

RFP for the enablement of the PRASA Train Control System (“PTCS”) Phase 1 through the Restoration, Verification, Testing, and Commissioning of the existing Original Equipment Manufacturer (“OEM”) electronic signalling interlocking system in PRASA’s Western Cape (“WC”) service region.



## **Annexure 1.4: Main Technical References**

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## 1 GENERAL

### 1.1 Purpose of the Document

1.1.1 The purpose of this document is to provide the Main Technical References (“MTR”) which form part of the minimum Requirements of the Passenger Rail Agency of South Africa (“PRASA”) for the enablement of the PRASA Train Control System (“PTCS”) Phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’S Western Cape (“WC”) service region (“the Project”) that the Bidder shall meet and deliver at the Bidder’s cost therefore within the Bid Price.

### 1.2 Executive Overview

- 1.2.1 Notwithstanding any other PRASA Requirements stated throughout the RFP, the Bidder shall uncompromisingly deliver the whole of the Works required to achieve successful delivery of the Project.
- 1.2.2 The specifications, standards, regulations and procedures listed forms part of the Technical Requirements.
- 1.2.3 The contents of the General Technical Requirements (“GTRs”) shall prevail in the event of a conflict between the referenced document and the GTRs.
- 1.2.4 All standards in this Bid specification (CENELEC, DIN, etc.) are given to describe the level of characteristic required. Any other standard equivalent or higher are acceptable. The standards adopted by the Bidder shall be approved by international, independent and qualified railway authorities.
- 1.2.5 The latest version of all standards, specifications, regulations and procedures shall be applicable, accept where explicitly stated otherwise.
- 1.2.6 The Bidder shall provide any other Works, activities and resources required to achieve the enablement of the PRASA Train Control System (“PTCS”) Phase 1 through the restoration, verification, testing, and commissioning of the existing original equipment manufacturer (“OEM”) electronic signalling interlocking system in PRASA’S Western Cape (“WC”) service region and meet any other requirements and specifications as required by all applicable legislation, regulations and by-laws and as requested throughout the RFP or as otherwise instructed in writing by PRASA.

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## 2 MINIMUM APPLICABLE REGULATIONS, STANDARDS, SPECIFICATIONS AND REGULATIONS

### 2.1 General

DOCUMENT NO.	DOCUMENT DESCRIPTION
<b>South African Regulations</b>	
	The Engineering Profession Act, 46 of 2000
	Occupational Health and Safety Act, 1993 (Act 85 of 1993)
	Compensation for Occupational Injuries and Diseases Act (Act 130 of 1993)
	Explosives Act No 26 of 1956 (as amended)
	SATS Legal Succession Act (Act No.9 of 1989)
<b>SANS</b>	
SANS3000:1	Railway Safety Management – General
SANS3000:2-1	Technical requirements for engineering and operational standards – General
SANS3000:2-2	Technical requirements for engineering and operational standards – Track, civil and electrical infrastructure
SANS3000:2-2-1	Technical requirements for engineering and operational standards – Track, civil and electrical infrastructure – Level Crossings
SANS3000:2-4	Technical requirements for engineering and operational standards – Train authorization and control systems and equipment
SANS3000:2-5	Technical requirements for engineering and operational standards – Train operations management
SANS3000:2-6	Technical requirements for engineering and operational standards – Interoperability, intermodal and utilities management
SANS3000:3	Railway occurrence management
SANS3000:4	Human factors management
SANS3000:5	Railway stations
<b>PRASA/TFR</b>	
	Asset Disposal Form
	Train Working Rules
	Rolling Stock specification
E7/1	Work on, over, under and or adjacent for railway lines and near high voltage equipment.

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DOCUMENT NO.	DOCUMENT DESCRIPTION
	PRASA Electronic Authorisation System User Requirement Specification
<b>CENELEC</b>	
EN50121-1	Railway applications - Electromagnetic compatibility - Part 1: General
EN50121-2	Railway applications - Electromagnetic compatibility - Part 2: Emission of the whole railway system to the outside world
EN 50126	Railway applications – Specification and demonstration of Reliability, Availability, Maintainability and Safety (“RAMS”)
EN50125-3	Railway applications – Environmental conditions for equipment
EN61000-6-2	EMC: Immunity for industrial environments
<b>IEC</b>	
IEC 62128-1	Railway applications - Fixed installations - Electrical safety, earthing and the return circuit - Part 1: Protective provisions against electric shock
IEC 61000-4	Electromagnetic compatibility (“EMC”) – Part 4-1 to 4-11: Testing and measurement techniques
<b>ISO</b>	
ISO 9001	Quality systems – model for quality assurance in design, development, production, installation and serving

## 2.2 RSS, Telecommunication and ETCS

DOCUMENT NO.	DOCUMENT DESCRIPTION
<b>CENELEC</b>	
EN 50121-4:	Railway applications- Electromagnetic compatibility (EMC)- Signalling and Telecommunication
EN50128:	Railway applications – Software for railway control and protection systems
EN50129:	Railway applications - Safety related electronic systems for signalling
EN50159-1:	Railway applications – Signalling and communications – Safety-related communication in closed transmission systems
EN50159-2:	Railway applications – Signalling and communications – Safety-related communication in open transmission systems
<b>ETSI</b>	
EN 302 608	Electromagnetic Compatibility and Radio Spectrum Matters (“ERM”); Short Range Devices (“SRD”); Radio equipment for Eurobalise railway systems
<b>IEC</b>	

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DOCUMENT NO.	DOCUMENT DESCRIPTION
IEC 60068-2-64	Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance
IEC 60068-2-29	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock
IEC/TS 62443	Industrial communication network – Network and system security
ISO/IEC 27000	Information technology — Security techniques — Information security management systems
<b>PRASA/TFR</b>	
BBB3609	Procedure for testing, commissioning and handing over of signalling projects
BBC1040:	Installation of earthing and lightning protection of signal relay rooms and signal equipment enclosures
BBC4030	Competent person for testing and commissioning of signalling installations
CSE Z148-1F	Standard Signalling Symbols
SAD-S&T-4	SATCOS Symbol catalogue
SAD-S&T-5	SATCOS command catalogue
SAD-S&T-6	RAMS requirements for RSS, Telecoms and ETCS
SAD-S&T-7	EMC, lightning and earthing requirements for RSS, Telecoms and ETCS
SAD-S&T-8	Environmental requirements for RSS, Telecoms and ETCS
SAD-S&T-9	Transportation and storage requirements for RSS, Telecoms and ETCS
STZ148-41F:	South African Railways – Multi Aspect Signalling
	Specifications for the trenching of optical fibre cable, erection of self-supporting optical fibre cable on traction masts, optical fibre accessories, for installations in the PRASA environment
01/04/2016	Specification for the Erection of self-support OFC Rev.1 in PRASA environment
#547290	Method Statement on the Installation of Way-Side Equipment