4

TECHNICAL SPECIFICATION	CESSPOOL EMPTIER - 500 LTRS (A)

Required Chassis	Cesspool Emptier is to be fabricated on the ARAI certified chassis (make TATA/EICHER/Ashok Leyland/Mahindra etc.) having following specification: 1. Engine : Min. 3 cylinder. 2. Fuel : CNG 3. Environment Compliance : BS-VI compliant chassis within KMC jurisdiction. 4. GVW : Min. 2540 5. Engine Power : Min. 45 HP 6. Engine Torque : Min. 100 N-m 7. Transmission : Power 8. Engine Aspiration : Turbo 9. Wheelbase : Approx. 2300 10. Ground Clearance : Min. 170 mm 11. Turning Radius : Max. 5900 mm 12. Gradeability : Min. 14% 13. Speed : Min. five (05) forward gears. 14. Dumping Height : Min. 1000 mm 15. Tyre : OEM 16. Fuel Tank : Min. 120 litre 17. Cabin : Day cabin
General	The suction machine should be useful to clean sewer line, cesspit, cesspool etc. by siphoning out of mud, slurry and other material. Aspiration of the effluent from sewer and drain water lines and chambers will be carried out on the principal of generating high vacuum in the sludge tank compartment for shiphoning out effluent, liquid, sludge and other materials. The sludge and slurry is to be extracted under high vacuum through a suction hose connected to the tank by a quick release coupling. The sludge tank will then be transported to any desired destination for disposal and emptied by gravity or under positive pressure. The unit is to be provided with blow back arrangement by which solid silt accumulated in sewer line is stirred and converted into liquid /semi liquid form by high pressure air with water.
Sludge tank capacity (Ltrs)	500
Tank Material	5mm thick MS IS 2062; (6mm for Back door will be preferable).
Construction	Shape-cylindrical

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	Tank is to be provided with anti surged baffle plates welded internally.
	Lifting hook is to be welded on top of the tank.
	The tank is fitted with sludge level indicator.
	The tank is incorporated with clean out valve.
PTO Drive	Vacuum pump drive is to be taken from heavy duty full torque split shaft PTO fitted between vehicle engine and differential. The split shaft PTO have one auxiliary output and 1:1 output ratio.
Vacuum pump	**Imported Italian JUROP or equivalent** make
Tech. Data	Free air flow-156 cum/hr. Max pressure-1.5 bar absolute Max. Vacuum-90% Air cooled pump Inbuilt 4-way valve Asbestos spark proof vane blades
Suction hose	Heavy duty PVC hose; 50mm dia. x10m length
Suction/ discharge valve	50mm suction ball valve and 75mm discharge ball valve.
Pressure reliefvalve	**Imported Italian** make/Equivalent spring type adjustable pressure relief valve to safeguard the tank from excess pressure creating inside the tank.

Quick coupler	**Imported Italian** make/equivalent quick coupler of sufficient diameter to connect the hose/metal pipes.
Primary shut off	To protect the exhauster from the harmful effect of the accidental ingress of sludge and other foreign particles caused due to an overflow from the tank, a Primary Shut Off is to be provided. It should be fitted inside the sludge compartment and on the top of the tank, this specially designed device consists of a rubber/SS ball which floats on water, rises and seals against the seat at a preset maximum level, thus ensuring that the tank contents do not overflow into the system.
Secondary shutoff	It should be fitted immediately after the primary shut off. It functions to protect the vacuum blower from any probable carryover of suspended water and sludge particles which may be drawn into the system from the water surface in the sludge compartment due to high vacuum condition. A ball float shut off arrangement should be incorporated inside the cyclone, for the protection of the system from any accidental overflow and carryover of material from the sludge tank. In the event of separator getting filled to the predetermined level, the ball will rise and seal against the rubber seal provided at the mouth of cyclone outlet ensuring that the water and sludge particles do not flow into the blower.

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Suction strainer	It should be fitted in the airflow circuit between the secondary shut off and pump made of a stainless steel basket type safety filter designed to filter out solid and semi solid particulars impurities of the size beyond that of the pumps handling capacity.
Exhaust silencer	It should be fitted on the pump exhaust side of the air flow circuit. The device dampens the airflow with minimum back pressure in the system, thus reducing the operational noise levels considerably.
Compound gauge	100mm dial, pressure ranger: 0-4 kg/cm2, vacuum: 0-760 mm of Hg.
Level gauge	Unbreakable sludge/water level gauge is to be fitted to the tank.
Paint	Two coat of epoxy primer
	Two coat of PU/synthetic enamel

Recomended

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(2)

TECHNICAL SPECIFICATION
OF
4000 LITRE CAPACITY CESSPOOL EMPTIER

1. **Over View:** Fabrication of 4000 Litre Capacity Cesspool Emptier on Cabin Chassis-BS-VI compliance — Vacuum-Cum-Pressure Pump to be operated by 10 HP/Kirloskar make / any reputed make of ISO 9000 company oil cooled/Air cooled Engine — Suitable coupling-Fifteen Numbers 20 feet long suction/delivery to be provided - Manhole — Level Indicator — Sludge separation tank — lubrication system — Mudguard and tail lamp guard, ladder etc. — Inside of the tank to be painted with bituminous paint over anti-corrosive paint and outside of the Tank to be finished in Synthetic Enamel paint of approved shade. All other mandatory fitments to be provided.

2. **Important Functional Parts Of The Cesspool Emptier:**

a) Exhauster / Compressor
b) Vacuum Cut-out (Primary)
c) Vacuum Cut-out (Secondary)
d) Sludge Trap
e) Level Indicator
f) Pressure-cum-vacuum gauge
g) Loading & discharge valve
h) Directional control valve
i) Hoses with couplings
j) Riser pipe for loading & fluidization.
k) Chassis for mobility of the unit

3. **Required Chassis:** Following are the specification of chassis made of reputed Company on which Cesspool Emptier is to be fabricated.

1.	Engine	: Min. 4 cylinder.
2.	Fuel	: CNG
3.	Environment Compliance	: BS-VI compliant chassis
4.	GVW	: Min. 7490 Kg
5.	Engine Power	: Min. 63.3 KW @ 2500 rpm
6.	Engine Torque	: Min. 285 Nm @ 1200 -1600 rpm
7.	Transmission	: Power
8.	Engine Aspiration	: Turbocharged

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9. Wheelbase	: Approx. 3500-3900
10. Ground Clearance	: Min. 216 mm
11. Gradeability	: Min. 25%
12. Speed	: Min. five (05) forward gears and one back gear.
13. Tyre	: 8.25R16 (Radial)
14. Fuel Tank	: Min. 180 litre
15. Cabin	: Day cabin

4. **Driving Unit:** Input driving for pump rotation will be coupled with Min. 10 HP 'Kirloskar' make/equivalent Oil Cooled/Air Cooled engine of ISO 9000 company with self starter.

5. **Exhauster / Compressor:** High power / high volume exhauster / compressor which can vacuumise and / or pressurize the tank in a short time for loading and discharge respectively. Oil cooled higher efficiency cast iron make compressor cum exhauster is to be provided to execute suction and delivery of the system in a short time.

   - Flow Rate : Min. 390 m^3/h
   - Min. 92% vacuuum
   - Min. 1.5 bar
   - 6.6 KW(8.9HP)

6. **Tank:** The tank should be cylindrical in construction, made of M. S. Plates. All steel should be MIG welded continuously to impart better weldment of material in the joining area by fusion settlement of the electrodes. front and rear dished ends of 6 mm. thick and rolling sheet of 5 mm thick. The air volume will be 4000 Litre.

7. **Hoses With Couplings:** 3" bore PVC flexible suction hoses of 300' length with male / female camlock couplings of aluminum or equivalent quick coupling having 20' length and 15 in nos.

8. **Other Salient Features:**

a) **Construction:** The Cesspool Emptier will be designed and manufactured with selected quality of materials and bought out finished components from the market to impart to the equipment high efficiency, least maintenance, simplicity in operation, long life and economy.

b) **Loading Of Sludge:** The tank when vacuummised should do self-loading of sludge directly into the tank without contaminating vital functional apparatus/gadgets etc.,

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such as vacuum pumps, pneumatic valves, pipes and hoses, pressure/vacuum gauge etc.

c) **Discharge Of Contents:** The contents are discharged pneumatically. Discharge should be effected through the discharge valve and hoses by pressurizing the tank.

d) **Vacuum Cut-Out (Primary):** An automatic type of vacuum cut-out should be provided within the main tank to prevent filling beyond optimum level.

e) **Vacuum Cut-Out (Secondary):** A secondary vacuum cut-out should be provided within the sludge trap to protect the exhauster/compressor against flooding.

f) **A Sludge Trap:** External to the tank & sludge trap is provided to protect the pump from contamination by contents of the tank, with quick opening blow-down arrangement.

g) **Level Indicator:** A full length content level indicator pipe should be provided for the sludge compartment to see the sludge content from outside.

h) **Pressure-Cum-Vacuum Gauge**: An adequately sized dial type vacuum-pressure gauge should be fitted at a prominent place for reading.

i) **Loading & Discharge Valves:** Loading valve with riser pipe should be provided at the rear on the side of the tank.Discharge valve should be fitted at the rear bottom of the dished end.

j) **Directional Control Valve:** A four way directional control valve should be provided to select the positions for vacuumising or pressurizing the tank from the exhauster/compressor.

k) **Riser Pipe For Loading & Fluidization**: A riser pipe should be provided with the tank over the loading valve to relieve downward pressure of the contents while loading is going on. The riser pipe is also used for aeration when tank is partially filled with water or sludge.

l) **Metal Canopy**: A protective metal canopy of proper stands shall be provided above the engine and compressor cum exhauster unit with foldable tarpaulin curtains.

m) **Side Platform**: Side platform will be provided for the placement of flexible hoses at idle hours.

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n) **Finish**: The standard finish of the inside of the tank should be bituminous paint over anti-corrosive paint. Outside should be finished in synthetic enamel paint of approved shade.

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TECHNICAL SPECIFICATION
OF
ROAD SWEEPING MACHINE (6 CUM CAPACITY)

a) **Over View:** Road sweeping machine while working at site should not create air pollution by blowing dust into the air. The machine should work on regenerative principle. Dust laden swept air is to be cleaned by different cleaning mechanisms and to be reused again for sweeping purpose. No dust laden air is to be blown out form the hopper into the air.

1. **Type Of Sweeping Machine**: Regenerative Mechanical Road Sweeping Machine is recommended.

2. **Dust Suppression Mechanism**: By sprinkling of water with adequate numbers of nozzles/variation of dust-laden air flow passage to the hopper with cyclone separator/Passing swept air through a series of suitable purgeable cartridge. Fabric filter, bag filter or similar system are not recommended.

3. **Water Spray Location**: Spraying of water should be done on the side brushes, enroute of the hopper and inside of the hopper using at least 20 nos. of suitable size nozzles to ensure complete suppression of the dust if cleaning of swept air is done by water spraying.

b) Sweeping System:

1.	No. of Side Brush	: 2
2.	Side Brush Diameter	: Minimum1000 mm
3.	Brush Material	: 4 Segment steel
4.	Sweeping Width (mm)	: Minimum 3200-3300 mm with two brooms Minimum 2600-2650 mm with one broom Minimum 2000 mm with Suction Head
5.	Life of Broom	: Minimum 160 hours
6.	Sweeping Speed	: 5-10 Km/hr

c) Hopper Section:

1.	Dust Collection Container	: 6 CuM
2.	Hopper Material	: Stainless Steel (Grade SS 409)
3.	Thickness of Hopper Material	: 3 mm
4.	Tipping Angle	: Minimum 52°
5.	Dumping Height	: Minimum 1100 mm
6.	Suction capacity	: Minimum 450 CMM (16000 CFM)
7.	Exhauster/Impeller size (mm)	: Minimum 800 mm
8.	Blower Speed	: 3000-3150 RPM
9.	Blower Rating (m3/min)	: Minimum 450 CuM/min
10.	Suction Hose (meter)	: Minimum 4 m

d) Suction System:

1.	Vacuum Pressure	: Minimum 280 mm of H2O

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2. Suction nozzle width : Minimum 2000 mm
3. Suction Hose Diameter : 300-350 mm
4. Wander hose D x L : 200 mm x 4000 mm
5. Diameter of Castor Wheels : Minimum 200 mm

e) Jetting Pump:

1. Pump Pressure : Minimum 120 bar
2. Water Flow : Minimum 30 LPM

f) Water Tank:

1. Main Tank : Minimum1000 litre
2. Back up Tank : minimum 800 litre

g) Road Washing System : Minimum 7-8 number of high-pressure jetting nozzles are to be fitted in front of the vehicle for road washing with high pressure jet.

h) Truck Parameter:

1. Type of Chassis : Chassis with Day cabin
2. Emission compliance : BS-VI
3. Type of fuel : Diesel/CNG
4. Gross Vehicle Weight : Minimum 14 MT
5. Kerb Weight : Maximum 4.5 MT
6. Engine Power : Minimum 150 HP @ 2400 rpm
7. Engine Torque : Minimum 450 Nm @ 1250-2000 rpm
8. No. of Cylinder : 4
9. Engine Aspiration : Turbocharged Intercooled.
10. Gradeability of vehicle : Minimum 23%
11. Ground clearance : Approx. 170 mm
12. Wheel Base : Approx. 4500 mm
13. Steering : Power operated
14. Turning Radius : Maximum 7400 mm
15. Main Frame Thickness : Minimum 5 mm
16. Tipping Angle : Minimum 52°
17. Dumping height : Minimum 1100 mm
18. Tyre Size : 8.25R20 16PR
19. Fuel tank capacity : Minimum 200 litre/Min. 400 Litre
20. Speed/ No. Gear : 6 speed (06 forward gear and 01 back gear)
21. Hydraulic & Pneumatic attachments: Reputed Make driven by auxiliary engine

i) Auxiliary Engine to run Hydraulic and Pneumatic Attachments:

1. Fuel : Diesel/CNG
2. Power : Minimum 100 HP @ 2200rpm
3. Fuel Tank : Minimum 200 litre

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(4)

TECHNICAL SPECIFICATION
OF
8 CUM MOVABLE COMPACTOR (BIN LIFTING)

TECHNICAL SCHEDULE: Vehicle chassis mounted, rear end manual loading and auto loading movable refuse compactor with 8 CuM container capacity should have the following specifications:

1. VEHICLE CHASSIS

The complete equipment to be mounted on a vehicle chassis. The Chassis to be supplied by the supplier with a factory fitted auxiliary PTO and with the following specification:

i.	Fuel	: CNG
ii.	Environment Compliance applicable	: BS-VI compliant chassis as per Govt. notification within KMC jurisdiction.
iii.	GVW	: Min. 14 MT
iv.	Engine Power	: Min. 125 HP
v.	Engine Torque	: Min. 420 N-m

(Full loaded Movable Compactor is required to climb at Dhapa Dumping ground and other dumping grounds of KMC for disposal of municipal waste as generated. Considering slope of dumping ground and working in wet weather condition, particularly in rainy season, agency is required to choose engine HP and Torque of prime mover/chassis wisely for making the composite vehicle. Before participation in the tender, you are requested to visit the working sites).

vi.	Engine Aspiration	: Turbocharged
vii.	Steering	: Power
viii.	Tyre	: As per OEM.
ix.	Fuel Tank	: Min. 400 litre.
x.	Engine	: 4 cylinder and water cooled.
xi.	Cabin	: Day cabin with two emergency lights on both sides of top of the cabin.
xiv.	Mounting	: The Refuse Collection Body to be welded to a skid / sub-frame and to be directly bolted on to the long-bearers of the chassis frame with shear plates. The front end of the collector body to be supported on each side using springs & special rubber mountings.

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2. REFUSE COLLECTION BODY

The skid mounted Refuse Collection Body to be of a min 8 CuM volumetric capacity. The body shall be fabricated from high tensile steel or equivalent. A hydraulically operated ejector plate should be located at the forward end of the container body. The rear end should be fitted with a hinged tailgate assembly, consisting of a hopper, a slider and packer plate assembly which constitutes the compacting unit.

The hydraulically operated, Bins/Skip loading arrangement assemblies to be located on the tailgate assembly and suitably positioned to facilitate emptying of the refuse Bins/Skips.

The top, bottom, side walls, and also the tailgate, should be reinforced with steel (rectangular box type) & an automatic tailgate locking arrangement to be incorporated in the system.

Interior surface of the containers should be given good quality epoxy paint with primer.

a) Materials to be used in compactor:

1.	Main compactor body	:	HT alloy steel of AISI 4140 or equivalent.
2.	Refuse Ejection Barrier	:	HT alloy steel of AISI 4140 or equivalent.
3.	Hopper	:	HT alloy steel of AISI 4140 or equivalent.
4.	Packer	:	HT alloy steel of AISI 4140 or equivalent.

b) Material Thickness should be as follows:

1. Main container body (8 CuM): Side plate Min. 4 mm
   : Floor plate : Min 5 mm
   : Roof plate Min 3 mm
2. Refuse Ejection Barrier : Min. 3 mm plate
3. Hopper : 7.00 mm plate
4. Packer : Min 5 mm plate
5. Emergency Light of the back side. : Two emergency lights to be fitted on the top of the body

c) Chemical Composition : HT alloy steel of AISI 4140 or equivalent.

d) Mechanical Strength : As per HT alloy steel of AISI 4140 or equivalent.

e) Operation Time :

Duration of Bin Lifting	: Max. 20 sec at idle condition.
Duration of Ejection	: Max. 45 sec at idle condition.
Duration of Compaction	: Max. 45 sec at idle condition.

3. **ATTACHMENTS**: The Compactor should have the following attachments

   a) **EJECTOR BLOCK**

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b) TAIL GATE ASSEMBLY

i) **TAILGATE:** Tailgate with double lip type rubber seal cord for leak-proof and Automatic Gate locking arrangement to be provided made of 7 mm plate side panel.

ii) **HOPPER:** There should be Min. 1.2 CuM capacity steel hopper with loading height of 1000 mm (approx.).

iii) **SLIDER PLATE**: The plate to be of robust design to withstand harsh operating condition and actuated by hydraulic cylinder.

iv) **PACKER PLATE**: The plate to be of robust design with strong reinforced bearing arms with hydraulic cylinder to be provided. Proven two plate fabrication packer of high tensile abrasion steel. slides within hopper channels on low friction self-lubricating bearing.

v) **UNIVERSAL BIN LIFTER:** Hydraulically operated Universal Bin Lifter unit capable to lift upto 1100 litre including 240 litre EN/ DIN standard Bin to be provided along with fittings.

vi) **BIN/TIP CART LIFTER:** Suitable size Bin cart should be fitted on the body properly to prevent unwanted noise during transportation of municipal solid waste. Tip cart should be detachable and not to be bolted but connected with the compactor in such a way that tip cart can be easily detached within few minutes.

4. HYDRAULIC SYSTEM

a) Hydraulic Pump & Drive

Reputed hydraulic pump of adequate capacity (minimum 200 Kg/cm^2) to meet the operational requirements of the complete system to be provided with the equipment. The hydraulic pump should be axial piston type/ gear Type.

The hydraulic pump to be driven by the auxiliary PTO supplied with the chassis. Engaging & disengaging of the PTO should be from the driver's cabin.

b) Hydraulic Cylinders

Hydraulic cylinders to be provided to carry out the functions of following component of the refuse collector unit:

1. Double acting cylinder for Slider Plate

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2. Double acting cylinder for Packer Plate
3. Double acting cylinder for Tailgate lifting and Auto-locking arrangement
4. Double acting cylinder for Universal Bin Lifting arrangement
5. Double acting, 2 or 3-stage cushioned cylinder for Ejector Panel Block
6. Cylinder for Rear Stabilizer

The cylinders to be manufactured by an ISO-9001/9002 certified company.

All cylinders to be double acting and cushioned, manufactured from ST-52 Grade steel and seals of reputed ISO-9000 manufacturer to be used.

All cylinders to be provided with lubricated bearings and should be of a standard reputed make.

c) Mobile Control Valves

1 no. 2-bank direction control valve block to be provided to facilitate lifting & lowering the Tailgate and movement of the Refuse Ejector Plate.

1 no. 2-bank direction control valve block to be provided to facilitate movement of the Carrier Plate, Packer Plate for compaction.

1 no. 2-bank direction control valve block to be provided to facilitate movement of the Stabilizer units.

The valves to be designed so as to allow operations by two hands only to avoid risks of accidents. The mobile Control valves to be of a standard reputed make such as that of Valvoil of Italy or Bucher, Germany or equivalent.

d) Tank & Filters

The hydraulic oil storage tank should have a volumetric capacity of a minimum 65 litres and should come equipped with a suction strainer of 125 microns, steel cartridge type return line filer of 25 microns, filler/filter/breather for the tank and a level indicator.

5. SURFACE PREPARATION AND FINISH

Both the exterior and interior surfaces of the compactor to be thoroughly sanded prior to spray painting.

The container exterior should be spray-painted with two coats of superior quality, anti-corrosive primer and two coats of enamel metal paint of a reputed make. The colour shade to be that of the customer's choice.

To resist corrosion due to weak acids, the interior will be coated with 2 coats of anti-corrosive gray epoxy paint.

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6. **COVERING ARRANGEMNT:**

A suitable shuttering/covering arrangement at the rear end of movable compactor is to be fitted to cover up the remaining garbage so that the garbage can't be visible from outside during transportation

7. **Rear overhung:**

Rear overhang shall be as minimum as possible for improved weight distribution and maneuverability. Rear over hang shall be within the RTO norms.

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(5)

TECHNICAL SPECIFICATION
OF
MANHOLE DESILTING MACHINE

1. **General Description:**
The equipment will be chassis mounted manholes and various chambers de-silting machine. The equipment consist of a Grab & Bucket arrangement, specially designed to quickly and others safely cleanout the silt and other waste matter from Manholes and any other chambers located at depths up to 30 feet without necessitating man entry. The boom is of a telescopic type and supported on a specially designed thrust bearing that caters to bearing of both the vertical and rotating loads, rotation of the boom, its extension and retraction opening and closing the grab and bucket is all done hydraulically. The self contained equipment will be fitted with a hopper, suitably sized to meet the GVW requirements of the selected chassis. The Bucket carrying the silt is to be emptied into the same. The collected silt and waste will be transported to the designated disposal sites and emptied by means of hydraulic tipping of the hopper. All function to be performed electro-hydraulically through a remote/ hand held, and push button control panel.

2. **Vehicle Chassis:**

The complete equipment shall be mounted on a reputed make chassis of Indian manufacturers of BS-VI emission norms.

Technical Data

Wheel base	Minimum 2100 mm
GVW	Minimum 1.55 MT
Pay load	Minimum 0.75 MT
Engine Power	Minimum 40 BHP

3. **Drive Arrangement:**

Drive for hydraulic system's pump is to be tapped from the vehicle's engine itself. The hydraulic system shall be provided with an oil storage tank of suitable capacity, filters, electro-hydraulic direction control valves and all other features to ensure safety of operations of the equipment. All hydraulic connections are to be combinations of high pressure seamless pipes and flexible hoses to facilitate easy replacements/repairs.

4. **Hopper :**
Manufactured from steel sheets and suitably strengthened, the hopper shall have a volumetric capacity of minimum 0.5 m^3 and bin type to ensure no leakage of water from the bin collected by the grab from the manhole. The hopper will be hinged at the rear end and will be designated so as to allow freely and quickly the emptying of its content by hydraulic tipping at the disposal site.

Technical Specification:

Sl. No.	Description	Requirement
1	Bucket traveling depth	Minimum 30 ft.
2	Grab bucket capacity	Minimum 25 Liters
3	Grab bucket cylinder	Suitable double acting not less than 294 cc with square plate clevis at tube end and construction by MS honed tube plated piston rod made of EN8
4	Wire rope	Galvanized wire having suitable strength as minimum 1770 N/mm^2. Tensile grade with minimum breaking force around 20 KN
5	Winch drive arrangement	By hydraulic motor through a gear box.
6	Wire reel	Approx 200 mm diameter made from pressed MS sheet.

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Sewer Cleansing (Central)

7	Hose reel	Capable to accommodate twin hose of ¼" diameter, minimum 35 ft length. It shall be automatic winding and unwinding.
8	Boom	Made from rectangle section with manually or hydraulically (optional) extendable type and 45^0 boom lifting angle.
9	Hydraulic Pump	Dowty, UK or equivalent make
10	Flexible Hose	¼" diameter 30 ft lengths for manhole cleaning single length flexible hose for grab bucket cylinder.
11	Controls	Four spool hydraulic lever operated control, separate high lever control for silt collecting bin.
12	Slewing	90^0 slewing on both sides by heavy duty rotary joint having taper roller bearing.
12	Hopper	Hydraulically tilted bin type hopper to ensure no leakage of water from the collected silt having capacity of minimum 0.50 m^3 shall be provided to facilitate that silt collected by grab bucket from manhole can directly be unloaded in to the hopper and this loaded hopper can directly empty into the garbage container or dumping site.
13	Jaw Opening angel	160 degree jaw opening angel with 120 mm piston displacement
14	De-silting grab form	Hot deep galvanized de-silting grab fork
15	Maximum grab jaw force [opening]	Approx 1700 – 2000 Kg force. 160 degree jaw opening angle with 120 mm piston displacement.
16	Derrick arm swinging range	Zero degree to 90 degree [L & R]
17	Point extension	Manual multiple point extension
18	Hose drum	Fixed hose drum made from pressed steel side cover
19	Drive for wire and hose	Combination drive for wire and hose
20	Reduction gear box	Reduction gear box of having 9.5 Kg-m output torque
21	Load on hose	Arrangement for hose safety, i.e. no load on hose during de-silting operation
22	Hose guide	HDPE hose guide

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Mechanical Sewer Cleansing Department
Kolkata Municipal Corporation

Exe. Engineer (Mech.)
Sewer Cleansing (Central)

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SC Dept(S & D)

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Director General
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(6)

THE KOLKATA MUNICIPAL CORPORATION

Mechanical Sewer Cleansing

under S&D Department

Technical Specification of medium size Gully-pit Emptier Machine

1. **General Description:**
Vehicle mounted Gully Pit Emptier having a twin compartment tank of total volumetric capacity of minimum 6000 Ltrs divided into two compartments of 4000 Ltr. for sludge/slush/mud etc. and 2000 Ltr. for fresh water.

2. **Chassis:**
The complete equipment to be mounted on a BS-VI vehicle chassis of GVW not less than 12 MT and not more than 13 MT. The chassis to be supplied by the supplier with a factory fitted split shaft PTO and one number mechanically operated clutch.

Technical Data

Type of Chassis	Engine Power	Wheel Base	GVW
Standard Indian chassis of BS-VI emission norms. Details of make/model/specification must be mentioned by the bidder without which the tender shall not be considered.	120 H.P (Minimum)	3600 mm to 4000 mm	Not less than 12 MT and not more than 13 MT

3. **Cabin:**
The cabin shall be sleeper/day type having driver seat and co-driver seat of 6 (six) accommodations provided with part front view glass window with proper ventilation.

4. **Tank:**
The sludge tank of the equipment to be fabricated from the standard structural gauge steel plates of 5 mm thick conforming of IS 2062 of Grade- 'A', and to be an all electrically welded construction as per IS 2825. The tank shall have one dished end welded at the cabin end and the other dished end door located on swing type hinge joints at the rear end. The tank is to be designed to withstand suction and over pressure operating conditions. The dished end rear door opening shall be in the horizontal plane. The opening of the door will be hydraulically operated along with steering type clamp to be provided. Also hydraulic tipping system of silt tank to be provided for easy emptying of silt tank. Emptying via hydraulic tipping of the complete tank using a hydraulic cylinder mounted in the front and bottom of the tank which may be suitable should be provided.

An arrangement for storage of suction hose to be provided. A level glass is to be fitted at a convenient position to enable the operator to gauge content's level inside the tank [both in sludge compartment and fresh water compartment]. A dual pressure gauge of 75 mm dia to be fitted at a convenient position for comfortable read out. A 75 mm dia full bore ball valve with a stainless steel plate to be installed on the outside of the tank. Also suitable facility with drain off valve 2" dia with hose pipe of at least 15 ft length to drain out excess water from the sludge tank as well as to reuse the excess water for cleaning of gully-pit chamber shall be provided which shall be located above the upper half of the rear door. One water outlet valve should be installed with fresh water tank at left side and lower level of the tank to discharge water on gully-pit chamber at normal pressure.

Technical Data:

Tank capacity	Sludge Compartment	Fresh water	Construction	Operating Pressure	Test Pressure
6000 Ltrs	4000 Ltrs capacity	2000 Ltr capacity	Cylindrical shell with torrispherical dished ends	0.9 to 1.5 bar	2.5 bar

Tank mounting: The tank shall be mounted on an auxiliary frame of ISMC 150 section and to be adequately strengthened to render its torque resistance. The auxiliary frame shall be manufactured to the size of vehicle's chassis and to be an electrically welded construction.

5. **Vacuum Pump:**
The Vacuum Pump shall be having a capacity of around 320 m3/hr @ 1300 rpm of free airflow. It shall be capable of creating vacuum of 90% and will empty chambers from depth of around 4 to 5 mtr. The vacuum pump shall be provided with;

i. Injection Air Cooling System
ii. Incorporated Automatic Lubricating Oil Pump
iii. Incorporated Check Valve
iv. Incorporated 4-way Valve

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The unit shall be of a dry, rotary sliding vane type. A vane made from asbestos free, spark proof material. The vacuum pump to be operated on the positive displacement principle-without pulsation and without valves. The vacuum pump shall be of simple design principle and to have a limited number of moving parts and dependable in operation, and have a modest maintenance requirement. Even when operated continuously these vacuum pumps to be required to often attain overhaul of several years. The system to be provided with an additional moisture trap to double protect from accidental ingress of waste water into the system.

Technical Data

System	Make/Manufacturer
Rotary vane type vacuum pump	Jurep SpA, Italy or Blackmer Mouvex (Hammond) or Moro, USA Inc. or Battioni, Italy.

Mounting

i. The pump shall be mounted on opposite side of the Jetting Pump.
ii. System Ancillaries and Miscellaneous Fittings
iii. The complete system is to be supplied with an overflow protection ball-flat-valve, suction filter, oil breather-cum-silencer, pressure relief valve and vacuum breaker.

6. **Suction Hose:**

Standard hose shall be of 4" dia. and total of 15 mtr. in length of 3 mtr. long each with quick release coupling to withstand the above mentioned suction pressure. Manufacturer dutron/kanaflex.

7. **High Pressure Jetting Pump:**

Suitable high pressure jetting pump is to be driven by a split shaft total power take off unit and to have a pressure and discharge rating of minimum 130 bar and minimum 70 ltr per minute(LPM) respectively. The high pressure jetting system to be adequately protected by incorporating suction filter with a suitably sized tank isolation valve, safety valve.

Technical Data

System	Make/Manufacturer
High Pressure Triple Ceramic plunger pump	Pratissoli, Italy or Mysers, USA or WOMA GB Ltd, UK or duati

8. **Jetting Nozzle:**

Simultaneous jetting suction in gully pit shall be provided around the suction nozzle to facilitate diffusion of heavy sedimentation.

Dechoking Nozzles– 2 Nos. forward jet & 2 Nos. reverse jet
Make/Manufacturer :NUOVA Contech (Medusa) [Italy] or KEG [Germany] or Stoneage [USA]

9. **Jetting Hose & Hose Reel:**

A hose reel with 15 mtr of 12 mm dia hose is to be supplied for cleaning of connection pipe pipe line of Gully pit or Gully pit to sewer line. Also a spray gun is to be supplied for washing down the sludge tank and work area. Jetting Hose Make: zec, superseal, parker, dutron or Pirana

10. **Pump Drive:**

Drive for the high pressure jetting pump and vacuum pump is to be tapped from a new generation total power take off (split shaft P.T.O). The total power take off to be fitted with two independent output drive shafts and the complete unit to be mounted in the centre of the auxiliary frame and between the vehicles gear box and the differential. It shall be designed in such a way that frequent break down is avoided i,e the smaller propeller shaft shall be properly aligned. The PTO should be capable to withstand 400 Kg.mtr Torque.

Technical Data

Manufacturer	No. of outputs(Auxiliary)	PTO Output Ratio
Pzb, Vas Italy,	Two	1:1 on main shaft

11. The hydraulic pump to be driven by the factory fitted lateral/axial PTO fitted onto the vehicle's gear box. Changeover of the various drives will be made effective by two pneumatic clutches.

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Hydraulic Transmission System and Drives:

The hydraulic pump to be of Dowty make, manufactured by Dynamatic Technologies Ltd. under technical collaboration of Dowty, UK. The hydraulic system to be provided with an oil storage tank of suitable capacity, suction and return line filters, direction control valves and counter balance-valve for the tipping cylinder. Hydraulic motor required to drive the hose reel is to be that of DANFOSS of Denmark/ Parker of USA. All hydraulic connections are to be a combination of high pressure seamless pipes and flexible hoses to facilitate easy replacement/ repairs.

12. **Instruments and Controls:**

All indicators and control elements required for remote control and monitoring shall be installed on angle frame located at the rear of the vehicle and on the left-hand side.

13. **Painting/ Finishing:**

Both exterior and interior of the tank shall be sand blasted prior to spray painting. The tank exterior to be spray painted with two coats of superior quality anti-corrosive primer and two coats of enamel metal paint of a reputed make. The colour shade to be that of the KMC choice. To resist corrosion due to weak acid, the tank interior is to be coated with 2 coats anti-corrosive golden yellow paint.

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Dy C E (Mech)
SC Dept(S & D)

11/09/23
Director General
Sewerage & Drainage

(7) + (8)

					Vehicle Mounted RCV (Bin Lifting)	
Sl No	Category	Components/ Sub assembly	Parameter	Rating /Value/ Size	7 CuM	8 CuM RCV (To be purchased by KMC)
1	Features	Container body	Type-	Hooper & compaction Hydraulic Unit	Hooper & compaction Hydraulic Unit	Hooper & compaction Hydraulic Unit
			Inside volume	6-8 Cum	Min. 7 CuM	Min. 8 CuM
			Side /bottom/Top Wall	Min 4 mm	5 mm (min.) Bottom Plate is reccommended	Side=4mm, Bottom=5mm, Top=3mm
			Sipper structure weight	Approx 1800-2400 kgs	Approx 1800-2400 kgs	Approx 1800-2400 kgs
			Body length	within 4500 mm	within 4500 mm	within 4500 mm
		Slider/Carriage plate	Plate thick	5-6 mm	5-6 mm	5-6 mm
			Material	IS 2062 E350 plates	IS 2062 E350 plates	AISI 4140
		Packer Plate	Plate thick	5.0-6.0 mm	5.0-6.0 mm	5mm
			Material	E350	E350	AISI 4140
		Floor Type	Flooring	Keel type with floor Sump	Keel type with floor Sump	Keel type with floor Sump
			Tail Gate	6 mm High tensile steel with low rave rail height	6 mm High tensile steel with low rave rail height	6 mm High tensile steel with low rave rail height
				4 mm seal fitted, integratted guide channel reduced overhang	4 mm seal fitted, integratted guide channel reduced overhang	4 mm seal fitted, integratted guide channel reduced overhang
		Packing/Packer		6 mm Two grade mechanism packer/sweeper	6 mm Two grade mechanism packer/sweeper	6 mm Two grade mechanism packer/sweeper
				No such Ejector barrier	No such Ejector barrier	No such Ejector barrier
2		Hydraulic Pump	Type	Vane/ Gear/ Axial Pump	Vane/ Gear/ Axial Pump	Vane/ Gear/ Axial Pump
			Capacity	75-90 LPM min	75-90 LPM min	75-90 LPM min
			Pressure	2500-3000 psi	2610 psi [i.e. 180 bar (min.)] to 3000 psi is reccommended	200 bar (min.)
			Operation	Through OEM PTO with closed coupled	Through OEM PTO with closed coupled	Through OEM PTO with closed coupled

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SWM-II) KMC.

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		Hydraulic Cylinder Teliscopic type Double Acting	Bin locking	2	2	2
			Bin lifting	2	2	2
			Bin Tilting	2	2	2
			Slider	2	2	2
			Compaction	2	2	2
			Stabilizer	2	2	2
			Tipping	2	2	2
			Make	Zenith/Tandem/Hyva or similar branded	Zenith/Tandem/Hyva or similar branded	Zenith/Tandem/Hyva or similar branded
3	Safety	Safety of cylinders		Protect cylinder and placed accordingly from Acid & external damages	Protect cylinder and placed accordingly from Acid & external damages	Protect cylinder and placed accordingly from Acid & external damages
		Hydraulic Direction Control Valve	Bin Lifting/Compaction & Dumping	3 way direction control solinoid type	3 way direction control solinoid type	3 way direction control solinoid type
			Make	Bucher or Equevalent	Bucher or Equevalent	Bucher or Equevalent
		Counter balance valve		For each segment to protect from pressure drope	For each segment to protect from pressure drope	For each segment to protect from pressure drope
		Hydraulic tank	Capacity	90-120 lts oil or as per design	90-120 lts oil or as per design	90-120 lts oil or as per design
			Oil	ISO 68 preferable	ISO 68 preferable	ISO 68 preferable
			Features	Level indicator with shut-off valve	Level indicator with shut-off valve	Level indicator with shut-off valve
		Bin Lifter	Bins	1100 lts standard DIN with light weight	1100 lts standard DIN with light weight	1100 lts standard DIN with light weight
			Capacity	450-700 kg	450-700 kg	450-700 kg
			Arms	DIN standard high tensile	DIN standard high tensile	DIN standard high tensile
			Safety	Valve for sudden failure of Hydl Pressure	Valve for sudden failure of Hydl Pressure	Valve for sudden failure of Hydl Pressure

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			Steering	Teliscopic Power Steering	Powr steering as per OEM	Powr steering
			Aspiration	Turbocharger Type natural aspiration	Turbocharged	Turbocharged
			Brake	hydraulic Power braking system with Booster mechanism	hydraulic Power braking system with Booster mechanism	hydraulic Power braking system with Booster mechanism
			Suspenssion	Semi elleptical leaf spring with auxilary spring/ higher category	Semi elleptical leaf spring with auxilary spring/ higher category	Semi elleptical leaf spring with auxilary spring/ higher category
			Clutch	Dry friction heavy duty	Dry friction heavy duty	Dry friction heavy duty
			Fuel tank	As per OEM	As per OEM	400 litre
			Make	TATA/Ashok Leyland/ Eicher or equivalent Brand	TATA/Ashok Leyland/ Eicher or equivalent Brand	TATA/Ashok Leyland/ Eicher or equivalent Brand
5	Special Orientation	Vehicle & Other Govt Norms	Painting	Rust protect Automotive Priming & Painting process should be applicable. Coulour selected by Authority.	Interior of compactor hopper should be coated with 2 coats of anti-corrosive grey epoxy paint	Interior of compactor hopper should be coated with 2 coats of anti-corrosive grey epoxy paint
			Naming	Both Side of the body Logo & Naming of Municipality must be placed	Both Side of the body Logo & Naming of Municipality must be placed	Both Side of the body Logo & Naming of Municipality must be placed
			GPS	Fitted GPS tracker for monitoring, fuel consumption, trip counting	Fitted GPS tracker for monitoring, fuel consumption, trip counting	Fitted GPS tracker for monitoring, fuel consumption, trip counting
			Speed	SLD fitted	SLD fitted	SLD fitted
			RTO	Follow RTO rules during manufacturing as per MV ACT 1990	Follow RTO rules during manufacturing as per MV ACT 1990	Follow RTO rules during manufacturing as per MV ACT 1990
				Registered before delivery from Local RTO	Registered before delivery from Local RTO	Registered before delivery from Local RTO
			All Safety measure must be maintained during manufacturing			

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SWM-II/HQ.

Ex. Engineer (SWM-II)
Kol. Mpl. Corpn.

Dy. Chief Engineer (SWM II)
Kol. Mpl. Corpn.

Ch. Mpl. Eng. (SWM)
Kol. Mpl. Corpn.

		Extra Fitments	Side Body & other sides	Foot steps/ Metal ladder both sides for O&M of top portion	Foot steps/ Metal ladder both sides for O&M of top portion	Foot steps/ Metal ladder both sides for O&M of top portion
				Rear both side foot steps with side bar to stand operator when vehicle moving	Rear both side foot steps with side bar to stand operator when vehicle moving	Rear both side foot steps with side bar to stand operator when vehicle moving
				Flashing Light on the Top for signaling	Flashing Light on the Top for signaling	Flashing Light on the Top for signaling
				Reverse horn & emergency light in rearwhen reversing & operation	Reverse horn & emergency light in rearwhen reversing & operation	Reverse horn & emergency light in rearwhen reversing & operation
				Back search light in rear top during night performance	Back search light in rear top during night performance	Back search light in rear top during night performance
4	Mounting	Chassis	GVW	Min 11 ton category commertial vehicle	Load carrying capacity of compactor will be around 3.5ton with 11 ton chassis. For carrying higher load, chassis GVW is to be increased. For example, load carrying capacity of compactor with 14 ton GVW chassis is approx. 5.5 ton.	14 MT GVW (Engine: 125 HP and Torque 420 N-m (min.)
			Pollution	BS VI standard Diesel Variant	BS VI standard Diesel Variant	BS VI standard CNG driven
			Driver Cabin	Single Cabin Type	Single Cabin Type	Single Cabin Type
			Wheel Base	Min 3400 mm	Wheel bae as per OEM based on GVW to be selected	Wheel base as per OEM

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SWM-II/HQ.

Ex. Engineer (SWM-II)
Kol. Mpl. Corpn.

ANNEXURE - II

Technical Specification of Vehicle Mounted Water Sprinkler (9 KL)

The work consists of a chassis on which fabricated 9KL water tank is fitted along with pump, nozzles and other accessories to make complete water sprinkler.

A) Specification of required Chassis:

1. Type of Chassis : Day Cabin Chassis
2. Application of vehicle : Water sprinkling on roads, trees, air etc. to control air pollution and to defuse fire that occasionally happens at dumpsite.
3. Emission compliance : BS-VI
4. Type of fuel : CNG if available else Diesel
5. Gross Vehicle Weight : Min. 16 MT
6. Engine Power : Min. 125 HP
7. Engine Torque : Min. 420 Nm
8. No. of Cylinder : 4
9. Engine Aspiration : Turbocharged.
10. Wheel Base : Approx. 4830 mm
11. Gradeability of vehicle : Approx. 25
12. Ground clearance : Approx. 225 mm
13. Steering : Power operated
14. Turning Radius : Approx. 9950 mm
15. Size of wheel : 9R 20 16PR (Radial)
16. Fuel tank capacity : Approx. 400 litre for CNG else as per OEM
17. Forward Gear : 6 nos.
18. Body Option : Customizable
19. Hydraulic &Pneumatic Attachments : Reputed Make

B) Specification of Tank and other Auxiliaries:

1. Tank Details

a) Capacity: 9000 Litres
b) Material: Hot Rolled M.S. Sheet, Grade IS 2062
c) Thickness: 5 mm

2. Construction details

Tank to be installed on the truck chassis at the rear end of the truck. Generator, Electrical Control box, electric motor, high pressure pump with jacketed water pipe line for fixing jet spraying nozzles should be installed conveniently on the track chassis.

The tank should be fitted with anti-surge baffles of 5 mm MS plate to give dynamic stability to the vehicle. Water tank mounted on the truck should have water level indicator, drain pit, baffle plate, cat walk, ladder, pressure adjustable stop valve with operators seating arrangement at both side of the tank.

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For internal maintenance of the tank a man hole with a lid is to be provided on the top of the tank and for cleaning purpose there should be a drain valve. The tank interior should be coated with epoxy paint for corrosion resistance and outside of the tank should have enamel paint. Tank should be mounted on the chassis such a way that at any point of time load will be distributed uniformly on the chassis.

3. **Shape**

Shape of the tank made out of embossed plate should be elliptical and hoses/hose reel should be mounted on it.

4. **Operation of Nozzles**

All high-pressure nozzles fitted in front header, rear header and side header should be controlled from driver's cabin.

NB: Nozzles of front header and side header will be used for road washing and nozzles of rear header will be used for dust suppression.

5. **Front Sprinkler details**
   a) Header Outer diameter: 100mm
   b) Header Material: MS
   c) Nozzle Size: 1"
   d) Nozzle Material: Stainless Steel (SS 316)
   e) No. of Nozzles: 2
   f) Spray Type: Adjustable pyramid spray

6. **Rear Sprinkler details**
   a) Header Outer diameter: 100mm
   b) Header Material: MS
   c) Nozzle Size: 1"
   d) Nozzle Material: Stainless Steel (SS 316)
   e) No. of Nozzles: 3
   f) Spray Type: Adjustable pyramid spray

7. **Side Sprinkler details**
   a) Header Outer diameter: 100mm
   b) Header Material: MS
   c) Nozzle Size: 1/2"
   d) Nozzle Material: Stainless Steel (SS 316)
   e) No. of Nozzles: 4 (both side)
   f) Spray Type: Adjustable pyramid spray

8. **High Pressure Water Pump**
   a) Type: Multistage Centrifugal Pump
   b) Make: Reputed brand
   c) Water discharge: 200 lit per min (continuous rating).
   d) Head: 213-145 m
   e) Speed : 2900-3000 rpm

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f) Pump capacity: 25 bar (approx.).

9. Motor

- Three phase
- 11kW; 50Hz
- Rated Voltage 415V
- Rated Current 21A

10. Diesel Generator Set

3 phase 35 KVA (Reputed)

Mechanical Power Transmission:

High Pressure Multistage Water Pump should be directly coupled with a motor driven by a Diesel Generator Set through an Electric Control Panel.

11. Jetting Hose

a) Type: Light weight, flexible, high pressure sustainable special rubber hose
b) Outer diameter: 14 -15 mm
c) Inner diameter: 6-8mm.
d) Hose Length: 15ft
e) Working Pressure: 200-250 bar
f) Bursting Pressure: 300-350 bar
g) Hose Reel: The hose reel should be sufficiently strong to take up the winding and unwinding of the high-pressure hose at the full pressure.

12. Water Ball Jet Gun: 1no. (with 3 nos. detachable nozzle)

1. **Electrical Control Panel** : Electrical control panel with wiring having auto cut circuit breaker should be there.

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Technical Specification of Vehicle Mounted Water Sprinkler (4 KL)

The work consists of fully Hydraulic Pump operated (without Diesel Generator) Truck Mounted Pressurized Water Sprinklers capable of dust suppression for effective pollution control along with a Road washing & firefighting & structure washing (up to 20m) with a handhold nozzle connected with hose pipe on a single unit.

SPECIAL FEATURES:

- The system should be fully hydraulic operated (without Diesel Generator).
- 4000 Liters/ 4 KL water tank for water storage.
- Front, rear and both side pressurized sprinklers.
- Firefighting unit on the top with throw up to 20 mtrs.
- Water discharge: 200 LPM at 11 bar
- Handhold nozzle with hose pipe for firefighting & structure washing.
- All controls from operator's cabin.

A) Specification of required Chassis:

(ARAI Certified Chassis; MAKE: TATA/ EICHER/ ASHOK LEYLAND/MAHINDRA)

1. Type of Chassis : Day Cabin Chassis
2. Application of vehicle : Water sprinkling on roads, trees, air etc. to control air pollution and to defuse fire that occasionally happens at dumpsite.
3. Emission compliance : BS-VI
4. Type of fuel : CNG if available else Diesel
5. Gross Vehicle Weight : Min. 7.4 MT
6. Engine Power : Approx. 100 HP
7. Engine Torque : As per OEM
8. No. of Cylinder : Min. 4
9. Engine Aspiration : Turbocharged.
10. Wheel Base : Approx. 3800 mm
11. Gradeability of vehicle : As per OEM
12. Ground clearance : Approx. 220 mm
13. Steering : Power operated
14. Turning Radius : As per OEM
15. Size of wheel : As per OEM
16. Fuel tank capacity : As per OEM
17. Forward Gear : As per OEM.

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18. Body Option : Customizable
19. Hydraulic &Pneumatic Attachments : Reputed Make

B) Specification of Tank and other Auxiliaries:

1. Tank Details

a) Capacity: 4000 Litres
b) Material: Hot Rolled M.S. Sheet, Grade IS 2062
c) Thickness: 5 mm

2. Construction details

Tank to be installed on the truck chassis at the rear end of the truck. Generator, Electrical Control box, electric motor, high pressure pump with jacketed water pipe line for fixing jet spraying nozzles should be installed conveniently on the track chassis.

The tank should be fitted with anti-surge baffles of 5 mm MS plate to give dynamic stability to the vehicle. Water tank mounted on the truck should have water level indicator, drain pit, baffle plate, cat walk, ladder, pressure adjustable stop valve with operators seating arrangement at both side of the tank.

For internal maintenance of the tank a man hole with a lid is to be provided on the top of the tank and for cleaning purpose there should be a drain valve. The tank interior should be coated with epoxy paint for corrosion resistance and outside of the tank should have enamel paint. Tank should be mounted on the chassis such a way that at any point of time load will be distributed uniformly on the chassis.

3. Shape

Shape of the tank made out of embossed plate should be elliptical and hoses/hose reel should be mounted on it.

4. Operation of Nozzles

All high-pressure nozzles fitted in front header, rear header and side header should be controlled from driver's cabin.

NB: Nozzles of front header and side header will be used for road washing and nozzles of rear header will be used for dust suppression.

5. Front Sprinkler details

a) Header Outer diameter: 90mm
b) Header Material: MS
c) Nozzle Type: A Mist Nozzle (Auto Make or Equivalent)
d) Nozzle Size: 25mm
e) Nozzle Material: Stainless Steel (SS 316)
f) No. of Nozzles: 3
g) Spray Type: Adjustable pyramid spray

6. Rear Sprinkler details

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a) Header Outer diameter: 90mm
b) Header Material: MS
c) Nozzle Type: A Mist Nozzle (MAKE: AUTOMECK OR EQUIVALENT)
d) Nozzle Size: 25mm
e) Nozzle Material: Stainless Steel (SS 316)
f) No. of Nozzles: 4
g) Spray Type: Adjustable pyramid spray

7. Side Sprinkler details

a) Header Outer diameter: 90mm
b) Header Material: MS
c) Nozzle Type: A Mist Nozzle (MAKE: AUTOMECK OR EQUIVALENT)
d) Nozzle Size: 12mm
e) Nozzle Material: Stainless Steel (SS 316)
f) No. of Nozzles: 4 (both side)
g) Spray Type: Adjustable pyramid spray

8. Hydraulic Pump (Axial Piston Pump) :

a) Displacement approx. 50cc/rev.
b) Rated Speed approx. 1500 rpm
c) Discharge approx.73 lpm
d) Working Pressure approx. 250 bar.

9. Hydraulic Motor:

a) 15hp (11.5kW)

10. High Pressure Water Pump

a) Type: Multistage Centrifugal Pump
b) Make: Reputed brand
c) Water discharge: 200 lit per min (continuous rating).
d) Pump capacity: 15 hp @ 11bar
e) Discharge: 4-way distribution with Stop Valve.

Drive of Water Pump: PTO driven Hydraulic Pump is to be coupled with a Hydraulic Motor which should be directly coupled with High Pressure Water Pump.

11. Jetting Hose

a) Type: Light weight, flexible, high pressure sustainable special rubber hose
b) Outer diameter: 14 -15 mm
c) Inner diameter: 6-8mm.
d) Hose Length: 15ft

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e) Working Pressure: 200-250 bar
f) Bursting Pressure: 300-350 bar
g) Hose Reel: The hose reel should be sufficiently strong to take up the winding and unwinding of the high-pressure hose at the full pressure.

12. Water Ball Jet Gun: 1no. (with 3 nos. detachable nozzle)

MATERIAL OF CONSTRUCTION

- Water tank: Hot Rolled M.S. Sheet, Grade IS 2062
- Hydraulic tank: 2-3 mm thick M.S. sheet.
- Pipe lines: Approx. 21 mm MS seamless pipes
- Sprinkling header & distribution header: Approx. 90mm OD Mild Steel (Grade: IS 2062)
- Nozzle Material: Stainless Steel (GRADE: SS 316).
- Hydraulic Pipe: Flexible hoses, R2 grade of Reputed Make.

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TECHNICAL SPECIFICATION	TRUCK MOUNTED WATER SPRINKLER (3KL)

VEHICLE	7T GVW vehicle with BS VI standard of reputed make (TATA/EICHER/Ashok Leyland/Mahindra etc.) manufactured within one year from the date of issuance of purchase order.
GENERAL	Truck mounted water sprinkler should be useful for sprinkling of water to suppress dust/washing road with the help of front and rear sprinkler. Cleaning of toilet/urinal, spraying water on trees, firefighting etc. should be done with the help of connected hose.
TANK	
Capacity Liters	3000
Tank thickness	5mm thick
Material	Mild steel conforming to IS 2062
construction	Anti surge baffle should be welded inside the tank body.
	Single manhole is to be provided on top of the tank with rubber packing.
	Single ladder made from M.S pipe for lifting at top of the tank.
	Catwalk is to be provided at the top of the tank.
	The tank should be fitted with suction valve between tank and pump.
	Discharge valve should be fitted at rear of the tank
	The tank should be fitted with water level pipe to check the water level.
	The tank should be facilitated with water level alarm.
	The tank interior and exterior are to be coated with epoxy primer for corrosion resistance.
	Tank filling coupling is to be provided at manhole
WATER PUMP	
	Flow: 70LPM Pressure: Min. 130 bar Type: Reputed high pressure triplex plunger pump.
Drive	Power required for jetting pump is to be taken from air cooled self start diesel engine (approx. 45 BHP) of reputed make.
Front sprinkler	SS 304 pipe with SS/Brass nozzle (Min. 5 nos.)
Rear sprinkler	SS 304 pipe with SS/Brass nozzle (Min. 5 nos.)
Lateral cleaning system	There should be spray gun having rotating nozzle which is very useful for: • Cleaning the side gully's of the road • Cleaning of manhole area inside and outside. • Servicing the vehicle, container etc. • Firefighting etc.
Washing hose	Approx. 6mm dia. and min. 10 meters long hose is to be provided with hand gun.
Washing gun	There should be reputed Washing Gun with Adjustable Spray (Lance Spray Gun).
Unloaded valve	**There should be a reputed** unloaded valve designed to withstand handgun's operating pressure. While handgun is shutting down fluid should be bypassed at zero pressure so as to pump runs at unloaded condition thereby increasing the performance efficiency of the unit.
Type	Pneumatic rotary actuated butterfly valve

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Controls	Electric controls should be provided in driver's cabin for controlling sprinkler nozzles.
	Control panel should include the following Operation of Front Sprinkler ON-OFF Operation of Rear Sprinkler ON-OFF
Accessories	Water level indicator
	Pressure gauge
	Water level alarm
	Tank filling line
	Drain valve
	Suction strainer Y type
	Pressure relief valve for pressure pump
	Unloader valve for washing line
	Reputed washing gun
PAINT	Two coat of epoxy primer
	Two cost of PU/synthetic enamel paint.

Recommended

Recommended only

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TECHNICAL SPECIFICATION	TRAILER MOUNTED WATER SPRINKLER (3KL)

TYPE	2 WHEELED TRAILER MOUNTED
GENERAL	Trailer mounted water sprinkler should be useful for sprinkling of water to suppress dust/washing road with the help of front and rear sprinkler. Cleaning of toilet/urinal, spraying water on trees, firefighting etc. should be done with the help of connected hose.
TANK	
Capacity Liters	3000
Tank thickness	5mm thick
Material	Mild steel conforming to IS 2062
construction	Anti surge baffle welded inside the tank body.
	Single manhole is to be provided on top of the tank with rubber packing.
	Single ladder made from M.S pipe for lifting at top of the tank
	Catwalk is to be provided at the top of the tank.
	The tank should be fitted with suction valve between tank and pump.
	Discharge valve should be fitted at rear of the tank
	The tank should be fitted with water level pipe to check the water level.
	The tank is facilitated with water level alarm.
	The tank interior and exterior are to be coated with epoxy primer for corrosion Resistance.
	Tank filling coupling should be provided at the manhole.
WATER PUMP	
	Flow-70LPM Presure-130 bar Reputed high pressure triplex plunger pump.
Drive	Power required for jetting pump is to be taken from air cooled self start diesel engine (approx. 45 BHP) of reputed make.
Front sprinkler	SS 304 pipe with SS/Brass nozzle (Min. 5 nos.)
Rear sprinkler	SS 304 pipe with SS/Brass nozzle (Min 5 nos.)
Lateral cleaning system	There should be spray gun having rotating nozzle which is very useful for: • Cleaning the side gully's of the road • Cleaning of manhole area inside and outside. • Servicing the vehicle, container etc. • Firefighting etc.
Washing hose	Approx. 6mm dia. and min. 10 meters long hose is to be provided with hand gun.
Washing gun	There should be reputed Washing Gun with Adjustable Spray (Lance Spray Gun).
Unloaded valve	**There should be a reputed** unloaded valve designed to withstand handgun's operating pressure. While handgun is shutting down fluid should be bypassed at zero pressure so as to pump runs at unloaded condition thereby increasing the performance efficiency of the unit.
Type	Manual operated valves

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Accessories	Water level indicator
	pressure gauge
	Water level alarm
	Tank filling line
	Drain valve
	Suction strainer
	Pressure relief valve for pressure pump
	Unloader valve for washing line
	Reputed washing gun
Trailer specification	Chassis made from channel section with towing hook
	Tyres: 7.50x16 (2 nos.)
	Axle: 75mmx75mm MS sq. bar
	Wheel plate: Cast steel (2 nos.)
	Brake: Parking type internal expanding shoe brake
Paint	Two coat of epoxy primer
	Two coat of PU/synthetic enamel paint.
Tractor	Min. 35 hp (Mahindra/Sonalika/Johndere/TAFE/Swaraj/Equivalent)

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(1) Annexure – I.

TECHNICAL SPECIFICATION

OF

500 LITRE CAPACITY CESSPOOL EMPTIER (B)

1. **Over View:** Fabrication of 500 Litre Capacity Cesspool Emptier on Cabin Chassis-**BS**-VI compliance — Vacuum-Cum-Pressure Pump to be operated by 06 HP/Kirloskar make / any reputed make of ISO 9000 company oil cooled/Air cooled Engine — Suitable coupling-**Fifteen Numbers** 20 feet long suction/delivery to be provided - Manhole — Level Indicator — Sludge separation tank — lubrication system — Mudguard and tail lamp guard, ladder etc. — Inside of the tank to be painted with bituminous paint over anti-corrosive paint and outside of the Tank to be finished in Synthetic Enamel paint of approved shade. All other mandatory fitments to be provided.

2. **Important functional parts of the cesspool emptier:**

a) Exhauster / Compressor
b) Vacuum Cut-out (Primary)
c) Vacuum Cut-out (Secondary)
d) Sludge Trap
e) Level Indicator
f) Pressure-cum-vacuum gauge
g) Loading & discharge valve
h) Directional control valve
i) Hoses with couplings
j) Riser pipe for loading & fluidization.
k) Chassis for mobility of the unit

3. **Required Chassis:** Following are the specification of chassis made of reputed Company on which Cesspool Emptier is to be fabricated.

i.	Engine	: Min. 3 cylinder.
ii.	Fuel	: CNG
iii.	Environment Compliance	: BS-VI compliant chassis within KMC jurisdiction.
iv.	GVW	: Min. 2540
v.	Engine Power	: Min. 45 HP
vi.	Engine Torque	: Min. 100 N-m
vii.	Transmission	: Power

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Asstt. Engr. (I
SWM-I/HQ.

11/09/23
Ex. Engineer (SWM-II)
Kol. Mpl. Corpn.

viii.	Engine Aspiration	: Turbo
ix.	Wheelbase	: Approx. 2300
x.	Ground Clearance	: Min. 170 mm
xi.	Turning Radius	: Max. 5900 mm
xii.	Gradeability	: Min. 14%
xiii.	Speed	: Min. five (05) forward gears.
xiv.	Dumping Height	: Min. 1000 mm
xv.	Tyre	: OEM
xvi.	Fuel Tank	: Min. 120 litre
xvii.	Cabin	: Day cabin

4. **Driving Unit:** Input driving for pump rotation will be coupled with 06 HP/equivalent power `Kirloskar' make Oil Cooled engine/Air Cooled engine of ISO 9000 company with self starter.

5. **Exhauster / Compressor:** High power / high volume exhauster / compressor which can vacuumise and / or pressurize the tank in a short time for loading and discharge respectively. Oil cooled higher efficiency cast iron make compressor cum exhauster is to be provided to execute suction and delivery of the system in a short time.

   - Flow Rate : Min. 156 m^3/h
   - Min. 90% vacuum
   - Min. 1.5 bar (abs)
   - Min. 3.3 KW(4.5HP)

6. **Tank:** The tank should be cylindrical in construction, made of M. S. Plates. All steel should be MIG welded continuously to impart better weldment of material in the joining area by fusion settlement of the electrodes. front and rear dished ends of 6 mm. thick and rolling sheet of 5 mm thick. The air volume will be 500 Litre.

7. **Hoses With Couplings:** 3" bore PVC flexible suction hoses of 200' length with male / female camlock couplings of aluminum or equivalent quick coupling having 20' length and 10 in nos.

8. **A Brief Description And Salient Features With Specification:**

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Ex. Engineer (Sr.)
Kol. Mnl. Corpn.

a) **Construction:** The Cesspool Emptier will be designed and manufactured with selected quality of materials and bought out finished components from the market to impart to the equipment high efficiency, least maintenance, simplicity in operation, long life and economy.

b) **Loading Of Sludge:** The tank when vacuummised should do self-loading of sludge directly into the tank without contaminating vital functional apparatus/gadgets etc., such as vacuum pumps, pneumatic valves, pipes and hoses, pressure/vacuum gauge etc.

c) **Discharge Of Contents:** The contents are discharged pneumatically. Discharge should be effected through the discharge valve and hoses by pressurizing the tank.

d) **Vacuum Cut-Out (Primary):** An automatic type of vacuum cut-out should be provided within the main tank to prevent filling beyond optimum level.

e) **Vacuum Cut-Out (Secondary):** A secondary vacuum cut-out should be provided within the sludge trap to protect the exhauster/compressor against flooding.

f) **A Sludge Trap:** External to the tank & sludge trap is provided to protect the pump from contamination by contents of the tank, with quick opening blow-down arrangement.

g) **Level Indicator:** A full length content level indicator pipe should be provided for the sludge compartment to see the sludge content from outside.

h) **Pressure-Cum-Vacuum Gauge:** An adequately sized dial type vacuum-pressure gauge should be fitted at a prominent place for reading.

i) **Loading & Discharge Valves:** Loading valve with riser pipe should be provided at the rear on the side of the tank.Discharge valve should be fitted at the rear bottom of the dished end.

j) **Directional Control Valve:** A four way directional control valve should be provided to select the positions for vacuumising or pressurizing the tank from the exhauster/compressor.

k) **Riser Pipe For Loading & Fluidization:** A riser pipe should be provided with the tank over the loading valve to relieve downward pressure of the contents while loading is going on. The riser pipe is also used for aeration when tank is partially filled with water or sludge.

l) **Metal Canopy:** A protective metal canopy of proper stands shall be provided above the engine and compressor cum exhauster unit with foldable tarpaulin curtains.

m) **Side Platform:** Side platform will be provided for the placement of flexible hoses at idle hours.

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n) **Finish:** the standard finish of the inside of the tank should be bituminous paint over anti-corrosive paint. Outside should be finished in synthetic enamel paint of approved shade.

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Asstt. Engr. (M)
SWM-II/HQ.

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Ex. Engineer (SWM)
Kol. Mpl. Corpn.

11/9/23
Dy. Chief Engineer (SWM II)
Kol. Mpl. Corpn.

11/9/23
Ch. Mpl. Eng. (SWM)
Kol. Mpl. Corpn.

6

TECHNICAL SPECIFICATION: CESSPOOL EMPTIER (1200L)

Vehicle	**MAHINDRA BOLERO OR EQUIVALENT** with BS VI standard of reputed make (TATA/EICHER/Ashok Leyland/Mahindra etc.) ARAI certified chassis manufactured within one year from the date of issuance of purchase order.	
Application	Sludge Suction	The machine should be useful to clean cesspit/cesspool, sewerline, etc. by siphoning out of mud, slurry and other material. Aspiration of the effluent from chamber, sewer and drain water lines should be carried out on the principal of generating high vacuum in the sludge tank compartment for siphoning out effluent, liquids, sludge and other materials.
	Sludge stirring	The unit should be provided with sludge stirring arrangement by which accumulated solid silt in the working area is stirred and converted into liquid /semi liquid form by high velocity air. The sludge and slurry should be extracted under high vacuum through a suction hose connected to the tank by a quick release coupling. The content of the sludge tank then be transported to any desired destination for disposal and emptied by gravity or under positive pressure.
	Sludge blowback	The unit should be provided with blow back system in which only water content of the sludge tank is discharged by pressurizing the tank to facilitate carrying of sludge/material waste only without transporting the unwanted water portion.
Sludge Tank	Capacity (liters)	1200
Construction	Thickness (mm) Material	5; (6mm for Back door will be preferable) Mild steel (IS:2062)
	Shape	Cylindrical
	Baffle	Welded inside the tank
	Ladder Lifting Hook	Fitted to climb on top of the tank For lifting the tank
	Side Railing	Fitted both side of the tank
	Discharge Valve	Ball valve of reputed make
	Suction Valve Welding	Ball valve of reputed make ARC/MIG welding
	Paint	Epoxy primer inside the tank
	Tank Mounting	Fitted on chassis with slope
	Rear Door Rear Door Sealing	Manual openable type U shape heavy duty rubber gasket
	Door Locking	Manual screw type locking

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Drive	For vacuum pump	Vacuum pump drive is to be taken from heavy duty full torque split shaft PTO fitted between vehicle engine and differential. The split shaft PTO have one auxiliary output and 1:1 output ratio.
Suction Machine		
Vacuum Pump	Make	Jurop /Equivalent
	Type	Asbestos spark proof vane blades
	Flow	156 cum/hr.
	Pressure	1.5 Bar (Absolute)
	Max Vacuum	90%
	Cooling	Air cooled
	Fitting	Inbuilt 4 way valve
Primary Shut Off	Use	To protect the exhauster from the harmful effect of the accidental ingress of sludge and other foreign particles caused due to an overflow from the tank, a Primary Shut Off is to be provided. It should be fitted inside the sludge compartment and on the top of the tank,this specially designed device consists of a rubber/SS ball which floats on water, rises and seals against the seat at a preset maximum level, thus ensuring that the tank contents do not overflow into the system.
	Type	Ball float type
	Fitting	Inside the tank
	Float Ball	Rubber/Stainless Steel
Secondary Shut Off	Use	It should be fitted immediately after the primary shut off. It functions to protect the vacuum blower from any probable carryover of suspended water and sludge particles which may be drawn into the system from the water surface in the sludge compartment due to high vacuum condition. A ball float shut off arrangement should be incorporated inside the cyclone, for the protection of the system from any accidental overflow and carryover of material from the sludge tank. In the event of separator getting filled to the predetermined level, the ball will rise and seal against the rubber seal provided at the mouth of cyclone outlet ensuring that the water and sludge particles do not flow into the blower.
	Type Fitting	Ball float type Fitted after primary shut off
	Float Ball	Rubber/Stainless Steel
Suction Strainer	Use	To Protect the pump from entering solid and semi solid particles of the size beyond that of the pumps handling capacity,

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		a basket type suction strainer should be fitted in the airflow circuit between the secondary shut off and pump made of a stainless steel.
	Type	Basket type with stainless steel mesh
	Fitting	Fitted in pump suction line after secondary Shut Off
Exhaust Silencer	Use	To dampens the air flow thereby reducing the operational noise level.
	Fitting	Fitted in pump exhaust line
Suction Hose	Make	Dutron/Equivalent
	Type Dia	Heavy duty PVC hose 50 mm
	Length	Min. 10m
Suction Valve	Type	Ball Valve
	Size	50 mm
Discharge	Type	Ball Valve
	Size	75 mm
Accessories	Sludge Level indicator	Acrylic tube type
	Compound Gauge	100mm Dial, pressure ranger: 0-4 kg/cm2, vacuum: 0-760 mm of Hg.
	Quick Coupler	Imported Italian or equivalent make quick coupler of sufficient diameter to connect the hose/metal pipes is to be provided.
	Pressure Relief Valve	Imported Italian or equivalent make spring type adjustable pressure relief valve to safeguard the tank from excess pressure creating inside the tank.
	Vacuum Relief Valve	Imported Italian make/reputed
Paint	Primer	Two coat of epoxy primer
	Finish	Two coat of synthetic paint

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TECHNICAL SPECIFICATION: CESSPOOL EMPTIER (2200L)

Vehicle	**TATA 407 OR EQUIVALENT ARAI certified chassis** with BS VI standard of reputed make (TATA/EICHER/Ashok Leyland/Mahindra etc.) manufactured within one year from the date of issuance of purchase order.	
Application	Sludge Suction	The machine should useful to clean cesspit/cesspool, sewerline, etc. by siphoning out of mud, slurry and other material. Aspiration of the effluent from chamber, sewer and drain water lines will be carried out on the principal of generating high vacuum in the sludge tank compartment for siphoning out effluent, liquids, sludge and other materials.
	Sludge stirring	The unit is to be provided with sludge stirring arrangement by which accumulated solid silt in the working area is stirred and converted into liquid /semi liquid form by high velocity air. The sludge and slurry is to be extracted under high vacuum through a suction hose connected to the tank by a quick release coupling. The content of the sludge tank is to be transported to any desired destination for disposal and emptied by gravity or under positive pressure
	Sludge blowback	The unit is to be provided with blow back system in which only water content of the sludge tank is discharged by pressurizing the tank to facilitate carrying of sludge/material waste only without transporting the unwanted water portion.
Sludge Tank Construction	Capacity (liters)	2200
	Thickness (mm)	5 (6mm for Back door will be preferable)
	Material	Mild steel (IS:2062)
	Shape	Cylindrical
	Baffle	Welded inside the tank
	Ladder	Fitted to climb on top of the tank
	Lifting Hook	For lifting the tank
	Side Railing	Fitted both side of the tank
	Discharge Valve	Ball valve of reputed make
	Suction Valve	Ball valve of reputed make
	Welding	ARC/MIG welding
	Paint	Epoxy primer inside the tank
	Tank Mounting	Fitted on chassis with slope
	Rear Door	Manual openable type
	Rear Door Sealing	U shape heavy duty rubber gasket
	Door Locking	Manual screw type locking

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Drive	For vacuum pump	Vehicle gearbox fitted PTO
Suction Machine		
Vacuum Pump	Make	Jurop /Equivalent
	Type	Sliding vane pump
	Flow	318 cum/hr.
	Pressure	1.5 Bar (Absolute)
	Max Vacuum	90%
	Cooling	Air cooled
Primary Shut Off	Use	To protect the pump from the harmful effect of the accidental ingress of sludge and other foreign particles caused due to an overflow from the tank, a Primary Shut Off is to be provided. It should be fitted inside the sludge compartment and on the top of the tank,this specially designed device consists of a rubber/SS ball which floats on water, rises and seals against the seat at a preset maximum level, thus ensuring that the tank contents do not overflow into the system.
	Type	Ball float type
	Fitting	Inside the tank
	Float Ball	Rubber/Stainless Steel
Secondary Shut Off	Use	It should be fitted immediately after the primary shut off. It functions to protect the vacuum blower from any probable carryover of suspended water and sludge particles which may be drawn into the system from the water surface in the sludge compartment due to high vacuum condition. A ball float shut off arrangement should be incorporated inside the cyclone, for the protection of the system from any accidental overflow and carryover of material from the sludge tank. In the event of separator getting filled to the predetermined level, the ball will rise and seal against the rubber seal provided at the mouth of cyclone outlet ensuring that the water and sludge particles do not flow into the blower.
	Type	Ball float type
	Fitting	Fitted after primary shut off
	Float Ball	Rubber/Stainless Steel
Suction Strainer	Use	It should be fitted in the airflow circuit between the secondary shut off and pump made of a stainless steel basket type safety filter designed to filter out solid and semi solid particulars impurities of the size beyond that of the pumps handling capacity.
	Type	Basket type with stainless steel mesh
	Fitting	Fitted in pump suction line after secondary Shut Off
Exhaust Silencer	Use	It should be fitted on the pump exhaust side of the air flow circuit. The device dampens the airflow with minimum back pressure in the system, thus reducing the

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		operational noise levels considerably.
	Fitting	Fitted in pump exhaust line
Suction Hose	Make	Dutron/Equivalent
	Type Dia	Heavy duty PVC hose 75mm
	Length	Min. 15m
Suction Valve	Type Size	Ball Valve 75mm
Discharge	Type Size	Ball Valve 75mm
Accessories	Sludge Level indicator	Acrylic tube type
	Compound Gauge	100mm Dial
	Quick Coupler	Imported Italian make/reputed.
	Pressure Relief Valve	Imported Italian make/reputed

	Vacuum Relief Valve	Imported Italian make/reputed
Paint	Primer	Two coat of epoxy primer
	Finish	Two coat of synthetic paint

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7

TECHNICAL SPECIFICATION: CESSPOOL EMPTIER (3000L)

Vehicle	7T GVW vehicle with BS VI standard (ARAI certified chassis) of reputed make (TATA/EICHER/Ashok Leyland Mahindra etc.) manufactured within one year from the date of issuance of purchase order.	
Application	Sludge Suction	The machine should useful to clean cesspit/cesspool, sewerline, etc. by siphoning out of mud, slurry and other material. Aspiration of the effluent from chamber, sewer and drain water lines will be carried out on the principal of generating high vacuum in the sludge tank compartment for siphoning out effluent, liquids, sludge and other materials.
	Sludge stirring	The unit is to be provided with sludge stirring arrangement by which accumulated solid silt in the working area is stirred and converted into liquid /semi liquid form by high velocity air. The sludge and slurry is to be extracted under high vacuum through a suction hose connected to the tank by a quick release coupling. The content of the sludge tank is to be transported to any desired destination for disposal and emptied by gravity or under positive pressure
	Sludge blowback	The unit should be provided with blow back system in which only water content of the sludge tank is discharged by pressurizing the tank to facilitate carrying of sludge/material waste only without transporting the unwanted water portion.
Sludge Tank	Capacity (liters)	3000
Construction	Thickness (mm)	6; (8mm for Back door)
	Material	Mild steel (IS:2062)
	Shape	Cylindrical
	Baffle	Welded inside the tank
	Ladder	Fitted to climb on top of the tank
	Lifting Hook	For lifting the tank
	Side Railing	Fitted both side of the tank
	Discharge Valve	Ball valve of reputed make
	Suction Valve	Ball valve of reputed make
	Welding	ARC/MIG welding
	Paint	Epoxy primer inside the tank
	Tank Mounting	Fitted on chassis with slope
	Rear Door	Manual openable type
	Rear Door Sealing	U shape heavy duty rubber gasket
	Door Locking	Manual screw type locking

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Drive	For vacuum pump	Vehicle gearbox fitted PTO
Suction Machine		
Vacuum Pump	Make	Jurop /Equivalent
	Type	Sliding vane pump
	Flow	318 cum/hr.
	Pressure	1.5 Bar (Absolute)
	Max Vacuum	90%
	Cooling	Air cooled
Primary Shut Off	Use	To protect the pump from the harmful effect of the accidental ingress of sludge and other foreign particles caused due to an overflow from the tank, a Primary Shut Off is to be provided. It should be fitted inside the sludge compartment and on the top of the tank, this specially designed device consists of a rubber/SS ball which floats on water, rises and seals against the seat at a preset maximum level, thus ensuring that the tank contents do not overflow into the system.
	Type	Ball float type
	Fitting	Inside the tank
	Float Ball	Rubber/Stainless Steel
Secondary Shut Off	Use	It should be fitted immediately after the primary shut off. It functions to protect the vacuum blower from any probable carryover of suspended water and sludge particles which may be drawn into the system from the water surface in the sludge compartment due to high vacuum condition. A ball float shut off arrangement should be incorporated inside the cyclone, for the protection of the system from any accidental overflow and carryover of material from the sludge tank. In the event of separator getting filled to the predetermined level, the ball will rise and seal against the rubber seal provided at the mouth of cyclone outlet ensuring that the water and sludge particles do not flow into the blower.
	Type	Ball float type
	Fitting	Fitted after primary shut off
	Float Ball	Rubber/Stainless Steel
Suction Strainer	Use	It should be fitted in the airflow circuit between the secondary shut off and pump made of a stainless steel basket type safety filter designed to filter out solid and semi solid particulars impurities of the size beyond that of the pumps handling capacity.
	Type	Basket type with stainless steel mesh
	Fitting	Fitted in pump suction line after secondary Shut Off
Exhaust Silencer	Use	To dampens the air flow thereby reducing the operational noise level.
	Fitting	Fitted in pump exhaust line

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Suction Hose	Make	Dutron/Equivalent
	Type	Heavy duty PVC hose
	Dia	75mm
	Length	Min. 15m
Suction Valve	Type	Ball Valve
	Size	75mm
Discharge	Type	Ball Valve
	Size	75mm
Accessories	Sludge Level indicator	Acrylic tube type
	Compound Gauge	100mm Dial
	Quick Coupler	Imported Italian make/reputed.
	Pressure Relief Valve	Imported Italian make/reputed

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	Vacuum Relief Valve	Imported Italian make/reputed
Paint	Primer	Two coat of epoxy primer
	Finish	Two coat of synthetic paint

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Technical Specification of 40-45 HP range of Tractors	
Tractor Engine Capacity (cc)	Minimum 2500
Type of Fuel	Diesel
Vehicle Emission Complaince	Bharat (TREM IIIA) Stage-IV
Engine BHP	Minimum 40 H.P
Engine Torque	Minimum 150 N-m
Power Take-Off (PTO) Type	Transmission/ Live/ Independent
PTO HP	Minimum 37
Engine Aspiration System	Natural / Turbo Charged
Engine Cooling	Watercooled
Fuel Injection	Inline
Fuel Tank Capacity (Ltrs)	Minimum 42 Lt.
Ground Clearance (mm)	Minimum 380 millimeter
Size Of Front Tyre with ply rating (mm)	6.00x16 & 08 PR
Size Of Rear Tyre with ply rating (mm)	13.6x28 & 12 PR
Tractor Transmission System	Constant Mesh / Partial Constant Mesh/ Sliding Mesh/ Synchromesh
No. of Forward / Reverse Gears (Nos.)	Minimum 8/2
Type of Wheel drive	Two Wheel Drive
Drive Axle	Rear
Type of Steering	Power Steering
Tractor Brake	Oil Immersed Disc Brake
Type of Clutch	Single / Dual Dry Clutch
Lifting Capacity at Hitch Point (Kg)	Minimum 1500 kg
Turning Radius (mm)	Maximum 3500 mm
Performance Parameters	
Warranty Time (Month)	Minimum 24 month

Additional Terms & Conditions:

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1. Vehicle Certification as issued by CFMTTI (Budni) / ARAI / ICAT / CIRT / GARC / VRDE / NRFMTTI (Hisar) is to be submitted.

2. Availability of Service Centre in West Bengal within 50-60 Km Radius from the place of Buyer is a mandatory criterion. Necessary documentary evidence must be submitted along with the bid document.

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Technical Specification of Battery Operated Tipper (BOT)

Or

Battery Operated Hydraulic Dumper (BOHD)

A. SPECIFICATION OF BOT/BOHD

- Type of Vehicle : A battery operated 3-wheel E Cart with battery assisted Hydraulic tipping container having two (02) separate equal compartments for transportation of Municipal Solid Waste (MSW) with windshield made of toughened glass for driver's protection (Container should be covered).

  Fork, T-connector in front of the vehicle must be rigid enough and there should be arrangement to cover Head Light, Speedo Meter etc. on handle to avoid water seepage during rainy season and other natural calamity.

- Certificate of compliance : **The vehicle as well as hydraulic lifting arrangement should be ARAI/ICAT certified** as per CMV rule 126, Central Motor Vehicle Rule 1989.

- Capacity of the Vehicle :

  Laden Weight : Approx. 930 Kg.
  Unladen Weight : Approx. 560 Kg

- Size of the Vehicle : Overall 2500x900x1000 mm to 2800x950x1290 mm.

- Steel Cargo Platform : 1200x800x500 mm to 1300x950x500 mm.

  Material : MS (IS 2062)

  Thickness : Bottom Plate-Min. 3mm (1no.)

  Front Dala-Min. 1.5mm (1 no.)

  Back Dala-Min. 1.5mm (1 no.)

  Side Dala-Min. 1.5mm (2 nos.)

  Foot Rest-Min. 3mm (1no.)

  Battery Housing-Min. 3mm

- Cargo Box Lifting : Lifted with the help of double acting hydraulic cylinder./ If single cylinder it should be well balanced.

- Wheel Base : Approx. 1900mm

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- Gear Box :

  Type : Manual
  No. of Gear : 1 Forward and 1 Reverse

- Traction Battery Pack :

  System Voltage : 72 V
  Battery Rating : 100 Ah
  [Lead Acid 12V x 100 Ah x 6 nos. Battery ARAI / ICAT certified]
  Charging time : Max. 6 to 8 hrs.
  Running time/Single Charge : Min. 10 to 12 hrs.

- Driving Mode : Shaft Drive or above.

- Traction Motor : 1.8 to 2.0 KW BLDC Mono Motor follow the ("Make in India" concept) Indian make preferable.

- Tyre :

  Front : 4.5 – 10, 8PR 85E 520 Kg 500KPa
  Rear : 165 D13 8PR 94/92J 670/630 Kg 450/450 Kpa
  Or as per manufacturer designing aspect to carry the load perfectly.

- Suspension :

  Front: Damping hydraulic coil spring
  Rear: Leaf Spring/Hydraulic/
  pneumatic as per load.

- Brake :

  Front: Drum
  Rear : Disc/Drum

- Parking Break : Yes

- Speed : 15 to 20 Kmph.

- Climbing ability : 10 to 30°.(up to 40°)

- Ground clearance : 280 mm to 300mm.(240 mm to 300 mm)

- Sitting arrangement : 1 (one) person.

- Lighting Arrangement : Front, back and indicator light as per OEM

B. SURFACE PREPARATION AND FINISH

Both the exterior and interior surfaces of the BOHD to be thoroughly sanded prior to spray painting.

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The container exterior should be spray-painted with two coats of superior quality, anti-corrosive primer and two coats of enamel metal paint of a reputed make. The colour shade to be that of the customer's choice.

To resist corrosion due to weak acids, the interior will be coated with 2 coats of anti-corrosive gray epoxy paint.

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POCLAIN

Specification of Medium Size Excavator	
Type of Excavator	Crawler

Engine	
Type	Direct injection, water-cooled, 4-cycle diesel engine with turbocharger, intercooler.
No. of cylinders	4
Bore and stroke	approx. 100 mm X 130 mm or as per OEM
Displacement	aprox. 3.9 L
Rated Power Output	approx. 100 hp
Max. Torque	approx. 375 Nm

Fuel

Swing System	
Swing Motor	Axial Piston Motor
Swing reduction	Planetary Gear Reduction or as per OEM
Swing Speed	approx. 11 rpm
Brake	Hydraulic; automatic locking when swing control lever is in neutral position or as per OEM.
Parking Brake	Hydraulically operated Disc Brake
Tail Swing Radius	Approx. 2180 mm
Front Swing Radius	Approx. 2620 mm

Cab & Control	
Cab & Control	Comfort Cab with dust free enclosure, all-weather, sound-suppressed steel cab equipped with a heavy, insulated floor mat.
	Two hand levers and two foot pedals for travel or as per OEM
	Two hand levers for excavating and swing or as per OEM
	Electric rotary-type engine throttle or as per OEM

Refilling Capacity & Lubricant	
Fuel tank	approx. 250 L
Cooling system	approx. 15 L
Engine oil	approx. 11 L
Travel reduction gear	As per OEM
Swing reduction gear	AS per OEM
Hydraulic oil tank	approx. 104 L Tank Oil Level
	approx. 160 L Hydraulic System

Hydraulic System	
Type of Pump	Two variable displacement pumps and one Gear Pump

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Flow	approx. 110 lpm each and approx. 20 lpm respectively
Reelif Valve Setting	
Boom, Arm & Bucket	approx. 330 kgf/cm²
Trave Circuit	approx. 330 kgf/cm²
Swing Circuit	approx. 285 kgf/cm²
Control Circuit	approx. 296 kgf/cm²
Pilot Control Pump	Gear Type
Oil Cooler	Air Cooled
Pilot Circuit	approx. 40 kgf/cm²

Attachment	
Bucket Capacity	approx. 0.6 m³
Opening width with side cutter	approx. 1100 mm
Opening width without side cutter	approx. 1000 mm
No. of Bucket Teeth	min. 5
Bucket Weight	approx. 540 Kg

Boom, Arm & Bucket Size	
Boom Cylinder	approx. 100 mm X 1092 mm or as per OEM
Arm Boom Cylinder	approx. 115 mm X 1116 mm or as per OEM
Bucke Cylinder	approx. 95 mm X 903 mm or as per OEM

Travel System	
Drive method	Hydraulic drive
Drive motor/Travel motor	Two speed axial piston motor with break valve and parking brake
Reduction system	Planetary reduction gear
Travel brakes	Hydraulic brake per motor
Parking brakes	Oil disc brake per motor
Travel speed	approx. 3.5 Km/hr
Drawbar pulling force	approx. 142 kN
Gradeability	70% (35°)
Under Carriage:	
Centre Frame	X- Leg Type or as per OEM
Track Frame	Pentagonal Box Type or as per OEM
Travel shoes	approx. 44 on each side
Carrier roller	approx. 1 on each side
Track roller	approx. 7 on each side
Rail gurare	as per OEM
Operating Weight and Ground Pressure	
Shoe Width	approx. 500 mm
Overall Width of Crawller	approx. 2490 mm or as per OEM
Ground Pressure	approx. 34 kPa
Operating weight	approx. 13000 Kg
Shipping weight	as per OEM

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Dimension	
Overall Length	approx. 7600 mm or as per OEM
Overall Height to top of Boom	approx. 2700 mm or as per OEM
Overall Width of Crawler	approx. 2500 mm or as per OEM
Overall Heigh to top of Cab	approx. 2900 mm or as per OEM
Ground Clearance of rear end	approx. 860 mm or as per OEM
Ground Clearance	approx. 435 mm or as per OEM
Tail Swing Radius	approx. 2180 mm or as per OEM
Distance from Centre of Swing to Rear End	approx. 2180 mm or as per OEM
Tumbler Distance	as per OEM
Overall Length of Crawler	approx. 3580 mm or as per OEM
Track Guage	approx. 1990 mm or as per OEM
Shoe Width	approx. 500 mm or as per OEM
Overall Width of Upper Structure	approx. 2500 mm or as per OEM
Standard Boom Length	approx. 4700 mm or as per OEM
Standard Arm Length	approx. 2100 mm or as per OEM

Working Ranges	
Max. digging reach	approx. 8.0 m
Max. digging reach at ground level	approx. 7.9 m
Max. digging depth	approx. 5.2 m
Max. digging height	approx. 8.3 m
Max. dumping clearance	approx. 5.8 m
Min. dumping clearnace	approx. 2.5 m
Max. vertical wall digging depth	approx. 4.9 m
Min. swing radius	approx. 2.6 m

Warranty	
Warranty Duration	one (01) Year
Operating hours during warranty period	2000 hr
No. of free service	5

Certification of compliance	
Test Report	Any ILAC/NABL accridited/Central Govt. Lab
ISO	ISO 7135
IS	11114:2006; 13116:2006
IS/ISO	6165: 2006

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Annexure-I

Technical Specification Tipper:

Sl. No.	Specification Parameters	Spec. Values that have been received	Spec. Values Suggested
1	Chassis Certification.		Mandatory
2	Type of TIPPER	Garbage Tipper	Garbage Tipper
3	Type of Fuel	Diesel -549	Diesel/CNG
4	Chassis Transmission System	Manual	Manual
5	Chassis Certification ARAI / VRDE / ICAT No.	ARAI	ARAI
6	Tipper Container capacity / Volume (Cubic meter)	3.2/3.3/3.0	2.5-3
7	Type of BIS MARKED Vehicle Tyre	Radial	Radial
8	At the time of supply of the equipment, the chassis should not be more than 6 months old.	Mentioned by the bidder	Tippler is to be built on the newly manufactured chassis, not more than six months old. Substantial document of chassis manufacturing date is to be submitted, if asked for.
9	Tipping Angle (Degree)	45/48	Min. 45
10	Type of TIPPER if other topper, please declare type of Tipper.	Not mandatory filed	
11	Type of Steering	Power operated	Power operated
12	Main Engine Aspiration	Turbo charged intercooled	Turbo charged intercooled
13	Make of Chassis	Mentioned by the bidder	Reputed make like TATA, Ashok Leyland, EICHER, Mahindra or equivalent.
14	Type of Chassis Frame	Conventional	Conventional
15	Vehicle Emission compliance	BS-VI	BS-VI
16	Max Engine Power BHP (BHP @rpm)	65/70, 69	Min. 65
17	No of Cylinder in Main Engine (Nos)	4/3	Min. 3
18	Category of Vehicle for which Chassis to be used	Light capacity commercial vehicle	Light capacity commercial vehicle
19	Type of Chassis	Chassis without facecoul/Chassis with facecoul	Chassis with facecoul
20	Fuel Consumption (declared by OEM as certified by Test Agency under Rule 115 of CMVR 1989) (Kmpl)	17.2/18/17.46	Min. 17 Kmpl
21	Speed, Max (Km/ Hr)	80	80

13/4/2023 Engine- Kol. Mpl. Comm.

13/4/23 Ch. Mpl. Engr. Kol. Mpl. Comm.

22	Rated RPM at Max Engine Power	3200/4000/3300	3200-3300
23	Max Engine Torque (N-m @rpm)	195/140	Min. 170
24	Rated RPM at Max Engine Torque	1400.22/1800/2400	3200-3300
25	Fuel Tank Capacity (Ltr.)	45/38/40	Min. 40
26	Gradeability of Vehicle with load (%)	10.3/28.11/32.27	Min. 24
27	Ground Clearance (mm)	170/160/177	Min. 170
28	Wheel Base(mm)	3150/2380/2350	2350-2380
29	Kerb Weight (Kg)	1500/1100/2590	Max. 1100-1300
30	Gross Vehicle Weight (Kg)	2700/2565/2565	2550-2700
31	Number of Speed / Forward Gears	5	5
32	Turning Radius, Min (mm)	5500/5100/5250	5100-5850
33	Speed Governers / EUC	Yes	Yes
34	ABS Fitted	No/Yes	Optional
35	Front Vehicle Brake	DISC/ Disc brake	Disc brake
36	Rare Vehicle Brake	DRUM	Drum
37	Type of Clutch	Single plate dry/ single dry friction/ single dry plate	Single Plate Dry Clutch
38	Size of Front Tyres (mm)	195R 15LT/185 R14 8PR/185R14LT	185 R14 8PR or more
39	Size of Rear Tyres (mm)	195R 15LT/185 R14- 8PR/185R14LT	185 R14 8PR or more
40	Size of Wheel (mm)	15/355.6/355.6	14 inch and more
41	Tipper body Pivot length (mm)	2350/1546/1420	As per OEM
42	Tipper body Length (mm)	2460/2695/2820	Min. 2400
43	Tipper body Height (mm)	1100/1082/850	Min. 1000
44	Over all Height of Tipper from ground (mm)	2125/1801/1920	1900-2125
45	Body Plate Thickness (mm)	1.6/2	Min. 2
46	Main Frame Thickness (mm)	2/4/3	Min. 3
47	Hydraulic System	YES	Yes
48	Tipper Hydraulic Cylinder (Make)	M&M VAP/Reputed make/canara/dantal or equivalent	Reputed make
49	Hydraulic System Driven By	Main engine/ power pack unit	Power pack unit

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50	Tipper Container Material	Mild Steel	MS (1018) have no corrosion resistant properties. AISI 4140 bears good corrossion resistant properties including higher mechanical strength. Hence, AISI 4140 is preferable.
51	Thickness of sheet from tipper collector container made (mm)	2	Min. 2
52	Dumping Height (mm)	950/551/900	Min. 1000
53	Engine Oil pressure level indicator in control panel	yes	yes
54	Fuel Gauge indicator in control panel	yes	yes
55	Engine cooling liquid temperature indicator in control panel	yes	yes
56	Operating hour meter	no	Optional
57	Locking / Unlocking of Tipper discharge container	yes	yes
58	Lowering/ Lifting if Tipper discharge container	yes	yes
59	Counter weight	no	no
60	If Yes counter weight (kg)	0	
61	Paint	Automotive point	Automotive point
62	Standard spare wheel and tool kit	yes	yes
63	Warranty Time (Month)	12	12
64	No. of Free service (Nos)	3	3
65	Battery Warranty (Months)	12	12
66	Warranty distance (km)(Unlimited during warranty period)	yes	yes
	Important Additional Parameters		
67	Duration of Bin Lifting		20 second at idle condition of chassis
68	Pressure of Hydraulic Pump		Min. 200 Kg/cm2
69	Driver of Hydraulic Pump		Hydraulic pump is to be driven by auxiliary PTO

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70	Engagement of PTO		From driver's Cabin
71	Body Supporting Frame		Hollow Section-40 X 25 mm
72	Main Frame Channel		ISMC 75 X 40
73	Main Frame Thickness		3 mm
74	Bottom Plate Thickness		3 mm
75	Side plate thickness		2 mm

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Kol. Mpl. Corpn.

Annexure-II

Technical Specification of Backhoe Loader

Technical Specification of Backhoe Loader

1. ENGINE

(a) BS IV CEV Engine Norms
(b) 4-cylinder diesel engine, liquid cooled.
(c) Displacement : Min. 3800-3900 cc
(d) Gross Power : Min. 74.0 HP @2200 rpm
(e) Torque :Min. 300 Nm @ 1300-1400 rpm

2. STEERING

(a) Front Wheel Steering with dedicated Steering Pump (Gear pump; Min. 30 lpm @ 2000-2200 rpm)
(b) Steering Wheels : Front
(c) Front Steer Axle of Oscillation : Approx. 20°

3. TRANSMISSION

(a) 4 Speed (4 Forward and 4 Reverse)
(b) 2 Wheel Drive
(c) Synchro Shuttle Transmission
(d) Torque Converter Stall Ratio : Approx. 2.64:1

4. HYDRAULIC SYSTEM

a) Hydraulic System Capacity : 140 litre
b) Pump : Piston Type, Axial
c) Pump Capacity : Min. 110 lpm
d) System Pressure : Min. 220 bar

5. TURNING CIRCLE

a) External turning radius over tyres (Unbraked/braked) :Approx.4300mm/3300 mm
b) External turning radius over tyres (Unbraked/braked) : Approx. 5750 mm/5000 mm
c)

6. AXLES

a) Front Axle-Steer axle, Centrally Pivoted
b) Rigidly mounted rear axle with outbound planetary drives

7. BRAKES

a) Service Brake-Hydraulic wet multi disc, dual pedal braking
b) Parking Brake-Mechanical on rear axle

8. TRAVEL SPEED

a) $1^{st}/2^{nd}/3^{rd}/4^{th}$: Approx. 5.4/8.6/19.9/40 km/h

9. SERVICE REFILL CAPACITIES

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a) Engine Oil : Min.11litre
b) Hydraulic Tank : Min. 70 litre
c) Transmission Oil : Min. 16 Litre
d) Rear Axle Oil : Min. 14.5 Litre
e) Fuel Tank : Min. 120 Litre
f) Liquid Cooling Tank Volume : Min. 16Litre

10. ELECTRICALS

a) Battery 12 Volts/130Ah
b) Alternator-Output 90A

11. TYRES

a) Front : As per OEM with ICAT/ARAI/equivalent certification
b) Rear : As per OEM with ICAT/ARAI/equivalent certification

12. OVERALL MACHINE DIMENSIONS

a) Overall Length : Approx. 6000-7000 mm
b) Wheelbase : Approx. 2100 -2200 mm
c) Backhoe Swing Centre Distance : Approx. 1300 mm
d) Ground Clearance : Approx. 280-380 mm
e) Cab Height : Approx.2800-3000 mm
f) Machine Height in travel position : Approx. 3750-3800 mm
g) Machine Width : Approx. 2280-2330 mm
h) Overall Width with Bucket : Approx. 2350mm
i) Rear Wheel Track Width : Approx. 1725mm
j) Front Wheel Track Width : Approx. 1965mm
k) Operating Weight : Approx. 7000-8000 kg

13. BACKHOE PERFORMANCE

a) Backhoe Bucket Capacity : Approx. 0.27m^3
b) Width : Approx. 880mm
c) Bucket Tear out Force : Approx. 6000 Kgf
d) Dipper Tear out Force : Approx. 3000 Kgf
e) Lift Capacity of Bucket Pivot at full reach (no bucket fitted) : Approx. 1600 kg
f) Bucket Rotation Angle : Approx. 190-200°

14. LOADER PERFORMANCE

a) Loader Bucket Capacity : Min. 1m^3
b) Width : Approx. 2235mm
c) Lift Capacity at Maximum Height : Approx. 4000 Kg
d) Payload : Approx. 2000kg
e) Shovel Breakout Force : Approx. 6000 Kgf
f) Loader Arm Breakout Force : Approx. 6000 Kgf
g) Maximum Hinge Pin Height : Approx. 3500 mm
h) Bucket Roll Back Angle at Maximum Hinge Pin Height : Approx. 60°
i) Maximum Bucket Rollback at Ground Level : Approx. 45°

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ANNEXURE-A

TECHNICAL SPECIFICATION OF COVERED HYDRAULIC TRACTOR TRAILER	
Function	Secondary collection of waste
Number of Wheel	2(two)
Capacity	3 Cubic meter (Approx.)
Size	2750mm*1500mm*600mm+450 mm
Upper Chassis	Fabricated from 100 mm*50mm*6mm M.S Channel With cross member of the same section
Chassis	Fabricated from 100mm*50mm*6mm M.S channel with cross member of the same section & 50 mm* 50mm* 6 mm M.S angle.
Drawbar	A triangular type drawbar made from 10 mm* 50mm *6 mm M.S Channel with spring with Spring loaded "I" hook of 36 mm dia. M.S Round.
Parking stand	A Screw Jack type Parking stand fabricated from 50 mm dia. M.S Round with Base plate of 25 mm thick 100 mm Square.
Sides & Top Structure	Sides & Top Structure fabricated from 75 mm* 40mm *6 mm M.S channel, 40mm*40mm*6mm* M.S angle
For Biodegradable & Non-Biodegradable Waste	The Structure provided with a tilting type partition when hydraulically lifting at 900 mm back side with hinged arrangement to be fabricated from 40mm* 40mm* 6mm M.S angle with 2.5 mm CRC sheet.
Leachate	A Drain plug/ hole would be provided to drain the leachate or for cleaning along with collection reservoir.
Side Dala	Each side 2(Two) Nos unloading Dala fabricated from 35 mm* 35mm *5mm M.S angle with cross member of the same section.
Top Dala	Each side provided with 2 Nos loading Dala fabricated from 30 mm* 30mm* 5 mm M.S angle with cross member of the same section.

Platform sheet	Platform to be covered with 5 mm C.R C sheet with standard length
Sides & top Sheet	Sides to be covered with 2.5 mm thick CRC sheet & Top with 2 mm thick.
Cylinder	125mm. Dia* 1050mm. height Telescopic type hydraulic cylinder with hydraulic pipe for joint with the tractor with necessary accessories
Axle	1 (One) No. 65 mm Square M.S axle with Heavy duty C.I hubs & tapper roller bearing size 30209 (SKF)
Spring	2 (Two) set 65 mm* 11mm *12 leaves Laminated leaf spring with U Clamp U Bolt & Shackle plate.
Tyre, Tube, Rim	2 (Two) Nos New 750-16(16 ply) Nylon (CEAT/MRF/BIRLA/JK) tyre & Tube with heavy duty Five-hole rim.
Paint	The T. T Container shall be spray painted with two coat of superior quality anti-corrosive primer & two coats of enamel paint of reputed make.
Colour	Blue for Non-Biodegradable Waste & Green for Biodegradable Waste.
Materials	The material for the container would be steel conforming to IS 2062. Top door hinges, tail gate hinges, top flap support, Top bottom frame supports, angles, channels, tee, anchor pins, locking arrangement of tailgate should be heavy duty of rugged steel.
Messages	ULB logo and name of the ULB should be painted on each container along with messages as specified. Green Colour- "Compostable waste" in Bengali blue colour- "Non Compostable waste" in Bengali language.

TECHNICAL SPECIFICATION	SUCTION CUM JETTING MACHINE (9KL)

Vehicle	**16 TON GVW BSVI [150 hp and 420 Nm (approx.)]**	
Application	High pressure Jetting	Jetting machine is capable of de- choking and desilting civil/industrial drains and sewer lines by using principal of hydrodynamic cleaning by injecting high pressure water into the lines through a suitably dimensioned sewer Jetting hose and special cleaning nozzles.
Application	Sludge Suction	The Suction machine is useful to clean sewer line, cesspit, cesspool etc. by siphoning out of mud, slurry and other material. Aspiration of the effluent from sewer and drain water lines and chambers will be carried out on the principal of generating high vacuum in the sludge tank compartment form shiphoning out effluent,liquids,sludge and other materials.
	Sludge stirring	The unit is provided with sludge stirring arrangement by which solid silt accumulated in sewer line is stirred and converted into liquid /semi liquid form by high velocity air.
	Sludge blowback	The unit is also provided with blow back system in which only water content of the sludge tank is discharged by pressurizing the tank so that the carrying only the sludge / material waste without transporting the unwanted water portion.
Sludge Tank	Capacity (liters)	4000
Water Tank	Capacity (liters)	5000
Total	Capacity (liters)	9000
Construction	Thickness (mm)	8 mm Side Wall, 6 mm Disc
	Material	Mild steel (IS:2062)
	Shape	Cylindrical
	Baffle	Welded inside the Tank
	Manhole	Single Manhole At top of Tank
	Ladder	Fitted to Climb on top of the Tank
	Lifting Hook	For Lifting the Tank

	Side Railing	Fitted Both Side of the Tank
	Discharge Valve	Ball Valve
	Suction Valve	Ball Valve
	Welding	Arc/Mig Welding
	Paint	Epoxy Primer inside the Tank
	Rear Door Sealing	U Shape Heavy Duty Rubber Gasket
	Door Locking	Manual Screw Type Locking
Drive	For jetting pump	PZB/VAS/Equivalent make Full torque Split shaft PTO fitted between vehicle gearbox and differential
Jetting Pump	make	**Imported** Pratissoli/Equivalent
	Type	Triplex Plunger Pump
	Flow	260 Lpm
	Pressure	150 Bar
Jetting Hose	make	Polyhose/Equivalent
	Dia	25mm
	Length	60 Mtrs
	Material	thermoplastic
	Working Pressure	170 Bar Min
	Bursting Pressure	400 Bar Min.
	Drive	Manual Winding-Unwinding
	Rotary Joint	Stainless Steel
Hose Reel	Type	Fixed on Pedestal Bearing
	Drive	Hydraulic Winding-Unwinding
	Transmission	Through Chain Drive
	Rotary Joint	Stainless Steel
	Chain Adjustment	Provided
Lateral Cleaning System		
Hand Gun	make	Imported Italian make
	Type	Lance Type With Adjustable Nozzle Spray
	Pressure Rating	250 Bar
Unloader Valve	make	Imported Italian make
Washing Hose	Dia	6mm
	Length	10Mtrs
Suction Filter	Make	Imported Italian make
	Type	Y Type
Nozzle	Type	Conical Head Front and Rear Hole
		Round Head Front and Rear Hole

Controls	Panel	3 way valve for Jetting hose
		3 way valve for washing hose
		Pressure gauge
		Hose reel rotation control lever
Safety	Accessories	Water Level Alarm
		Water Level Gauge
		Suction Filter
		Pressure Gauge
		Imported make 3 Way Valve
		Pressure Relief Valve
Suction Machine		
Vacuum Pump	make	Jurop /Equivalent
	Type	Sliding Vane Pump
	Flow	540 cum/hr
	Pressure	1.5 Bar Absolute
	Max Vacuum	92%
	Cooling	Air Cooled
Primary Shut Off	Use	To Protect the Pump From Sludge And Foreign Particles Entering Due To Overflow From the Tank.
	Type	Ball Float Type
	Fitting	Inside the tank
	Float Ball	Rubber/Stainless Steel
Secondary Shut Off	Use	To Protect the Pump From Sludge And Foreign Particles Entering Due To Overflow From the Tank.
	Type	Ball Float Type
	Fitting	Fitted After Primary Shut Off
	Float Ball	Rubber/Stainless Steel
Suction Strainer	Use	To Protect the Pump From Entering Solid And Semi Solid Particles.
	Type	Basket Type With Stainless Steel Mesh
	Fitting	Fitted in Pump Suction Line After Secondary Shut Off
Exhaust Silencer	Use	To Dempens the Air Flow,Thus Reducing the Operational Noise Level.
	Fitting	Fitted in Pump Exhaust Line
Suction Hose	Make	Dutron/Equivalent
	Type	Heavy Duty Pvc Hose
	Dia	100mm
	Length	15 Mtrs
Suction Valve	Type	Ball Valve
	Size	100mm
Discharge Valve	Type	Ball Valve
	Size	100mm
Hydraulic system	Tank Tipping	Hydraulic-Front Mounted Cylinder
	Rear Door	Hydraulic Openable Type

Hydraulic system	Hose reel	Hydraulic winding-unwinding
	Hydraulic pump	Dowty/equivalent gear pump
	Control valve	Walvoil/equivalent make DC valve
	Hydromotor	M+S/equivalent make gear motor
	Oil tank	Fitted with accessories like Suction strainer,return line filter,oil level gauge etc
Accessories	Sludge Level indicator	Acrylic Tube Type
	Compound Gauge	100mm Dial
	Quick Coupler	Imported Italian make
	Pressure Relief Valve	Imported Italian make
	Vacuum Relief Valve	Imported Italian make
Paint	Primer	Two Coat of Epoxy Primer
	Finish	Two Coat of Pu/Synthetic Paint

SPECIFICATIONS OF WATER PUMP IN ADDITION WITH THE JETTING CUM SUCTION MACHINE

Engine

Fuel Type	Petrol
Displacement(cc):	Min 79.7
Rated Power kW(PS)/rpm	Min. 1.5 kW/3600 RPM
Type	Air Cooled 4 stroke, O.H.V., Petrol Engine

Pump Parameters

Size (mm)	Min 38 * 38
Min. Head (Meters)	16
Min. Discharged (Ltr/Min)	160
Type	Self Priming Pump

Recommended

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SPECIFICATION OF TRUCK MOUNTED COMBINATION MACHINE
JETSUC® 8000 Lts. (Sewage 3500 lts. – Water 4500 lts.)

GENERAL :-

The vehicle mounted combined unit for jetting/suction shall be able to create vacuum required for siphoning of mud, slurry, grit and other materials from sanitary, storm and combined sewerage system and high velocity jetting to remove and dislodge obstructions, soluble grease, grit and other materials from sanitary storm and combined sewerage system. The unit shall be especially being required to clean out the non-man entry drain and deep wet wells of sewage pumping stations.

The unit shall be multi-purpose vehicle designed to collect sludge & sewage from catchpits. It shall also be used for flushing the silted storm water drain lines.

The vehicle mounted combined unit having suction lift of at least 8 m. The unit shall consist of:

(a) Drive System

(b) Tank

(c) High Pressure jetting pump

(d) Vacuum Pump (Exhauster/Compressor)

(e) Suction Hose

(f) Hose Reel Drum

(g) Sewer Hose

(h) Lateral cleaning system. (Including handgun arrangement)

(i) Hydraulic Plant.

(j) Piping

(k) Control Panel.

(l) Accessories.

(m) Vehicle chassis with cabin & PTO

(n) Chasis - 16 T GVW
(o) Engine : Min. 150 HP
(p) Torque : Approx. 400 Nm
(q) Tank Materials - IS 2062
(r) Nozzle Material - SS316

The above equipment shall be mounted on 16 ton GVW Cab Chassis with side PTO manufactured by TATA / ASHOK Leyland / Eicher.

a) PRIME MOVER:-

The jetting unit (jetting pump, vacuum pump, hydraulic pump etc.) shall be run on the power transmitted from vehicle engine through split shaft P.T.O. (Power Take Off Unit). The P.T.O shall be of sturdy design of reputed make (PZB, SEW,) and should be able to provide sufficient power to run the system.

P.T.O. SPECIFICATIONS: (Power Take-Off Unit):-

The P.T.O. Unit shall be split shaft horizontal type, fitted with Nickel Chrome Alloy Steel Gears on Heavy Duty Ball Roller bearings in accurately machined housing. The unit shall be designed for horizontal drive. The RPM and direction of rotation of output shaft shall be the same as that of the input shaft. Foot mounting arrangement shall be provided for mounting the P.T.O. Unit.

Shift mechanism with (a) Vehicle Drive (b) Neutral and (c) Pump Drive shall be provided and the same can be operated from inside the cab. The P.T.O. Unit shall be capable of transmitting adequate torque generated by the engine.

b) TANK:-

The twin tank shall have a capacity of at least 8000 litres (3500 lts-sewage & 4500 lts for water). The tank shall be mounted on the chassis. The tank shall be fabricated from corrosion and abrasion resistant welded steel having minimum thickness of 6 mm and it shall have provision to take care of any surges that might occur in the tank. The inside of the tank shall be coated with anti-corrosive paint.

The tank shall be welded with torispherical dished ends at the front and the rear. The vacuum compartment shall be provided with hydraulically operated rear door opening facility. The tank shall be mounted on hinge supports for tilting about the rear end, while the front end shall have rest pads for seating on the chassis of the vehicle in the horizontal position.

The tank shall be provided with emptying rear cover at the rear, which shall be opened and closed on hinges. The locking of the rear cover shall be effected by robust hand wheels. The rear cover shall be free from any mounting except,:

- Suction cum Drain off valve Ø 4" for suction & discharge of all the sucked material from the tank. This shall be located at the bottom of the door.
- Drain off valve Ø 2" for only water separated in the sludge suction which is located above the upper half of the door.

The tank shall be provided with tipping arrangement. The tipping angle shall be minimum 20^0 to the horizontal and shall be effected using hydraulic system (hydraulic plant).

The water and sludge tanks shall be provided with sight glasses so that the levels of water and sludge in the respective tanks may be seen. The sight glass of the sludge tank shall not be tube type but shall be of 100 mm wide acrylic sight glass. Both the tanks shall be fitted proper fittings and valves like hydrant hose connection for water tank filling, drain valves off, jetting pump suction - shut off, valve, etc.

The tank shall be provided with manhole at the water compartment for attending to the maintenance operations/repainting of the tank. The tank shall be provided with suitable suction line strainer and filler hose connection. The tank shall be finished with two coats paint of suitable enamel paint with primer on the outside. The entire tank shall be fabricated and finished to the best of quality standards and as per the standard engineering practice.

c) HIGH PRESSURE JETTING PUMP:-

The high pressure triplex jetting pump of imported make and shall be a fully variable unit with a heavy duty, positive displacement, reciprocating plunger and having a discharge capacity of 265 l.p.m.. 160 bar pressure to perform the jetting function with a high degree of efficiency and reliability.

The pump shall be of Pratisolli, Italy, Myers, USA, Woma, Germany reputed imported make with proven performance.

The pump shall be suitably located on the chassis with provision for stopping the jetting pump without stopping the prime mover.

The pump shall be equipped with pressure relief valve for protection and life extension of jetting pump

d) VACUUM PUMP:-

A rotary positive displacement type air cooled vacuum pump (Battioni, Italy, Jurop, Italy, Moro, Italy) having displacement capacity of minimum 540 cubic metre/hr at about 1400-1500 r.p.m. and capable of producing 630 mm of Hg. Vacuum and 1.5 bar max discharge pressure shall be provided. Basically, the vacuum pump shall be designed to create vacuum, as well as work as air compressor for blow back during discharge. The vacuum pump shall be capable to produce 95% vacuum in the tank. The pump shall be driven through Power Take-Off unit.

The vane blades for the vacuum pump shall be of heat / spark resistant material to avoid overheating in tropical conditions. The vacuum pump shall be designed for 30 min. continuous running without interruption.

The vacuum pump shall be suitably located on the chassis with provision for stopping the vacuum pump without stopping the prime mover. A hand operated manifold Valve for switching from suction to pressure shall be provided at the discharge of the vacuum pump and the valve shall be suitably located for ease of operation. Corrosion resistant ball float valve shall be provided to prevent over-filling. A safety pot with lateral cleaning flap and outlet valve shall be provided.

The Vacuum Pump shall be equipped with overpressure relief valve for protection, cooling and life extension of vacuum pump.

e) SUCTION HOSE:-

5 Nos. of non-collapsible, flexible suction hoses of 100 mm. Internal dia. and 3 mts in length shall be provided with the unit. Quick-fix “Muller” design coupling (male-female) shall be provide for these hoses. One end of one of the suction hose shall be 100 mm internal dia and 2 mts. long hose with 1 mtr. long steel pipe at one end and quick fix coupling (female part) at the other end shall be provided with each unit.

f) HOSE REEL DRUM:-

The hose reel drum shall be of sturdy design and shall be designed to take a minimum of 120 mts. of 25mm internal diameter high pressure jetting hose.

The hose reel drum shall be driven through a hydraulic motor preferably of Eaton, Parker, Danfoss make to effect the wind and unwind operations.

The hydraulic motor shall be designed for withdrawing the hose at its full length inside the sewer lines against the friction and jetting reaction forces. A manual cranking facility shall be provided.

The high pressure water supply to the jetting hose shall be given through a special rotary swivel arrangement provided at the hose reel drum end.

g) SEWER HOSE:

DESIGN:-

Subject hose shall be of 25 mm ID of 120 m length and designed in such a manner so as to facilitate replacement on a powered hose reel without interfering with the original manufacturer’s intended minimum bend radius.

CONSTRUCTION:-

Subject hose shall be constructed to the following exact specifications. Exception to the following

will render alternate hoses not acceptable. The hose shall be Trelleborg, Sweden / Piranha, USA or Parker, USA.

INNER CORE:-

Inner core shall be constructed of a special water and grease resistant Styrene-Butadiene Rubber Polymers (SBR) / Polyolefin thermoplastic material.

REINFORCING MATERIAL:-

Special synthetic textile braided.

COVER:-

A smooth Styrene-Butadiene Rubber Polymers (SBR) / Natural Rubber. (NR) / Polyether-urathene of 1.3 – 1.4 mm thick cover shall be provided.

MINIMUM BEND RADIUS:-

110 - 150 mm approx.

STRENGTH OF HOSE:-

TENSILE STRENGTH:-

Shall be around 45 KN.

FITTING PULL OFF:-

Permanently attached fitting shall be a minimum of 35 KN.

PRESSURE RATINGS:-

BURST PRESSURE:-
Shall be minimum of 7500 psi (520 bar)

WORKING PRESSURE:-
Shall be minimum of 3000 psi (200 bar).

DIMENSIONS:-

Outside diameter for hose shall be minimum approximately:
37 mm for 25 mm inside dia. hose.

WEIGHT OF HOSE:-

Weight of subject hose shall be approximately for 100 mtr. length.

60 - 88 kg for 25 mm dia. hose.

TEMPERATURE LIMITS:-

-40^{o} C to 50^{o} C.

h) LATERAL CLEANING SYSTEM: -

The lateral cleaning hand gun, complete with 25 mtrs. long, 12.5 mm dia. hose and quick coupling connector shall be provided. The washing down shall be facilitated by two conveniently located

connection points. The water shall be made available from the water pump at a reduced pressure to ensure operator's safety.

This will be used for:-
(i) Cleaning the side gullys of the road.
(ii) Cleaning the manhole area inside and outside.
(iii) Servicing the vehicle chassis and unit. Besides, this system has various other uses.
(iv) Fire fighting, general purpose cleaning and maintenance.
(v) Street cleaning maintenance.

This system will not only enhance the machine's capability but also increase the efficiency of sewer cleaning process.

i) HYDRAULIC PLANT:-

A Hydraulic Pump shall be of Dowty make and capable of developing a pressure of about 120 -150 bar approx, powered by P.T.O. The entire hydraulic plant will consist of oil reservoir, pipeline with connected hoses, filter, control valve for operation of hydraulic function, etc. It shall be suitably laid along the entire length of the tank and cabin thereby avoiding additional space for the plant.

j) PIPING:-

All piping subjected to high pressure shall be fabricated from extra strong pipes and all fittings shall be forged steel. All pipings shall be laid out such that they can drain by gravity or through suitable plugged openings to drain water, when purged with air.

k) CONTROL PANEL:-

A control panel shall be provided and located conveniently. All gauges, switches, acceleration lever, jetting/bypass valve lever, control panel lamp, Industrial Socket for flash lamp. (Including appropriate wiring) Low water alarm with indicator necessary for the operation of the unit shall be grouped in this control panel so that the operator can have complete control of the operation.

The following controls should be provided:

(i) Tank Tipping
(ii) Door Open / Close
(iii) Hose reel rotation
(iv) Jetting / Bypass valve lever
(v) Directional control valve lever
(vi) Acceleration lever
(vii) Compound Pressure gauge (for vacuum)
(viii) Pressure gauge (for jetting)
(ix) Control panel lamp
(x) Low Level Water Indicator
(xi) Industrial Socket for Flash Lamp
(xii) Toggle Switch for Socket
(xiii) Toggle Switch for Control Panel Lamp
(xiv) Toggle Switch for Low Water level alarm.

l) ACCESSORIES:-

The following accessories shall be supplied along with each unit.

i) Set of Nozzles.
   a) 25^0 Radial Nozzle (5 rear jets 1 forward) – 1 no.
   b) 35^0 Tangential Nozzle (6 rear jets) – 1 no.

ii) Al chequered plate special maintenance platform with railing between cabin and tank – 1 no.
iii) Al Chequered plate catwalk with ladder – 1 No.
iv) Foot switch with indicator and hooter for low water level.
v) Flash Lamp
vi) Reverse audio visual alarm.
vii) Mud guards – 2 Nos.
viii) Mud flaps – 4 Nos.
ix) Filter Hose – 10 mt.

m) VEHICLE CHASSIS:-

The complete equipment shall be mounted on a suitable chassis with standard day cabin and side PTO (Ashok Leyland / TATA / Eicher). The chassis should be provided with front and rear shock absorbers with five forward and one reverse constant mesh gear box, complete original front show with headlights, starter, dynamo with batteries and fuel tank.
The truck chassis shall have the following approximate specifications:

Wheel Base	4200 mm min
Overall length	7700 mm approx.
Max. Width	2400 mm approx.
Max. GVW	16200 Kgs

PAINTING:-

The entire unit shall be painted with two coats of superior quality anti-corrosive primer with two coats of approved quality paint.

SPECIFICATIONS OF WATER PUMP IN ADDITION WITH THE JETTING CUM SUCTION MACHINE

Engine

Fuel Type	Petrol
Displacement(cc):	Min 79.7
Rated Power kW(PS)/rpm	Min. 1.5 kW/3600 RPM
Type	Air Cooled 4 stroke, O.H.V., Petrol Engine

Pump Parameters

Size (mm)	Min 38 * 38
Min. Head (Meters)	16
Min. Discharged (Ltr/Min)	160
Type	Self Priming Pump

Recommended

Motor Vehicles In-Charge
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Motor Vehicle In-charge
Panihati Municipality

TECHNICAL SPECIFICATION	SUCTION CUM JETTING MACHINE (6KL)

Vehicle	**12 TON GVW BS VI [125 hp and 400 Nm (approx.)]**	
Application	High pressure Jetting	Jetting machine is capable of de- choking and desilting civil/industrial drains and sewer lines by using principal of hydrodynamic cleaning by injecting high pressure water into the lines through a suitably dimensioned sewer Jetting hose and special cleaning nozzles.
Application	Sludge Suction	The Suction machine is useful to clean sewer line, cesspit, cesspool etc. by siphoning out of mud, slurry and other material. Aspiration of the effluent from sewer and drain water lines and chambers will be carried out on the principal of generating high vacuum in the sludge tank compartment form shiphoning out effluent,liquids,sludge and other materials.
	Sludge stirring	The unit is provided with sludge stirring arrangement by which solid silt accumulated in sewer line is stirred and converted into liquid /semi liquid form by high velocity air.
	Sludge blowback	The unit is also provided with blow back system in which only water content of the sludge tank is discharged by pressurizing the tank so that the carrying only the sludge / material waste without transporting the unwanted water portion.
Sludge Tank	Capacity (liters)	**2500**
Water Tank	Capacity (liters)	**3500**
Total	Capacity (liters)	6000
Construction	Thickness (mm)	**Sidewall- 8mm, disc-6mm**
	Material	Mild steel (IS:2062)
	Shape	Cylindrical
	Baffle	Welded inside the Tank
	Manhole	Single Manhole At top of Tank
	Ladder	Fitted to Climb on top of the Tank
	Lifting Hook	For Lifting the Tank
	Side Railing	Fitted Both Side of the Tank

	Discharge Valve	Ball Valve
	Suction Valve	Ball Valve
	Welding	Arc/Mig Welding
	Paint	Epoxy Primer inside the Tank
	Rear Door Sealing	U Shape Heavy Duty Rubber Gasket
	Door Locking	Manual Screw Type Locking
Drive	For jetting pump	PZB/VAS/Equivalent make Full torque Split shaft PTO fitted between vehicle gearbox and differential
Jetting Pump	make	**Imported** Pratissoli/Equivalent
	Type	Triplex Plunger Pump
	Flow	137 Lpm
	Pressure	140 Bar
Jetting Hose	make	Polyhose/Equivalent
	Dia	19mm
	Length	60 Mtrs
	Material	thermoplastic
	Working Pressure	170 Bar Min
	Bursting Pressure	400 Bar Min.
	Drive	Manual Winding-Unwinding
	Rotary Joint	Stainless Steel
Hose Reel	Type	Fixed on Pedestal Bearing
	Drive	Hydraulic Winding-Unwinding
	Transmission	Through Chain Drive
	Rotary Joint	Stainless Steel
	Chain Adjustment	Provided
Lateral Cleaning System		
Hand Gun	make	Imported Italian make
	Type	Lance Type With Adjustable Nozzle Spray
	Pressure Rating	250 Bar
Unloader Valve	make	Imported Italian make
Washing Hose	Dia	6mm
	Length	10Mtrs
Suction Filter	Make	Imported Italian make
	Type	Y Type
Nozzle	Type	Conical Head Front and Rear Hole
		Round Head Front and Rear Hole
Controls	Panel	3 way valve for Jetting hose
		3 way valve for washing hose
		Pressure gauge

		Hose reel rotation control lever
Safety	Accessories	Water Level Alarm
		Water Level Gauge
		Suction Filter
		Pressure Gauge
		Imported make 3 Way Valve
		Pressure Relief Valve
Suction Machine		
Vacuum Pump	make	Jurop /Equivalent
	Type	Sliding Vane Pump
	Flow	390 cum/hr
	Pressure	1.5 Bar Absolute
	Max Vacuum	92%
	Cooling	Air Cooled
Primary Shut Off	Use	To Protect the Pump From Sludge And Foreign Particles Entering Due To Overflow From the Tank.
	Type	Ball Float Type
	Fitting	Inside the tank
	Float Ball	Rubber/Stainless Steel
Secondary Shut Off	Use	To Protect the Pump From Sludge And Foreign Particles Entering Due To Overflow From the Tank.
	Type	Ball Float Type
	Fitting	Fitted After Primary Shut Off
	Float Ball	Rubber/Stainless Steel
Suction Strainer	Use	To Protect the Pump From Entering Solid And Semi Solid Particles.
	Type	Basket Type With Stainless Steel Mesh
	Fitting	Fitted in Pump Suction Line After Secondary Shut Off
Exhaust Silencer	Use	To Dempens the Air Flow,Thus Reducing the Operational Noise Level.
	Fitting	Fitted in Pump Exhaust Line
Suction Hose	make	Dutron/Equivalent
	Type	Heavy Duty Pvc Hose
	Dia	75mm
	Length	15 Mtrs
Suction Valve	Type	Ball Valve
	Size	75mm
Discharge	Type	Ball Valve
	Size	75mm
Hydraulic system	Tank Tipping	Hydraulic-Front Mounted Cylinder
	Rear Door	Hydraulic Openable Type
Hydraulic system	Hose reel	Hydraulic winding-unwinding
	Hydraulic pump	Dowty/equivalent gear pump
	Control valve	Walvoil/equivalent make DC valve

	Hydromotor	M+S/equivalent make gear motor
	Oil tank	Fitted with accessories like Suction strainer,return line filter,oil level gauge etc
Accessories	Sludge Level indicator	Acrylic Tube Type
	Compound Gauge	100mm Dial
	Quick Coupler	Imported Italian make
	Pressure Relief Valve	Imported Italian make
	Vacuum Relief Valve	Imported Italian make
Paint	Primer	Two Coat of Epoxy Primer
	Finish	Two Coat of Pu/Synthetic Paint

SPECIFICATIONS OF WATER PUMP IN ADDITION WITH THE JETTING CUM SUCTION MACHINE

Engine

Fuel Type	Petrol
Displacement(cc):	Min 79.7
Rated Power kW(PS)/rpm	Min. 1.5 kW/3600 RPM
Type	Air Cooled 4 stroke, O.H.V., Petrol Engine

Pump Parameters

Size (mm)	Min 38 * 38
Min. Head (Meters)	16
Min. Discharged (Ltr/Min)	160
Type	Self Priming Pump

Recommended

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Technical Specification of Hearse Van

Specifications Name	Bid Requirement (Allowed Values)
A. Vehicle Technical Specification:	
1. Type of Fuel	Diesel
2. Vehicle Emission Compliance	BS-VI
3. Air Conditioning	Only rear Mortuary Compartment
4. Engine BHP @ rpm (HP @ rpm)	Minimum 50 BHP
5. No. of Cylinder in Engine	Minimum 3
6. No. of Doors	3
7. Ground Clearance	Minimum 160 mm
8. Wheelbase	Minimum 2250 mm or compatible.
9.Vehicle Transmission System	Automatic (PTO)
10. No. of Forward Gears	Minimum 5
11. Type of Steering	Power Steering
12. Breaking System	
a. Front Vehicle Brake	Disc Brake/ Drum Brake
b. Rear Vehicle Brake	Disc Brake/ Drum Brake
13. Length	Minimum 3000 mm
14. Width	Minimum 1300 mm
15. Height	Minimum 1600 mm
16. Cabin Seating capacity	2 including Driver
17. Fuel Tank Capacity	Minimum 30 litre
18. Type of Tyre	Radial
19. Warranty	2 years or 3 lakh KM (whichever is earlier)
20. No of Free Service of vehicle during warranty	3 times in a year
B. Construction of Hearse Van Body (One Body) with A.C:	
1. Structure	The Structure of the Dead Body Carrier will be constructed with 1-1/2"×1-1/2"×16g M. S. Square Pipe & covered with Stainless Steel Sheet. It will have glasses (6mm) with Aluminum Channels on all sides
2. Paneling	Outside Panelling of the Dead Body Carriers will be made with 18g rust-proof G. I. Sheet & covered with Stainless Steel Sheet
3. Floor	The Hearse Cabin Floor will be covered with Aluminum Chequered Plate & outside Cover with Stainless Steel Sheet
4. Door	The Hearse Cabin Door will be covered with Stainless Steel Sheet
5. Strecher	It will have a Strecher made by Steel Pipe & Stainless Steel Sheet
6. Extra fittings	The Hearse Van will be decorated with 2nos. Flower Stand in each side & 2nos. Dhoop Stand on both side

	of the body. There will be Stainless Steel Pipe Grill Stand on both side of the Dead Carrier
7. A. C. fittings	Supply & Fittings A. C. Inside the Hearse Cabin
8. Electrical fittings	Inside the Dead Body Cabin one no. Tube Light. It will be provided one no. Revolving Light and One no Hooter

Proposed only

Motor Vehicle In-charge
Panihati Municipality

Motor Vehicles In-Charge
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