

Appendix 3: Project Development Specifications

The plant is proposed to have a capacity to process at least 90 MT per day of Municipal waste keeping in the view of future expansion need. The following are the minimum requirements of infrastructure for Transfer station Plant.

| No | Item | Minimum Requirement |
|---|---|------------------------------|
| | | (Dediyasan site Near WTP) |
| Part A - Summary of Infrastructure Requirement for 90 TPD Transfer station Plant | | |
| 1. | Construction of Shed Including Unloading section, loading section & Container traversing system for Roll on Roll off Container | 600.00 SQM |
| 2. | Construction work for Loading area and Static compactor | 300.00 SQM |
| 3. | Construction of Leachate Storage Tank | 100.00 CUM |
| 4. | Construction of Admin cum Weighbridge Operator Room | 68.25 SQM |
| 5. | Construction of Roads (3.5 m Wide) | 47.50 SQM |
| 6. | Construction of Roads (7.0 m Wide) | 50.00 RM |
| 7. | Construction of Compound Wall with Entrance Gate | 193.00 RM |
| 8. | Electrification work including inside wiring & Installation of Transfer station as per requirement | Transformer 250 Kva capacity |
| Part B - Summary of Machine/Equipment's Requirement for 90 TPD Transfer station Plant | | |
| 9. | Design, Construction, Fabrication, Supply, Erection of Plant, Machineries & Equipment's for- Static Compactor with Hopper | 2.00 Nos |
| 10. | Design, Construction, Fabrication, Supply, Erection of Plant, Machineries & Equipment's for- Container Traversing system for Roll-on-Roll -off Containers | 2.00 Nos |
| 11. | Design, Construction, Fabrication, Supply, Erection of Plant, Machineries & Equipment's for- Roll-on-Roll-off Containers (20 CuM Capacity) | 4.00 Nos |
| 12. | Procurement of- Hook Loader (Truck - Min 28 Ton Capacity) | 2.00 Nos |
| 13. | Construction and installation of Calibrated Weigh Bridge including Civil Works (60 to Capacity) | 1.00 Nos |

(i) **Minimum Specifications of Civil Work**

| No | Item | Minimum Specifications |
|----|--|---|
| | | (Dediyasan site Near WTP) |
| 1. | Construction of Shed Including Unloading section, loading section & Container traversing system for Roll on Roll off Container | The shed (7.5 m Eave height) should have Brick wall up to 2-3 m and M. S. sheets with suitably designed trusses, purlins, columns and RCC foundation. The Floor must be stable, durable and impervious and should be constructed with an appropriately designed combination of RCC and PCC. |
| 2. | Construction work for Loading area and Static compactor | Static compactor Foundation are design to carry vibration during Operation and strong enough with suitable RCC work. |
| 3. | Construction of Leachate Storage Tank | <p>The Developer shall, construct leachate collection tank(s) and provide a leachate collection network.</p> <p>i. ensures that the leachate from the Waste Transfer Facility is carried to the Leachate Collection Tank without any stagnation (except in storage/holding tanks)</p> <p>ii. The leachate so collected shall be treated to required standards as per pollution control board.</p> |
| 4. | Construction of Admin cum Weighbridge Operator Room | The Office Building shall be designed to house the main office, meeting hall and other support services. The building should be RCC framed structure with masonry wall. The building should be designed complying to all relevant Indian Standard codes and National Building Code. The building should be complete in all respect with all necessary fixtures for doors & windows, water supply and electrical installation and suitable finishing for flooring and walls. |
| 5. | Construction of Roads (3.5 m Wide) | <p>The Developer shall provide and maintain good quality motorable roads. There shall be 3.5 m. wide road & 7.0 m wide road with shoulder on either side with adequate drainage slop. The Specifications shall be used as per SOR of Govt. of Gujarat. Following are the minimum requirement for pavement:</p> <ul style="list-style-type: none">• Sand layer of required thickness overlaid by geotextile sheet (GSM 250)• Granular Sub Base (GSB) of designed thickness.• Wet Mix Macadam (WMM) layer of designed |
| 6. | Construction of Roads (7.0 m Wide) | |

| No | Item | Minimum Specifications |
|----|--|---|
| | | (Dediyasan site Near WTP) |
| | | <p>thickness.</p> <ul style="list-style-type: none"> • Dry Lean Concrete (DLC) layer in cement concrete of proportion 1:2:4 • Interlocking concrete paver blocks, having minimum thickness of 100mm and crushing strength not lesser than 45N/mm², laid over a layer of 45mm. thick uniformly graded river sand with a mechanical compactor. |
| 7. | Construction of Compound Wall with Entrance Gate | <p>The entire Boundary Wall with Gate surrounding the transfer station facility with 1 entrance gate. The Developer shall construct 2.5 m. high compound wall constructed in brick masonry over Un Coursed Rubble Masonry (UCR) duly plastered with cement mortar. On top of the compound wall, Concertina barbed razer tape coil of appropriate diameter, width and guage shall be provided. The total height of the compound wall with Concertina barbed razer tape coil shall not be less than 3.0m.</p> |
| 8. | Electrification work | <p>A HT or LT electric power connection has to be obtained from state electricity boards from the nearest substation.</p> <ul style="list-style-type: none"> - Power for processing machines- 35 KW - Power for other amenities-25 KW - Power Connection Required- 60 KW |

(ii) **Minimum Specifications of Machines and Equipment's**

Weigh bridge

An electronic weighbridge of adequate capacity is to be installed at the entrance to monitor the quantity of incoming and outgoing waste at the plant With All Civil work having capacity of more than 60 Ton.

Static Compactor with hydraulically operated Bin cart loading mechanism: -

The equipment is designed to receive garbage from Mini Tippers and compact the same into Roll on-Roll-off containers which are then picked up by Hook Loaders and transported to the processing plant. The salient features of this equipment are that this is provided with a hydraulically operated bin cart loading mechanism which receives the garbage from mini tippers and load the garbage into the charge box of the Static Compactor. The offered Static compactor consists of the following: -

- a) Static/ Stationary Compactor having a Charge Box Volume of 3 Cu.M. maximum and is fitted with 15 KW Electric Motor
- b) Charge Hopper
- c) Hydraulic Compaction Container Coupling
- d) Hydraulic Vertical Locking Mechanism
- e) Hydraulically operated Bin Cart loading mechanism
- f) Container Traversing/ Change Over System

The detail Technical Specification of Static Compactor unit is attached.

Container Traversing System: -

Each Stationary Compactor should be provided with a Rail Mounted Container Traversing System/ change over system. Each traversing system is designed to handle two number Roll-on Roll-off Containers and shall consist of two numbers electrically operated shuttle cars (transfer car) moving on Rails for placing empty containers and shifting loaded containers when detached from the static refuse compactor.

The Technical Specifications of the Container Traversing System is enclosed.

Hook Loaders: -

The hook loader suitable to be mounted on 28 T GVW Truck Chassis and is suitable for handling 20 Cum capacity container and is designed to pick-up the loaded Roll-on Roll-off container from the transfer station, transport, dumping the material by hydraulic tipping at the dumping ground and thereafter transport the empty container back to the transfer station and unload the same at the Transfer Station.

The Technical Specifications of the Hook Loaders is enclosed.

Roll-On Roll-Of Container: -

The closed type Roll-On Roll-Of containers of 20 Cu.M are compatible with Hook loader and the stationary compactor installed at transfer stations. The container has mechanical locking arrangement to lock them with the stationery compactor while loading the refuse and is provided with a discharge door for discharging the material at the dumping ground through hydraulic tipping by the Hook loader.

The Technical Specifications of the Roll-On Roll-Of Container is enclosed.

TECHNICAL SPECIFICATION OF STATIC REFUSE COMPACTOR WITH HYDRAULICALLY OPERATED BIN CART GARBAGE LOADING DEVICE

General: -

The offered System consists of Static Compactor suitable for receiving municipal Solid Waste from Waste Collection Vehicles into a hydraulically operated bin cart loading mechanism, compacting and loading into Roll-on-Roll off containers for further handling through Hook Loaders. The offered System Consists of the following: -

- Static Compactor with Hydraulic Compaction Container Coupling, Hydraulic Vertical Container Gate Opening/Closing Mechanism and a Hydraulic Push-Pull Cylinder.
- Hydraulically operated Bin Cart loading mechanism
- Container Traversing/Change Over System

as per the specification given below: -

Static Compactor

- Compactor in heavy duty design with extra strong sheet thickness with horizontally operating straight single cylinder system
- Hydraulic System comes with regenerative control for faster cycle time
- Fail safe hydraulic ram control without limit switches, press plate comes in low maintenance plastic guides
- Container 75% full warning as standard

- Extra pressure boost and automatically plate positioning for closure operation
- Control Panel with main switch, emergency stop button, function button and function lights
- All, hydraulic functions are controlled via a central, maintenance free valve Hydraulic Unit with oil filter and oil level gauge.

| | |
|-----------------------------------|------------------------------|
| • Charge box volume approx. | 3 m ³ |
| • Compaction cycle time | 42 sec |
| • Theoretical volumetric capacity | 257 m ³ /hr |
| • Normal compaction force | 330 kN |
| • Max compaction force | 380 kN |
| • Compaction Density | 0.75 – 0.8 T/ m ³ |
| • Motor Power | 15 kW |
| • Power Supply | 440 V |

Hydraulic Compaction Container Coupling

The Hydraulic Container Coupling consists of a pair of hydraulically operated Hook with lever which pulls, align and attaches the container to the compactor unit before loading the garbage into the container. After the container is loaded the Hydraulic Coupling releases the container which is detached from the compactor before lifting by the Hook Loader.

Hydraulic Vertical Container Gate Opening/Closing Mechanism

The Container opening is provided with a sliding steel gate. The Gate is lifted by a hydraulic vertical mechanism before loading the garbage into the container. After the container is loaded, the hydraulic vertical mechanism pushes the container sliding gate downward and closes the opening. The complete Operation is controlled by means of push buttons.

Hydraulic Push Pull Cylinder

A hydraulic Push-pull cylinder is provided for pulling the empty Roll-on-Roll off container towards the compactor unit and pushing it back after the container is full.

Hydraulically operated Bin Cart loading mechanism

Each compactor unit is provided with mild steel Bin Cart having a garbage holding capacity of 3.5 Cum and is designed to receive garbage from Mini Tippers and load into the receiving hopper of the static compactor. The Bin cart loading device can be Rear loading, left or right-hand loading as may be decided during finalization of Order.

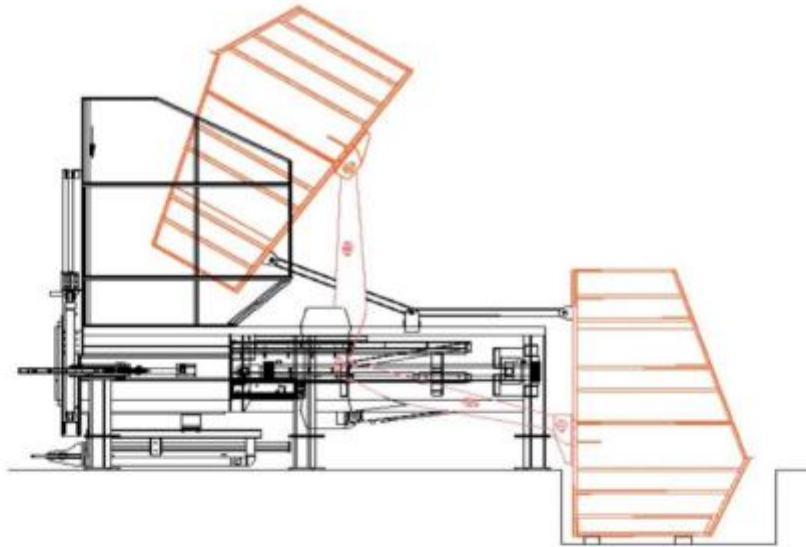


Figure 3 Loading Mechanism in Hopper

TECHNICAL SPECIFICATION CONTAINER TRAVERSING SYSTEM

Each Stationary Compactor should be provided with a Rail Mounted Container Traversing System/change over system. Each traversing system is designed to handle two number Roll-on-Roll-off Containers and shall consist of two numbers electrically operated shuttle cars (transfer car) moving on Rails for placing empty containers and shifting loaded containers when detached from the static refuse compactor.

The Traversing System for each Static Compactor shall include the following: -

1. Rail Track of minimum length 10 metres including anchor plates and clamps for fixing rails.
2. Shuttle cars (transfer car) – 2 Nos. suitable for carrying and moving a loaded Container.
3. 04 Nos. Electric Motor (02 Nos. 3 phase 415 V 1 HP for each transfer car) with all control systems including electric cables suitable for operation of the Shuttle cars (Transfer car)



Figure 4 Roll on Roll off System

TECHNICAL SPECIFICATIONS OF HOOK LOADER

Product Description:

Truck Mounted Hook Loader, suitable for lifting 20 M³ capacity container is designed to pick up the loaded or empty Roll on – Roll off containers, transport, dumping of material and thereafter unload the skip containers safely and faster.

The telescopic Jib enables proper load distribution on the chassis.

Technical Features:

Designed to handle containers of 20 M³ capacity. The dumping mode is achieved by operating the main rams, actuating arm and tilting frame, with jib extended, pivoting around the rear shaft.

- A sub-frame made out of bend steel plates and cross members is mounted on the truck chassis frame.
- A tilting frame hinged to the sub frame with a steel shaft carry the rear centering rollers.
- A main arm hinged on the tilting frame with a mechanical locking mechanism allows the dumping mode.

A telescopic jib, sliding in the arm, supporting a wide-open lifting hook enables loading of container.

Hydraulic Specifications:

Pump - High Performance Vane Type Pump

Controls - Low pressure hydraulic – Manual

Filter - 10 micron, return line with replaceable cartridge

Arm cylinders (lift cylinders) - 2 Nos., Double Acting, equipped with counter balance valves and built in by pass valves.

Jib cylinder (slide cylinders) – 1 No., Double Acting, equipped with built in counter balance valve Hoses, tubes & fittings.

Container Locking Cylinder - 1 No., Double Acting

Boom Locking Cylinder - 1 No., Double Acting

Stabilizers are provided at suitable locations along the rear of the vehicle to ensure vehicle stability during the loading & unloading cycle of operation.

All Hydraulic Cylinders, allied components and all hydraulic pumps shall be supplied from manufacturer of ISO certified company.

- SAFETY DEVICES**
- Safety valve prevents jib operation during dump Mode
 - Automatic locks on arm
 - Slide through container catches

Truck Chassis

The hook loader is suitable to be mounted on 3 Axle Truck Chassis of 28 T GVW, BS- VI of TATA/Ashok Leyland /Eicher/Mahindra or equivalent to be supplied by client. The Chassis shall be with Driver Cabin fitted with PTO and Hydraulic Pump.

Welding

Structure welding confirming to relevant IS standards.

Hook for Lifting

The hook for lifting the Compactor Unit would be integral to the structure. It shall be provided with the necessary reinforcement to handle the design weight for lifting with adequate factor of safety. The shape and size would as per design of the lifting tackle.

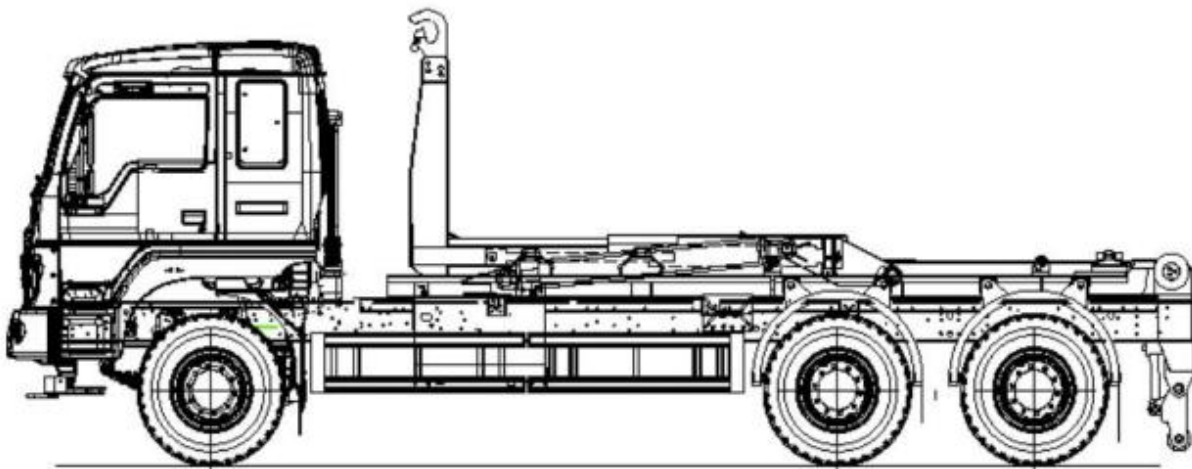


Figure 5 Hook Loader

CONTAINERS OF 20 CU.M VOLUMETRIC CAPACITY COMPATIBLE WITH THE HOOK LOADER

1. GENERAL DESCRIPTION: -

The closed type containers will be compatible with Hook loader, and the stationary compactor to be installed at transfer stations. The container will have rear door opening by ratcheting arrangement for loading refuse at the Transfer Station. They will also have mechanical locking arrangement to lock them with stationery/portable compactor while loading the refuse.

2. TECHNICAL SPECIFICATION: -

- | | | |
|-----------------------|-------------------------------------|-----------------|
| • Volumetric Capacity | 20 Cu.M | |
| • Floor Plate | 5 mm reinforced with hollow section | |
| • Side Panels | 3 mm reinforced with hollow section | |
| • Rollers | 2 Nos. rear side | |
| • Material | | As per BIS 2062 |

The design of container shall be compatible to the Hook Loader with all safety arrangement i.e., locking while tipping etc.

Proper sealing arrangement shall be provided to the container to avoid spillage of garbage & leachate during transportation.

The container shall have arrangement to collect leachate formed during compaction and the same shall not spill on road during transportation.

The container shall be painted with anti-corrosive paint from inside & outside. All the containers shall be numbered for an identification & record purpose.

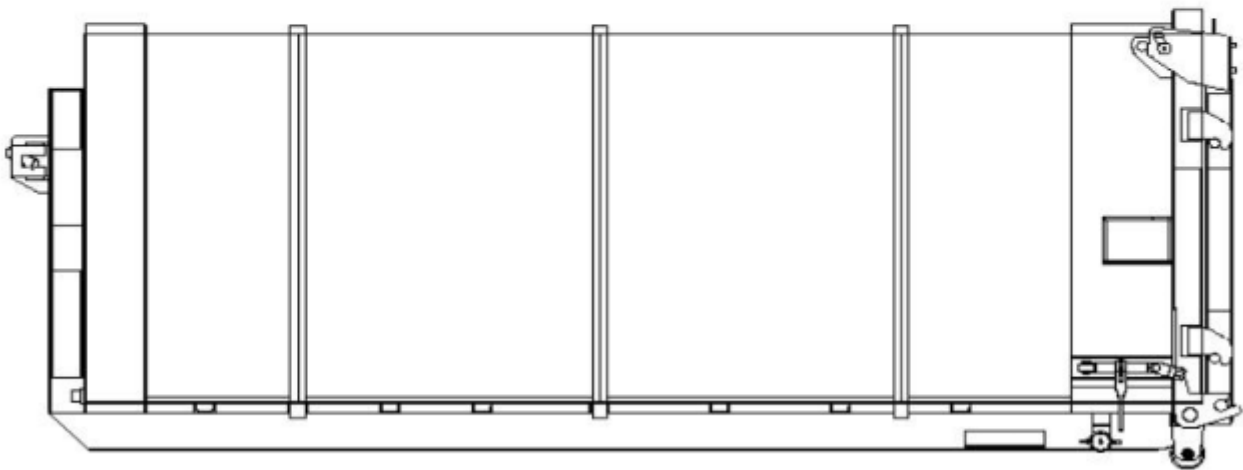


Figure 6 Container

(iii) Abstract and Bill of Quantities (BOQ) of civil work

As attached with the RFP document

(iv) Proposed Key plan of Plant and drawings

As attached with the RFP document

Note –

- *Proposed Plan and drawings will be for indicative purpose only, may be change as per actual site condition and at the time of submission of detailed implementation plan.*
- *Tentative Drawings and estimate are attached with the bid document bidder has to provide and submit detailed drawing of each civil component with detailed specification and estimate and verified and take approval from the engineer in-charge before execution of work.*