

REQUEST FOR PROPOSAL –BID DESCRIPTION: Appointment of a TURNKEY service provider for the Demolition Detailed Design, Construction and reinstatement of the associated PERWAY of Boksburg Hospital Rd rail over road bridge between Boksburg and Boksburg east station for a period of 10 months.



ANNEXURE 3 SPECIFICATION

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1.SCOPE OF THE DESIRED SOLUTION

The scope of works covers two key critical aspects. The first being the demolition of the existing bridge structure and the removal and safe guarding of existing perway (ie rail, sleepers, clips and pads). The second aspect is the detailed design, construction and reinstatement of associated perway.

The scope of work required is for the service provider to provide a TURNKEY (Demolition ,Design and Construction) solution for the demolition of the existing concrete Rail over Road bridge, the design of a new Rail over Road concrete bridge and the construction of said bridge. This work will take place between Boksburg and Boksburg East stations.

1.1 The scope of work required is for the service provider to provide:

1.1.1 To removal of the existing perway

1.1.2 Conduct demolition works of the existing bridge deck and embankments, (including the demolition supervision)

1.1.3 Conduct all required studies needed for the construction of a new concrete Rail over Road bridge

1.1.4 Compile detailed designs for the construction of a new concrete Rail over Road Bridge

1.1.5 Construction of a new Rail over Road Concrete bridge

1.1.6 The reinstatement of the associated perway on the affected area

1.2 The removal and safe keeping of rails, sleepers, clips and pads. A suitable location will be identified where the rails, sleepers clips and pads can be stock-piled. The service provider must provide security for the duration of the project to safe guard all material for the duration of the project.

1.3 The appointed Service Provider is expected to provide designs and includes the following in terms of work to be done:

1.4 Do own assessment of work (Geotechnical investigation, Site surveys, Tests, analyses, and other investigations if applicable)

1.5 Refine Schematic/Concept and develop Design Development documents (to be approved by PRASA)

1.6 Following conceptual design approval, do detail design and submit for approval

1.7 Submit construction documents and schedule for approval

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- 1.8 Construction delivery and payment schedule
- 1.9 Undertake construction supervision as per ECSA Guideline Scope of Services.
- 1.10 Testing and commissioning
- 1.11 Handover and close out.
- 1.12 The most important serviceability limit states to be considered in design are:
- 1.13 The deflection – the appearance or efficiency of any part of the structure must not be adversely affected by deflections. SABS 0100-1 suggests span/250 as a general limit on deflection.
- 1.14 Cracking – local damage due to cracking must not affect the appearance, efficiency, or durability of the structure. In this case the SABS 0100 limit is generally 0.3mm.
- 1.15 Corrosion of reinforcement.
- 1.16 Excessive vibration – which may cause discomfort or alarm as well as damage to bridge structure.
- 1.17 Fatigue – which must be considered if cycle loading is likely.
- 1.18 Fire resistance – this must be considered in terms of resistance to collapse, explosion, flame penetration and heat transfer.
- 1.19 Special circumstances – any special requirements of the structure which are not covered by any of the more common limit states, such as earthquake resistance, must be considered.
- 1.20 The construction work includes the demolishing and removal of the unsound and damaged concrete structure, repair and reconstruction of bridge, rail track rehabilitation and will include the following activities:
- 1.21 Establishment of the service provider site.
- 1.22 Preparation of the site for the accommodation of a large mobile crane.
- 1.23 Exposing of existing services by hand excavation.
- 1.24 Maintenance of existing services until the contract has been handed over to the Employer.
- 1.25 Upliftment of the track and overhead electrification and reinstatement thereof.
- 1.26 Demolishing and removal of the unsound, damaged, or contaminated concrete structure and removal of metal sections embedded in concrete.
- 1.27 Excavate and remove to spoil unsuitable material.
- 1.28 Excavation of the railway embankment and preparation of concrete formwork for extension of existing concrete elements or construction of new concrete members.
- 1.29 Pouring of in-situ concrete and completion of backfilling.

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- 1.30 After the completion of concrete work, the service provider shall restore the original ground level by backfilling with approved material from commercial sources.
- 1.31 Rehabilitate existing formation layers to various depths as per approved designs.
- 1.32 The replacement of track formation with material from commercial sources which comply with specification.
- 1.33 Reinstating the track and finishing off the works.
- 1.34 Cleaning and Mechanized tamping of ballast to specification where required.
- 1.35 Tamp and realignment of track (final alignment) with Mechanized Tamping Machine to final level.
- 1.36 And any other work arising out of or incidental to the above or required of the service provider for the proper completion of the works.
- 1.37 Removal of site establishment

***Note. The above list is not exhaustive**

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2. SCOPE OF WORK

This project entails, broadly the following elements and the appointed services providers will be required to undertake the following services:

2.1 Establish the method and sequence of demolition (including demolition supervision) of the remaining bridge concrete structure. Careful consideration should be given to the employ techniques that do not damage the adjacent structures and road bridge, the sounding rail tracks, mast foundations and overhead electrification infrastructure. It will be expected from the service provider to execute and supervise demolition works for the bridge deck, abutments and embankment

2.2 The removal and safe keeping of existing perway that being rails, sleepers, clips,pads. These will be safely stock-pilled in a designated place. Security will need to be provided to guard said material for the duration of the project

2.3 Geotechnical investigations and report on the bridge foundation types and sizes, which determine the magnitude of applied stress and the stability of the foundations. Lateral extent of the investigation to include geology and geomorphology of the site along with structural sensitivity.

2.4 Hydrological survey of the area adjacent to the station to determine the relevant storm water characteristics shall be included.

2.5 Source the relevant as-built information in order to ascertain the extent of the works. Determine the as built data of the bridge from PRASA and the Municipality and analyse it for stability and safety. Information obtained/developed in this regard should be ratified with the Metropolitan Transport authorities and/or PRASA Gauteng South Region.

2.6 Carry out surveys, analysis, lab tests and site investigation to provide recommendations for the proposed new bridge structure foundations and/or other relevant investigations where necessary.

2.7 Preparation of a complete Preliminary Investigation Report detailing the extent of the damage highlighting the different problem areas as well as recommending specific solution to the problem.

2.8 Following the acceptance and approval of the report by PRASA, the preparation of complete Detail Designs in accordance with the latest Technical Specifications.

2.9 Submission of the prepared Detail Designs for construction to PRASA for approval:

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2.10 The design must cater for and take into account any impact on bridge foundations in the rail reserve abutments and around the affected Railway Street.

2.11 Concrete bridge structure: Reinforced Concrete design is an important requirement. Careful consideration should be given to the design of bridge to ensure that the material's ultimate strength is not exceeded under factored loads.

2.12 Rail formation Design: The rail formation layer works are to be designed as specified in the *Specification for Railway Earthworks S410* included in this document and TRH4 as the standard specification for structural design of flexible pavements and rail formation layer works. The formation shall meet the minimum structural requirements for 20t axle loading (S410 Figure 2).

2.13 Drainage: Bridge get flooded during heavy rain. Careful consideration should be given to natural watercourses, lake and the possible development of new watercourses that may form as a result of the construction of the drainage system. These watercourses should be fully integrated in the design of the drainage system. The SANRAL Drainage manual to be adopted for stormwater drainage design as the standard used for the hydrology and hydraulic design of surface and subsurface drainage.

2.14 The design requirements of culverts should be such that the risk of 1:50 year storm water damage is limited along the affected length of the rail corridor.

2.15 Repair of embankment and replacement of concrete kerbing, channeling and lining to reduce pressure on side drains from stormwater up the residential area and Railway Street along the hospital: The design shall include construction of the slope retaining structures right through the embankment on the southern side of the railway line.

2.16 Erosion control: Adequate erosion protection measures should be designed to prevent unnecessary scouring and erosion of the earthworks formation where required. Hand screening of all ballast is required in all affected lines. Wing walls to be erected on the existing culverts.

2.17 Submission to PRASA of project technical information for Rail Safety Regulator (RSR) approval purposes (Submission to the RSR will be done by the relevant PRASA department).

2.19 Preparation of Close out Reports and Submission of As-built Drawings.

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2.20 The standard specification for rail and track works shall be the relevant E.10 Specifications.

2.21 Project Management, Cost Control and Quality Management as well as Value Engineering from concept right through to implementation and commissioning.

2.23 Environmental Impact Assessments approved by the Water Affairs department.

2.24 Compile a risk assessment matrix and manage the risk matrix on behalf of the PRASA.

2.25 Negotiate and compile service level agreements with relevant parties as and when required.

2.26 Finalization and submission of completion documents as well as submission of “Close out” report.

2.27 Conduct environmental studies

2.28 Obtain Environmental authorisation/Water Use Licence and or Heritage approval

2.29 Comply to all issued approvals conditions

2.30 Draft Environmental Plans for the project and ensure compliance thereof

2.31 Monitor service provider’s compliance to environmental requirements

2.32 Draft site specific Risk Assessments

2.33 Approve method statement by service providers

2.34 Submit compliance reports

2.35 Conduct Monthly inspections , audits and submit reports

2.36 Submit close out report

2.37 Ensure service provider safety file compliance to PRASA guidelines and it is approve timeously

2.38 Ensure service provider compliance to SHE on site as per the Safety file guidelines

2.39 Apply for construction permit

2.40 Draft SHE specification for the project

2.41 Draw site specific Risk assessment and monitoring there of

2.42 Conduct site induction

2.43 Inspect, test, and evaluate workplace environments, equipment, and practices to ensure that they follow safety standards and government regulations

2.44 Design and implement workplace processes and procedures that help protect workers from hazardous work conditions

2.45 Evaluate programs on workplace health and safety

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- 2.46 Educate employers and workers about workplace safety by preparing and providing training programs
- 2.47 Demonstrate the correct use of safety equipment
- 2.48 Investigate incidents and accidents to identify what caused them and how they might be prevented
- 2.49 Conduct monthly inspections and produce audit reports.
- 2.50 Approve service provider method statements ensuring compliance to SHE
- 2.51 Produce close out report for the project
- 2.52 Produce Bill of Quantities for construction
- 2.53 Prepare final account at the end of the project
- 2.54 Advice on Construction options of the project
- 2.55 Inspect works for conformity to quantities
- 2.65 Prepare payment certificates
- 2.66 Budget estimates

***Note the above list is not exhaustive**