



A Division of Transnet Limited

RAIL NETWORK
Condition Assessment Systems (CAS)
Scope of work

Isando Infrastructure Depot
Inspection, Repair and Calibration of an Assized Weighing in Motion System

Author	Engineer in Training	Bonginhlanhla Mabaso	23-01-2024	
Reviewed	Engineering Technician	Reggie Madileng		Digitally signed by Reggie Madileng DN: cn=Reggie Madileng, o=TRF, ou=Signals, email=Reggie.Madileng@transnet.net, c=ZA Date: 2024.06.19 10:54:45 +02'00'
Authorised	Maintenance Manager	Sibusiso Mgcina		Digitally signed by Sibusiso V Mgcina Date: 2024.06.20 11:16:33 +02'00'
Approved	Depot Engineer	Rantshane Mogashoa		

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Contents

1. Introduction.....	3
1.1 Overview.....	3
1.2 Objectives	3
2. Executive summary	3
2.1 Description of system	3
2.2 Current situation and Location of system	3
3. Detailed scope.....	4
3.1 Preliminary Assessment	4
3.2 Fault Identification.....	4
3.3 Repair Strategy	4
3.4 Parts and Materials.....	4
3.5 Inspection, Repairs and Calibration.....	4
3.6 Testing and validation	4
3.7 Documentation.....	4
4. Scope deliverables	4
5. Specifications, drawings, and standards.....	5
6. Other Requirements	5
6.2 Disposal of redundant Materials	6
6.3 Plant and Equipment	6
6.4 Quality Inspection	6
6.5 Supervision	6
6.6 Safety Requirements	6
6.7 Occupations	7
6.8 Pre-testing and Commissioning.....	7
7. General requirements.....	7
8. Completion of work.....	8
9. Annexure A	9
10. Annexure B	9

1. Introduction

1.1 Overview

This document outlines the scope of work for an external contractor to perform inspection, repairs, and calibration as per the Assized Weighing in Motion System installed within TFR Isando Infrastructure Depot.

1.2 Objectives

The objective of this project is for an external contractor to inspect, repair and calibrate faults on the in-motion weighbridge system to ensure optimal performance and functionality of the system that is compliant to Transnet Freight Rail (TFR) approved specifications and standards. The repaired system shall overcome the shortcomings that the existing system has.

2. Executive summary

2.1 Description of system

The purpose of the Assized Weighing in Motion System (AWIMS) Is a system that is used to measure the total mass of a wagon, the total mass of each side and the total mass of each wheel automatically while a train is transversing over the system. The purpose of this system is to eliminate wagon overloading, uneven loading or underloading which may result in excessive damage to TFRs infrastructure and loss of revenue.

The AWIMS identify locomotives and wagons and associate the measured mass to a specific identified vehicle. TFR operates Integrated Train Condition Monitoring System (ITCMS), which is employed to gather the weighing information and couple the wagon numbers to the measured mass. The data from the AWIMS will then be transmitted to ITCMS for both condition monitoring and commercial purposes.

2.2 Current situation and Location of system

Currently at the TFR Isando depot there's Assized Weighing in Motion System located at Ellof which is not functioning attributable to certain vandalised components. To mitigate the increased risk of derailment and loss of revenue caused by overloading, a response is required to ensure that the system continues to function at its optimal performance.

The Assized Weighing in Motion System is not fully functional and is becoming more unreliable with the passing of time. To restore the reliability and availability of the Assized Weighing in Motion System, a complete inspection and repair of the Assized Weighing in Motion System on site is required.

The inspection and repairs are a response to having a reliable Assized Weighing in Motion System that is compliant to Transnet Freight Rail (TFR) approved specifications and standards.

3. Detailed scope

The purpose of this section is to specify the requirements required for inspection and repairs of the Assized Weighing in Motion System installed within TFR railway network. The scope of work for this project shall include the following, but is not limited to:

3.1 Preliminary Assessment

- Contractor shall conduct a thorough assessment of the current state of Assized Weighing in Motion System Contractor shall document existing issues, anomalies, and performance deviations.

3.2 Fault Identification

- Contractor shall utilize diagnostic tools and procedures to identify faults in the system.
- Contractor shall categorize faults based on severity and impact on system functionality.

3.3 Repair Strategy

- Contractor shall develop a comprehensive repair strategy for addressing identified faults.
- Contractor shall prioritize repairs based on criticality and impact on system performance.

3.4 Parts and Materials

- Contractor shall identify replacement parts and materials for the repairs and supply the materials listed in the Bill of quantities in **Annexure A**.
- Employer shall free issue necessary materials as identified by the contractor that are not the listed bill of quantities.
- Contractor shall ensure compatibility and compliance with the Transnet Freight Rail approved Assized Weighing in Motion System specifications.

3.5 Inspection, Repairs and Calibration

- The contractor shall inspect all the equipment's of the weighbridge before repairing.
- Contractor shall execute repairs following Transnet Freight Rail standards and original equipment manufacturer guidelines.
- Contractor shall perform effective repair activity breakdown to enhance system reliability.
- The Contractor shall calibrate the assized weighbridge in accordance with the Transnet Freight Rail standards and specifications.

3.6 Testing and validation

- Contractor shall perform rigorous testing post-repairs to validate the effectiveness of the corrective actions.
- Contractor shall ensure all system components meet specified performance criteria through using calibration tools.

3.7 Documentation

- Contractor shall provide detailed records of fault diagnosis, repairs undertaken, and testing results.
- Contractor shall provide updated system documentation reflecting changes made during the repair process.

4. Scope deliverables

- Diagnostic Report: - Document detailing findings from the preliminary assessment and fault identification.
- Repair Plan: - Comprehensive plan outlining the strategy for addressing identified faults.

- Repair Schedule: - A schedule for the ongoing repair activities.
- Updated Documentation: - Revised system documentation reflecting changes and improvements.

5. Specifications, drawings, and standards

- All equipment and materials supplied shall be of Transnet Freight Rail (TFR) approved specifications and standards.
- The repairs, installation, test, and commissioning must be done as per specified specification on Annexure B.
- Specifications: **Inspection and Repairing of the following**

Equipment	Quantity
Rail weight weigh line triple transducers	2 sets & 6 m long 4 rails
Transducer cables	12cables, 20m long each
Spec plugs	1
Hydraulic hose	1
Tiefenbach dual wheel sensors with hydraulic hose	3
Junction box with antivandal protection	1
Transcore tag reader with connection cable	1
TP complete (Transmitter and receiver)	1
Lightning protection	1
TSR4000 Indicator	Inspect and repair if required

6. Other Requirements

6.1 Material, transport, and labour to be supplied by the contractor.

- The Contractor shall be responsible for the supply of all equipment required unless specified within this document.
- The Contractor shall be responsible for the supply of materials listed in the BOQ within this document.
- All material and systems shall comply with relevant Transnet Freight Rail specification and standards.
- The Contractor shall be responsible for the safekeeping, proper staging and handling of all material supplied.
- Removed and redundant Assized Weighing in Motion System material shall be carefully stripped out, documented, and disposed of as detailed in the next section.
- Free issued material are materials supplied by the TFR Isando depot.
- The contractor will be afforded extension of time with or without costs for delays in delivery of free issued material.
- Such delays shall be recorded in the site instruction book and submitted with request for extension of time.

6.2 Disposal of redundant Materials

- All redundant and removed signalling material shall be carefully stripped out, documented, and disposed of as detailed. Full documentation for all material delivered to Isando maintenance depot shall be submitted to the Project Supervisor within 3 working days after delivery.
- All removed material shall be classified as either re-usable or scrap material under guidance of the Project Supervisor. The material shall be separately delivered to the designated depot as required by the Project Supervisor for disposal or distribution.
- Unless otherwise indicated, Isando Maintenance Depot shall be regarded as the "designated depot".

6.3 Plant and Equipment

- The Contractor shall supply all vehicles, machinery, small plant and any mechanised equipment for the proper execution of the work.
- The maintenance, leasing, hiring and insurance of this equipment will solely rest with the Contractor.
- The Contractor shall be responsible for his/her own arrangements with regards to the transport and safe staging of this equipment

6.4 Quality Inspection

- During the progress of the contract all work, being undertaken by the Contractor shall be subject to periodic inspection by the Technical Officer. All such workmanship shall be supplied and performed, respectively, to the entire satisfaction of the Technical Officer or his duly authorized representative.
- Should at any stage in the progress of the work, or on completion, an inspection visit reveals any defects in the construction or the quality of work, which are due to the Contractor, such defective workmanship shall immediately be remedied by the Contractor at his own expense and to the satisfaction of the Technical Officer or his duly authorized representative.

6.5 Supervision

- The Contractor shall provide a competent person for the duration of the contract to supervise the execution of the work; the identified person shall at all times be able to provide reliable feedback on the progress and occurrences of the project.

6.6 Safety Requirements

- The contractor shall provide a safety file to the technical manager for approval incorporating the following elements:
 - Scope of work
 - Roles and responsibilities of Contractor personnel.
 - Hazard management plan.
 - Contract induction and safety training.
 - Safe work practices and procedures.
 - Emergency procedures.
 - Incident recording and investigation.
 - Health and safety performance monitoring.
 - Dangerous goods/hazardous substances.
 - Management of sub-Contractors (where applicable)
- Upon approval of the safety file, the Contractor will be issued with a site access certificate authorised by the depot engineer. All personnel who will be working on site shall attend the

safety induction prior to the commencement of any repairs or installation. The replacement team shall always have the safety file with them when on site.

- The work will be performed under normal operating conditions (i.e., between trains). The Contractor will be responsible to safeguard the work area i.e., Protect its workforce when working close to electrical high voltage; protection from passing trains and keeping the line free from any obstructions.
- The TFR technical officer/TFR Site Supervisor will communicate with the TCO at the relevant CTC before commencing with the work and after the completion of work on each day when working in the relay room.
- Personal Protective Equipment (PPE) must be worn at all times.
- No making of fires will be permitted on site. Any claims arising from the making of such fires will be for the cost of the Contractor.
- The workplace must be cleaned of scrap material (i.e., Papers, cable offcuts, tins etc.) After every workday.

6.7 Occupations

- Transnet reserves the right to cancel an authorised occupation or work permit at any time, even during the period of such occupation or work permit.
- The Contractor must provide protection of his personnel where they would be subjected to danger of passing trains.
- The wearing of reflective clothing and PPE is compulsory while working on or near railway lines.
- No red or green clothing shall be worn on or near railway lines.
- Before disconnecting or working on any signalling apparatus which is connected to a working signalling system, TCO should be informed on what is going to happen and he/she must endorse and initial the entry.
- At all times cooperation with the CTC operating staff is essential. This is essential for safe working and for a quick completion of the works to be carried out.
- All safety precautions according to the train working regulations must be adhered to. When the work has been completed and tested to the satisfaction of the operator as well as the countersigned by the operator, to acknowledge that he/she is aware that the work has been completed.

6.8 Pre-testing and Commissioning

- Upon completion of installation and repairs, the Contractor will be responsible for pre-testing of the system within the prescribed time as per the projected schedule.
- The testing and commissioning will be conducted by the project manager or his/hers duly authorised personnel. See specification BB0493 version 7.
- The Contractor shall be responsible for providing all tools and equipment required to conduct the process of testing and commissioning.
- The Contractor shall be liable for any damages to Transnet Freight Rail's property caused by the Contractor, in the event that equipment is damaged, it must be repaired, reported and tested by the Contractor at their own cost.

7. General requirements

- Brochures of the material offered must be submitted. (To verify for TFR approved).
- The Contractor must ensure that their quotation covers all costs to complete the specified work.
- Except where otherwise specified, the Contractor shall provide labour, transportation for personnel and material, tools required for installation and testing, as well as lavatory facilities

where TFR does not have permanent facilities installed. All the above mentioned, shall be at the Contractors own cost.

- The Contractor shall dispose any scrap as per environmental laws and submit the disposal certificate.
- The specifications (Annexure A) included in this document shall be strictly adhered to.

8. Completion of work

Work shall be completed within the projected timelines, i.e., from the PO/ Letter of award once it has been issued by Transnet Freight Rail.

END OF SCOPE

9. Annexure A

Bill of Quantities

Item	Description	Unit	Quantity	Rate/Machine	Price
1	Inspect and repair Assized Weighing in Motion System	machine	1		
	Total Price				
	Vat (15%)				
	Gross Total				

10. Annexure B

Applicable Transnet specifications and standards

DESCRIPTION	DOC.No.	CAT.	ISSUE/ VER/Model type	DATE
Assized Weighing in Motion System				
AWIMS specification	BBC1769		Version 4	Jan 2022
AWIMS site specification	BBH0126		Version 2	May 2019
Modular frame & door	BBH5987		Version 1	June 2023
Modular concrete building	BBH5984		Version 1	June 2023
Security specification				
CAS building security	BBH5832		Version 1	June 2023
Secure building				
Modular concrete specification	BBH5829		Version 1	June 2023
Lightning protection:				
Lightning protection for CAS	BBC1040		Version 1	Nov 2018

Cabling:				
Trenching and outdoor cable installation	CSE-516		Version 1	Jan 1988
General:				
Environmental specification for Spoornet railway signalling systems	CSE-1154001	E48	Version 2	
Procedure for Testing, Commissioning and Handing Over.	BBB3609		Version 1	
E7/1- Specification for general work and works on , over, under or adjacent to the railway line near high voltage equipment	BBD8210			