TRANSNET PORT TERMINALS TENDER NUMBER: ICLM RB 1058/TPT DESCRIPTION OF THE WORKS: MANUFACTURE, SUPPLY, DELIVERY, TESTING AND COMMISSIONING OF TWO (2) SUPER SUCKER TRUCKS / MACHINES FOR TRANSNET SOC LTD OPERATING AS TRANSNET PORT TERMINALS, (HEREINAFTER REFERRED TO AS "TPT"), AT THE RICHARDS BAY MULTI – PURPOSE AND DRY BULK TERMINALS, AS A ONCE OFF SUPPLY.	TRANSNET

TECHNICAL SPECIFICATION

SUBJECT : SUPER SUCKER TRUCK / MACHINE

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1. Works Information

1.1 Introduction

The Super Sucker Truck shall be utilised to suck liquid such as sludge, sewage and similar within the Port Terminal environment and contain and dispose at approved sites / areas. The Super Sucker trucks shall be capable of operating efficiently in harsh terrain i.e. potholes, uneven surfaces, water drenched roads, etc.

The machine shall be fitted with a powered steering system capable of making quick, easy turns (minimal turning radius) ensuring that sweeping close to obstacles and curbs is achieved without damaging the tyres and equipment.

The Super Sucker shall be supplied complete and fully assembled in all respects, including standard equipment supplied by the manufacturer and shall comply with the South African Occupational Health and Safety Act, Act 85 of 1993/as amended or equivalent international standard such as ISO, DIN, etc.

The sludge and slurry generated during the daily operations of the port cargo conveying especially in a confined arears require the Super sucker machine to suck out the sludge contaminated waste material.

1.2 Scope

1.2.1 The SST must be designed to operate in a coastal corrosive environment, under heavy dust laden conditions, suitable for the handling of coarse, abrasive material, sludge, slurries and be able to operate on any floor surface.

2. Operational Requirements

2.1 Ergonomics

2.1.1 Operator's Cabin

2.1.1.1 The driver's cabin shall be ergonomically designed to ensure that visibility, safety and comfort is not compromised. The cabin must be fitted with side and rear mirrors that are positioned for maximum visibility.

2.1.1.2 The cabin shall be fitted with a comfortable, full suspension, fully adjustable, sprung type seat, in accordance with EN 13059, complete with seat belt, upholstered of good quality material, and ensuring easy reach of controls and instrumentation.

2.1.1.3 The machine shall be fitted with a locally supported air-conditioning system, with spares available locally. Ambient temperatures encountered may range from 0º C to +45º C dry bulb, with relative humidity varying from 15% to 100%. Accessibility to all parts of the air-conditioner, ease of maintenance and simplicity of control and operation are essential.

2.1.1.4 When the seat is not occupied for a predetermined time lapse and when the engine is left idling as well as when operator's cabin door/s is left open, the air-conditioner shall switch off after a predetermined time lapse. (Supplier to indicate the time period.)

2.1.1.5 The air-conditioner shall have a heavy duty air filter due to harsh working condition in in a bulk or multi-purpose terminal.

3. Technical Requirements

3.1 Chassis

Shall be of appropriate heavy-duty steel alloy construction.

3.2 Diesel Engine and Transmission

3.2.1 Engines shall be robust and have sufficient power for the duty required. The engine should be efficient in delivering power for the sweeping without impacting on the vehicle speed.

3.2.2 The engine shall be easily accessible for maintenance purposes.

3.2.3 The air cleaning system design will consist of the (cyclone or similar) system designed to prevent or minimise the ingress of heavy dust particles from clogging the air filter elements.

3.2.4 The exhaust shall be sufficiently silenced in such a manner as not to adversely affect the engine performance to any great extend and shall be reasonably positioned.

3.2.5 A full-length stainless-steel exhaust shall be fitted.

3.2.6 The exhaust outlet must be of the 'goose neck' type to prevent the ingress of water under any operational or non-operational conditions.

3.2.7 The exhaust pipe must be protected by a stainless-steel heat shield if it is exposed and could cause injury to the driver or any other person.

3.2.8 The outlet manifold must be protected by a heat shield if exposed when the engine compartment is opened.

3.2.9 An efficient pressure fed engine lubrication system is required and shall incorporate an external oil filter of the full flow type, utilising elements of the replaceable cartridge type.

3.2.10 The cooling system shall be filled with a coolant mixture which complies with the engine manufacturer's specifications.

3.2.11 An engine monitor and cut-out system shall be fitted to protect the engine from overheating, low oil pressure and over revving under no load conditions.

3.2.12 The following functions shall be monitored: water temperature, water level and oil pressure.

3.2.13 The engine shall be fitted with an Electronic Management System (EMS), which shall also allow for shutting the engine down when the seat is not occupied for a predetermined time lapse. (Supplier to indicate the time period. However, facility must be available to allow Purchaser to adjust time.)

3.2.14 The engine shall comply with 'EUROMOT III' with regard to emission standards

3.3 Brake system

3.3.1 An ABS brake system shall be supplied.

3.3.2 The brake system shall enable the vehicle to comply with the latest specifications SANS 1027 and SANS SV1051, as well as the South African Road Traffic Act.

3.3.3 The latest technology low maintenance brake system shall be fitted.

3.3.4 The brakes shall be fitted with automatic adjusters.

3.4 Tyres and rims

3.4.1 The machine shall be supplied with heavy duty pneumatic tyres.

3.4.2 Tyres manufactured in the Republic of South Africa or standard tyres which are readily available in South Africa must be supplied.

3.4.3 Tyres and rims must conform to the standards as laid down in ERTO or S.A.N.S. ARP 007 and ARP 008 and shall be of an approved brand.

3.4.4 The wheels shall not foul or touch the chassis at maximum oscillation

3.4.5 Wheel nut position indicators shall be provided for all wheel nuts.

3.5 Electrical system

3.5.1 All electrical lights must be capable of effective visibility and functionality in extreme operating conditions such as rain, fog and mist.

3.5.2 A warning horn and reverse buzzer shall be fitted, and shall be in the range of 80 - 85 decibels.

3.5.3 The machine shall be fitted with the following minimum lighting system:

- 2 x LED headlamps
- 2 x LED taillights
- 2 x LED stop lights
- 6 x LED Working lights (Two front and two rear)
- 2 x LED front and 2 x LED rear direction indicator lights
- 2 x LED reverse lights coupled to an automatic reverse warning sound mechanism.
- 2 x Amber strobe lights shall be fitted in such a manner as to not hinder the operator (front and rear).
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3.5.4 All electric wiring must be colour coded, numbered, grommited, sleeved, trunked and securely clamped. Wire numbers to be carried through into the schematic diagrams and detailed drawings.

3.5.5 Referenced specifications for electrical:
SABS 1376 Parts 1, 2 and 3 (Lights for motor vehicles)

3.6 Painting

3.6.1 The Super Sucker Truck will be painted in accordance with Specification EEAM-Q-008 for Corrosion Protection. (The manufacturer's standard painting procedure can be used if it is equivalent or better
than that called for above. Full details of these specifications and **procedures shall be clearly stated** if tenderer proposes to use another system, and is to be approved by the TPT Supply Manager prior to fabrication.)

3.6.2 The total paint dry film thickness shall not be less than 250µm.

3.6.3 The colour scheme of the sweeper shall be as follows:

3.6.4 Red to colour specification RAL 3020

3.6.5 No other colours shall be accepted.

3.6.6 Drain holes must be provided in areas where water can accumulate.

3.6.7 If paintwork not according to EEAM–Q-008 shall be guaranteed to meet the condition as stated under section 2.1 of the EEAM–Q-008 paint specification where the surface will achieve at least Ri 2 on the ISO 4628-3 scale of degree of rusting after 10 years in an environment of frequent salt spray, chemicals and polluted coastal atmosphere.

4. Signage and markings

4.1 A data plate as required by the South African Road and Traffic Act shall be fitted.
4.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations that impose a danger.
4.3 Durable, ultraviolet resistant and weather resistant information signs shall be provided to assist the driver/maintenance staff with operation/maintenance.
4.4 A fuse diagram shall be displayed at the fuse box.
4.5 The Transnet Logo (white on the red background) is to be provided on each side of the machine. (Position and size to be agreed.)

5. Safety and Environment

5.1 **Safety Requirements**

5.1.1 The machine shall comply with the South African Occupational Health and Safety Act, Act 85 of 1993/as amended.
5.1.2 All surfaces where operating or maintenance personnel shall tread must be laid out with non-slip material.
5.1.3 A 9kg hand held fire extinguisher shall be provided with a storage compartment.
5.1.4 Fast reacting electric e-stops for vacuum operation.
5.1.5 Manual safety lock to secure door in open position when cleaning or maintenance is required.
5.1.6 Mechanical locking door clamps to prevent accidental door opening when travelling.
5.1.7 Lock-out gearbox switch mechanism to prevent accidental gearbox switch-over when driving.
5.1.8 Walkways with harness attachment point for where working-at-heights are required.
5.1.9 Automatic PTO lockout when driving
5.1.10 Automatic tank isolation valve when driving
5.1.11 Detailed decals to indicate component.
5.1.12 Warning decals where necessary

6. Maintenance

6.1 **Lubrication**

- Manual lubrication
- All grease points must be clearly marked by means of a yellow circle of approximately 2,5cm in diameter.
- Grease points that are not easily reachable must be provided with a steel extension tube to an accessible position.

6.2 Accessibility

- All replaceable items including (but not limited to) critical components shall be designed for easy access, removal and replacement.

7. General

7.1 The machine and all components fitted shall be new.

7.2 All components shall be installed and fitted according to the manufacturer's recommendations.

7.3 All electrical and mechanical components shall have been tested for reliability and extended lifetime in the conditions to be expected.

7.4 The machine will only travel within the boundary of the port; however it shall comply with the requirements of The South African Road Traffic Act, where applicable.

7.5 The Super Sucker Truck must be designed for all parts and components to be easily assembled, adjusted and removed.

7.6 A magnet shall be fitted to the front of the machine to collect steel debris prior to Super Sucker passing over the steel.

7.7 The machine must be supplied with detailed maintenance, operating, training and spares manuals (in English), including technical data for each spare, as well as general arrangement drawings and a bill of materials. Maintenance manuals to have sufficient information to allow terminal to capture maintenance schedules in terms of inspections, servicing and replacement of parts. Three hardcopies and two electronic copies of the operating, maintenance, training and spare parts manuals shall be provided, as well as a training manual for each trainee.

8. Referenced Specifications

8.1 **Standard specifications**

The following, not necessarily comprehensive, list of standard specifications are relevant:

- ANSI/AWS D1.1 Structural Welding Code - Steel
- BS-EN 287 Part 1 Approval testing of welders/fusion welding
- BS-EN 288 Part 3 Specification and approval of welding procedures for metallic materials

- BS 5135 Metal arc welding of carbon and carbon manganese steels
- BS 3923 Methods for ultrasonic examination of welds
- BS 2600 Radiographic examination of fusion welded butt joints in steel
- BS 5493 Code of practice for protective coating of iron and steel structures against corrosion
- DIN 1026 Metric channels
- ISO R657 Angles
- SANS 135 ISO metric bolts, screws and nuts (hexagon and square) (coarse thread, free fit series)
- SANS 136 ISO metric precision hexagon-head bolts and screws, and hexagon nuts (coarse thread medium fit series)
- SANS 064 Preparation of steel surfaces for coating
- SANS 763 Hot-dip (galvanized) zinc coatings
- SANS 1091 National colour standards for paint
- SANS 1431 Weldable structural steels
- SNS 1376 Parts 1, 2 & 3 Lights for motor vehicles
- SABS 1327: 1981 Electrical connectors for towing and towed vehicles
- SANS 1207 & SANS SV 1051 Braking

  Regardless of which specifications are actually worked to when manufacturing Plant and Materials, such Plant and Materials shall be capable of satisfactorily passing all tests laid down in the standard specifications called for.

9. Employer specifications

The following Employer specifications are relevant:

- EEAM-Q-004 Gearing, shafts, bearings, brakes, lubrication, vee-belts, keys and keyways
- EEAM-Q-006 Structural steelwork
- EEAM-Q-008 Corrosion protection
- EEAM-Q-009 Quality Management