# SCOPE OF WORKS FOR THE UPGRADE OF BUILDING AT THE INSEZI LOCOMOTIVE BUSINESS WITHIN TRANSNET ENGINEERING.

## REFERENCE NO.: INSEZI LOCOMOTIVE

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## EXECUTIVE OVERVIEW

Transnet Engineering is an engineering division of Transnet SOC Ltd, comprising of a group of product focused businesses in manufacture, upgrading, conversion, repair, and maintenance of railway rolling stock as well as spares and associated transport equipment.

The corrosion and rusted structure started developing early in 2010 and the propagation of the corrosion has worsened. It has also been noticed that the movements of the Locomotives in the shed seem to resonate with building structures left vibrating and they been growing to the extent that the buildings are now deemed unsafe for human occupancy.

The structural steel in the sheds and workshops is highly corroded and rusted, which raise safety concerns to those who use the said facilities. Replacement of the portal structure and sheeting is a requirement to pass the infrastructure as structurally safe. If the capacity should be stated as below requirement by the business it may be prudent to consider upgrades at this point to avoid double costing of similar work items in the short to medium term. The business has stopped using the crane within this building due to safety measures.

## EMPLOYER'S OBJECTIVE

The purpose of the project is to upgrade the following areas:

1. Shedding Workshops (80mx15mx7,5m)
2. Locomotive Wash Bay Structure (45,12m×7m×6,5m)

## PART A: TECHNICAL REQUIREMENTS

| Structure | Locomotive wash bay structure upgrade |
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| | • Dismantle the whole structure (45,12m×7m×6,5m). All steel beams (PC100×50), columns (H section parallel flange), bolt connection, steel plates, rods, cross steel bracing (100×100×10 angles [equal leg]), roof truss should be dismantled and reserved for re-galvanising.<br>• Remove rust from all steel compartments and rust from corroded rebars on the concrete columns.<br>• Galvanising. – galvanise all steel compartments (All steel beams (PC100×50), columns (H section parallel flange), bolt connection, steel plates, rods, cross steel bracing (100×100×10 angles [equal leg]), roof truss) using hot-dip galvanizing.<br>• Galvanize all exposed concrete rebar/reinforcement using spray galvanizing.<br>• Site clearance to 1m away from the structure(45m×7m) in all direction. – removal of topsoil and all vegetation.<br>• All concrete columns(320mm×490mm) must be grouted. (grouting is a process used to improve structural integrity, enhance load-bearing capacity)<br>• Excavation for concrete column grouting<br>• Grout all concrete columns.<br>• Formwork<br>• Concrete casting in column grouting<br>• Concrete curing<br>• Re-assemble the structure using same as existing<br>• Add new corrugated iron sheet covers(45,12m×2m×0.8mm) and poly carb sheet covers(45,12m×2m×0.8mm) on the two sides and corrugated iron sheet covers(45,12m×2,54m×0.8mm) on both sides of the roof. |
| **Walkway** | |
| | • 2 walkways(45,12m×1,15m)<br>• Walkways consist of a two 100mm thick U beam (PC100×50 parallel flange channel) and a 3cm trench cover on top cover. There are steel stars in each side and a hold on poles.<br>• The walkway is supported by 34columns which are 110 in diameter<br>• Repair columns ×4, remove all rust.<br>• Galvanize all column, beams, hold on poles and trench cover with hot dip galvanize. The whole walkway must be dismantled to enable hot dip galvanize. |
| **Lights** | |
| | Add 24 lights. (outer door weatherproof fitting led LP65 – 0,6m double) |
| **Gutter** | |
| | Add gutters to the structure and downpipes |
| **Drainage system** | |

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| | Check all drainage system and clean them |

| Item no. | Workshops upgrade |
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| **A** | **ENGINEERING DATA GATHERING** |
| 1 | Detailed site investigation and data gathering to establish the full project requirements |
| 2 | The engineering gathering will need to take into consideration a wide range of technical, social, legal, economic, spatial, and environmental issues, which should be integrated to provides a recommended solution. |
| 3 | Arrange and undertake all engineering surveys, civil, structural, tests, & geotechnical surveys. |
| 4 | Consultation with the client authorized representatives |
| 5 | Control the design, planning and quality of material to meet time and budgetary requirements. |
| 6 | Develop a plan which outlines the key variables and what needs to be considered prior to the construction process. |
| 7 | Developing a detailed methodology as per Transnet Engineering requirements |
| 8 | Collation of available information about the existing services and As-built drawings |
| 9 | Preliminary investigations, surveys, tests, analyses, and geotechnical investigations |
| 10 | Compilation and submission of the Assessment Report to the employer |
| **B** | **DISMANTLE OF THE EXISTING STRUCTURE & SET ASIDE** |
| 11 | A detailed plan and schedule clearly illustrating the method and sequence by which the Contractor proposes to demolish and remove the existing concrete or steel structures (in whole or in part), including a description of the measures that will be implemented to meet the environmental requirements. The demolition procedure shall include detailed and drawings that are sealed, signed, and dated by a Professional Engineer |
| 12 | Demolition, removal and disposal of existing concrete or steel structures, including but not limited to abutments, piers, girders, deck, curbs (in whole or in part) including removal of asbestos sheets |
| 13 | Sequence of operation, including position of equipment |
| 14 | Proposed method of traffic accommodation and protection of the travelling public, when required |
| 15 | Specific requirements for dismantling, demolition and disposal of precast concrete and structural steel components. |
| 16 | Measures to be taken to protect adjacent structures, adjacent grades, and portions of existing structure to remain |
| 17 | The Contractor shall be fully responsible for ensuring safety in areas underlying and adjacent to the construction site. The Contractor will be responsible for any loss or damage caused as a result of his actions. The Contractor shall prevent movement, settlement or damage to adjacent structures, grades, or portions of existing structures to remain. If the safety of the structure being removed, or adjacent structures or grades appear to be in danger, the Contractor shall cease operations and notify the Engineer immediately |
| 18 | Upon completion of the Work, a letter bearing the seal of the Registered Professional Engineer certifying that he has carried out a personal inspection of the Work and the method of demolition and removal, including any temporary works |
| **C** | **DIMENSIONAL PARAMETERS** |
| 19 | Ensure that the Occupational Health and Safety requirements (In accordance with OHSA 85 of 1993 are included in the design of all the work categories and the respective specifications. |

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| 20 | The structures shall be 80m (l) x 15m (w) x 9m (h). The roof for the shed shall be similar pitch with the existing structural steel. |
| 21 | The structures shall be constructed of IBR sheeting a minimum white coat thickness of 130g/mm² as required by ISO 9364:2001 for a coating designation of AZ150 similar to Zincalume |
| 22 | Excavate foundations for new column bases for the new building |
| 23 | Excavate new strip foundations to brick up one side (80m) with facebrick to the height of 1.2m in order to close the structure complete, including brick-force every course |
| 24 | Erect new structure for the building. All steel structural steel work shall be fabricated and erected in accordance with SANS 2001-CSI |
| 25 | Welds shall conform to SABS 0167-1984 and 044 spec. and to be 6mm fillet welds unless otherwise shown |
| 26 | All dimensions shall be checked on site before shop drawings commence any discrepancies shall be brought to the attention of the engineer |
| 27 | Roof sheets to be 0.6mm chromadek IBR sheets. Insulation to be installed underneath the roof sheets. |
| 28 | Install new downpipes and drainage system to be connected on the existing stormwater line |
| 29 | Erect the side cladding the side cladding to be chromadek IBR sheeting, 0.6mm full hard and polycarbonate translucent sheeting in between to provide lighting. |
| 30 | Provide ventilation on the new roof (to comply with OHSA). |
| 31 | All the supporting posts shall be hot dipped galvanised and unpainted. |
| 32 | The contractor shall submit the plans to the local authority and follow up until the plans are approved |
| **D** | **CORROSION PROTECTION** |
| 33 | Corrosion protection with reference to SANS 1200 HC CLAUSE5,2 |
| 34 | Corrosion protection shall be applied to the structural steel under workshop conditions, the only structural corrosion protection work allowed on site will be touching up of minor damage |
| **E** | **STORMWATER AND DRAINAGE SYSTEM** |
| 35 | Supply and Install gutters and gutter boxes to control the top roof water (Complete storm water management plan for the entire shed) |
| 36 | Drainage system must be installed inside the shed. This includes deviating of the existing effluent drainage and storm water to new positions |
| **F** | **ELECTRICAL INSTALLATION** |
| 37 | 8 X 250W Metal halide flood lights shall be mounted on columns outside the roof. (4 lights per side) |

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| 38 | The contractor shall design and install lights to produce 300 Lux Illuminance. |
| 39 | The contractr shall decide on the cable sizes, breakers, and connection to the nearest power supply |
| 40 | The contractor shall install new DB and cables to supply what was existing |
| 41 | Special Requirements- Electrical contractor to do the electrical work must have a CIDB grading of EB |
| 42 | Copies of compliance certificates shall be submitted after the completion of work. |
| 43 | On completion of the electrical installation on the contractor shall issue a certificate of compliance in accordance with SANS10142 |
| **G** | **COMMISSIONING & TESTING** |
| 44 | A performance test to the satisfaction of the stakeholders shall be conducted by the contractor. |
| 45 | The contractor shall undertake to repair all faults due to shoddy workmanship and/or faulty materials during a period of twelve calendar months, calculated from the date that the project is accepted by Transnet Engineering. |
| 46 | Any defects that become apparent during the guarantee period shall be rectified to the satisfaction of Transnet Engineering at the cost of the supplier. |
| **H** | **DOCUMENTATION ON DAY OF COMMISSIONING** |
| 47 | 4 sets off hard copies with a disc containing documentation in PDF Format for each of: |
| 48 | Operating Manual. |
| 49 | Maintenance Manual. |
| 50 | Electrical Schematics. |
| 51 | As built Drawings. |
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## 3. HEALTH AND SAFETY REQUIREMENTS

3.1 All equipment and installation whether detailed in this specification or not shall. comply with the requirements of the Occupational Health and Safety Act 85 of 1993 as amended and all other applicable legislation including specific set of regulations and local authority bylaws where applicable.

3.2 The contractor shall hold monthly safety meetings with staff and records of minutes. shall be kept on file on site.

3.3 The contractor shall be available for monthly meetings with Transnet Management. A schedule for these meetings may be agreed upon.

## 4. SHE SPECIFICATION

- Prior to commencement of contract, the contractor shall be issued with a SHE specification in order to compile a SHE files in line with TE requirements.

- Prior to establishing on site, it is an explicit requirement of this contract that all of the Contractor's personnel directly involved with this contract, including those of sub-contractors, attend a Safety induction course. Transnet will provide the course free of charge and attendance is compulsory for all

personnel under the control of the Contractor who, during the duration of the contract, will be present on site whether on a full time or adhoc basis.

- The contractor must allow for all additional charges because of these requirements as no claims for extras will be accepted in connection with the foregoing.

## 5. AS PART OF THE LEGISLATIVE AND TE SHE REQUIREMENTS.

- The successful contractor is required to conduct a Risk assessment to ascertain all potential risks associated with this project. The completed risk assessment is to potential risks associated with this project. The completed risk assessment is to be formally submitted to the Risk department via the project manager at least two weeks prior to the commencement of the actual project.
- A safety file and associated documents will be required from a successful tenderer and such will be communicated by the Risk department.

## 6. REQUIREMENTS FOR PREVENTION OF COVID-19

6.1 COVID-19 Safety Plan.
6.2 Daily Screening questionnaire.
6.3 Return to work induction register- Induction Presentation/TE will also conduct the COVID-19 induction.
6.4 COVID-19 Employee questionnaire checklist.
6.5 Fitness Certificates.
6.6 Risk Assessments register.
6.7 COVID-19 PPE issue register/sanitizer.