

**Draft QR/TDs for Water Cannon**

SI No.	Nomenclature	QRs/Specifications	Trial Directives
<b>Generic Parameters</b>			
1.	Chassis	Chassis of any OEM compatible with capacity of 12 KL water	As per OEM's certification & visual /physical inspection/operation and should meet the parameters. BOOs to physically inspect.
2.	Category of vehicle for which chassis to be used	Heavy capacity commercial vehicle	
3.	Type of fuel	Diesel	
4.	Max. Speed (kmph)	80	
5.	Steering	Tilt & Telescope Power Steering.	
6.	Emission	As per latest Emission norms of Govt. of India at the time of procurement	As per OEM's certification about the Engine type. Engine emission norms should be checked and verified at local RTA's or any other Govt. accredited agencies as per parameters. BOOs to check.
7.	Fuel Tank (with fuel suppression material) Capacity	≥250 ltr	As per OEM's certification & visual /physical inspection/operation and should meet the parameters. BOOs to physically inspect.
8.	Overall Height (min)	In accordance with the norms laid down by the State Transport Department	As per OEM's certification & with the help of measuring Tape and should meet the parameters. BOOs to physically inspect.
9.	Gradeability (%)	≥25	
10.	Ground Clearance	≥330 mm	
11.	No. of Speed/Forward Gears	06	As per OEM's certification & visual /physical inspection/operation and should meet the parameters. BOOs to check.
12.	Turning Radius	≤ 9500mm	
13.	Chassis Transmission System	Manual	
14.	ABS Fitted	Yes	
15.	Side View Mirror	Yes	
16.	Fog Lights	Yes	
17.	Surveillance System	04 IP cameras (01 camera each at the	

		front, rear, left side and right side of the vehicle) with following specifications:- i. High resolution picture/video (min. 2K) ii. Ingress Protection: latest available in market. iii. Capable of capturing/recording photos/video during day and night.	
18.	Low fuel warning Light	Yes	
19.	Standard Spare wheel and Tool Kit	Yes. The standard spare wheel and tool kit shall be installed in the water cannon in proper way for easy access and utilization. They shall not be placed in the cabin of the vehicle.	
<b>Constructional Parameters(Note: timber should not be used I body construction)</b>			
20.	Seating Capacity (in the cabin)	06 or above (including Driver)	As per OEM's certification & visual/physical inspection/operation and should meet the parameters. BOOs to physically inspect.
21.	Auxiliary Engine for Driving Pump	Yes	
22.	Engine Power	≥210 HP	
23.	No. of Normal Water Tank	01	
24.	Capacity of Normal Water Tank	12000 ltr	As per OEM's certification/visual/physical inspection & filling the Tank with water and should meet the parameters. BOOs to physically inspect.
25.	Material of Water Tank	SS 304 grade steel or better	As per OEM's certification & visual/physical inspection/operation and should meet the parameters. BOOs to check..
26.	Nominal thickness of SS Plate used for fabrication of Water Tank	≥05 mm	
27.	Thickness of Water Tank at bottom, front and rear	≥05 mm	
28.	Thickness of Water Tank at side and top	≥05 mm	

29.	Thickness of Baffles	≥02 mm	As per OEM's certification & visual/physical inspection/operation and should meet the parameters. Ease of maintenance to be ensured. BOOs to physically inspect.
30.	Diameter of Bolted Manholes	≥600 mm	
31.	Diameter of Filling Orifice	≥250 mm	
32.	Diameter of Drain Cock	≥75 mm	
33.	Internal diameter of Overflow Pipe	≥100 mm	
34.	No. of Filling Pipes	≥02	
35.	Internal diameter of Filling Pipe	≥70 mm	
36.	Diameter of Male Coupling fitted with filling pipe	≥60 mm	
37.	Tube type Water level indicator calibrated as empty ¼, ½, ¾ and full should be provided	Yes	
38.	Length of Water Filling Pipe (min)	≥50 mtr	
39.	Paint on outer body	≥85 DFT	
40.	Type of welding for fabrication of core structure	Mild welding	
41.	Colour Coding for inlet/outlet Pipes	Yes	
42.	Provision of self-filling of Water Tank directly from pump	Yes	
43.	Type of Pump	Two stage centrifugal pump	
44.	Pump shall be connected with Water Tank, Water Cannon and Spray Nozzles	All connecting pipes shall be made of SS	
45.	Various controls of operating the pump at pump control panel and in drivers cabin also	<ul style="list-style-type: none"> <li>The material of various controls of operating the pump at pump control panel should be made of SS</li> <li>The control panel of Water Cannon should be installed in the way that it may not hinder the front view of the Water Cannon</li> </ul>	
46.	Material of Pump casing and impeller	Gun Metal	
47.	The pump shall be capable of giving the performance when working with all internal and external strainer at sea level and upto	Yes	

	35° Water Temperature		
48.	Water Flow	≥3200 LPM at low pressure /8.5 kg/sqcm, ≤2400 LPM at high pressure/ 10.5 kg/sqcm	
49.	Suction Lift Measured Vertically from Water Level	≥07 m	
50.	Diameter of Suction Hose	100 mm	
51.	The Primer shall be capable of lifting water from a depth of 07 mtr at a rate not less than 300 CC/sec through a suction bore of 100 mm dia and shall preferably be of the water ring/exhaust ejector type	Yes	
52.	No. of Irritant Ink Tank	01	As per OEM's certification & filling the Tank with water and should meet the parameters. BOOs to physically inspect.
53.	No. of Indelible Ink Tank	01	
54.	Capacity of Irritant Ink Tank	500 ltr made of SS 316 L grade or better	
55.	Capacity of Indelible Ink Tank	500 ltr made of SS 316 L grade or better	
56.	Material of Tanks	SS 304 grade or better	As per OEM's certification & visual/physical inspection/operation and should meet the parameters. BOOs to check..
57.	Thickness of Walls of Tank (min)	05 mm	
58.	Hydraulic Pressure of Tanks to be Withstand (kg/sqcm)	0.5	
59.	Diameter of Filling Orifice of each Tank (min)	150 mm	
60.	Diameter of Drain Cock and Pipe (min)	50 mm	
61.	Suitable venting arrangement shall be provided	Yes	
62.	Tube type level indicator for ink and irritant tanks calibrated as empty ¼, ½, ¾ and full should be provided	Yes	
63.	Inductor and Selector valve should be fitted with proportionate valve to ensure correct intake of irritant/indelible ink from 0 to 8%	Yes	
64.	No. of Water Cannons	02	
65.	Operation of Water Cannon	Electro Hydraulic	

66.	Mounting of Water Cannon	on the front of roof of the vehicle. the height of cannon to be reduced optimum without impacting sole operation of water Cannon	
67.	Operated by	Joysticks	As per OEM's certification & visual/physical inspection/operation and should meet the parameters. BOOs to check.
68.	Each Cannon should be capable of traversing 210° (-105 ° to 105 °) in azimuth and from -15° to 60° in elevation	Yes	
69.	Searchlight fitted with Water Cannon	Yes	
70.	Provision of manual override control of Water Cannons in case of failure of electro hydraulic control	Yes	
71.	Water Flow from each Cannon	1100 LPM @ 10.5 kg/sqcm	
72.	Distance of Water Jet Throw (min)	60 mtr	
73.	Water Cannon fitted with Pulse Jet arrangement	Yes	
74.	Pulse Jet arrangement both for Pulse and continuous je throw arrangement	Yes	
75.	Discharge Water Pulse Duration	02 sec on & 02 sec off	
76.	Switchover from continuous system to pulse jet arrangement	Yes	
77.	To protect the vehicle tyres during operation, two spray nozzles at front and rear shall be provided with wide jet pattern to cover an area twice the width of vehicle	Yes	
78.	Adequate sitting arrangement for driver and team should be in driver's cabin, Maximum possible vision and adequate ventilation should be provided in cabin, The doors should open outwards and the glasses on doors and windows should be fitted with wire mesh polycarbonate sheets, Windscreen of splinter proof safety type	Yes	

	shall be provided		
79.	All glasses shall be provided with removable protective wire mesh screen of 10 gauge wire dia and 25 mm openings, wire mesh also to be provided on head lamps and other lights on vehicle	The wire mess should be of SS and fitted with wing nuts for easy cleaning of all glasses	
80.	The frame/core structure of the vehicle	should be zinc-coated, followed by epoxy coating	
81.	Material used for panelling and locker	Aluminium sheets	
82.	Thickness of material used for Panelling and locker	≥1.62mm (16 gauge)	
83.	Checkered plate shall be provided on top of the entire vehicle	Yes	
84.	Lockers shall be provided for stowage of all the accessories, spare/tools	Yes	
85.	Locker shall be fitted with internal automatic lighting and should be weather proof and self-draining to release all water following a wash-down	Yes	
86.	Size of TFT Monitor in Driver cabin	14 inch foldable LED	
87.	Video camera shall be mounted on a stand provided inside the rear door of the vehicle	Yes. Additional 04 Nos. Video Cameras shall be installed for 360-degree view in the driver's cabin.	
88.	Power source of Video Camera and TFT	12 V DC Vehicle Battery	
89.	An additional compressed air cylinder shall be provided for pneumatic systems	Yes	
90.	No over-turning should occur upto 27° slope from the horizontal (under fully equipped and loaded conditions)	Yes	
<b>Instruments and Controls</b>			
91.	Digital control Panel for operating various instruments.	Yes	
92.	Pneumatic controls for Water Supply for	Yes	As per OEM's certification &

	Water Cannon, cooling system, inductor, rear and front tyre saving spray nozzle		visual/physical inspection/operation and should meet the parameters. BOOs to check.
93.	Pneumatic controls indelible and irritant ink supply for mixing with water	Yes	
94.	Pneumatic controls for selector valve and control for air release	Yes	
95.	Hydraulic auto/manual controls for oil hydraulic system for cannon movement	Yes	
96.	Elevation for cannon	Yes	
97.	Azimuth for cannon	Yes	
98.	Mechanical control level for water supply from water tank to pump valve	Yes	
99.	Calibrated pressure gauge	Yes	
100.	Calibrated vacuum gauge	Yes	
101.	Control for engine throttle	Yes	
102.	Control lever for priming and exhaust primer valve	Yes	
103.	Water supply control for cooling system	Yes	
104.	Water supply control from pump to water tank filling valve	Yes	
105.	Suction Mouth	Yes	
106.	Delivery valves	Yes	
<b>Tools And Documents</b>			
107.	All tools required for normal maintenance of vehicle and system shall be provided along with the system	Yes	As per OEM's certification & visual/physical inspection/operation and should meet the parameters. BOOs to check.
108.	User Handbook, Technical Manual, Illustrated part identification list shall be provided	Yes	
109.	CCES and Equipment Dossier	Yes	
110.	Detailed drawing of the product available	Yes	
111.	Markings of Manufacturers name or	Yes	

	trade mark, Year of manufacture, Capacity of pump, water tank, irritant tank and indelible tank, Engine and chassis number and Pump number should be present		
<b>Accessories</b>			
112.	No. of armored suction hose in 2.5 mtr length with internal dia of 100 mm with standard round thread coupling (IS: 902/2410)	04	<ul style="list-style-type: none"> <li>• Certification from any Valid NABL accredited LAB for the test prescribed in IS: 902/2410.</li> <li>• As per OEM's certification &amp; visual /physical inspection/ operation and should meet the parameters.</li> <li>• BOOs to check.</li> </ul>
113.	No. of low level suction strainer (IS: 907 )	01	<ul style="list-style-type: none"> <li>• Certification from any Valid NABL accredited LAB for the test prescribed in IS: 907</li> <li>• As per OEM's certification &amp; visual /physical inspection/ operation and should meet the parameters.</li> <li>• BOOs to check.</li> </ul>
114.	No. of basket strainer for low level suction strainer (IS: 4643)	01	<ul style="list-style-type: none"> <li>• Certification from any Valid NABL accredited LAB for the test prescribed in IS: 4643</li> <li>• As per OEM's certification &amp; visual /physical inspection/ operation and should meet the parameters.</li> <li>• BOOs to check.</li> </ul>
115.	No. of suction wrenches (IS: 4643)	01 pair	<ul style="list-style-type: none"> <li>• Certification from any Valid NABL accredited LAB for the test prescribed in IS: 4643</li> </ul>

			<ul style="list-style-type: none"> <li>As per OEM's certification &amp; visual /physical inspection/ operation and should meet the parameters.</li> <li>BOOs to check.</li> </ul>
116.	No. of suction collecting head 3 way	01	As per OEM's certification & visual /physical inspection/operation and should meet the parameters. BOOs to check.
117.	No. of suction adopter to hydrant	01	
118.	RRL Hose	02	
119.	Light alloy branch pipe	02 sets	
120.	Front bumper hook	Yes	
121.	Rear hook	Yes	
<b>Safety Features</b>			
122.	Features	<ul style="list-style-type: none"> <li>First Aid Box.</li> <li>02 Nos hand held portable fire extinguishers (CO2 type, Minimum 2 Kgs each).</li> <li>See- Through windows/grilled partition from driver's cabin to rear door.</li> <li>Run-Flat Tyres- 25 kms</li> <li><b>Electric Isolation System</b> to prevent electric shock if water is sprayed on live wires.</li> <li>The appliance will be painted white.</li> <li>The name and insignia of the tenderer be painted (in English and Hindi) on both sides of the vehicle.</li> <li><b>Public Address System</b> for issuing warnings and commands to the crowd</li> </ul>	As per OEM's certification & visual /physical inspection/operation and should meet the parameters. BOOs to check.

		<ul style="list-style-type: none"> <li>Revolving LED beacons of Red, Blue and White colour with Hooter shall be mounted on top of the driver cabin</li> </ul>	
<b>Performance Parameters</b>			
123.	Warranty Time	The successful bidder shall be responsible for maintenance of the whole Water Cannon for a period of 08 years after completion of <u>guarantee/warranty of years</u>	A written agreement should be made between firm and intender. BOOs to check.
124.	Warranty	25000 km or 03yrs or 2000 hrs of engine run time whichever is earlier	
125.	Battery warranty	12 month	
126.	No. of free services	03 1 <sup>st</sup> -6months 2 <sup>nd</sup> -12 months 3 <sup>rd</sup> - 24 months	