SLOPE STABILIZATION, DRAINAGE UPGRADE BETWEEN DOORNFONTEIN AND MAYFAIR STATION

Contents

1. SCOPE OF WORK

This contract covers the stabilization of an embankment and drainage upgrade at **DOORNFONTEIN - MAYFAIR** and any other work arising out of, or incidental to the

above or required from the Contractor for the proper completion of the WORKS in accordance with the true meaning and intent of the contract document.

2. ADMINISTRATIONS OF THE CONTRACT

For the purpose of this contract, “Engineer” means the Regional Perway Engineer, GAUTENG PRASA Rail or his duly authorised representative or any person lawfully acting in that capacity.

3. CHANGE OF NAME

Wherever reference is made to “South African Railways”; “South African Railways and Harbours”; “South African Transport Services”; “Administration”; “SPOORNET” or” Transnet” in the Standard Specifications, as listed in clause 14 below, it shall be changed to read “PRASA Rail”.

4. STANDARD SPECIFICATIONS AND INSTRUCTIONS OF PRASA RAIL

4.1 The following specifications, instructions and documents shall, inter alia, form part of this contract:

(i) The project specification

(ii) The schedule of quantities

(iii) Specification for safety arrangements and procedural compliance with the Occupational Health and Safety Act: Act 85 of 1993 and Regulations E.4E

(iv) General conditions of contract, SPK 5(SEPT 2008) (September 2008).

(v) Specification for Works on, over, under or adjacent to Railway lines and near High Voltage Equipment, SPK7/1 (September 1999)

5. CONSTRUCTION REGULATION REQUIREMENTS

5.1 The Construction Regulations, 2003, an addition to the Occupational Health and Safety Act, 1993, will be applicable to this contract. The contractor is to ensure familiarity with and compliance to the regulation. The regulation can be obtained from the Department of Labour. The contractor is to ensure that the prices tendered for this contract make allowance for all the requirements of the regulation. PRASA Rail will consider the prices tendered to include the requirements of the regulation.

5.2 As part of the Construction Regulations, 2003, PRASA Rail has to provide the following documentation to the contractor:

(i) Risks on site

A preliminary risk assessment will be done by the Technical Officer in charge of this contract. This serves to highlight to the Contractor, the risks and hazards on the site of works. This will assist with the compilation of the health and safety programme, the method statement as well as the prices tendered by the contractor.

(ii) Aspects that must be covered in the Health and Safety Programme

To assist with the compilation of the Health and Safety Programme by the contractor, PRASA Rail has provided a list of elements which should be found in the plan. This can be found in Annexure 1. This list is not necessarily complete, and the contractor is allowed to include other elements which are deemed important. Refer to clause 6.1.1.3 for further details of the composition of the Health and Safety Programme. The Health and Safety Programme, as submitted by the contractor, will be discussed and amended, if necessary, before work on site begins (Refer to clause 6.1.1.4).

(iii) Safety specifications of PRASA Rail

The SPK7/1 and the E.4E specifications are included as part of the tender document.

6. DOCUMENTS THAT MUST BE RETURNED AS PART OF THE TENDER

6.1 The following documents must be returned by the contractor as part of the tender submitted:

6.1.1Health & Safety Programme

As per clause 6 of the E.4E as well as clause 11.2 of the SPK5 (Sept 2008), the Contractor is responsible for the development of and adherence to a health and safety programme as detailed below:

6.1.1.1 The Contractor shall, with his tender, submit a Health and Safety Programme setting out the practical arrangements and procedures to be implemented by him to ensure compliance by him with the Act and Regulations and particularly in respect of :-

(i) the provision, as far as is reasonably practical, of a working environment that is safe and without risk to the health of his employees and subcontractors in terms of section 8 of the Act.

(ii) the execution of the contract work in such a manner as to ensure in terms of section 9 of the Act that persons other than those in the Contractor's employment, who may be directly affected by the contract work are not thereby exposed to hazards to their health and safety,

(iii) ensuring, as far as is reasonably practical, in terms of section 37 of the Act that no employee or subcontractor of the Contractor does or omits to do any act which would be an offence for the Contractor to do or omit to do.

6.1.1.2 The Contractor's Health and Safety Programme shall be based on a risk analysis in respect of the hazards to health and safety of his employees and other persons under their control, that are associated with or directly affected by the Contractor's activities in performing the contract work and shall establish precautionary measures as are reasonable and practical in protecting the safety and health of such employees and persons.

6.1.1.3 The Health and Safety Programme shall include full particulars in respect of

(i) The safety management structure to be instituted on site or place of work and the names of the Contractor's health and safety representatives and members of safety committees where applicable.

(ii) The safe working methods and procedures to be implemented to ensure the work is performed in compliance with the Act and Regulations.

(iii) the safety equipment, devices, and clothing to be made available by the Contractor to his employees.

(iv) the site access control measures pertaining to health and safety to be implemented,

(v) The arrangements in respect of communication of health and safety related matters and incidents between the Contractor, his employees, subcontractors and the Technical Officer with particular reference to the reporting of incidents in compliance with Section 24 and General Administrative Regulation 6 of the Act and with the pertinent clause of the General Conditions of Contract forming part of the Contract and

(vi) the introduction of control measures for ensuring that the Safety Programme is maintained and monitored for the duration of the Contract.

6.1.1.4 The Health and Safety programme shall be subject to the Technical Officer's agreement, and he may, in consultation with the Contractor, order that additional and/or supplementary practical arrangements and procedures be implemented and maintained by the Contractor or that different working methods or safety equipment be used or safety clothes be issued which, compliance by the Contractor with his obligations as an employer in terms of the Act and Regulations. The Technical Officer or his deputy shall be allowed to attend meetings of the Contractor's safety committee as an observer.

6.2 Proof of Registration with Compensation Commissioner

As per clause 11.2 of the SPK5 (Sept 2008), the Contractor shall submit proof of registration and good standing with the Compensation Commissioner, in terms of Act 130 of 1993.

6.3 Method Statement

The Contractor shall submit, with his tender, a detailed method statement indicating the method or process the contractor will use to complete the works. Mention will have to be made of the machinery, tools and equipment that the contractor intends using for each stage of the works.

Failure to provide these documents with the tender submitted will render the tender incomplete and the tender will therefore not be considered for award of business.

7. CONSTRUCTION PROGRAMME

The Contractor shall, within two weeks of the date of written notification of acceptance of his tender, submit a detailed programme of work in the form of a bar chart, or other means acceptable to the Technical Officer, showing, inter alia, the duration, expected occupation or work permit dates, expected delivery dates of materials, machinery and equipment, and the starting and completion dates of each major activity in the Contract. Where the activity is ongoing and not of a one-off nature the proposed weekly production rate shall be indicated. Failure to submit the construction programme on time will result in the cancellation of the contract.

8. SECURITY AND RETENTION

As per clause 30.2 of the SPK5 (Sept 2008), retention of five percent (5%) of the contract value will be retained for the duration of the maintenance period.

The maintenance period will be from the time the contractor has completed the required work specified for a period of 12 months.

9. DURATION OF CONTRACT

PRASA Rail Gauteng requires that the Works be completed within as per schedule of quantities, which period shall include any statutory and builder's holidays falling within this period. The completion date will be determined by adding the period specified above to the date of written notification of acceptance of tender, or to such later date as may be specified in the advice of award. Lead-time has been built into the period specified.

10. PENALTIES FOR LATE COMPLETION

Should the Contractor fail to complete the WORKS by the date stipulated in the contract or such extended period as may be allowed, he shall pay PRASA Rail as penalties in terms of the Conventional Penalties Act of 1962, as amended, the sum of R20 000 (Ten thousand Rand) South African currency, per day of part thereof beyond the completion date, as defined in 5.9.1.

11. MATERIAL AND LABOUR TO BE SUPPLIED Y PRASA

Nil.

12. MATERIAL AND LABOUR TO BE SUPPLIED BY THE CONTRACTOR

12.1 The Contractor shall provide all material as detailed in the schedule of quantities.

12.2 The Contractor shall provide all Supervision and Labour necessary for the proper execution and completion of the WORKS. The Contractor shall make extensive use of labour from the local communities. When called upon by the Engineer, the Contractor shall provide documentary proof in this regard.

12.3 The Contractor shall supply a fully qualified Track Master and three Flagmen for the protection of his personnel at the working site/s.

13. PENALTIES FOR DELAYS TO RAILWAY WAGONS

When wagons, consigned to the PRASA, are to be unloaded by the Contractor, the Engineer will give the Contractor 24 hours' notice of the place and time of placing of wagons for unloading. The Contractor shall unload the wagons as expeditiously as possible, but should he fail to unload any wagon within 24 hours of it being placed for unloading, he shall be liable to pay the following penalties for the whole period between the expiration of the 24 hours period allowed and the time the wagon is finally unloaded, irrespective of what days intervene: - Bogie wagons: R11, 85 per hour or part thereof with a maximum of R260, 00 per day.

The Contractor shall, as soon as he has unloaded any wagon, advise the Engineer, giving the date, time and number of wagons unloaded.

The same conditions and penalties shall apply to empty wagons into which the Contractor has to load released material or material supplied by PRASA, surplus to requirements.

The penalties payable by the Contractor will be deducted from any monies becoming due to him.

14. SITE

The location and extent of the site is in various areas within the PRASA Rail Gauteng region and will be pointed out during the site inspection. The sites available for the

Contractor's camp will be pointed out during the site inspection. Access to the site is by public roads. The Contractor must acquaint himself with the available access to the site and the condition of the roads during the site inspection. PRASA Rail will not be liable to ensure all weather passage on the service roads.

No housing of employees of the Contractor will be allowed on the property of PRASA, and the Contractor shall make his own arrangements for the housing of his employees.

15. SITE SERVICES

The Contractor shall make his own arrangements for the supply of water (for all purposes), light, power, sanitation and telephones, as required on the site.

16. SERVICES

Where the position of a known service cannot be determined with sufficient accuracy, by visual inspection, the Contractor shall open up and make further investigation before commencing with any of his activities related to erosion protection in that vicinity, so that the position of such services may be determined with sufficient accuracy. Thereafter the Contractor shall assume responsibility for all known services.

The Contractor shall take all reasonable precautions to protect existing services during his activities on the site, and any known service damaged as result of the Contractor's operations, shall be repaired and reinstated by the Contractor or the Authority concerned, all at the expense of the Contractor and to the satisfaction of the Engineer. If a known service is damaged, the Engineer must be notified immediately and all work on site must stop until the extent of the damage is quantified.

17. CLEARING OF SITE

The Contractor shall clear the site for his camp and the cost thereof shall be included in the rates tendered. The contractor is to ensure that each site on which he works is

cleared of all waste on completion of the day's work. The waste must be disposed off at a registered dumping site. Final payment will not be made unless all waste is removed from site and the site is clean.

18. HOURS OF WORK

All off-track related work will take place between trains and within the following hours:
07h00 – 17h00 (Monday - Friday)
07h00 – 18h00 (Saturday & Sunday)

Any work with machinery closer than 3,0m from the railway and overhead power lines is dependant on the approval of occupation notices and will take place between:
09h00 – 15h00 (Monday to Friday), and 07h00 – 18h00 (Saturday & Sunday)

19. OCCUPATIONS AND WORK PERMITS

Between trains occupations and work permits will be granted for the stabilization of embankment. The maximum duration of occupations/work permits will normally not exceed six hours nor be less than three hours. Occupations/work permits will normally be granted from 09:00 to 15:00 on weekdays. The Contractor shall apply for occupations/work permits, or "work between trains permits" 28 days in advance. Late applications will not be considered. Penalties for late completion will not be wavered should the contractor not apply for occupations in time. Also refer to clause 7 and B5.

20. PENALTIES FOR ILLEGAL OCCUPATION

The Contractor is not allowed to work on site without an occupation notice or the required protection. Should the Contractor perform any work on site, without an occupation notice or without the required protection, then the Contractor shall pay to the Regional Engineer, PRASA Rail, a penalty of R10, 000.00 (Ten Thousand Rands) or shall be blacklisted and not be allowed to tender for any work at PRASA Rail. The decision as to the penalty for illegal occupation will be made by the Engineer. Also refer

to clause A.28 for the tool that will be used to evaluate the performance of the Contractor.

21. CO-OPERATION WITH PRASA RAIL'S TRAIN SERVICES PERSONNEL

The Contractor shall always liaise and cooperate with the staff of PRASA Rail during any type of occupation and in all respects, to obviate any delays. Should any train service be affected due to the negligence on the part of the Contractor, penalties will be raised in terms of clause 16 of the SPK7/1. See clause 22 of this General Specification for amounts that will be charged for delays to the train service.

22. PENALTIES FOR DELAYS TO TRAINS

Should the Contractor cause delays to the train service, either by late finish of daily occupation or inability to comply with the working programme and scheduled occupations, then the Contractor shall pay to the Regional Engineer, PRASA Rail, and a penalty of R5000.00 per train that was delayed.

23. SAMPLES AND TESTING

The Contractor shall make available, free of charge, enough material supplied by him, which are to be used for the WORKS, for quality verification by the engineer.

24. SITE MEETINGS

Site liaison meetings will be arranged by the Engineer as necessary. The Contractor or his duly authorized representative shall be available when called upon to attend site meetings with the Engineer or his representative.

25. DAY WORK

No work shall be performed on a day work basis in terms of 17 of the SPK5 (Sept 2008), unless ordered by the Engineer.

26. PLANT HIRE

In the Schedule of Quantities and Prices, provision has been made for plant required to be used for the WORKS. Tendered rates per hour shall include all costs for the operation of such plant, including operator, fuel, incidentals and any other indirect costs to tender such plant operational in terms of 17 of the SPK5 (Sept 2008), unless ordered by the Engineer.

27. LABOUR AND PLANT RETURNS

In the Schedule of Quantities and Prices, provision has been made for plant required to be used on the WORKS. Tendered rates per hour shall include all costs for the operation of such plant, including operator, fuel, incidentals and any other indirect costs to tender such plant operational in terms of clause 17 of the SPK5 (SEPT 2008)

28. SITE INSTRUCTION BOOK AND SITE DIARY

28.1 PRASA Rail will provide a site instruction book for any instructions that need to be issued to the Contractor. The Contractor will have to sign for all instructions issued and will be issued with copies of the instructions.

28.2 The contractor will be responsible for keeping a site diary with all information related to the contract. This diary will have to be kept to make record of rain delays, production for the day, visitors to the site, expected date of material delivery, material delivered daily, labour and plant on site each day, etc. This will have to be filled in daily and will be called for should there be a request for an extension in contract period.

29. PERFORMANCE EVALUATION OF CONTRACTOR

This contract and the Contractor's performance will be evaluated. The evaluation document can be found in Annexure 3. The evaluation will be done with each payment by the Engineer and Technical Officer in conjunction with the Contractor. This evaluation document will be used as a reference for future contract award by PRASA Rail.

30. QUALITY ASSURANCE

The contractor must provide the Technical Officer with the results of compaction tests (soil) and concrete cube tests (7&28 days) as randomly selected / required by the Technical Officer during the construction process. Work not approved as a result of noncompliance will have to be rectified by the contractor on his account.

31. MEASUREMENT AND PAYMENT

Measurement and payment will be as per the schedule of quantities.

32. INCREASE OR DECREASE IN COSTS OR ESCALATION

No contract adjustment or escalation factors are applicable to this contract.

33. VALUE-ADDED TAX

(i) Value added tax in terms of the Value-added Tax Act No. 89 of 1991 should not be included in the tendered rates. Provision is made in the Schedule of Prices/Summary of Prices for the lump sum addition of value added tax.

(ii) The total price inclusive of Value-added Tax shall be carried forward to the Tender form.

(iii) Value-added Tax shall be reflected on monthly contract payment certificate but paid separately on the presentation of a VAT-invoice by the contractor.

(iv) The value of work reflected on the VAT-invoice must correspond with the nett amount indicated on the contract payment certificate.

34. INSURANCE

The Contractor will be responsible for insurance of all tools, equipment, vehicles and labour that will be used on this contract, as per clause 39 of the SPK5 (Sept 2008).

PART B: EMBANKMENT STABILIZATION AND DRAINAGE UPGRDE

B.1 SCOPE

This specification covers the construction of a soil retaining structure comprising of gabion baskets, erosion blocks and backfilling with geotextile-reinforced material, drainage upgrade and ballast screening.

B.1.1 The work includes: -

B.1.1.1 Clearing and grubbing

B.1.1.2 Clearing and grubbing at inlets and outlets of hydraulic structures.

B.1.1.3 Cleaning out of the existing storm water system and disposal of debris in such a way that it will not be washed back into the system during future storm events

B.1.1.4 Clean earth drain to a suitable grade on both sides.

B.1.1.5 Install concrete-lined open drain

B.1.1.5 Cut and re-profile existing embankment.

B.1.1.6 Removal of excavated material

B.1.1.7 Prepare embankment for installing Gabion baskets and erosion protection blocks.

B.1.1.8 Construct retaining wall using erosion blocks between AB 16/560 – AB 17/564

B.1.1.9 Construction of retaining wall using Gabion baskets and erosion protection blocks

B.1.1.10 Reinforcing of backfilled material using geofabric/geotextile (bidim).

B.1.1.11 Installation of Trapezoidal channel

B.1.1.12 Ballast cleaning

B.2 TRACK STANDARDS, TOLERANCES AND ACCEPTANCE OF WORK

B2.1 Track standards and tolerances

B2.2 Acceptance of work

Only when the Contractor is satisfied that the specified standards have been obtained shall he notify the Technical Officer, in writing, that the work is within the specified standards and tolerances and that he requires an inspection of the work. After receipt of his request, the engineer will arrange for an inspection of the works to be carried out within two working days.

B.3 SPECIFICATION OF PROPOSED WORKS

B.3.1 Specifications

B.3.1.1 Design: Erosion Control Blocks.

- The contractor will be responsible to provide PRASA with a design for the installation of the erosion control blocks and will include:
    - A survey of the area to determine the slope,
    - Detail of any proposed surface drainage (E.g. earth drain, Concrete canal, etc.) to address the surface storm water entering the area,
    - Detail of sub-surface drainage behind erosion blocks (if required),
    - Detail of the erosion block foundation, and
    - Any other detail required to successfully install the erosion blocks.
- Should the contractor not be qualified to do the design, it will be expected from him to appoint a qualified person (E.g. Engineer) for this purpose.

B.3.1.2 Clearing and grubbing

B.3.1.3 Cut and re-profile existing embankment.

B.3.1.4 Removal of excavated material

B.3.1.5 Reinforcing of backfilled material using geofabric/geotextile (bidim).

B.3.1.6 Geotextile/geofabric “bidim” lining to be grade AG200 for the entire height of the embankment

B.3.1.7 Prepare embankment for installation of erosion control blocks.

B.3.1.8 Heights and the lengths of retaining structures vary according to areas.

B.3.1.9 Scarify surface to a reasonable depth prior to placing of selected granular material (as will be determined on site)

B.3.1.10 The selected granular backfill material should be compacted to minimum 93% MOD. AASHTO.

B.3.1.11 G6 material to be placed at 150mm layers-measured after compaction and compacted to 93% MOD AASHTO and at optimum moisture content.

B.3.1.12 Supply and install L13 erosion control blocks, including compaction of backfill, laying, stacking, foundations and drainage along the embankments surrounding the railway lines.

B.3.1.13 CONCRETE: Concrete strength to all concrete items to be as indicated on the drawing, curing to be 28 days. Concrete cubes to be available and tested for the record of the Technical officer on site.

B.3.1.14 FOUNDATION: Foundations to be 0.700m x 0.600m x L m long concrete footing with strength of not less than average compressive strength of 20Mpa.

B.3.1.15 All blocks shall be filled with fertile topsoil and to be lightly tamped and hydroseeded.

B.3.1.16 The first row of block’s wall bases should be filled with concrete, class 20/22. i.e. (20mpa + 22mm crusher)

B.3.1.17 The bank at the top of the retaining structure to be re-profiled to a natural slope of 1:1.5 where possible.

B.3.1.18 Supply and install erosion control Trapezoidal channel or similar approved over the total length of the embankment.

B.3.1.19 Supply and install associated drainage infrastructure to connect the new and existing stormwater infrastructure.

B.3.1.20 Clearing and grubbing at inlets and outlets of hydraulic structures.

B.3.1.21 Cleaning out of the existing storm water system and disposal of debris in such a way that it will not be washed back into the system during future storm events

B.3.1.22 Clean earth drain to a suitable grade on both sides.

B.3.1.23 The contractor shall box the ballast to its original “ballast bed” profile (to the satisfaction of the Engineer), so as not to interfere with the top of the drain. The contractor shall make sure that the ballast shoulder is not higher than the sleeper height.

B.3.1.24 There shall be no contamination of ballast allowed.

B.3.1.25 The contractor should provide temporary support for all excavations.

B.3.1.26 The contractor shall remove all the material at the toe of the embankment that may interfere with the intended flow of water.

B.3.1.27 Provision of surface / subsurface drainage as required.

B.3.1.28 The contractor shall make the channel/s be at reasonable slope or gradient for reasonable drainage.

B.3.1.29 The contractor shall remove all bushes (complete with roots), other vegetation, rubbish and all other material that may interfere with the flow of water.

B.3.1.30 The contractor shall always start working on the lower lying side of the slope or drain gradient.

B.3.2 Contamination of Ballast and Drains

If the action of the contractor leads to the contamination of the ballast and existing drains, rehabilitation will be at the contractor own cost. If the contractor fails to comply then PRASA Rail will take the initiative to return ballast and drains to the required specification and PRASA Rail will recover all costs from the contractor.

B.3.4 SUPPORTING SPECIFICATIONS AND ORDER OF PRECEDENCE OF DOCUMENTS

The following specifications and documents shall, inter alia, form part of this contract and the order of precedence shall be as follows:

a) The Project Specification (this specification).

b) The Schedule of Quantities

c) General conditions of contract for maintenance of Assets SPK5

d) Specification for Works on, over, under or adjacent to Railway lines and near High Voltage Equipment, SPK7/1 (September, 1999).

B.3.4 The Area of Work

The area of work is between Doornfontein - Johannesburg Park station km AE 12.779 to AE 13.530 and Braamfontein – Mayfair km AB 16.560 to AB 17.564

B.4 DURATION

This contract shall commence within 1 day of its award for a period of 12 months and will be completed as per schedule of quantities.

B.5 OCCUPATIONS

Occupations will be between trains from 9:00 until 15:00. **The Contractor shall apply for occupations or "work between trains occupations" 28 days in advance.** Also refer to clause 19 of the Project Specification.

B.6 PROTECTION

The Contractor shall provide all protection including protection for his own staff. Work will not be allowed to continue without the necessary protection. This protection will be in the form of three (3) Flagmen and one (1) Trackmaster.

B.7 TO BE SUPPLIED BY THE CONTRACTOR

The Contractor shall supply all material, labour, plant, consumable materials, tools, safety equipment and fuel necessary for the completion of the works unless otherwise stipulated elsewhere in this specification.

B.8 TO BE SUPPLIED BY PRASA RAIL

Nil

B.9 MATERIAL

Contractor to supply all material

B.10 TRANSPORTATION OF MATERIAL

The Contractor is to arrange for all transportation of all material at his own cost. All spoil material to be removed off site and disposed of.

B.11 CARE OF MATERIAL

The Contractor will be held responsible for the care of all of his/her material

(v) B.12 INSPECTIONS AND MEETINGS

PRASA Rail shall carry out such spot inspections, as the Regional Engineer deems necessary to verify the quality of the work performed, the accuracy of records, and safety on the worksite. The Contractor is required to attend all inspections and meetings that may be deemed necessary by the Regional Engineer.

B.13 CANCELLATION OF THE CONTRACT

PRASA Rail reserves the right to cancel this contract should the Contractor fail to complete the project within the allocated time.

B.14 MEASUREMENT AND PAYMENT

B.14.1 Measurements will be as per schedule of quantities

B.14.2 At the end of the works the Contractor shall submit an invoice for all works carried out to the Regional Engineer, PRASA Rail Gauteng. The Regional Engineer will then verify the correctness of this invoice and, once he is satisfied, the invoice shall be processed for payment.

B .14.3 All quantities are provisional but the tendered rates must be based on the given quantities. These quantities will be verified on site by the designated site agent and contractor.

B.15 Construction

B15.1 Work specifications

The standard specification for earthworks, formation, embankment, and drainage works shall be the *COLTO Standard specifications for Road and Bridge Works for State Road Authorities, 1998.* This specification has been written to deal with all aspects of road and bridge contracts

and may cover items of work not required for this contract. The particular specifications used for this contract are applicable to the works anticipated for rail formation and embankment reconstruction and are amended where necessary. The standard specification for rail and track works shall be relevant *E.10 Specifications* provided by the Employer.

In addition the contractor must note the Employer's SPK7/1 *Specification for Works on, Over, Under or Adjacent to Railway Lines and Near High Voltage Equipment.*

The standard specifications provide, in certain instances for a choice to be specified between alternative materials or methods of construction and for additional requirements to suit a particular contract. Details of such alternatives or additional requirements are contained in this part of the construction specifications. It also contains additional specifications for this particular contract. The number of each clause and payment item in this part of the construction specifications consists of item in the standard specification. The number of a new clause or new payment item is also prefixed by B followed by a new number.

SECTION 1700: CLEARING AND GRUBBING

B1703 EXECUTION OF WORK

Replace the first paragraph with the following:

"This section covers the clearing of the site and the grubbing necessary for the construction of the Works covered by the Contract."

B1703 EXECUTION OF WORK

(a) Areas to be cleared and grubbed

Delete "normally" *in the first line of the second paragraph of this Subclause.*

B1704 MEASUREMENT AND PAYMENT

B17.01 Clearing and grubbing

Add the following to the measurement and payment paragraphs:

"Clearing and grubbing for the construction of camp sites shall not be measured separately. Payment shall be regarded as included in the rates tendered for the applicable items for the above-mentioned work."

Add the following items to this Clause:

"**Item** **Unit**

B17.07 Demolition, removal and disposal off Site of miscellaneous structures consisting of:

(a) Unreinforced concrete .....cubic metre (m^3)

(c) Reinforced concrete.....cubic metre (m^3)

The unit of measurement for subitems (a), and (b) shall be the cubic metre prior to demolition of concrete, masonry or stone pitching demolished and disposed of. Subitem (a) also includes existing concrete berms under guardrails.

The tendered rate shall include full compensation for all materials, labour plant, tools, equipment and for all work necessary for and incidental to the demolition of the structures.

The tendered rate shall include full compensation for the disposal of all material in an approved disposal site within a freehaul distance of up to 1 kilometre.

Excavation and backfilling will be measured separately. For the purposes of this item reinforced concrete shall be taken to mean concrete which contains at least 0,2% of steel by volume."

Item **Unit**

B18.01 Materials

(a) Procurement .....Provisional Sum (PS)

(b) Contractors handling costs, profit and all charges .....Percentage (%)

The prices for materials (excluding VAT) shall be based on the documented proof submitted to the Engineer as specified in Clause B1802 and expenditure shall be made in accordance with the General Conditions of Contract. The prices shall not be subject to the contract price adjustment factor.

The tendered percentage as an on-cost on the net cost price of materials shall include full compensation for handling, overheads, profit, liabilities, obligations, risks, incidents and other on-cost for the supply, delivery and distribution of materials for dayworks.

B18.02 Transport

(a) LDV .....kilometre (km)

(b) Flatbed truck .....kilometre (km)

The unit of measurement for item B18.04 shall be the kilometre distance that the vehicle travelled for transporting personnel and/or equipment. All traveling shall be approved by the Engineer.

The tendered rate for item B18.04 shall include full compensation for the cost of the vehicle including fuel, maintenance, depreciation and running costs.

The above-mentioned tendered rates shall be full compensation for the various items as specified and no further profit shall be paid.

SECTION 2100: DRAINS

B2101 SCOPE

Amend the first paragraph to read:

This section covers all work both rehabilitative and new work in connection with the excavation and construction of open drains, subsoil drainage and banks and dykes at the locations and to the sizes, shapes, grades and dimensions as shown on the drawings or as directed by the engineers, and the test flushing of subsoil drains.

B2104 SUBSOIL DRAINAGE

(a) Materials

(i) Pipes

Amend this sub-clause by adding the following to the end of the third paragraph:

"(category-heavy duty) or SANS 1601 (stiffness class 350)"

The pipes to be used shall be either slotted u PVC pipes or perforated HDP pressure pipes, 100 mm ID"

(ii) Natural permeable material

Add the following to the 3rd paragraph:

"The crushed stone shall be fine or coarse (19mm nominal) and shall be washed clean of all fines"

(iii) Synthetic-fibre filter fabric

Under item (4) Selection, of this subclause, replace the 1st paragraph with the following:-

"The filter-fabric used for subsoil drains shall be grade 2 and shall satisfy the criteria for a grade 2 geotextile as given in Table 2104/2"

(b) Construction of subsoil drainage systems

Add the following sub-clause:

"(v) Proving of pipes in sub-soil drainage systems

On completion of the pipe laying and prior to backfilling, all pipe joints shall be surveyed as proof of their installation to line and level. After backfilling the pipes shall be proved by pulling through a cylindrical cleaning brush followed by a wooden mandrill ± 400mm long and 5mm in dia less than the bore of the pipe. Proving of pipes shall not be paid for separately and the cost thereof shall be deemed to be included in the rate tendered for laying the pipe."

B2107 MEASUREMENT AND PAYMENT

B21.01 Excavation for open drains

Add the following to the penultimate paragraph:

"The tendered rate shall also include full compensation for trimming the open drains including all haul."

B21.03 (a) Excavation for subsoil drainage systems

Replace the first sentence of the second measurement and payment paragraph with the following:

"The tendered rates shall include full compensation for the excavation of the material to the required lines, levels and grades, all temporary shoring and distrusting, and the disposal of the material at the approved dumping sites provided by the contractor, including all haul."

B21.12 Concrete outlet structures, manhole boxes, Junction boxes, and cleaning eyes for subsoil drainage systems

Add the following:

"The tendered rate shall also include full compensation for procuring and finishing the galvanised woven wire mesh, cutting, waste, installing the wire mesh at outlets and keeping the wire mesh in the pipe openings clean for the duration of the contract period."

B21.20 Shaping and cleaning existing unlined open drains

Item	**Unit**
(a) Soft Material	cubic meter (m^3)
(b) Hard material	cubic meter (m^3)

The tender rate shall include full compensation for all labour, equipment, tools and transport required for shaping and cleaning of existing open drains and disposal of the material to approved sites."

SECTION B2300: CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES AND CONCRETE LINING FOR OPEN DRAINS

B2301 SCOPE

Add the following:

"This section also covers the replacement of damaged concrete kerbing, channelling and lining."

B23.07 MEASUREMENT AND PAYMENT

Add the following:

Item	**Unit**
B23.19 Linings	**m/m^2**

The unit of measurement for the supply and installation of precast units shall be as per the Bill of Quantities.

The tendered rate shall include full compensation for supplying and installing precast units or in-situ cast linings including all labour and materials for placing and bedding.

SECTION B3300: MASS EARTHWORKS

B3301 SCOPE

Add the following:

"This section also covers the construction of fill layers using materials from commercial sources."

B3312 MEASUREMENT AND PAYMENT

Add the following:

"All haul to be included in items 33.01, 33.02, 33.04 and 33.07"
Amend the description of item 33.04 as follows

Item **Unit**

"B33.04 Cut to spoil, including all haul. Spoil site to be identified by contractor"

Replace the last sentence of the last measurement and payment paragraph with the following:

"The tendered rates for removal of spoil material shall also include full compensation for loading, transporting the material over haul distance, off-loading and disposing of the material as specified, to a spoil site as identified by the contractor."

Item **Unit**

"B33.07 Removal of unsuitable material, including all haul. Spoil site to be identified by contractor"

Replace the last sentence of the last measurement and payment paragraph with the following:

"The tendered rates for removal of unsuitable material shall also include full compensation for loading, transporting the material over haul distance, off-loading and disposing of the material as specified, to a spoil site as identified by the contractor."

B33.21 Fill layers constructed from gravel obtained from commercial sources:

(a) Material in compacted layer thickness of 200mm or less:

(iii) Compaction requirements, minimum in-situ dry density

Add the following after the first paragraph:

All fills at embankments shall be compacted to 93% of modified AASHTO density unless otherwise specified by the engineer.

Add the following to paragraph (iv):

The maximum swell at 100% Mod ASSHTO density compaction shall not be more than 2%."

The unit of measurement shall be the cubic metre of compacted pavement layer, and the quantity shall be calculated from the authorized dimensions of the completed layer.

The tendered rate shall include full compensation for procuring and furnishing approved material from commercial suppliers, including the cost of transporting the material to the required location on the site, placing and compacting the material, and the protection and maintenance of the layer and the conducting of control tests, all as specified. No additional payment shall be made for the removal or disposal of oversize material, regardless of the volume of oversize material.

SECTION B3400: PAVEMENT LAYERS OF GRAVEL MATERIAL

B3406 QUALITY OF MATERIALS AND WORKMANSHIP

Add to Clause 3406 the following:

Test results and re-measurements shall be assessed in accordance with the provisions of Section 8200: Quality Control of the standard specifications, as amended in these project specifications.

B3407 MEASUREMENT AND PAYMENT

Delete the note at the start of the measurement and payment clause dealing with work in restricted areas. On this Contract, no extra over payment will be made due to the nature of the site or the size of the work area available. All costs associated with carrying out the works are deemed to be included in the tendered rates for the items in the Schedule of Quantities.

SECTION B5100: PITCHING, STONEWORK AND PROTECTION AGAINST EROSION

B5102 Materials

(a) Stone

Replace the 2nd paragraph with the following:-

"Unless suitable stone can be located on site, the stone for pitching shall come from commercial sources but, from whatever source, its use shall be subject to the prior approval of the engineer."

Replace item 51.07 with the following:

Item **Unit**

B51.07 Foundation trenches:

(a) In soft material, irrespective of depth .....cubic meter (m^3)

The unit of measurement is the cubic metre of material excavated in the various classes of material, irrespective of depth. The quantity shall be calculated according to the dimensions shown on the Drawings or as instructed by the Engineer.

The tendered rates shall include full compensation for all excavation in the different classes of material, irrespective of depth, the disposal of excess material (including all haul) at approved dumping sites provided by the Contractor, dealing with any surface or subsurface water, and for any other work necessary for completing the work as shown on the Drawings or as specified by the Engineer."

B5108 MEASUREMENT AND PAYMENT

Add the following new pay item:

Item **Unit**

B51.08 Armoflex erosion control……..…….square metre (m^2)

The unit of measurement shall be square metre of erosion protection, and the quantity shall be calculated from the authorized dimensions of the completed lining.

The tendered rate shall include full compensation for procuring, furnishing and transporting approved material from commercial suppliers, including the cost of transporting the material to the required location on the site, site preparation, excavation, trimming and compaction, handling and placement by manual labour, wiring in-situ, anchoring and finishing, all as specified.

SECTION B5200: GABIONS

5201 SCOPE

Add the following:

"This section also covers backfilling behind gabion protection walls."

B5202 MATERIALS

(d) Galvanizing

Insert the following after "wire" in the first line:

"including binding wire."

(e) Wire mesh

Add the following:

"The minimum wire diameter shall be 2,7mm for PVC-coated wire and galvanized wire. Mesh sizes shall be 80mm x 100mm."

(f) Filter fabric below the gabions

Replace the contents of this subclause with the following:

"Filter fabric shall be in accordance with Subsubclause B2104(a)(iii). The grade of filter fabric to be used shall be at least grade A7 bidim or similar approved.

B5204 CONSTRUCTION OF GABIONS

(c) Assembly

Add the following:

"In the event of the manufacturer's instructions not being available the following shall apply:

(i) Assembly

Prior to assembly the gabion material shall be opened out flat on the ground and stretched to remove all kinks and bends. The gabion boxes shall then be assembled individually by raising the sides, ends and diaphragms ensuring that all creases are in the correct position and that the tops of all four sides are even. The four corners of the gabion boxes shall be laced first followed by the edges of internal diaphragms to the sides. In all cases lacing shall commence at the top of the box by twisting the end of the edges being joined, through each mesh in turn and securely tied off at the bottom. The ends of all lacing wire shall be turned to the inside of the box on completion of each lacing operation.

(ii) Erection

Only assembled boxes, or groups of boxes, shall be positioned in the structure. The side, or end from which work is to proceed shall be secured to either completed

work or by rods or stakes driven into the ground at the corners. These shall be secured and reach at least the top of the gabion box.

Further gabions shall be positioned in the structure as required, each being securely laced to the preceding one at all corners and diaphragm points.

(i) Stretching

On completion of erection of a suitable length of gabion the gabion boxes shall be stretched using a wire strainer or winch of at least one ton capacity firmly secured to the free end of the assembled gabion boxes.

Whilst under tension the gabion boxes shall be securely laced along the edges (top, bottom and sides) and at diaphragm points, to all adjacent boxes and shall thereafter be filled."

(d) Rock filling

Add the following subclauses:

"(iii) Filling the boxes

Filling shall be carried out only whilst gabion boxes are under tension. Filling material shall consist of stone so placed to produce a neat face and line with a minimum of voids.

Internal horizontal bracing wire shall be provided at 330mm vertical centres in 1,0m deep units at a ratio of four to every 1,0m^3 of filling. These bracing wires shall be wrapped around two mesh wires and extended from front to back so positioned to ensure a neat face and line free of excessive bulges and depressions. Gabion boxes shall be filed in stages and horizontal bracing wires inserted as filling is brought up.

Similar bracing wires used vertically shall be provided in 0,5m deep gabions at 330 mm horizontal centres where water falls directly onto the gabions or where a neat face is required.

Tension on the gabion boxes shall be releases only when they are sufficiently full to prevent the mesh from slackening.

Gabion boxes shall be overfilled by 20 to 50mm above their tops to allow for subsequent settlement of the filling.

(ii) Final wiring

Closing and wiring down of lids shall proceed as soon as practicable after filling operations and certainly in the likelihood of storms or floods during construction.

Lids shall be stretched tight over the filling with bars and wired down securely through each mesh along all edges, ends and diaphragms. The ends of all typing and bracing wires shall be turned into the gabion box on completion of all lacing operations.

Tightness of mesh, well packed filling and secure lacing is essential in all structures.

(iii) Cutting and folding mesh

Gabion mesh may only be cut, folded and wired together for the purpose of forming mitre joints, angles, curves or slopes which are not possible to construct using standard rectangular gabions. Such mesh shall be cut neatly, surplus mesh shall either be completely removed, or folded back, or folded and tightly wired to an adjacent gabion face. The cut edges of the mesh shall be securely laced together with binding wire."

PART C: TRACKWORK

E.10/3: BALLAST CLEANING

1 SCOPE

This specification covers the work necessary for the cleaning of ballast by hand methods on open lines and yards.

2. INTERPRETATIONS

2.1 SUPPORTING SPECIFICATION

2.1.1 The following specifications, shall, inter alia, form part of the contract documents:

a) The E.10 Gen - General
b) The E.10/4 - Ballasting and tamping
c) The E.10/11 - Survey and setting out of track alignment and referencing

2.1.2 In addition the following specifications, inter alia, may be required:

a) The E.10/9 - Slewing and alignment
b) The E.10/10 - Drain cleaning

2.2 DEFINITIONS

Void.

3. MATERIALS

3.1 BALLAST SPECIFICATION

Ballast returned to the track shall comply with SANS 1083.

3.2 SUPPLY OF MATERIAL

Refer to the sub-specification for Ballasting E.10/4 if additional ballast is required.

4. PLANT

Ballast forks shall be used for handling ballast when it is cleaned by hand. The contractor must provide all tools necessary to execute the works, either manual or mechanical.

5. CONSTRUCTION

5.1 GENERAL

The contractor is required to provide the method statement to be approved by the Engineer.

5.2 SAFETY

The contractor once handed over the site is responsible for the safety of all personnel closer to the site and the public.

5.3 PROGRAMME AND METHOD STATEMENT

It is the requirement of these works that all work to be undertaken must be documented on a method statement. The method statement must be approved by the Engineer.

The work programme should be submitted to the Engineer and updated as and when work progresses, any deviations to the program either by Engineer or contractor to be accounted for by the contractor and no liability will be accepted by PRASA.
It is the nature of these works that the work should continue between trains, occupations must be requested from the Engineer or his representative, who will advise on the period for which they are going to be approved and their duration. The contractor should have enough labour and resources to complete the works during these maintenance window periods.
PRASA will not allow works to continue without approval of occupations. The contractor may be required to work outside normal working hours.

5.4 METHODS AND PROCEDURES

5.4.1 GENERAL

5.4.1.1 Ballast cleaning is to be done in conjunction with other operations on track, the cleaning must be done before or concurrently with the other operations if at all possible. The Contractor shall not offload new ballast prior to or during cleaning unless instructed to do so by the Engineer.

5.4.1.2 The Contractor shall clean the ballast and shall excavate the formation material or import approved formation material to the levels and shapes designed and specified by the Engineer.

5.4.1.3 The Contractor shall have at least three track thermometers in continuous use while ballast is being cleaned and, when the temperature is rising, he shall keep a written record of temperature at fifteen-minute intervals and be prepared to stop work and make the track safe against kick outs before the rail temperature attains the upper limits of temperature ranges B or C shown in Annexure H of specification E.10 Gen., whichever range is decided upon by the Engineer.

5.4.1.4 During ballast cleaning, the Contractor shall square any sleepers which are obviously skew. He shall tighten the sleeper fastenings on all sleepers and reposition any displaced elastic pads between the rails and sleepers.

5.4.1.5 The Contractor shall give special attention to the run out at the end of the working area before he line is opened to traffic. He shall ensure that the run out from partially tamped track to fully tamped track is applied at a slope with a grade of not more than 1:500 with respect to the existing grade.

5.4.1.6 The ballast shall be boxed in on completion of the day's work.

5.4.1.7 Should the Contractor contend that there are any adverse track or site conditions he shall record all relevant information prior to and after working.

5.4.2 CLEANING BALLAST BY HAND.

5.4.2.1 Cleaning of ballast shall be carried out only under one sleeper and between it and the next sleeper in any group of eight sleepers. The ballast shall be packed before work between the next pair of sleepers is commenced. At the end of the days work, ballast under all sleepers in the specific work area shall have been cleaned to prevent rail damage over solid sleepers.

5.4.2.2 Ballast cleaning shall not take place when the rail temperature exceeds the maximum of the following ranges specified in Annexure H of specification E.10 Gen.:

a) For wood-sleepered track, range B.
b) For concrete-sleepered track, range C.

5.4.3 Standard operating procedure for screening of ballast.

5.4.3.1 Do a pre-start inspection on the following:

5.4.3.1.1 All PPE- (Gloves, goggles, overalls, safety boots, dust masks etc.)

5.4.3.1.2 All tools- (Shovels, ballast forks, and beaters)

5.4.3.1.3 All equipment

5.4.3.1.4 Check your surroundings / area that you are going to perform the task in.

5.4.3.2 Procedure to be followed when a task is performed:

5.4.3.2.1 Report to the rail control and give the necessary information on the task that is going to be performed.

5.4.3.2.2 Take out the necessary permits that are required to perform the job.

5.4.3.2.3 Before you start the task make sure that the necessary flags are put out for protection to warn trains that they are people working on the railway lines. Safe distances are 50m to 100m.

5.4.3.2.4 Make sure that people who are going to perform the task know exactly what to do and what tools to use before they start.

5.4.3.2.5 Ballast forks only are used in removing, screening and returning ballast on the track.

5.4.3.2.6 Shovels are used in removing spoils from the track and on formation. The spoils must be deposited where it will not be wash back into the drains.

5.4.3.2.7 Beaters are used to loosen fouled ballast to enable ballast forks easy penetration.

5.4.3.2.8 Cleaning of ballast between trains (i.e. removing, cleaning and lashing in) must be carried out at rate of not more than one sleeper in every 8 sleepers at one given time.

5.4.3.2.9 Ballast is removed from the cribs onto formation, screened and then placed back into the track using ballast forks only.

5.4.3.2.10 The spoils from screened ballast is moved away from formation and drainage system.

5.4.3.2.11 The ballast is boxed in and profiled to required standard. Special attention must be given to vertical and horizontal clearances.

5.4.3.2.12 Supervision by competent person is required at all times to ensure that task is completed in safe manner.

5.4.3.2.13 Once the task is completed make sure the track is left in safe condition.

5.4.3.2.14 Remove all tools and equipment from the tracks and clean the work area.

5.4.3.2.15 Remove the flags on both sides of the working area and sign off the permit

5.4.4 DISPOSAL OF FOULING MATTER AND MATERIAL EXCAVATED.

5.4.4.1 Fouling matter and excavated material shall be disposed of as directed by the Engineer on each site.

5.5 STANDARDS

Manual for track maintenance 2000

Sabs 1083

5.6 COMPLETION

All completed wok must be on the B standard in yards and A standard on open track. The contractor to ensure that the site is cleaned of all fouled material after each days work. All fouled material to be disposed off at suitable location.

6. TOLERANCES

6.1 The actual depth of ballast cleaning shall not differ by more than 30 mm from the depth of cut specified by the Engineer.

6.2 The actual width of ballast cleaning shall not differ by more than 100 mm from the width of cut specified by the Engineer.

6.3 100% by volume of the cleaned ballast shall pass a 73mm sieve and not more than 5% shall pass a 19 mm sieve.

6.4 Material disposed of by the manual methods shall not contain more than 5% by volume of acceptable ballast.

6.5 The adjustment of the standards described in 6.3, applicable to the cleaning of wet ballast, will be as specified in the Project Specification.

7. TESTING

7.1 Before any length of track on which ballast cleaning has been done is presented to the Engineer for take-over, the Contractor shall open the work for inspection and testing of the cleaned ballast in the track, as directed by the Engineer. Any ballast samples taken shall be picked up with a shovel.

8. MEASUREMENT AND PAYMENT

8.1 SCHEDULED ITEMS

8.1.1 Clean ballast…… Unit: m³

Quantities of ballast cleaned will be measured from cross sections by the method of end areas.

8.1.1.1 Separate items will be scheduled for the following:

a) Different ballast profiles (class of line).
b) Different sleeper types.
c) Ballast in tunnels, on bridges, under bridges and at platforms.

8.1.1.2 The rates tendered shall include for the following:

a) Measuring the rail temperature as described.
b) Squaring sleepers requiring squaring.
c) Tightening the sleeper fastenings on all sleepers.
d) Repositioning any displaced elastic pads between the rails and the sleepers.
e) Boxing in the ballast.

8.1.2 Formation correction……. Unit: m³

Quantities of formation correction will be measured as the volume of formation material excavated calculated from cross sections by the method of end areas.

8.1.2.1 Separate items will be scheduled for the following:

a) Formations in cuttings.
b) Formations in tunnels, on bridges, under bridges and at platforms.
c) Formation on banks.
d) Formations in station yards.

8.1.2.2 The rates tendered shall include for the following:

a) Excavating formation material to the specified depth.
b) Importing and compacting approved material.
c) Grading the formation to the specified profile and levels.

8.1.3 Disposal of fouling matter and material excavated……. Unit: m³

The volume of fouling matter will be taken as 35% of the volume of ballast cleaned, unless otherwise specified in the Project Specification.

8.1.3.1 The rates tendered shall include for the following:

a) Ballast in tunnels and on bridges
b) Single tracks.
c) Multiple tracks.
d) Disposal with wagons.
e) Disposal with lorries

8.1.3.2 The rates tendered shall include for the following:

a) Loading fouling matter and material excavated on wagons
b) Loading it on lorries.
c) Transporting it over the free haul distance.
d) Offloading it at designated place**.**

8.1.4 Open work for inspection and testing…… Unit: Each

Every location opened for inspection at which the work is found acceptable will be counted. Locations at which the work is unacceptable will not be counted.

8.1.4.1 The rate tendered shall include for the following:

a) Opening work for inspection.
b) Making good after inspection by the Engineer.

35. CONSTRUCTION RELATED SECURITY

35.1 MANDATORY SECURITY REQUIREMENTS

35.1.1 All security companies used by the Contractor shall be PSIRA registered with valid letter of good standing.
35.1.2 Security personnel shall all be PSIRA registered with a clear criminal record no criminal pending cases and preferably be sourced from the local community.
35.1.3 All security officials utilised in this project shall be South African Citizens.
35.1.4 All personnel employed by the Contractor including sub-contractors shall have undergone a Health and Safety Induction.
35.1.5 Permits to work (in line with Covid-19 regulations) shall be issued at the cost of the contractor to all personnel on that shall be signed and stamped by the authorized PRASA Official responsible for Risk Management.

35.1.6 The security to be provided by the contractor shall be responsible for both the appointed contractor's assets and PRASA's assets on site until the site is handed over to PRASA. A list of all functioning equipment that do not form part of this scope of work will be shared with the successful bidder and shall be signed off by both the successful bidder and PRASA's representative.

35.1.7 PRASA assets that shall be guarded by the contracted security includes Permanent way assets, All Train Authorisation on track elements, all train stations (with all assets included) along the section and all functioning equipment along the corridor.

35.1.8 Any lost or stolen material shall be replaced by the contractor at his own cost.

35.1.9 The contractor shall provide on-site security for personnel and material stock and should ensure that patrols are in place at the section handed over to the contractor and until the completed work is handed over to PRASA. No claims of material or losses shall be lodged with the client for stolen goods during the construction before the completed work is handed over to PRASA.

35.1.10 Furthermore, it is the contractor's responsibility to ensure that valuable metal i.e. copper is adequately protected while in transit to and from site.

35.1.11 The contractor shall make sure that all material removed from site is quantified, counted, logged in the site diary and that it is co-signed by a PRASA representative on site before it is removed from site.

35.1.12 Scrap metal removed from the section shall be adequately protected until it is delivered to PRASA's stores.

35.1.13 PRASA reserves the right to conduct ad-hoc inspections to ensure Compliance

35.2 Risks

35.2.1 Tabulated below are the associated security Risks and proposed mitigation measures. It should be noted that this are minimum risks identified and bidders shall be responsible for conducting their own risk assessment that will influence their quotations.

Risk	Probability	Mitigation
Theft of Installed equipment	High	Fit for purpose security with an

		integrated plan for assets installed and physical security at site office. Ensure protective measures for site with an access gate.
Hi-jacking of site personnel vehicles	High	Armed Escorts to and from the site
Armed Robbery of personnel on site and Storage Facility at site	High	Armed Guarding at site and site office with an armed response for mobilisation

35.3 PROPOSED INTERVENTIONS

Minimum of 2 vehicles with armed response officers (2-4) per vehicle strategically deployed within the site. To supplement the vehicles, a suitable number of day and night visible officers on foot patrol is required.

35.3.1 Requisite equipment:

- Bullet proof vests.
- Spotlight.
- Night vision equipment.
- Torches.
- Tactical Radios (PTT with GPS and Panic Button). This should be the primary communication for all personnel on site.
- Handcuffs (disposable type) and other standard equipment.
- Firearms with extra magazine; and
- Any other equipment identified though the risk assessment.

36. OVERALL STAFFING AND KEY RELATED PROFESSIONAL STAFF

The contractor shall provide qualified and experienced professional staff with the following key professional expertise.

- Team Leader/Project Director

- Civil Engineering Technician
- Flagman
- Construction Health and Safety Officer
- Plant Operator

MINIMUM QUALIFICATION OF KEY PROFESSIONAL STAFF

Team Leader/Project Engineer

- Civil Engineering qualification (Degree, Diploma or N-level certificate)
- Minimum 3 years post experience in the in the planning and design of multi-disciplinary similar or related projects
- Project Management qualification with 3 years minimum experience

Civil / Structural Engineer

- BSC Degree / B.Tech in Civil / Structural Engineering
- ECSA registered as a Professional Engineer/Technologist.
- Minimum 3 years Post Graduate experience in design of similar projects.

Surveyor

- All survey cross-sections and longitudinal-sections work shall be done by a fully qualified Surveyor in possession of a valid land survey qualifications
- Minimum 3 years' experience as a qualified Land Surveyor.

Flagman

- Qualified flagmen for the protection of the work site with valid flagman certificates.
- A minimum of three qualified flagmen shall be deployed for each occupied section.

Health and Safety Officer

The desired minimum qualifications for the Construction Health and Safety Officer are as follows:

- Registered with professional body (SACPCMP)
- Minimum of 3 years industry experience as a health and safety officer.

General labours

- All general labour must be medical fit.

37. APPLICABLE SPECIFICATIONS

The documents forming the contract are to be taken as complimentary to each other. In case of any discrepancy or inconsistency between contract documents, the order of precedence will be:

a) SANS 3000-1 to 2, Railway Safety Management.
b) SABS 1200NB Railway Sidings (Track work).
c) EN13674-1, UIC 860-0, UIC 8610-1 or the latest equivalent standard.
d) EN13848 - Railway applications – Track geometry quality or the latest equivalent standard.
e) Standard specifications E7/1.
f) Safety Arrangements and Procedural Compliance with the Occupational Health and Safety Act (Act 85 of 1993) and Applicable Regulations (E4E); including any subsequent amendments.
g) E10: General Specifications for Railway Track work.
h) E10/1: Laying of Rails.
i) E10/2: Laying of sleepers.
j) E10/4: Ballasting and alignment.
k) Manual for Track Maintenance (2000); and
l) Railway Safety Regulator Act (Act 16 of 2004)
m) Infrastructure Perway Technical Specification for Rails

38. PROJECT SPECIFIC TERMS AND CONDITIONS

E10: General specifications for Railway tracks Maintenance 2000	Refers to Manual for Track
E10/3: Ballast cleaning	Refers to Manual for Track Maintenance 2000
E10/10: Drainage cleaning	Refers to Manual for Track Maintenance 2000
E10/4: Ballasting and Tamping	Refers to Manual for Track Maintenance 2000

39. PROJECT-SPECIFICFIC SAFETY RELATED REGULATIONS

a. The contractor shall comply with requirements of safety legislations and regulations in all respects.
b. All drivers shall be in possession of valid driver's licenses and Public Drivers Permits (PDP) where applicable. Crane operators will be required to have a valid Crane Operator's certificate. All vehicles shall be road worthy.
c. The contractor shall be responsible for all protective clothing and –equipment for his employees. All employees required to climb structures shall be issued with suitable harnesses.
d. All work shall always comply with the E7/1 Specification attached hereto.
e. Normal protection measures in accordance with the Protection Manual shall apply.
f. An effective safety procedure to be followed by all personnel on any work site in the case of approaching rail traffic shall be compiled by the Contractor and implemented before any work commences. This procedure shall be updated whenever the need arises, and any changes shall be communicated to all employees on a works site before work proceeds.
g. It is the requirement of this contract that the contractor should provide PRASA with a detailed safety plan prior to being issued with a site access certificate, in accordance with the latest version of the OHS Act and the SPK7 and the E4E.
h. Occupational Safety Act, 1993 (Act No: 85 of 1993)
i. National Environmental Management Act 107 of 1997
j. Construction regulation 2014

44.1 STAGE 2: TECHNICAL / FUNCTIONALITY REQUIREMENTS

Qualifying bidders shall then be evaluated on functionality after meeting all compliance requirements outlined above. The minimum threshold for the technical/functionality requirements is 70% as per the standard Evaluation Criteria presented in table 44.1 above. Bidders who score below this minimum requirement shall not be considered for further evaluation in stage 3.

Details of the technical/functional requirements are presented in the table below.

Item	Criteria	Weight
1	Organizational Experience	40
2	Experience of key personnel	30
3	Project program (Work plan)	30
4	Project Approach and Methodology	20
	TOTAL	**100**