



SOUTH AFRICAN RAIL COMMUTER CORPORATION LTD.

SPK7/2

GENERAL CONDITIONS AND SPECIFICATION FOR WORKS ON, OVER, UNDER OR ADJACENT TO RAILWAY
LINES AND NEAR HIGH VOLTAGE EQUIPMENT

(This specification shall be used in contracts other than those awarded by SA Rail Commuter Corporation)

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1 DEFINITIONS

The following definitions shall apply :

Authorised Person: A person whether an employee of Transnet or not, who has been specially authorised to undertake specific duties in terms of Spoornet's publication ELECTRICAL SAFETY INSTRUCTIONS, and who holds a certificate or letter of authority to that effect.

Barrier: Any device designed to restrict access to and prevent inadvertent contact with exposed "live" high-voltage electrical equipment.

Bond: A short conductor installed to provide electrical continuity.

Responsible Representative: The responsible person in charge, appointed by a contractor, who has undergone specific training (and holds a certificate) to supervise staff under his control to work on, over, under or adjacent to railway lines and in the vicinity of high-voltage electrical equipment.

Contractor: The person or organisation appointed by the Grantee to carry out work on his/its behalf.

Dead: Isolated and earthed.

Duly Authorised Representative: Any employee of SARCC or its maintenance and/or operating Contractor whose responsibilities include the safety of trains, persons and SARCC property in the area in which the work is being undertaken.

Electrical Officer (Contracts): The person appointed in writing by the responsible Electrical Engineer of the SARCC's maintenance Contractor as the person who shall be consulted by the Contractor in all electrical matters to ensure that adequate safety precautions are taken by the Contractor.

Grantee: A person or organisation to whom authorisation has been granted by the SARCC to perform work on, over, under or adjacent to railway line.

High-Voltage: A voltage normally exceeding 1 000 volts.

Live: A conductor is said to be live when it is at a potential different from that of the earth or any other conductor of the system of which it forms a part.

Near: To be in such a position that a person's body or the tools he is using or any equipment he is handling may come within 3 metres of live high-voltage electrical equipment.

Occupation: An authorisation granted by the SARCC's maintenance and/or operating Contractor for work to be carried out under specified conditions on, over, under or adjacent to railway lines.

Occupation between trains: An occupation during an interval between successive trains.

Site: The land and other place on, over, under, in or through which the works are to be executed or carried out and any other land or place made available by the SARCC in connection with the work.

Total occupation: An occupation for a period when trains are not to traverse the section of line covered by the occupation.

Work on: Work undertaken on or so close to the equipment that the specified working clearances to the live equipment cannot be maintained.

Work permit: A combined written application and authority to proceed with work on or near dead electrical equipment.

Works: The works, on, over, under or adjacent to a railway line to be executed by the Contractor and for which permission has been obtained from the SARCC.

PART A - GENERAL CONDITIONS**2. ADVERTISING AND NOTICE BOARDS ON SARCC PROPERTY**

- 2.1 The SARCC reserves all advertising rights on its property.
- 2.2 No advertisement or notice board may be erected on SARCC property by the Grantee or Contractor unless the written approval of the SARCC has first been obtained.
- 2.3 All information on notice boards shall be in English and may be supplemented by another official language if considered necessary. The proposed wording shall be submitted for approval by the SARCC.

3. TRADING ON SARCC PROPERTY

- 3.1 The Grantee or Contractor shall not trade or allow any trading by others on the site without the prior approval of the SARCC.

4. ENTRY ON SARCC PROPERTY

- 4.1 Entry on, over or under SARCC property is restricted. Permission to enter will be given by the SARCC only for the purpose of carrying out the Works and will be subject to terms and conditions laid down by the SARCC.
- 4.2 Permission to enter will be considered on condition that no act or omission on the part of the Contractor or his employees shall affect the safe and uninterrupted passage of trains or the safety of persons or SARCC property, and may be withdrawn at the discretion of the SARCC.

5. INSTALLATIONS AND SERVICES ON SARCC PROPERTY

- 5.1 Should it be necessary to maintain, discontinue, remove or relocate any installation or service on SARCC property, the Grantee shall, with the prior approval of the SARCC cause it to be maintained, discontinued, disconnected, removed or relocated as the case may be, in such a manner as may be required either by the SARCC, the owner of a private installation or service or by the local or statutory authority in the case of a public utility installation or service.

The Grantee shall be responsible for sending all requisite notices to the authorities or persons concerned and for making arrangements for the maintenance, discontinuance, disconnection, removal or relocation of the said installations or services as the case may be.

He shall be responsible for the payment of all fees or charges that may become payable to the local or statutory authority or persons concerned in connection with any of the above mentioned matters or arrangements.

- 5.2 The Contractor shall, before commencing work, ascertain from the SARCC's maintenance and/or operating Contractor or any local or other authority whether overhead or underground electrical conductors are affected by the Works, and the Contractor shall ensure that any precautionary measures required are strictly observed.

6. ACCESS, FENCING AND GATES ON SARCC PROPERTY

- 6.1 The Contractor shall arrange, at his own expense, for access to SARCC property. The Contractor shall be responsible for the closing of all gates on roads and tracks used by him or his employees. Except with prior approval of the SARCC's maintenance and/or operating Contractor, the Contractor shall not cut, lower, damage, remove or otherwise interfere with any fence or gate which is either on the SARCC boundary or which restricts access to SARCC property. Where such approval has been given, the contractor shall prevent entry on to SARCC property by animals or unauthorised persons and shall make the fence safe against trespass at the close of each day's work.
- 6.2 When access is no longer required and before completion of the Works, the Contractor shall at his own expense, repair, restore or replace fence and gates to the satisfaction of the SARCC's maintenance and/or operating Contractor.

7. FOSSILS AND ANTIQUITIES ON SARCC PROPERTY

- 7.1 All fossils, coins, articles of value or antiquity, and structures and other remains or things of geological or

archaeological interest discovered on the site shall be deemed to be the absolute property of the SARCC. The Contractor shall take reasonable precautions to prevent his workmen or any other person from removing or damaging any such article or thing, and shall immediately upon discovery thereof and before removal, inform the SARCC's maintenance and/or operating Contractor of such discovery, and dispose of such article or thing at the direction and expense of the SARCC.

8. AREA NOT TO BE POLLUTED

- 8.1 Pollution of the area inside or adjacent to the SARCC boundaries shall be prevented.

9. COMPLIANCE WITH STATUTES AND REGULATIONS

- 9.1 The Contractor shall comply with the provisions of the following:

- (i) the OHS Act 85 of 1993, as amended;
- (ii) the Explosive Act 26 of 1956, as amended;
- (iii) the Workmen's Compensation Act, 1941, as amended;
- (iv) the Mines Health and Safety Act 29 of 1996, as amended;
- (v) the ELECTRICAL SAFETY INSTRUCTIONS, as amended;

and all regulations framed under these acts.

- 9.2 The Contractor shall prepare and submit to the SARCC's maintenance and operating contractor for acceptance, a Safety Case clearly explaining his Safety Management System. A site access certificate will not be issued to the Contractor unless this Safety Case has been accepted.

- 9.3 The Contractor shall comply with the provisions of the OHS Act 85 of 1993, as amended. For the purpose of this Act, the site occupied by the Contractor is transferred, for the duration of the contract, to the control of the Contractor as if it were his property. Prior to commencement of any work, and following the acceptance of a Safety Case, a site access certificate shall be issued to the Contractor by the SARCC's maintenance and/or operating Contractor. As employer, the Contractor is in every respect responsible for compliance with the provisions of this Act.

- 9.4 Compliance with all applicable legislation shall be entirely at the Contractor's cost.

10. SITE INSTRUCTION BOOK

- 10.1 The Contractor shall supply and have available on the site at all times a triplicate carbon copy book with detachable sheets for receiving and recording instructions by the SARCC or its maintenance and/or operating Contractor or by the owner of any other affected services or property. The Contractor shall request the person concerned to write the instruction in the site instruction book, to sign it and to record his official designation. The instruction shall be countersigned by the Contractor or his agent. The original sheet of the site book will be removed and retained by the person issuing the instruction and carbon copies retained by the Contractor.

11. CONTRACTOR'S REPRESENTATIVES

- 11.1 The Contractor shall exercise supervision over the Works at all times during working hours, or shall be represented by an agent having full power and authority to act on his behalf. Such agent shall be competent and responsible, and have adequate experience in carrying out work of a similar nature to the Works, and shall exercise personal supervision on behalf of the Contractor. The SARCC's maintenance and/or operating Contractor shall be notified in writing of such appointment.

- 11.2 The Contractor or Responsible Representative(s) shall be available on the site at all times while the Works are in progress to receive the instructions of the SARCC or its maintenance and/or operating Contractor or by the owner of any other affected services or property.

- 11.3 The Contractor shall nominate his Responsible Representative(s) of whom at least one shall be available at any hour for call-out in cases of emergency. The Contractor shall provide the SARCC's maintenance and/or operating Contractor with the names, addresses and telephone numbers of the representatives.

- 11.4 The Contractor guarantees that he has satisfied himself that the Responsible Representative(s) are fully conversant with this specification and that he shall comply with all his obligations in respect thereof.

- 11.5 The Responsible Representatives shall be familiar with the contents and provisions of the ELECTRICAL

SAFETY INSTRUCTIONS, copies of which they shall keep in their possession for the duration of the contract.

12. FACILITIES TO SARCC OR OTHER CONTRACTORS

- 12.1 The Contractor shall, in accordance with the requirements of the SARCC or its maintenance and/or operating Contractor, afford all reasonable facilities to any other party(ies) who may be required by the SARCC or its maintenance and/or operating Contractor to perform duties or carry out work on or contiguous to the Works. Any disagreement arising in this connection between the Contractor and such other party(ies) will be settled by the SARCC's maintenance and/or operating Contractor who will convey its decision to the Contractor and other party(ies) concerned.

13 CARE OF THE WORKS

- 13.1 The Contractor shall take full responsibility for the care of the Works and any temporary works, and shall be liable for any damage caused by him in the course of any of his operations.

14. TEMPORARY LEVEL CROSSINGS

- 14.1 Applications for temporary level crossings shall be submitted by the Grantee in writing for approval to the SARCC's maintenance and/or operating Contractor. These applications shall include a plan and cross-sectional view of the site including all affected services and proposed temporary alterations thereto.

- 14.2 The SARCC's maintenance and/or operating Contractor may permit the construction of a temporary level crossing over the railway line at any approved site. The period for which the level crossing is permitted will be at the discretion of the SARCC's maintenance and/or operating Contractor.

- 14.3 The Contractor at his own cost, shall arrange the construction by a nominated specialist sub-contractor of the entire approved temporary level crossing, including all level crossing signs and height gauges and alterations to communication, power and signal equipment as well as drainage.

The constructed temporary level crossing shall be subject to the inspection and approval of the SARCC's maintenance and/or operating Contractor. After the temporary level crossing has served its purpose, the Contractor, at its own cost, shall arrange its removal by a nominated specialist Contractor and return the infrastructure assets to normal to the approval of SARCC's maintenance and/or operating contractor.

- 14.4 The Contractor shall, at his own cost, take all necessary steps including the provision of gates, locks and, where necessary, watchmen to restrict the use of the level crossing to himself and his employees, his sub-contractors and their employees, the staff of the SARCC and its maintenance and/or operating Contractor and to such other persons as the SARCC may permit, of whose identity the Contractor will be advised.

If ordered by the SARCC's maintenance and/or operating Contractor, the Contractor shall, at his own cost, appoint persons to control road traffic using any temporary level crossing. Such persons shall stop all road traffic when any approaching train is within 750 m of the level crossing and shall not allow the road traffic to proceed over the level crossing until the lines are clear.

15. BLASTING

- 15.1 No blasting in the vicinity of railway lines shall be carried out except with the prior written permission of the SARCC's maintenance and/or operating Contractor.

- 15.2 The Contractor shall advise the SARCC's maintenance and/or operating Contractor of his intention to blast at least 21 days prior to the commencement of any blasting operation.

- 15.3 The Contractor shall have labour, tools and plant, to the satisfaction of the SARCC's maintenance and/or operating Contractor, available on the site to clear immediately any stone or debris deposited on the track or formation by blasting, and to repair any damage to the track or formation immediately after blasting. Repairs to the track shall be carried out only under the supervision of a duly authorised representative of the SARCC's maintenance and/or operating Contractor.

- 15.4 Before any blasting is undertaken, the Contractor and the SARCC's maintenance and/or operating Contractor shall jointly examine and measure up any SARCC buildings, houses or structures in the vicinity of the proposed blasting to establish the extent of any cracking or damage that exists. The Contractor, at his own expense shall make good any deterioration of such buildings, houses, or structures, which, in the opinion of the SARCC's maintenance and/or operating Contractor, is a direct result of the blasting.

- 15.5 The Contractor shall provide proof that he has complied with the provisions of clauses 10.17.1 to 10.17.4 of the Explosives Regulations (Act 26 of 1956 as amended).
- 15.6 Blasting within 500 metres of a railway line will only be permitted during intervals between trains. A person appointed by the SARCC's maintenance and/or operating Contractor, assisted by flagmen with the necessary protective equipment, will be in communication with the controlling railway station.
- Only this person will be authorised to give the Contractor permission to blast, and the Contractor shall obey his instructions implicitly regarding the time during which blasting may take place.
- 15.7 The flagmen described in clause 15.6 above, where provided by the SARCC's maintenance and/or operating Contractor, are for the protection of trains and SARCC property and personnel only, and their presence does not relieve the Contractor in any manner of his responsibilities in terms of Explosives Act or Regulations, or any obligation in terms of this contract.
- 15.8 The person described in clause 15.6 above will record in a book provided and retained by the SARCC's maintenance and/or operating Contractor the dates and times:
- (i) when each request is made by him to the controlling station for permission to blast;
 - (ii) when blasting may take place;
 - (iii) when blasting actually takes place; and
 - (iv) when he advises the controlling station that the line is safe for the passage of trains.
- 15.9 Before each blast the Contractor shall record in the same book, the details of the blast to be carried out. The person appointed by the SARCC's maintenance and/or operating Contractor and the person who will do the blasting shall both sign the book whenever an entry described in clause 15.8 above is made.
- 15.10 The cost of any protection services provided by the SARCC's maintenance and/or operating Contractor for blasting shall be borne by the Contractor.
- 15.11 The terms of clause 11 of part B hereof shall be strictly adhered to.
- 15.12 Within a reasonable time after completion of the blasting, the Contractor shall obtain a written clearance from the SARCC's maintenance and/or operating Contractor and each land owner in the vicinity of the blasting operations to the effect that all claims for compensation in respect of damage caused by the blasting operations have been settled.

16. WATCHING AND LIGHTING

- 16.1 The Contractor shall provide and maintain at his own cost, all lights, guards, barriers, fencing and watchmen when and where necessary or as required by the SARCC's maintenance and/or operating Contractor or by any statutory authority, for the protection of the Works and for the safety and convenience of the public. Red, yellow, green or blue lights, and red, yellow, green or white flags shall not be used by the Contractor in such a position where they can be mistaken for railway signals.

17. PROTECTION

- 17.1 The Contractor, at his own cost, shall take all the requisite measures and precautions during the course of the Works and during blasting operations to:
- (i) protect the public and property of the public;
 - (ii) protect the property and workmen of both the SARCC's maintenance and/or operating Contractor and the Contractor;
 - (iii) avoid damage to and prevent trespass on adjoining properties; and
 - (iv) ensure compliance with any instruction issued by the SARCC's maintenance and/or operating Contractor, or any instruction embodied in these conditions which affects the safety of any person or thing.
- 17.2 The Contractor shall take all precautions and appoint guards, watchmen and camp managers for

prevention of disorder among and misconduct by the persons employed on the Works and by any other persons, whether employees or not, on the site of the Works and for the preservation of the peace and protection of persons and property in the neighbourhood of the Works. Any relocation of camps on account of disorder shall be at the Contractor's expense.

18. ROADS ON SARCC PROPERTY

- 18.1 The Contractor shall not restrict the free use of any road, right-of-way or path on SARCC property unless he has obtained the approval of the authority/owner concerned.
- 18.2 The Contractor shall make good or bear the cost of making good any damage caused by him to any road or path on SARCC property.
- 18.3 The Contractor shall construct and maintain any temporary roads which he may require after the SARCC's maintenance and/or operating Contractor has agreed to such roads and to the details of their construction.

19. INTERFERENCE WITH SARCC ASSETS AND WORK ON RAILWAY LINES

- 19.1 The Contractor shall not interfere in any manner whatsoever with a railway line, nor shall he carry out any work or perform any act which affects the security, use or safety of a railway line on SARCC property except with the authority of the SARCC's maintenance and/or operating Contractor and in the presence of a duly authorised representative.
- 19.2 The Contractor shall not carry out any work, or operate any plant, or place any material whatsoever nearer than 3 metres from the centre line of any railway line except with the written permission of the SARCC's maintenance and/or operating Contractor and subject to such conditions as he may impose. The cost of implementing such conditions shall be borne by the Contractor.
- 19.3 Care shall be taken not to interfere with or damage any services such as overhead wire routes, cables or pipes on SARCC property, except as provided for in clauses 5.1 and 5.2 hereof. The Contractor will be held responsible for any damage to or interruption of such services arising from any act or omission on his part or the part of any of his employees, or persons engaged by him on the Works. The cost of repairing, replacing or restoring the services, as well as all other costs arising from any damage to services, shall be borne by and will be recovered from the Contractor.

20. PUBLIC LIABILITY INSURANCE

- 20.1 The Contractor shall purchase and maintain at his own cost insurance in the names of the Grantee and the Contractor, with a company registered in the Republic of South Africa, against all claims legally enforceable against the Contractor or the Grantee by any third party, including the SARCC, arising out of any act or omission on the part of the Grantee or Contractor or any employee of the Grantee or Contractor in the course of the contract relating to the construction of the Works of the contract of which these conditions and specifications form part.
- 20.2 The insurance coverage referred to in this clause shall be obtained from an insurer in terms of an insurance policy approved by the SARCC. The Contractor shall, before commencing work, submit to the SARCC the policy of insurance together with a certificate from the insurer or insurance broker concerned confirming that the policy provides the full coverage referred to in clause 20.1 hereof. The Contractor shall furthermore submit to the SARCC, at 3-monthly intervals, proof that premiums have been fully paid up. Under no circumstances shall the policy be cancelled while the Works are in progress or before the maintenance period has expired without the written consent of the SARCC.
- 20.3 Before payment as settlement of an aforesaid claim is made by the insurer, the claimant(s) shall certify in writing that such payment releases the SARCC of all obligations resulting from any act or omission giving rise to such claim.

The SARCC must be advised that the claim has been paid out directly to the claimant(s) concerned.

21. AUTHORITY OF THE SARCC

- 21.1 The Contractor shall co-operate with the officers of the SARCC and its maintenance and/or operating Contractor and shall comply with all instructions issued and restrictions imposed with respect to the works which bear on the existence and operation of SARCC railway lines and high voltage equipment.
- 21.2 Without limiting the generality of the provisions of clause 21.1 hereof, any duly authorised representative,

having identified himself, may stop the work if, in his opinion, the safe passage of trains or the safety of SARCC assets or of any person is affected.

CONSIDERATIONS OF SAFETY SHALL TAKE PRECEDENCE OVER ALL OTHER CONSIDERATIONS.

- 21.3 The SARCC's maintenance and/or operating Contractor may direct the Contractor in regard to any measures which he may require for the operations of the SARCC, the safety of trains, property and workmen of the SARCC and/or its maintenance and/or operating Contractor, and for the safety of other property and persons. The Contractor shall, at his own cost, carry out these instructions. These instructions shall not relieve the Contractor of any of his duties and liabilities in terms of these conditions, and shall not imply any assumption by the SARCC of the legal and other responsibilities of the Contractor in the carrying out of the Works.
- 21.4 The SARCC and its maintenance and/or operating Contractor may delegate to any person any of its powers or functions in terms of these conditions and, on receiving notice in writing of such delegation, the Contractor shall recognise and obey the person to whom any such powers or functions have been delegated.

22. OCCUPATIONS AND WORK PERMITS

- 22.1 Work to be done during total occupation or during an occupation between trains or under a work permit shall be done in a manner decided by, the SARCC's maintenance and/or operating Contractor and at times to suit the requirements of the SARCC's maintenance and/or operating Contractor.
- 22.2 The Contractor shall organise the Works in a manner which will minimise the number and duration of occupations and work permits required.
- 22.3 Neither the SARCC nor its maintenance and/or operating Contractor shall be liable for any financial or other loss suffered by the Contractor arising from his failure to complete any work scheduled during the period of an occupation or work permit.
- 22.4 The Contractor shall submit to the SARCC's maintenance and/or operating Contractor, in writing, requests for occupations or work permits together with details of the work to be undertaken at least 21 days before they are required. The SARCC's maintenance and/or operating Contractor does not undertake to grant an occupation or work permit for any particular date, time or duration.
- 22.5 The SARCC's maintenance and/or operating Contractor reserves the right to cancel any occupation or work permit at any time before or during the period of occupation or work permit. If, due to cancellation or change in date or time, the Contractor is not permitted to start work under conditions of total occupation or work permit at the time arranged, neither the SARCC nor its maintenance and/or operating Contractor shall be liable for any losses incurred by the Contractor as a result thereof.
- 22.6 Before starting any work for which an occupation has been arranged, the Contractor shall obtain from the SARCC's maintenance and/or operating Contractor written confirmation of the date, time and duration of the occupation.
- 22.7 Before starting any work for which a work permit has been arranged, the Responsible Representative shall read and sign portion C of Annexure 8.1 of the ELECTRICAL SAFETY INSTRUCTIONS, presented by an authorised person, signifying that he is aware of the limits within which work may be undertaken. After the work for which the permit was granted has been completed, or when the work permit is due to be terminated, or if the permit is cancelled after the start, the same person who signed portion C shall sign portion D of Annexure 8.1 of the ELECTRICAL SAFETY INSTRUCTIONS, thereby acknowledging that he is aware that the electrical equipment is to be made "live". The Responsible Representative shall advise all his workmen accordingly.

23. SPEED RESTRICTIONS AND PROTECTION

- 23.1 When speed restrictions are imposed by the SARCC's maintenance and/or operating Contractor because of the Contractor's activities, the Contractor shall organise and carry out his work so as to permit the removal of the restrictions as soon as possible.
- 23.2 When the SARCC's maintenance and/or operating Contractor considers protection to be necessary, the Contractor shall provide all protection including flagmen, other personnel and all equipment for the protection of the SARCC and its maintenance and/or operating Contractor's personnel and assets, the public and

including trains. The Contractor will arrange training and Transnet accreditation of his flagmen and other personnel performing protection duties. The cost of the training shall be to the Contractor's account. It remains the responsibility of the Contractor to protect his personnel and assets at all times.

- 23.3 The Contractor shall consult with the SARCC's maintenance and/or operating Contractor, whenever he considers that protection will be necessary, taking into account the minimum permissible clearances set out in Transnet's publication, PERMANENT WAY INSTRUCTIONS.

- 23.4 The Contractor shall appoint a Responsible Representative to receive and transmit any instruction, which may be given by the personnel of the SARCC's maintenance and/or operating Contractor, providing protection.

24. CLEARANCES

- 24.1 No temporary works shall encroach on the appropriate minimum clearances set out in Transnet's publications, PERMANENT WAY INSTRUCTIONS and ELECTRICAL SAFETY INSTRUCTIONS.

25. STACKING OF MATERIAL

- 25.1 The Contractor shall not stack any material closer than 3 metres from the centre line of any railway line or within 2.5 metres of the boundary fence without prior approval of the SARCC's maintenance and/or operating Contractor and considering the presence of any trackside equipment.

- 25.2 All stacking of material shall take place in accordance with the Occupational Health and Safety Act No. 85 of 1993, and Regulations and Instructions, and the ELECTRICAL SAFETY INSTRUCTIONS.

26. EXCAVATION, SHORING, DEWATERING AND DRAINAGE

- 26.1 Unless otherwise approved by the SARCC's maintenance and/or operating Contractor any excavation adjacent to a railway line shall not encroach on the hatched area shown in Figure 1.

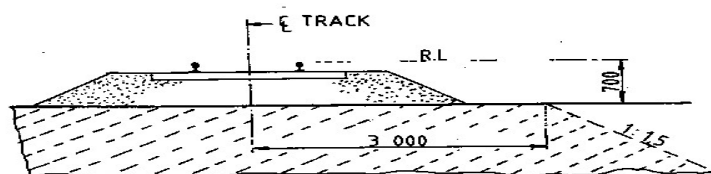


Fig. 1.

- 26.2 The Contractor shall provide at his own cost any shoring, dewatering or drainage of any excavation.
- 26.3 Where required by the SARCC's maintenance and/or operating Contractor, drawings of shoring for any excavation under or adjacent to a railway line shall be submitted and permission to proceed obtained, before the excavation is commenced.
- 26.4 The Contractor shall prevent ingress of water to the excavation but where water does enter, he shall dispose of it as directed by the SARCC's maintenance and/or operating Contractor.
- 26.5 The Contractor shall not block, obstruct or damage any existing drains either above or below ground level unless he has made adequate prior arrangements to deal with drainage.

27. FALSEWORK FOR STRUCTURES

- 27.1 Drawings of falsework for the construction of any structure over, under or adjacent to any railway line shall be submitted to the SARCC's maintenance and/or operating Contractor and his permission to proceed obtained before the falsework is erected. Each drawing shall be given a title and a distinguishing number and shall be signed by a registered professional engineer certifying that he has checked the design of the falsework and that the drawings are correct and in accordance with the design.
- 27.2 After the falsework has been erected and before any load is applied, the Contractor shall submit to the SARCC's maintenance and/or operating Contractor a certificate signed by a registered professional engineer certifying that he has checked the falsework and that it has been erected in accordance with the drawings. Titles and numbers of the drawings shall be stated in the certificate. Notwithstanding permission given by the

SARCC's maintenance and/or operating Contractor to proceed, the Contractor shall be entirely responsible for the safety and adequacy of the falsework.

28. PILING

- 28.1 The SARCC's maintenance and/or operating Contractor will specify the conditions under which piles may be installed on SARCC property.

29. UNDERGROUND SERVICES

- 29.1 No pegs or stakes shall be driven or any excavation made before the Contractor has established that there are no underground services, which may be damaged thereby.
- 29.2 Any damage shall be reported immediately to the SARCC's maintenance and/or operating Contractor, or to the personnel in charge at the nearest station, or to the traffic controller in the case of Centralised Traffic Control.
- 29.3 Any previously uncharted underground services encountered by the Contractor during the course of his activities shall be reported immediately to the Engineer who shall ensure the necessary inclusion in the "as built" drawings.

30. RAIL TROLLEYS

- 30.1 The use of rail trolleys on a railway line will be permitted only if approved by the SARCC's maintenance and/or operating Contractor and under the conditions stipulated by him.
- 30.2 All costs in connection with such trolley working requested by the Contractor shall be borne by the Contractor, including the costs of any train protection services required.

31. ANCILLARY TRACKSIDE EQUIPMENT AND FACILITIES.

- 31.1 Where signal track circuits are installed, the Contractor shall ensure that no material capable of conducting an electric current makes contact between rails of a railway line/lines.
- 31.2 No signal connections on track-circuited tracks shall be severed without the SARCC's maintenance and/or operating Contractor's knowledge and consent.
- 31.3 No ancillary trackside equipment or facilities such as axle counters, bonds, wiring runs, connection boxes, points machines, signals, drainage systems etc. shall be disconnected, removed, altered or in any way interfered with without the Engineer's knowledge and consent.

32. PENALTY FOR DELAYS TO TRAINS

- 32.1 If any trains are delayed by the Contractor and the SARCC's maintenance and/or operating Contractor is satisfied that the delay was avoidable, a penalty will be imposed on the Contractor of R15 000 per hour or part thereof for the period of delay, irrespective of the number of trains delayed.

PART B - ADDITIONAL SPECIFICATION FOR WORK NEAR HIGH-VOLTAGE ELECTRICAL EQUIPMENT

1 GENERAL

- 1.1 This specification is based on the contents of Spoomet's publication ELECTRICAL SAFETY INSTRUCTIONS, as amended, a copy of which will be made available on loan to the Contractor for the duration of the contract on request only. These instructions apply to all work near live high-voltage equipment maintained and/or operated by Transnet or SARCC's maintenance contractor, and the onus rests on the Contractor to ensure that he obtains a copy.
- 1.2 The Contractor's attention is drawn in particular to the contents of Sections 1 and 2 of the publication ELECTRICAL SAFETY INSTRUCTIONS.
- 1.3 The publication ELECTRICAL SAFETY INSTRUCTIONS covers the minimum safety precautions which must be taken to ensure safe working on or near high-voltage electrical equipment, and must be observed at all times. Should additional safety measures be considered necessary because of peculiar local conditions, these may be ordered by and at the discretion of the Electrical Officer (Contracts).
- 1.4 This specification must be read in conjunction with and not in lieu of the publication ELECTRICAL SAFETY INSTRUCTIONS.
- 1.5 The Contractor shall obtain the approval of the Electrical Officer (Contracts) before any work is done which causes or could cause any portion of a person's body or the tools he is using or any equipment he is handling, to come within 3 metres of any live high-voltage equipment.
- 1.6 The Contractor shall regard all high-voltage equipment as live unless a work permit is in force.
- 1.7 Safety precautions taken or barriers erected shall comply with the requirements of the Electrical Officer (Contracts), and shall be approved by him before the work to be protected is undertaken by the Contractor. The Contractor shall, unless otherwise agreed, bear the cost of the provision of the barriers and other safety precautions required, including the attendance of Transnet or SARCC's maintenance contractor where this is necessary.
- 1.8 No barrier shall be removed unless authorised by the Electrical Officer (Contracts).

2. WORK ON BUILDINGS OR FIXED STRUCTURES

- 2.1 Before any work is carried out or measurements are taken on any part of a building, fixed structure or earthworks of any kind above ground level situated within 3 metres of live high-voltage equipment, the Electrical Officer (Contracts) shall be consulted to ascertain the conditions under which the work may be carried out.
- 2.2 No barrier erected to comply with the requirements of the Electrical Officer (Contracts) shall be used as temporary staging or shuttering for any part of the Works.
- 2.3 The shuttering for bridge piers, abutments, retaining walls or parapets adjacent to or over any track may be permitted to serve as a barrier, provided that it extends at least 2,5 metres above any working level in the case of piers, abutments and retaining walls and 1,5 metres above any working level in the case of parapets.

3. WORK DONE ON OR OUTSIDE OF ROLLING STOCK, INCLUDING LOADING AND/OR UNLOADING

- 3.1 No person shall stand, climb or work whilst on any platform, surface or foothold higher than the normal unrestricted places of access, namely:-
 - (i) the floor level of trucks;
 - (ii) external walkways on diesel, steam and electric locomotives, steam heat vans, etc. and
 - (iii) walkways between coaches and locomotives.

When in these positions, no person may raise his hands or any equipment or material he is handling above his head.

- 3.2 In cases where the Contractor operates his own rail mounted equipment, he shall arrange for the walkways on this plant to be inspected by the Electrical Officer (Contracts) and approved, before commencement of work.
- 3.3 The handling of long lengths of material such as metal pipes, reinforcing bars, etc. should be avoided, but if essential they shall be handled as nearly as possible in a horizontal position below head height.
- 3.4 The Responsible Representative shall warn all persons under his control of the danger of being near live high-voltage equipment, and shall ensure that the warning is fully understood.
- 3.5 Where the conditions in clauses 3.1 to 3.3 above cannot be observed the Electrical Officer (Contracts), shall be notified. He will arrange for suitable safety measures to be taken. The Electrical Officer (Contracts), may in his discretion and in appropriate circumstances, arrange for a suitable employee of the Contractor to be specially trained by the relevant authority at the Contractor's costs, as an Authorised Person to work closer than 3 metres from live overhead conductors and under such conditions as may be imposed by the responsible Electrical Engineer in Transnet or SARCC's maintenance contractor.

4. USE OF EQUIPMENT

4.1 MEASURING TAPES AND DEVICES.

- 4.1.1 Measuring tapes may be used near live high-voltage equipment provided that no part of any tape or a person's body comes within 3 metres of the live equipment.
- 4.1.2 In windy conditions the distance shall be increased to ensure that if the tape should fall it will not be blown nearer than 3 metres from the live high-voltage equipment.
- 4.1.3 Special measuring devices longer than 2 metres such as survey staves and rods may be used if these are of non-conducting material and approved by the senior responsible Electrical Engineer in Transnet or SARCC's maintenance contractor, but these devices must not be used within 3 metres of live high-voltage equipment in rainy or wet conditions.
- 4.1.4 The assistance of the Electrical Officer (Contracts) shall be requested when measurements within the limits defined in clauses 4.1.1 to 4.1.3 above are required.

4.2 PORTABLE LADDERS.

- 4.2.1 Any type of portable ladder longer than 2 metres may only be used near live high-voltage equipment under the direct supervision of the Responsible Representative. He shall ensure that the ladder is always used in such a manner that the distance from the base of the ladder to any live high-voltage equipment is greater than the fully extended length of the ladder plus 3 metres. Where these conditions cannot be observed, the Electrical Officer (Contracts) shall be advised, and he will arrange for suitable safety measures to be taken.

4.3 WORK FROM INSULATED VEHICLES AND TRESTLE TROLLEYS.

- 4.3.1 Where specially constructed insulated vehicles or trestle trolleys are available for use, authorised persons, category A, or a person issued with a letter of authority (clause 303.0 of the ELECTRICAL SAFETY INSTRUCTIONS) may be permitted to work from the top of such vehicles under "live" overhead track equipment.

5. CARRYING AND HANDLING MATERIAL AND EQUIPMENT

- 5.1 Pipes, scaffolding, iron sheets, reinforcing bars and other material, which exceeds 2 metres in length, shall be carried completely below head height near live high-voltage equipment. For maximum safety such material should be carried by two or more persons so as to maintain it as nearly as possible in a horizontal position. The utmost care must be taken to ensure that no part of the material comes within 3 metres of any live high-voltage equipment.
- 5.2 Long lengths of wire or cable shall never be run out in conditions where a part of a wire or cable can come within 3 metres of any live high-voltage equipment unless the Electrical Officer (Contracts) has been advised and has approved appropriate safety precautions.
- 5.3 The presence of overhead power lines shall always be considered, especially when communications lines or cables or aerial cables, stay wires, etc. are being erected above ground level.

6. PRECAUTIONS TO BE TAKEN WHEN ERECTING OR REMOVING POLES, ANTENNAE, TREES ETC.

6.1 A pole may be handled for the purpose of erection or removal near high-voltage equipment under the following conditions:

- (i) If the distance between the point at which the pole is to be erected or removed and the nearest live high-voltage equipment is more than the length of the pole plus 3 metres, the work shall be supervised by the Responsible Representative.
- (ii) If the distance described in (i) is less than the length of the pole plus 3 metres, the Electrical Officer (Contracts) shall be consulted to arrange for an Authorised Person to supervise the work and to ensure that the pole is earthed where possible. The pole shall be kept in contact with the point of erection, and adequate precautions shall be taken to prevent contact with live high-voltage equipment.

6.2 The cost of supervision by an Authorised Person and the provision of earthing shall, unless otherwise agreed, be borne by the Contractor.

6.3 The provisions of clauses 6.1 and 6.2 above shall also apply to the erection or removal of columns, antennae, trees, posts, etc.

7. USE OF WATER

7.1 No water shall be used in the form of a jet if it can make contact with any live high-voltage equipment or with any person working on such equipment.

8. USE OF CONSTRUCTION PLANT

8.1 "Construction plant" entails all types of plant including cranes, piling frames, boring machines, excavators, draglines, dewatering equipment and road vehicles with or without lifting equipment.

8.2 When work is being undertaken in such a position that it is possible for construction plant or its load to come within 3 metres of live high-voltage equipment, the Electrical Officer (Contracts) shall be consulted. He will arrange for an Authorised Person to supervise the work and to ensure that the plant is adequately earthed. The Electrical Officer (Contracts) will decide whether further safety measures are necessary.

8.3 The cost of any supervision by an Authorised Person and the provision of earthing shall, unless otherwise agreed, be borne by the Contractor.

8.4 When loads are handled by cranes, non-metallic rope hand lines shall be used, affixed to such loads so as to prevent their swinging and coming within 3 metres of live high-voltage equipment.

8.5 Clauses 8.1 to 8.4 above shall apply mutatis mutandis to the use of maintenance machines of any nature.

9. WORK PERFORMED UNDER DEAD CONDITIONS UNDER COVER OF A WORK PERMIT

9.1 If the Responsible Representative finds that the work cannot be done in safety with the high-voltage electrical equipment live, he shall consult the Electrical Officer (Contracts) who will decide on the action to be taken.

9.2 If a work permit is issued the Responsible Representative shall:

- (i) before commencement of work ensure that the limits within which work may be carried out have been explained to him by the Authorised Person who issued the permit to him, and that he fully understands these limits.
- (ii) sign portion C of the permit before commencement of work;
- (iii) explain to all persons under his control the limits within which work may be carried out, and ensure that they fully understand these limits;
- (iv) care for the safety of all persons under his control whilst work is in progress; and

- (v) withdraw all personnel under his control from the equipment on completion of the work before he signs portion D of the work permit.

10. TRACTION RETURN CIRCUITS IN RAILS

- 10.1 DANGEROUS CONDITIONS CAN BE CREATED BY REMOVING OR SEVERING ANY BOND.
- 10.2 Broken rails with an air gap between the ends, and joints, at which fishplates are removed under "broken bond" conditions, are potentially lethal. The rails on either side of an air gap between rail ends on electrified lines shall not be touched simultaneously until rendered safe by an Authorised Person.
- 10.3 The Contractor shall not break any permanent bonds between rails or between rails and any structure. He shall give the Engineer at least 21 days written notice when removal of such bonds is necessary.
- 10.4 No work on the track, which involves interference with the traction return rail circuit, either by cutting or removing the rails, or by removal of bonds shall be done unless the Electrical Officer (Contracts) is consulted. He will take such precautions as may be necessary to ensure continuity of the return circuit before permitting the work to be commenced.

11. BLASTING

- 11.1 The Contractor shall obtain the permission of the Electrical Officer (Contracts) before blasting, and shall give at least 21 days notice of his intention to blast. The Electrical Officer (Contracts) shall then decide whether it is necessary to have an Authorised Person in attendance during such operations.
- 11.2 The terms of clause 13 of SPK7/1 Part A or clause 15 of the SPK7/2 Part A, as applicable, shall be strictly adhered to.

12. HIGH-VOLTAGE ELECTRICAL EQUIPMENT NOT MAINTAINED AND/OR OPERATED BY TRANSNET OR SARCC'S MAINTENANCE CONTRACTOR

Where the work is undertaken on or near high-voltage electrical equipment which is not maintained and/or operated by Transnet or SARCC's maintenance contractor, the Occupational Health and Safety Act No. 85 of 1993, and Regulations and Instructions, and/or the Mines Health and Safety Act (Act 29 of 1996), shall apply.

Such equipment includes:

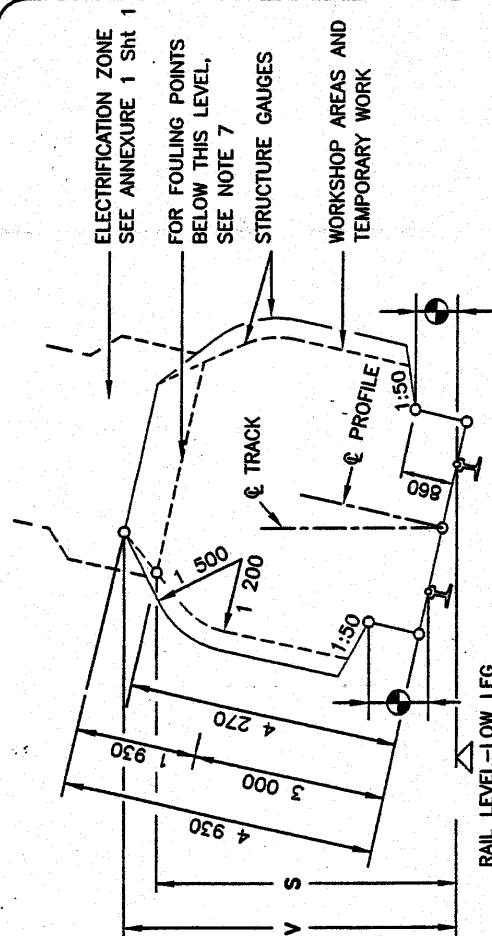
- (i) Equipment of Electricity Suppliers;
- (ii) the Contractor's own power supplies;
- (iii) Equipment being installed by, but not yet taken over from the Contractor, and
- (iii) Electrified Private Siding equipment.



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ANNEXURE 1
SHEET 2 of 5
AMENDMENT

VERTICAL CLEARANCES :
1 065mm TRACK GAUGE



LOCATION	NOT ELECTRIFIED	ELECTRIFIED (PRESENT OR FUTURE)	
		3kV & 25kV	50kV
RADIUS (mm)	S (mm)	V (mm)	V (mm)
100	4 470	5 050	5 400
300	4 410	5 020	5 370
600	4 370	5 000	5 350
1 000	4 350	4 990	5 340
1 500	4 310	4 960	5 310
2 000	4 290	4 940	5 290
>3 000	4 270	4 930	5 280
* OVER OR NEAR POINTS AND CROSSING IF REQUIRED BY ELECTRICAL IRRESPECTIVE OF RADIUS		5 650	6 000

ALL AREAS OTHER THAN THOSE INDICATED BY * BELOW

REMARKS:

1. V IS THE REQUIRED VERTICAL CLEARANCE EXCEPT WHERE REDUCED CLEARANCE S APPLIES.
2. S IS THE MINIMUM VERTICAL CLEARANCE FOR STRUCTURES AND TEMPORARY WORK OVER NON-ELECTRIFIED LINES.
3. INTERMEDIATE VALUES MAY BE INTERPOLATED BY THE ENGINEER IN CHARGE.
4. FOR APPLICATION AT CURVES
 - 4.1 APPLY INCREASED CLEARANCES FOR CURVES TO POINTS 3m BEYOND THE ENDS OF THE CIRCULAR CURVE.
 - 4.2 REDUCE CLEARANCES AT A UNIFORM RATE OVER THE REMAINDER OF THE TRANSITION CURVE.
 - 4.3 FOR NON-TRANSITIONED CURVES REDUCE AT A UNIFORM RATE OVER A LENGTH OF 15m ALONG STRAIGHTS.
5. NEW STRUCTURES: SEE BRIDGE CODE.
6. TUNNELS: SEE DRAWING BE 82-35.
7. FOULING POINTS: SEE CLAUSE 8.1.
8. CLEARANCES ARE BASED ON 15m BOGIE CENTRES AND 21.2m VEHICLE BODY LENGTH.
9. SEE ANNEXURE 1 SHEET 3 FOR PLATFORM CLEARANCES.

BE 97-01 Sht 2 of 5 DATE : JUNE 2000

ANNEXURE 1
SHEET 3 of 5
AMENDMENT

CLEARANCES : PLATFORMS

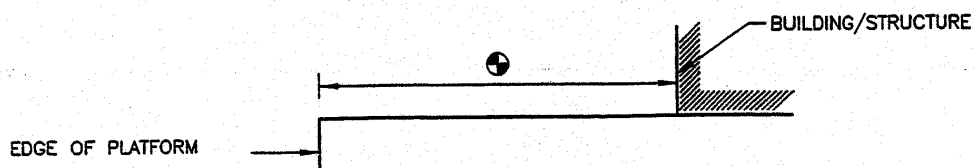
PLATFORMS : TRACK GAUGE 1 065mm

PASSENGERS					GOODS
					(NO CANT)
RADIUS (m)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
90	1 690	1 820	890	810	1 840
100	1 650	1 790	890	810	1 810
120	1 610	1 740	890	810	1 760
140	1 580	1 700	890	810	1 720
170	1 550	1 660	890	810	1 690
200	1 530	1 630	890	820	1 670
250	1 520	1 600	890	820	1 640
300	1 520	1 580	890	830	1 620
350	1 520	1 560	880	830	1 600
400	1 520	1 550	880	840	1 590
500	1 520	1 540	880	850	1 580
600	1 520	1 530	870	850	1 570
800	1 520	1 520	860	860	1 560
1 200	1 520	1 520	860	860	1 550
2 000	1 520	1 520	860	860	1 540
3 000	1 520	1 520	860	860	1 530
STRAIGHT	1 520	1 520	860	860	1 520

REMARKS:

1. NO CANT TO BE APPLIED EXCEPT WHEN THE GOODS PLATFORM IS ON A RUNNING LINE.
2. INTERMEDIATE VALUES MAY BE INTERPOLATED BY THE ENGINEER IN CHARGE.
3. 8m TO MAIN STATION-BUILDINGS AND 3m TO ALL OTHER STRUCTURES.
4. TOLERANCES : SEE CLAUSE 8.0.10.

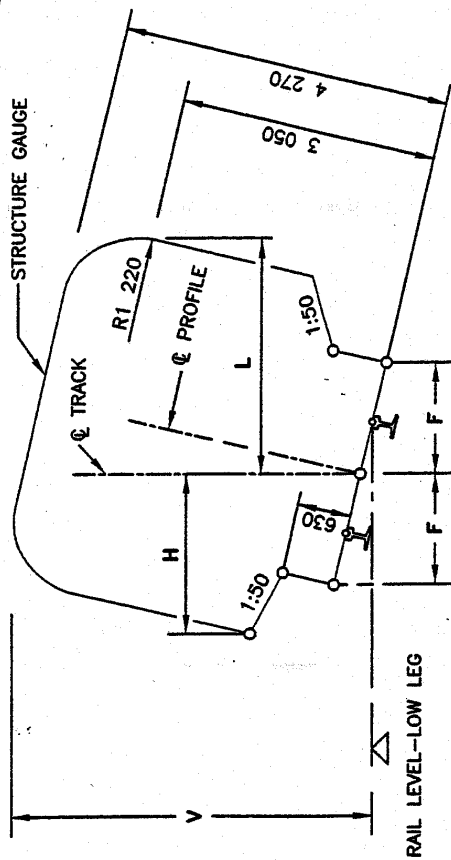
STRUCTURES ON PLATFORMS : 1 065mm AND 610mm TRACK GAUGE



BE 97-01 Sht 3 of 5 DATE : JUNE 2000

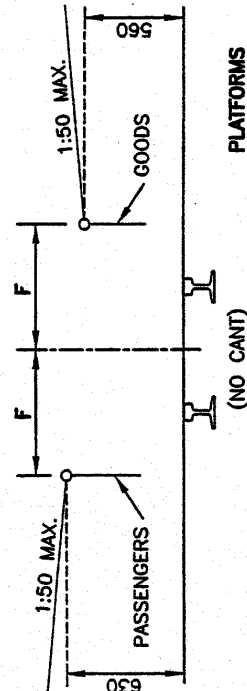
ANNEXURE 1
SHEET 5 of 5
AMENDMENT

CLEARANCES : 610mm TRACK GAUGE



RADIUS (m)	F (mm)
50	1 550
60	1 510
80	1 480
100	1 430
120	1 410
140	1 390
170	1 380
200	1 370
250	1 360
300	1 350
600	1 330
1 000	1 320
>2 000	1 320
STRAIGHT	1 310

RADIUS (m)	WITH CANT		NO CANT	
	H (mm)	L (mm)	H & L (mm)	V (mm)
50	2 370	2 490	2 400	4 320
70	2 310	2 420	2 330	4 310
100	2 260	2 370	2 280	4 310
140	2 220	2 340	2 250	4 310
200	2 200	2 300	2 220	4 300
300	2 190	2 270	2 200	4 300
500	2 180	2 230	2 190	4 290
700	2 170	2 200	2 180	4 270
1 000	2 170	2 170	2 170	4 270
>2 000	2 160	2 160	2 160	4 270



REMARKS:

1. H IS THE MINIMUM HORIZONTAL CLEARANCE ON THE OUTSIDE OF THE CURVE BASED ON MINIMUM CANT.
2. L IS THE MINIMUM HORIZONTAL CLEARANCE ON THE INSIDE OF THE CURVE BASED ON MAXIMUM CANT.
3. V IS THE MINIMUM VERTICAL CLEARANCE.
4. FOR APPLICATION AT CURVES:
 - 4.1 APPLY INCREASED CLEARANCES FOR CURVES TO POINTS 2m BEYOND THE ENDS OF THE CIRCULAR CURVE.
 - 4.2 REDUCE CLEARANCES AT A UNIFORM RATE OVER THE REMAINDER OF THE TRANSITION CURVE.
 - 4.3 FOR NON-TRANSITIONED CURVES REDUCE AT A UNIFORM RATE OVER A LENGTH OF 18m ALONG STRAIGHTS.
5. INTERMEDIATE VALUES MAY BE INTERPOLATED BY THE ENGINEER IN CHARGE.
6. ALSO REFER TO REMARKS 5, 6 AND 7 OF ANNEXURE 1 SHEET 2.
7. CLEARANCES ARE BASED ON 9 700mm BOGIE CENTRES AND 13 700mm VEHICLE BODY LENGTH.
8. SEE ANNEXURE 1 SHEET 3 FOR STRUCTURES ON PLATFORMS.

BE 97-01 Sht 5 of 5 DATE : JUNE 2000

AGREEMENT FOR WORK OVER, UNDER, OR ADJACENT TO RAILWAY LINES AND NEAR HIGH VOLTAGE EQUIPMENT IN THE METRORAIL TSHWANE REGION

Agreement entered into by and between METRORAIL TSHWANE and a public company with limited and incorporated in terms of the company laws of South Africa and SARCC trading as METRORAIL TSHWANE of the one part and

(Company Name)

Here in after referred to as the Grantee and represented by

_____ in his capacity as

_____ of the other part.

WHEREAS the Grantee intends to contract to perform or cause to be constructed or perform

works consisting of _____ on a site situated at

_____ and which will be *on / *over / *under or *adjacent to a railway line * and near high voltage electrical equipment.

(Delete which is inapplicable)

NOW THEREFORE, IT IS HEREBY AGREED AS FOLLOWS:

1. METRORAIL TSHWANE hereby grants to the GRANTEE, which the Grantee hereby accepts, authority to perform work on, over, under, or adjacent to a railway line on the defined site and subject to the conditions and requirements stipulated here in and in General Conditions and Specifications for works on, over under or adjacent to Railway Line and near High Voltage Equipment (SARCC SPK 7/2), which document forms part of this Agreement.
2. The Grantee undertakes to ensure that the conditions and requirements set out in the SARCC SPK 7/2 and E4E are observed and complied with in all respects by himself, his employees and any contractor and subcontractor that may be appointed by the grantee for the construction or performance of works.
3. The Grantee undertakes also to provide the indemnities; safeguards and insurance required in terms of the said General Conditions and Specifications.
4. Failure by the Grantee or any Contractor, subcontractor or their employees to observe and comply with these requirements of METRORAIL TSHWANE may result in the cancellation of the agreement and the authorisation granted in terms hereof being withdrawn.
5. The representatives of the Grantee to this agreement are:

6. The contractor shall comply with the requirements of Act 85 of 1993 in its entirety. The premises shall for the duration of the execution of the work and the control thereof be transferred to the contractor as if it were his property.
7. The first 800mm of excavation on areas where Metrorail Tshwane shown cables to contractor must be excavated by hand to prevent cable damage.

METRORAIL TSHWANE

GRANTEE: _____

Signed by _____ on behalf of the Grantee at _____

On this _____ day of _____ 20 ____ .

In the presence of the undersigned witnesses.

GRANTEE

As Witnesses:

1. _____

2. _____

Signed by _____ on behalf of METRORAIL TSHWANE

at _____ on this _____ day of _____ 20 ____ .

In the presence of the undersigned witnesses.

METRORAIL TSHWANE

As Witnesses:

1. _____

2. _____