfaction of the Committee will be rejected. The financial bids of the Technically qualified Tenderers only will be considered for opening. The date of opening of financial Bids will be intimated to the concerned technically qualified tenderers, over phone/Fax/e-mail. This will be with in 7 to 10 days of evaluation of technical bid.

**17. Technical Evaluation:** - All tenderers who quote for the supply of above Water Cannon Vehicle are required to be ready for live demonstration to be held at **Special Armed Police Camp, Thiruvananthapuram on 16.11.2021 at 10.30 AM (or any other venue which will be intimated in due course). In the**

**event of firms not able to show live demonstration, they need to convince the Technical Evaluation Committee about such inability and resort to documentary/power point presentation with original product brochures/CDs/scale models/ videos/ slide shows etc. to the utmost satisfaction of the Technical Evaluation Committee.** Any clarification/doubts regarding the specification or related matters pertaining to Water Cannon Vehicle may be freely got cleared through **Superintendent of Police, Motor Transport, PHQ Mobile No. 0471-2726809 / 9497996993 (Mail ID: spmt.pol@kerala.gov.in ).**

**18. All Bidders who participates in e-tender should produce hard copies of all relevant documents related to e tender at the time of technical evaluation, without fail.**

**19. Note to Bidders:**

- i) Bidders have to procure legally valid Digital Certificate (Class III) as per Information Technology Act, 2000 for digitally signing their electronic bids. Bidders can procure the same from any of the license certifying authority of India. For more details, please visit the e-GP website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in).
- ii) Bidders are advised to note the Tender\_Id and Tender No. & Date for future reference.
- iii) All uploaded documents should contain the signature and the office seal of the bidder/ authorized persons and should be digitally signed while uploading. Documents uploaded without digitally signing shall entitle rejection of the tender.
- iv) In the case of Foreign Equipments, the rate should be quoted in Indian Rupees. Preference will be given to those who are ready to supply the item without opening Letter of Credit. Ordinarily, no advance payment will be made for procuring the above item. In case advance payment has to be made, a clear case has to be made out by the Tenderer. However this will be only on extraordinary circumstances.
- v). For obtaining Digital Signature Certificate and help on e-tendering process, contact Kerala State IT Mission, e-Government Procurement PMU & Helpdesk, Basement floor of Pension Treasury Building, Uppalam Road, Statue, Thiruvananthapuram; Ph: 0471-2577088, 2577188; Toll free no: 18002337315; e-mail: [etendershelp@kerala.gov.in](mailto:etendershelp@kerala.gov.in); Website: [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) on all government working days from 9:30 am to 5:30 pm.
- vi) The State Police chief is empowered to reject any tender without assigning any reason.
- vii) For any clarifications regarding the terms and conditions in this tender notice or the tender document, please contact Additional Asst. Inspector General of Police, , OR Senior Superintendent H Branch, Police Headquarters,

Vazhuthacaud, Thiruvananthapuram – 10 on all Government working days from 10:30 am to 5:00 pm. Ph:0471-2721547 Fax: 0471-2726945

viii) **Bidders who are using Internet Banking are requested to make online payment 72 hours in advance.**

**NOTE: - BIDDERS ARE ADVISED TO GO THROUGH THE CONDITIONS IN THE NOTICE INVITING TENDER AND THE TENDER DOCUMENT CAREFULLY AND COMPLY THEM TO AVOID OUTRIGHT REJECTION OF THEIR TENDER.**

For any litigation relating to this order, the jurisdiction will be Thiruvananthapuram City.

Sd/-

Additional Assistant Inspector General of Police  
For DIRECTOR GENERAL OF POLICE &  
STATE POLICE CHIEF, KERALA

Signature Not Verified

Digitally signed by Sureshkumar K  
Date: 2021.10.13 10:40:51 PDT  
Location: Kerala-KL

# **DRAFT QUALITATIVE REQUIREMENTS / TECHNICAL SPECIFICATION OF WATER CANNON.**

## **CHASSIS SPECIFICATIONS**

### **1 ENGINE**

EMISSION STANDARD: BS.VI

Type: Water Cooled Direct Injection Turbo Charged Intercooled Diesel Engine.

Min Engine Power: 170 HP

### **2 CLUTCH**

Type : Single Plate Dry Friction Type Organic Clutch/ with Organic Lining.

### **3 GEAR BOX**

Type : Min 06 Speed Synchromesh

No. of Gears : Min. 6-Forward & 1-Reverse.

### **4 AXLES**

Total 03 Axle - 02 back side (one drive axle & other dummy) and 01 front, the rear axle should have the provision of differential lock.

Rear axles- At least one of the two rear axles must be provided with Single Speed, Hypoid Gear in Pressed Steel Welded Beam with Differential Carrier Housing. Fully floating axle shafts.

Front Axle- Type : Extra Heavy Duty Forged I-Beam Reverse Elliot Type.

### **5 STEERING**

Power Steering at RHS

### **6 BRAKES**

Service Brakes : Dual Circuit Full Air Brake System

Parking Brake Type : Fail safe Hand Operated graduated type pneumatically assisted  
Parking Brake acting on Rear Wheels.

Engine Exhaust Brake : Electro Pneumatically Operated & Coupled with Service Brakes.

### **7 FRAME**

Type : Ladder Type Heavy Duty Frame with Riveted / Bolted Cross Members & Channel Section Side Members.

### **8 SUSPENSION**

Type : Semi Elliptical Leaf Springs at Front and Rear with helper spring

Shock Absorber: Hydraulic Double Acting Telescopic Type on both axles.

### **9 WHEELS & TYRES**

Tyres : 10.00X20-16PR. Cross country tyres (lug pattern)/ 295/90 R20  
No. of Wheels : Front-2, Rear Drive-4, Rear Dummy-4 & Spare-1.

#### **10 FUEL TANK**

Capacity : Min. 225 ltrs x 02 Nos.

#### **11 ELECTRICAL SYSTEMs**

24 Volts.

Maintenance free gel type Battery – 2 X 12 V, 120 AH Capacity

#### **12 MAIN CHASSIS DIMENSIONS AS PER IS-9435 (IN MM)**

Wheel Base : Min. 4800mm.

Maximum overall Length : 9000mm including fully fabricated water canon.

Max. Width : 2500mm including fully fabricated water canon.

Max. Height : 3700mm including fully fabricated water canon.

#### **13 WEIGHTS (Kgs)**

Permissible GVW : should be able to with stand GVW up to 25000 Kgs.

#### **14 PERFORMANCE**

Geared Speed in Top Gear : min. 70 Kmph.

Turning Radius not more than 10.5 mtrs.

Ground clearance not less than 240mm

#### **15 HYDRAULIC JACK**

4 hydraulic jacks to keep the vehicles lifted above the ground in fully prepared condition while not in use, so that unnecessary wear & tear of the tyres can be prevented.

#### **16 DRIVER & CO-DRIVER SEAT/OPERATOR SEAT**

01 Adjustable type Seat for the driver and 02 Seats should be provided for Co-drivers/ Water Canon Operators.

### **II. DRAFT QUALITATIVE REQUIREMENTS (QRS)**

#### **1 GENERAL**

i) The vehicle mounted Water Cannon shall have water tank capable of carrying 12000 Ltrs of water, an indelible ink and an irritant tank, each capable of carrying 500 ltr of indelible ink and irritant respectively.

ii) A centrifugal pump capable of delivering 3200 LPM of water at 8.5 Kg/sq cm and 2400 LPM at 10.5 Kg/sq cm shall be mounted in aluminum lockers just behind the driver's cabin coupled to a separate engine.



iii) The engine used for driving the pump shall be a Turbo charged BS-IV or higher engine developing not less than 150 BHP at 2800 rpm as per Higher Standard. Diesel tank shall be filled with explosion suppression material to avoid explosion in the tank. A variable round the pump proportionator shall be fitted between the suction and delivery of the pump. The proportionator shall have six-position section valve:-

\*Position -I shall be selected during operation of one cannon

\*Position- II shall be selected during operation of both cannons simultaneously

\*Position- III shall be selected during operation of both cannons along with front and rear spray nozzles

\*Position- IV shall be selected during operation front and rear spray nozzles only.

\*Positive- V shall be selected during operation of one front and one rear Canons simultaneously.

\*The “OFF” position should isolate the proportionator so that the appliance could be used to deliver water only if required.

## **2 MATERIAL SELECTION & TREATMENT**

i) The material to be used in the construction of the appliance should be completely rust proof & able to impart strength & durability.

Water Tank– MS

Indelible ink Tank– SS

Irritant Tank– SS

Body Building– MS, Aluminum

Engine Skid – MS

Panelling – Aluminum

Piping for Water Tank – Galvanised pipe

Piping for Indelible ink tank –SS

Piping for Irritant Tank –SS

Pneumatic – SS

Hydraulic – CDS

ii) Timber shall not be used in the body construction

iii) All parts which forms water ways or come in contact with indelible ink and irritant shall be corrosion resistant material or suitably treated to prevent corrosion. All water pipelines shall be hot dipped galvanized. The water contact surfaces shall be painted internally with epoxy paint after a shot / sand blasting and all metal parts exposed to atmosphere shall either be corrosion resistant material or treated suitably to resist corrosion.

### **3 DESIGN & CONSTRUCTION**

#### **i) WATER TANK**

The water tank mounted on the chassis shall be capable of carrying 12000 ltrs of water. It shall be of welded construction and fabricated out of mild steel sheet. The thickness of the sheets at the bottom, front and rear sides should not be less than 5 mm, for sides and top not less than 4mm, for baffles not less than 3mm thick. The tank shall be suitably baffled in both the directions to prevent surge when the vehicle is accelerating, cornering or braking. The baffles shall be of welded type with bolted panels provided with the opening in the baffles. The tank shall be semi elliptical in shape and so designed and mounted as to bring the centre of gravity of the appliance as low as possible. The mounting shall permit full rated contents of the tank to flow into the pump. The watertank with all its fitment shall withstand a hydraulic pressure of 0.3 kg/cm<sup>2</sup>(guage).

ii) Suitable lifting eyes with proper stiffeners shall be provided on the shell of the tank to enable the tank to be lifted of the vehicle for repairs /replacements as necessary.

iii) The tank shall be fitted with a filling orifice, a drain cock and one / two bolted man hole of 450 mm dia on top of the tank. The filling orifice shall not be less than 250 mm specification diameter and fitted with a removable, strainer and filler cap clearly marked "WATER". The drain cock and pipe shall be taken down to a point well below the chassis without reducing the effective ground clearance, when fully loaded and shall discharge away from the chassis.

iv) An overflow pipe of not less than 100 mm internal dia shall be fitted to the tank. The overflow pipe shall be taken down to a point well below the chassis without reducing effective ground clearance when fully loaded and shall discharge away from the wheels. The pipe shall be so designed and located to ensure that water will over flow through the pipe only while refilling the tank but no water shall overflow, through this pipe when the appliance is in motion or is standing on an uneven ground or brakes are applied to the moving vehicle.

v) Two filling pipes (hydrant connections) each with an internal dia of not less than 70 mm shall be fitted to the tank. Each of these shall be fitted with 63 mm instantaneous male couplings incorporating a strainer. The inlet of the filling pipes shall be fitted at the pump control panel. Fool Proof Arrangement shall be made to prevent pressurization of water tank while refilling through these hydrant connections. Suitable arrangements should be provided to ensure that the water from the tank does not leak through the filling pipes.

vi) A tube water level indicator for the water tank shall be provided and Calibrated as Empty,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and full.

vii) Suitable arrangements shall be provided for self filling of water tank directly from the pump using a 50 mm pipe line. All plumbing shall be reasonably accessible for maintenance purpose. Drain cocks shall be provided where necessary and control for these shall be readily accessible and so arranged as to prevent the cocks from being opened by vibrations. The direction in which the valves / cocks open / close shall be clearly marked near each valve / cock.

viii) The plumbing between the water tank and pump shall have a clear and unobstructed water way of not less than 100 mm throughout. The draw off shall be protected by a brass wire screen filter and shall be fitted with antivortex device.

ix) All plumbing shall be reasonably accessible for maintenance purpose. Drain cocks shall be provided where necessary and control for these shall be readily accessible and so arranged as to prevent the cocks from being opened by vibrations. The direction in which the valves / cocks open / close shall be clearly marked near each valve / cock.

#### **4 PUMP**

i) A two stage centrifugal pump shall be connected to a separate BS-IV or better standard ENGINE (as described earlier) for driving the pump. The pump engine assembly shall be mounted on a sub-frame and fitted on the chassis in a locker just behind the driver's cabin. The pump casing and impeller shall be of gun metal. The pump shaft shall be of stainless steel supported by anti friction bearing external of the casing. The gland shall preferably be of self adjusting type. The impeller neck rings in the pump casing shall be renewable and manufactured from high quality bronze. The impeller must be hydraulically balanced to reduce end thrust. A drain plug shall be provided at the bottom of casing.

ii) A separate engine, independent from the vehicle engine shall affect the drive to the pump.

iii) The pump shall be capable of giving its rated output of 3200 LPM at 8.5 Kg/Cm<sup>2</sup>. The pump shall also be capable of giving the performance given in the table below when working with all internal and external strainer (except basket strainer) at sea level and up to 35 degree centigrade water temperature.

Sl. No.	Out Put LPM	Pressure (Kg/Cm <sup>2</sup> )	Suction Lift (Measured Vertically foam water level to the suction eye (m))	Remarks
	3200	8.5	1.5	When working through two 2.5 mtr length of specified suction hose

iv) Allowances for out put

- a) Temp. Compensation :- 1% for every 2.8 degree centigrade rise in water temp. above 35 degree centigrade
- b) Altitude Compensation :- 4% for every 300 mm elevation above mean sea level

v) The suction eye of the pump shall be provided with standard 100 mm suction hose connection with internal strainer and blank cap. The strainer shall be retained firmly when in use but shall be readily removable. The pump shall be provided with two delivery outlets at the pump panel fitted with screw type quick closing clack valves with standard 63 mm delivery hose connection and gun metal blank cap fastened with chains

vi) The pump casing and impeller shall be free from casting defects such as blow holes etc and pump shall be tested to a Hydraulic pressure of twice the rated pressure or one and a half times the shut-off pressure whichever is more to detect any leakage, performance etc.

vii) The pump shall be connected with the water tank, (water cannon) and spray nozzles. The various controls for opening the pump unit, monitors spray nozzles etc shall be located in the driver's cab and duplicate at the rear pump control panel.

## **5 PRIMER**

The primer shall be capable of lifting water at least from depth of 7M at a rate not less than 30 CC/Sec and shall preferably be of the water ring / exhaust ejector type.

## **6 ENGINE FOR DRIVING PUMP**

Water cooled direct injection Diesel Engine BS-IV or higher shall be used for driving the pump.

## **7 COOLING SYSTEM**

i) In addition to the radiator cooling, an indirect cooling system of the open circuit type shall be provided with the pump engine, discharging water to waste, this shall enable full power output to be maintained during continuous stationary running of the engine without overheating.

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

iii) The oil in the oil pump shall be prevented from overheating and the pump characteristics shall be chosen so the engine does not run at its maximum speed for giving maximum output.

iv) Suitable gauge for cooling water and glow lamp for lubricating system of pump engine shall be provided in the driver's cab and on pump panel. This shall be marked with operating with temperature.

**v) IRRITANT AND INDELIBLE INK TANKS :**

Two stainless steel tanks each of 500 ltr capacity shall be suitably mounted on the chassis. The tanks shall be separate and distinct units which can be removed separately for replacement. The tanks shall be rigid type and shall be fabricated out of minimum 2 mm thick stainless steel sheets and shall be of welded /bolted construction reinforced suitably. Its shall withstand a hydraulic pressure of 0.3 Kg/Sq.cm

vi) Each tank shall have a filling orifice of not less than 150 mm dia with a removable strainer fitted on it. A drain cock and pipe of not less than 50 mm dia shall also be provided.

vii) The draw off tube shall be suitably located and fitted with a gauge strainer of suitable material mesh size and of adequate straining area. The tank top shall be removable and the joint between top and body of tank shall be leak proof. Suitable venting arrangement shall also be provided.

viii) Tube type level indicator for ink and irritant tanks shall be provided near the tank and calibrated as empty  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and full. In addition level indicators shall also be provided in the driver's cabin and calibrated to read empty  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and full.

**ix) PROPORTIONATOR**

A round the pump inductor should be fitted between the suction and the delivery of the pump which will induct irritant or indelible ink as required in to the water stream with no loss in delivery pressure from the pump. The proportionator shall comprise of an inductor and two selector valves calibrated to ensure correct intake of irritant / indelible ink from 0 to 8%

**8 WATER CANNON**

i) Two Nos. at front & 2 Nos at rear Electro-hydraulically operated water Cannons shall be mounted on the roof of the cab in such a manner that these can be operated by means of separate joysticks suitably located in the driver's cabin. Each cannon shall be capable of traversing through 360 degree in the horizontal plane and elevating from 15 degree to +60 degree in the vertical plane. A powerful search light shall be suitably fitted with the each cannon so as to adequately illuminate the area of operation.

ii) The output from each cannon shall be 1100 LPM at a pressure of 10Kg/Cm<sup>2</sup> and a throw of not less than 45 M

## **9 PULSE JET ARRANGEMENTS**

The water cannon shall be fitted with Pulse Jet arrangement so as to discharge water in the form of water shots (pulse of short duration). If required the cannons shall also be capable of discharging water in continuous stream shall be affected by simple arrangement.

## **10 GROUND SPRAY NOZZLES**

To protect the vehicle during the operation it shall be provided with 2 Nos. Spray Nozzles in front of the vehicle between the front wheels. The spray nozzles shall have a wide jet pattern to cover an area, at least twice the width of the vehicle with a throw of min 3m.

## **11 REAR SPRAY NOZZLES**

3 Nos. rear spray nozzles shall be provided to protect the vehicle from the rear so that the mob does not come near the vehicle from rear. Wide pattern spray nozzle shall be located suitably having minimum throw of 6 M.

## **12 BODY WORK & STOWAGE**

i) Enclosed accommodation with double compartment for driver and two operators in the front seat and a crew of four in the rear seat shall be provided. The design of the cab shall be such that it shall afford maximum possible vision for the crew and shall ensure adequate ventilation. Hinged doors shall be provided on both sides of the appliance. The doors should open out-ward and these shall hung forward and have locks with double catch striking plates. All glasses fitted on doors/windows shall have winding type regulators and shall be of splinter proof safety type. All glasses including wind shield and front side full body shall be provided with removable protective wire mesh screen. A minimum 6 mm thick rubber skirt shall be provided all along the vehicle from lower ends of the body extending up to the ground to keep off petrol bombs and other missiles thrown on the vehicle by the mob.

ii) A protective grill shall be provided at the front of the vehicle extending below cab to prevent items getting under the vehicle.

iii) The cab and body should be of composite construction with sufficient rigidity and strength. It shall be of all steel construction. Pressed section of sufficient strength shall be used for the super structure. Mild steel sheets of 16 gauge shall be used for panelling outside. For paneling locker on in sides, 18gauge mild steel sheet shall be used.

iv) Lockers shall be provided for the stowage of all the essential equipments associated with Water Canon. The locker shall be provided with internal automatic lighting arrangement with master switch in the cab. The locker shall be of weather proof and self draining to release all water following a wash down etc.

**Warranty :**

1. Two years warranty for whole system of the vehicle
2. AMC for whole system of the vehicle for next 03 years

**ADDITIONAL POINTS TO BE INCORPORATED IN THE SPECIFICATIONS  
OF WATER CANNON**

1. The amount of water in the tank in litres and the water pressure should be possible to be monitored/observed by the operators with the means of digital or analog gauges.
2. The pump should have a low level shutdown system, which should stop the engine at reaching the pre adjusted level of water tank.
3. The water cannon should be fitted with PA system.
4. The cannon must have two nozzles at the back to disperse the crowd at the back. Since the length of the vehicle is too big to maneuver, two nozzles of the same size as of the front nozzles are required at the back top of the cannon.
5. To see the crowd at the back a 360 degree movable camera must be fitted at the back top of the cannon which should be connected with a monitor/LCD fitted in driver's cabin to observe the crowd at the back.
6. Roof top should be of non corrosive checkered plate.
7. A dragon light with 100m wire should be fitted on the roof top of the water cannon alongwith a Stand for providing it additional elevation.
8. SS Box to house pipes used for drawing water from out side tank/river/ponds should be fabricated left side on the roof top.
9. Two man hole should be available on top of the water tank for filling as well as periodically cleaning/ maintenance.
- 9 Tool Box should be available in the lower right side of the Cannon.
10. CCTV Camera on the back side of Cannon connected with LCD should be fitted in the cabin of Driver.
11. Visibility for Driver to see outside must be clear. Panel and other equipments in the Driver's cabin should be fitted accordingly.
12. Wire mesh on all windscreen panels/ glasses
13. Hydraulic /electrically operated canon should be designed in such a way (Either by telescopic mechanism or others) so that they can be elevated above the overall roof top level at the time of actual operation and can be lowered to their rest position when they are not in use. This will help in reducing the overall height of the vehicle.
14. Fog Lamp, Reverse Light, Twin Ampere Blinker Light,
15. Battery Charger with 30 Meters Cable and Plug socket
16. Cabin Instrument Panel and locker light
17. Spot Light, Inspection Lamp with Bracket

18. Armoured suction hose in 2.5 m length with internal diameter of 100 mm with Standard round thread coupling and other equipments
19. Suction wrenches
20. Low level suction strainer for 100 mm suction house with basket strainer
21. Suction collect head 03 way, 100 mm x 63 mm hydrant to suction adopter
22. RRL hose 63 mm diameter & 30 m long with instantaneous
23. Light alloy branch pipe with 19 & 25 mm nozzles