**Minutes of the 55th Meeting of State Level Task Force on Solid Waste Management for discussion on several issues of solid waste management**

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| In the Chair : | Director, SUDA |
| Meeting Date : | 12th September, 2023 |
| Meeting Venue : | SUDA Conference Hall (2nd Floor) |
| Meeting Time : | 3.00 PM |
| Meeting Attendees : | |

- List of Members and participants : Annexed

Director, SUDA chaired the meeting.

At the outset, he welcomed all the members present and explained the discussion points of the meeting. After threadbare discussion the following decisions were arrived at:

1. The Committee noted that the pre final Survey Report of the project 'Inventorization of Plastic Product Manufacturers, Recyclers, Users and Collectors in all districts of North Bengal' submitted by Jalpaguri Government Engineering College (JGEC) was based on secondary data regarding dry/plastic waste generation at source collected from the ULB and several manuals, reports etc. and no data has been collected from primary source i.e. field level data.

   The committee recommended conveying Jalpaguri Government Engineering College (JGEC) to take following actions for finalizing the report:

   - ✓ Primary data should be collected from point of generation of plastic waste on a sample basis from all categories of plastic generators like households, commercial establishments, bulk waste generators etc. and also from the dumpsite. Analyze both the data to obtain the salvaging quality of plastic waste. Professor Arunava Majumder explained the sampling process to the team of JGEC. This quantitative analysis (plastic audit) should be done in at least one district town of each districts of the North Bengal.
   - ✓ Providing the complete list of registered and unregistered plastic recycling industries of each District.

2. The committee recommended to constitute a Technical Sub-Committee for SWM Vehicle Procurement under SLTF comprising of the following members:
   - ✓ Sri Amitava Das, WBCS (Exe), Deputy Director, SUDA- Chairman
   - ✓ Sri Dipak Naskar, Superintendent Engineer-Member Convenor
   - ✓ Sri Chandan Das, Executive Engineer, SUDA
   - ✓ Mahasin SK, Executive Engineer (Mechanical), SWM Department, Kolkata MC
   - ✓ Sri Santanu Kundu, Vehicle In-charge, Panihati Municipality
   - ✓ Sri Amiya Kr. Mitra, Vehicle In-charge, Bally Municipality
   - ✓ Sri Chironjit Debnath, Vehicle In-charge, Bhatpara Municipality
- ✓ Sri Kuntal Mahato, SUDA

The Sub- Committee will examine the requirement of SWM/LWM vehicles in the ULBs, finalize its specification and submit the same before SLTF for concurrence.

3. The Technical Sub-Committee for vehicle will prepare the following documents with support of Prof. Arunava Majumder, SWM Expert of SLTF:
   - ✓ Estimate the requirement of Cesspool for each ULB.
   - ✓ Prepare an advisory for use of Cesspool by the ULB.
   - ✓ Estimate the requirement of vehicles/ machine for drainage cleaning /desiltation according to dimension of roads for each ULB.
   - ✓ Estimate the requirement of Road Sweeping Vehicles/ Machines for each ULB.
   - ✓ At the time of procurement of above mentioned vehicles/ machines, 5 years O&M should be considered.
4. M/s Kulkarni Power Tools Pvt. Ltd., who have supplied 1600 BOT to KMC, was requested to submit the specification of BOT and its fabrication to SUDA. The committee directed the Technical Sub-Committee for vehicle to examine the specification, customize the same and suggest the ULB wise requirement of such vehicle.
5. The committee approved the technical specifications of following vehicles enclosed at **Annexure-I :**
   - ✓ 500 ltr capacity Cesspool Emptier
   - ✓ 4000 ltr capacity Cesspool Emptier
   - ✓ 6 cum capacity Road Sweeping Machine
   - ✓ 8 cum Movable Compactor (Bin Lifting)
   - ✓ Manhole desilting Machine
   - ✓ Mechanical medium size gully-pit emptier machine
   - ✓ 7 CUM RCV with bin lifter
   - ✓ 8 CUM RCV with bin lifter
6. The committee recommended to provide one Mobile/ Portable microphone to each Nirmal Sathi of the ULBs for awareness generation of citizens on SWM activities and also recommended the following specification of the Mobile/Portable Microphone:
   - Product Dimensions: 7.6 x 17.4 x 25.8 cm; 470 Grams
   - Batteries: 1 Product specific batteries required, Lithium
   - Item Weight: 470 g
   - Elegant and compact ultra portable PA amplifier with max. output power of 12W; Ideal for: Teaching, Tour Guides, Yoga Classes, Play Schools etc
   - Built-in MP3 digital player for playback of music through a USB drive or a TF card; The unit can be used while hanging on the shoulder or by putting around the neck.
   - 3.5mm Mic input socket for connecting the headband microphone and 3.5mm Line input socket for connecting a DVD CD or an MP3 player.
   - Apart from the headband mic provided, the mic input socket can also accept input from Condenser Microphones CTP-10DX UTP-30 (used without their cell compartment).
   - Special circuitry provides low distortion even at high output power. Built-in high capacity rechargeable lithium-ion battery. Low battery LED indicator;

convenience of use. The unit can be used while hanging on the shoulder or by putting around the neck.

ULBs may be instructed to procure the same from the fund to be provided to them from IEC component of SBM (U).

7. The committee recommended to procure Safety Kits and Uniform for all categories of SWM workers including Nirmal Sathis, Nirmal Bandhus (conservancy workers), drain cleaners, road sweeper, rag pickers/ informal SWM/ LWM workers etc.

8. The committee noted that a writ petition has been filled for providing social security and safety to informal SWM workers and rag pickers. For this, SUDA is collecting the data base of rag pickers of each ULB. Now, the committee recommended to start health check up camp initially for these workers in each ULB and gradually start the other activities phase wise.

9. The committee noted that MED has submitted the feasibility report on the land of Bankura for setting up of Waste to Energy Plant and recommended to take the land of Ranibandh Block for setting up of Waste to energy plant as detailed below:
   - ✓ Mouza - Dhadanga
   - ✓ Plot No: 15/481
   - ✓ Area of Land : 9.06 Acre
   - ✓ Remarks : As per site visit it is found that Kangsabati River is passing beside the identified land for Waste to Energy project. But the site should be 100 mtr. away from river as per Schedule -I(A)( VII) of S.W.M Rule -2016. This site can be feasible after maintaining the above mentioned gap between the River and Waste to Energy plant site.

10. The committee has accorded post facto approval of floating the e-tenders for 17 Integrated Solid Waste Processing projects (both comprehensive fresh waste and excess quantity legacy waste) viz. "Selection of Concessionaire for biomining of legacy waste with reclamation of land of dumpsite(s) utilising scientific method and parallel establishment of Permanent Integrated Municipal Solid Waste Processing Plant(s), along with its operation and complete maintenance for a period of 15 (fifteen) years from the Commercial Operation Date (COD), strictly complying the Solid Waste Management Rules, 2016, at different dumpsites in the State of West Bengal on Design, Build, Operate and Transfer (DBOT) basis", for ULBs.: (1) Bankura, (2) Bolpur, (3) Rampurhat, (4) Suri, (5) (i) Arambagh & (ii) Tarakeswar, (6) Chandernagore MC, (7) Hooghly-Chinsura, (8) Dhuliyan, (9) Domkol, (10) Santipur, (11) Barrackpore, (12) Bongaon, (13) Garulia, (14) Halisahar, (15) Khardah, (16) Madhyamgram and (17) Titagarh Municipality, vide Tender ID: 2023_KMDA_556082_1 to 2023_KMDA_556082_17 on 10.08.2023 at 6:45 pm.
    The committee recommended the following points for incorporation in the corrigendum to make the integrated tender documents more bidder friendly and competitive:
    - ✓ Startup company, recognized by DPIIT, Government of India and MSME may be considered subject to approval of Finance Department, Government of West Bengal.
    - ✓ Waste assurance should be at least 50% and KMDA will provide infrastructure of capital cost up to 60% on pro-rata basis.
    - ✓ Contract should be for 15 (fifteen) years, from the Commercial Operation Date (COD), and total infrastructure should be constructed within 2 years (maxm.)

11. In continuation to above point, the committee recommended that all the tenders to be floated for setting up fresh waste processing plant should have
    - ✓ A contract period of at least = 2 yrs. for development of infrastructure + 1 month for trial run, up to achieving of COD + 15 years for Operation and Maintenance from COD.
    - ✓ To keep the provision of providing 60% of capital expenditure, as Capital Grant, to the agency by SUDA/KMDA.
    - ✓ JV, as per procurement guideline, Government of India, shall be allowed. JV must be registered and should open a separate joint bank account where payment will be made from either KMDA or SUDA.
    - ✓ Agencies having history of litigation shall not be eligible to qualify for bidding.
    - ✓ If liquidated damage amounting to 70% or more of LD amount has been imposed by any Govt. Organisation to the agency, shall not be eligible for qualify in the bidding.
12. The committee directed the Finance Officer of SUDA to prepare a comparative statement on JV & SPV and place the same before the committee in next meeting.
13. The committee noted that in Promodnagar tender for fresh waste processing, it was mentioned that payment on 70% assured quantity of fresh waste to be provided to the agency. Now, the committee recommended to place it before the SLTC and SHPC for endorsement.
14. The committee noted that several ULBs like Bongaon, Nabadwip, Coochbehar etc. expressed their interest to set the fresh waste processing plant by their own through SHG mode. Hence the committee recommended that if any ULB wants to set up their fresh waste processing plant by their own then it should be encouraged. The respective ULBs to make a presentation on their plan of action before SLTF.
15. The committee approved the design and drawing of the fresh waste processing plant of Alipurduar Municipality vetted and finalized by KMDA.
16. The committee approved the design and drawing of the fresh waste processing plant of Barasat Municipality vetted and finalized by MED.
17. The committee noted that separate land has been indentified both by Englishbazer and Old Malda Municipality for setting up of fresh waste processing plant. Hence, the committee recommended to drop the cluster project of these municipalities and prepare the stand alone project to float the tender.
18. The committee noted that to assess the excess quantity of legacy waste drone survey has been completed in Promodnagar. Hence, the committee recommended to float tender for excess quantity of legacy waste on output basis.
19. The committee recommended to float the tender for processing of excess quantity of legacy waste for 63 ULBs by KMDA/ SUDA after assessing the quantity through drone survey.

20. The Committee noted that:

The Chairman, Central Pollution Control Board, has issued a letter relating to Extended Producer Responsibility (EPR). EPR Guideline for plastic packaging had already been notified by MoEFCC vide 4th Amendment to Plastic Waste Management Rules (PWM) Rules dated February 16, 2023. As per guidelines, Producer, Importer & Brand owner (PIBOs) selling plastic packaging or commodities in plastic packaging are required to fulfil EPR liability corresponding to the quantity of plastic packaging sold by them. Plastic Waste Processors (PWPs) including recyclers, co-processors, waste-to-energy plants, and waste-to-oil plants, can generate EPR Certificates corresponding to the quantity of plastic waste processed by them. PIBOs are required to procure EPR Certificates from the PWPs to fulfil their EPR liability. All PIBOs /PWPs are required to register on the Centralized EPR Portal developed by CPCB. The EPR Portal has provision for the online generation of EPR Certificate by PWPs and their transfer to PIBOs. The PWPs can now generate revenue not only through selling their processed products but also through trading EPR Certificates with the PIBOs. The increase in profit margins due to the sale of EPR Certificate is expected to encourage the PWPs to process more & more Plastic Waste. As per the provision of EPR Guidelines, the Urban Local Bodies (ULBs) can procure EPR Certificates from PWPs in lieu of services/resources (plastic waste, Material Recovery Facilities (MRF) facilities, transportation facilities, etc.) provided to them and earn revenue through trading of these Certificates with the PIBOs. They may sell the plastic waste directly to the PWPs and earn revenue in the process. They can also set up their own PWPs and earn revenue through the generation and trading of EPR Certificate. The market dynamics of EPR can be observed in the study of Ghaziabad. The Chairman, CPCB also requested to encourage the ULBs to adopt an appropriate revenue generation model for effective plastic waste management.

West Bengal may replicate above model for ULBs where state is going to manage municipal solid waste through SHG led mode of operation in first phase. The modalities of which i) whether ULB sell the plastic waste directly to the PWPs and earn revenue in the process or ii) they can also set up their own PWPs and earn revenue through the generation and trading of EPR Certificate may be worked out mutually with the Urban Local Bodies.

There may be the following different scenarios :

i. The ULB after collection of dry waste, may do the processing itself by setting up a processing plant. For this, the ULB has to register itself as Plastic Waste Processor (PWP) in the CPCB portal.

ii. ULB after collection of dry waste may not process itself, but it can give the processing job to any agency. That agency will do the processing work and will share revenue with the ULB. In this case, the ULB has to ensure before the agreement with the agency, that the agency has registered in the CPCB portal as PWP.

The above two scenarios have a high potential for the ULBs who are doing it either by themselves or doing it through SHG mode. SUDA with the help of WBPCB, may hold an awareness-cum-training program on how to register as PWP in the CPCB portal.

Also there may be other scenarios also:

iii. The ULB after collection of dry waste, does some segregation and pre-processing and then the plastic is sold off to any plastic waste processor. In this case the ULB has to ensure that processor as PWP has registered itself in the CPCB portal.

iv. The ULB after collection of dry waste, does some segregation and pre-processing and then sells the plastic to any agency which function basically as mediator/aggregator and it, in turn, sells the plastic to a processor or other mediator/aggregator. This is the challenge for ULBs to ensure the end-to-end processing. Here ULB needs to collect PWP registration certificate from the final processor, at the same time collect challan from every intermediate mediator/aggregator.

v. For some ULBs, the tendering of fresh waste processing work has been done by State level authorities like SUDA or KMDA. The agency who got the tender, may follow similar actions similar to what has been mentioned at just like point i, ii, iii, & iv above. For them also a similar course of action has to be ensured by SUDA or KMDA or MED as the Nodal Agency.

There are certain clarifications that are required, WBPCB may be requested :

vi. Whether the ULB or any other agency who are either selling plastic or purchasing plastic or both, in bulk, need also to be registered in the CPCB portal or not. If yes, then all such organization including ULBs, agencies engaged by SUDA/KMDA and the mediators/aggregators, even if they are not processing, will have to register. In this matter Dr Tapas Gupta, Chief Technical Advisor, WBPCB informed the committee that for selling or purchasing plastic does not require PWP registration.

The Committee recommended that the training of ULBs for PWP registration in the CPCB portal will be conducted by SUDA with the help of WBPCB.

21. The committee noted that the domestic hazardous waste specially sanitary pads, diapers, anything connected to blood and body fluid needs to be collected separately from sources itself in a segregated manner, transportation of such and handing over of such to the Agencies assigned by Health Department needs to be concluded with regards to point of collection and rate for such disposal.

    The committee recommended to organize a meeting shortly with Health & Family Welfare Department and the agencies engaged by them for disposal of Bio-Medical Waste for disposal of domestic sanitary waste to be collected by the ULB.

22. The committee noted that Municipal Commissioner, KMC has requested the Principal Secretary, UD&MA Department to advise surrounding ULBs adjacent to KMC like Dum Dum, North Dum Dum , South Dum Dum, Howrah MC etc. to send their C&D waste to the 500 TPD C&D processing plant established by KMC at Patharghata, New Town providing a cost of Rs. 369/- per ton. A meeting was held with the surrounding ULBs in this regard on 14.08.2023, the decisions are placed below:
    - Modifications are to be made in Building Rules under the W.B Municipal Act. KMC will prepare a draft amendment of Building Rules. SUDA will move the file to the Law cell of the UD&MA Deptt for further action.
    - C&D waste within KMC must be carried through dedicated KMC vehicles. Vehicle tracking system to be developed for the vehicles carrying C&D waste.
    - KMC to explore the possibility to waive off the processing fees initially to encourage the ULBs to send C&D waste to Patharghata Plant.
    - An advisory to be issued for all government organizations like KMDA, MED, PWD, P&RD, Metro Rail, Railways, HRBC, WBHDCL for scientific collection and transportation of C&D waste to Patharghata plant.

    The committee recommended to collect the notification of CPWD regarding C&D waste disposal and using the same for Government Departments.
23. The committee recommended the following for establishing C&D waste plant in other NCAP Cities (except Kolkata MC)
    - Engagement of a Transaction Advisor to conduct a survey on quantum of daily C & D waste generation in and around the NCAP cities and preparation of DPR in terms of techno feasibility and techno commercial study to arrive processing fees.
    - Proposal will be sent to Department for making provisions of mandatory collection of C&D waste processing fee by making necessary amendment in the municipal building rules.
24. The committee recommended to submit the details of identified land for setting up of fresh waste processing plant at Tamralipta, Falakata and Mal Municipality to WBPCB for opinion/ observations.

With no other issue for discussion the meeting ended with vote of tanks to and from the chair.

**(Supriya Ghosal)**
**Director, SUDA**

(1) Annexure – I.

## TECHNICAL SPECIFICATION
## OF
## 500 LITRE CAPACITY CESSPOOL EMPTIER

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.

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

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|---|---|---|
| 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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HQ SWM-I/HQ.

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.

11/09/23
Asstt. Engr. (M)
SWM-II/HQ.

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

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-I/HQ.**

11/9/23

**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.**

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# 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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SWM-I/HQ.

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

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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.,

Asstt. Engr. (M)
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Ex. Engineer (SWM-II)
Kol. Mpl. Corpn.

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.

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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.

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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)
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Kol. Mpl. Corpn.

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

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

# 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 | : Minimum 1000 mm |
| 3. | Brush Material | : 4 Segment steel |
| 4. | Sweeping Width (mm) | : Minimum 3200-3300 mm with two brooms<br>Minimum 2600-2650 mm with one broom<br>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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**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<br>: Floor plate : Min 5 mm<br>: 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 mancuverability. Rear over hang shall be within the RTO norms.

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# 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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|---|---|---|
| 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° 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° 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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# 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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| | | | | | 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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| | | | | | | |
|---|---|---|---|---|---|---|
| | | 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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| | | | | | | |
|---|---|---|---|---|---|---|
| | | 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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