



SOUTH AFRICAN RAIL COMMUTER CORPORATION LIMITED

E7/1 (July 1998)

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

(This Specification shall be used in PRASA Contracts)

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1.

DEFINITIONS

The following definitions shall apply:

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

Barrier. Any device designed to restrict access to "live" high-voltage electrical equipment.

Bond. A short conductor installed to provide electrical continuity.

Contractor. Any person or organisation appointed by PRASA to carry out work on its behalf.

Dead. Isolated and earthed.

Electrical Officer (Contracts). The person appointed in writing by the responsible Electrical Engineer in PRASA as the person who shall be consulted by the Contractor in all electrical matters to ensure that the Contractor takes adequate safety precautions.

Executive Officer. The person appointed by PRASA from time to time as the Executive Officer to act according to the rights and powers held by and obligations placed upon him in terms of the Contract.

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 exposed high-voltage electrical equipment.

Occupation. An authorisation granted by PRASA 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.

Project Manager. The person or juristic person appointed by PRASA from time to time as the Project Manager, to administer the Contract according to the powers and rights held by and obligations placed upon him in terms of the Contract.

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.

Technical Officer. The person or juristic person appointed by PRASA from time to time as the Technical Officer, to administer the Contractor's performance and execution of the Works according to the powers and rights held by and obligations placed upon the Technical Officer in terms of the Contract.

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.

2. **PART 1 - GENERAL SPECIFICATION**

AUTHORITY OF OFFICERS OF PRASA

- 2.1 The Contractor shall co-operate with the officers of PRASA and shall comply with all instructions issued and restrictions imposed with respect to the Works which bear on the existence and operation of PRASA's railway lines and high-voltage equipment.
- 2.2 Without limiting the generality of the provisions of 2.1, any duly authorised representative of PRASA, having identified himself, may stop the work if, in his opinion, the safe passage of trains or the safety of PRASA assets or any person is affected. **CONSIDERATIONS OF SAFETY SHALL TAKE PRECEDENCE OVER ALL OTHER CONSIDERATIONS.**

3. **CONTRACTOR'S REPRESENTATIVES**

- 3.1 The Contractor shall nominate Responsible Representatives of whom at least one shall be available at any hour for call-out in cases of emergency. The Contractor shall provide the Technical Officer with the names, addresses and telephone numbers of the representatives.

- 3.2 The Contractor guarantees that he has satisfied himself that the Responsible Representative is fully conversant with this specification and that he shall comply with all his obligations in respect thereof.

4. **OCCUPATIONS AND WORK PERMITS** 4.1 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 Technical Officer and at times to suit PRASA requirements.

- 4.2 The Contractor shall organise the Works in a manner which will minimise the number and duration of occupations and work permits required.

- 4.3 PRASA will not 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.

- 4.4 The Contractor shall submit to the Technical Officer, in writing, requests for occupations or work permits together with details of the work to be undertaken, at least 14 days before they are required. PRASA does not undertake to grant an occupation or work permit for any particular date, time or duration.

- 4.5 PRASA 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, all costs caused by the cancellation shall be born by the Contractor except as provided for in clauses 4.6 to 4.8.

- 4.6 When the Contractor is notified less than 2 hours before the scheduled starting time that the occupation or work permit is cancelled, he may claim reimbursement of his direct financial losses caused by the loss of working time up to the time his labour and plant are employed on other work, but not exceeding the period of the cancelled occupation or work permit.

- 4.7 When the Contractor is notified less than 2 hours before the schedule starting time, or during an occupation or work permit, that the duration of the occupation or work permit is reduced, he may claim reimbursement of his direct financial losses caused by the loss of working time due to the reduced duration of the occupation or work permit.

- 4.8 Reimbursement the Contractor for any loss of working time in terms of 4.6 and 4.7, shall be subject to his claims being submitted within 14 days of the event with full details of labour and plant involved, and provided that the Technical Officer certifies that no other work on which the labour and plant could be employed was immediately available.

- 4.9 Before starting any work for which an occupation has been arranged, the Contractor shall obtain from the Technical Officer written confirmation of the date, time and duration of the occupation.

- 4.10 Before starting any work for which a work permit has been arranged, the Responsible Representative shall read and sign portion C of form No. T.1276 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 the T.1276 form, thereby acknowledging that he is aware that the electrical equipment is to be made "live". The Contractor shall advise all his workmen accordingly.

5. **SPEED RESTRICTIONS AND PROTECTION**

5.1 When speed restrictions are imposed by PRASA 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.

5.2 When the Technical Officer considers protection to be necessary the Contractor shall, unless otherwise agreed, provide all protection including flagmen, other personnel and all equipment for the protection of PRASA's and the Contractor's personnel and assets, the public and including trains.

PRASA will provide training free of charge of the Contractor's flagmen and other personnel performing protection duties. The Contractor shall consult with the Technical Officer, whenever he considers that protection will be necessary, taking into account the minimum permissible clearances set out in appendixes 1 to 4.

5.3 The Contractor shall appoint a Responsible Representative to receive and transmit any instruction, which may be given by PRASA personnel providing protection.

6. **ROADS ON PRASA PROPERTY**

The provision of clause 25 of the E.5, General Conditions of Contract, or clause 23 of the E.5 (MW), General Conditions of Contract for Maintenance Works, shall apply to the use of existing roads on PRASA's property.

7. **CLEARANCES**

7.1 No temporary works shall encroach on the appropriate minimum clearances set out in Appendixes 1 to 4.

8. **STACKING OF MATERIAL**

8.1 The Contractor shall not stack any material closer than 3 m from the centre line of any railway line without prior approval of the Technical Officer.

9. **EXCAVATION, SHORING, DEWATERING AND DRAINAGE**

9.1 Unless otherwise approved by the Technical Officer any excavation adjacent to a railway line shall not encroach on the hatched area shown in Figure 1.

9.2 The Contractor shall provide at his own cost any shoring, dewatering or drainage of any excavation unless otherwise stipulated elsewhere in the Contract.

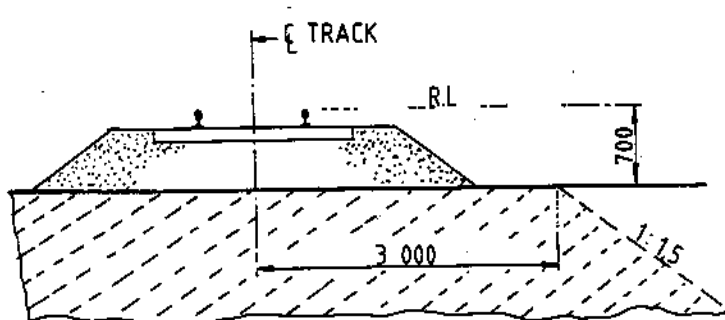


Fig. 1.

- 9.3 Where required by the Technical Officer, 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.
- 9.4 The Contractor shall prevent ingress of water to the excavation but where water does enter, he shall dispose of it as directed by the Technical Officer.
- 9.5 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.

10. **FALSEWORK FOR STRUCTURES**

- 10.1 Drawings of falsework for the construction of any structure over, under or adjacent to any railway line shall be submitted to the Technical Officer 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.
- 10.2 After the falsework has been erected and before any load is applied, the Contractor shall submit to the Technical Officer 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 Technical Officer to proceed, the Contractor shall be entirely responsible for the safety and adequacy of the falsework.

11. **PILING**

- 11.1 The Technical Officer will specify the conditions under which piles may be installed on PRASA property.

12. **UNDERGROUND SERVICES**

- 12.1 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.
- 12.2 Any damage shall be reported immediately to the Technical Officer, or to the official in charge at the nearest station, or to the traffic controller in the case of centralised traffic control.

13. **BLASTING**

- 13.1 The provisions of clause 23 of the E.5, General Conditions of Contract or clause 21 of the E.5 (MW), General Conditions of Contract for Maintenance Work, shall apply to all blasting operations undertaken in terms of the Contract.
- 13.2 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).
- 13.3 Blasting within 500m of a railway line will only be permitted during intervals between trains. A person appointed by the Technical Officer, 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.
- 13.4 The flagmen described in 13.3, where provided by PRASA, are for the protection of trains and PRASA property 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.
- 13.5 The person described in 13.3 will record in a book provided and retained by PRASA 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.

13.6 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 Technical Officer and the person who will do the blasting shall both sign the book whenever an entry described in 13.5 is made.

13.7 The terms of clause 27 hereof shall be strictly adhered to.

14. **RAIL TROLLEYS**

14.1 The use of rail trolleys or trestle trolleys on a railway line for working on high voltage equipment will be permitted only if approved by the Technical Officer and under the conditions stipulated by him.

14.2 All costs in connection with such trolley working requested by the Contractor shall, unless otherwise agreed, be borne by the Contractor, excluding the costs of any train protection services normally provided free of charge by PRASA.

15. **SIGNAL TRACK CIRCUITS**

15.1 Where signal track circuits are installed, the Contractor shall ensure that no material capable of conducting an electrical current makes contact between rails of a railway line/lines.

15.2 No signal connections on track-circuited tracks shall be severed without the Technical Officer's knowledge and consent.

16. **PENALTY FOR DELAYS TO TRAINS**

16.1 If any trains are delayed by the Contractor and the Technical Officer is satisfied that the delay was avoidable, a penalty will be imposed on the Contractor of R5 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

17. **GENERAL**

17.1 This specification is based on the contents of Metrorail's publication SAFETY INSTRUCTIONS, HIGH-VOLTAGE ELECTRICAL EQUIPMENT, as amended, a copy of which will be made available on loan to the Contractor for the duration of the contract.

These instructions apply to all work near live high-voltage equipment maintained and/or operated by PRASA, and the onus rests on the Contractor to ensure that he obtains a copy.

17.2 The Contractor's attention is drawn in particular to the contents of Part I, Sections 1 and 2 of the Safety Instructions: High-Voltage Electrical Equipment.

17.3 The Safety Instructions: High-Voltage Electrical Equipment cover 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).

17.4 This specification must be read in conjunction with and not in lieu of the Safety Instructions: High-Voltage Electrical Equipment.

17.5 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.

17.6 The Contractor shall regard all high-voltage equipment as live unless a work permit is in force.

17.7 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 PRASA staff where this is necessary.

17.8 No barrier shall be removed unless authorised by the Electrical Officer (Contracts).

18. **WORK ON BUILDINGS OR FIXED STRUCTURES**

18.1 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.

18.2 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.

18.3 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.

19. **WORK DONE ON OR OUTSIDE OF ROLLING STOCK, INCLUDING LOADING OR UNLOADING**

19.1 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.

19.2 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.

19.3 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.

19.4 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.

19.5 Where the conditions in 19.1 to 19.3 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 METRORAIL and at its 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 Senior responsible Electrical Engineer in PRASA.

20. **USE OF EQUIPMENT**

20.1 Measuring Tapes and Devices

20.1.1 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.

20.1.2 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.

- 20.1.3 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 responsible Electrical Engineer in PRASA, but these devices must not be used within 3 metres of live high-voltage equipment in rainy or wet conditions.
- 20.1.4 The assistance of the Electrical Officer (Contracts) shall be requested when measurements within the limits defined in 20.1.1 to 20.1.3 are required.
- 20.1.5 The restrictions described in 20.1.1 to 20.1.3 do not apply on a bridge deck between permanent parapets nor in other situations where a barrier effectively prevents contact with the live high-voltage equipment.

20.2 **Portable Ladders**

- 20.2.1 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.

21. **CARRYING AND HANDLING MATERIAL AND EQUIPMENT**

- 21.1 Pipes, scaffolding, iron sheets, reinforcing bars and other material that exceeds 2 metres in length shall be carried completely below head height near live high-voltage equipment. For maximum safety two or more persons to maintain it as nearly as possible in a horizontal position should carry such material. The utmost care must be taken to ensure that no part of the material comes within 3 metres of any live high-voltage equipment.
- 21.2 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.
- 21.3 The presence of overhead power lines shall always be taken account of especially when communications lines or cables or aerial cables, stay wires, etc. are being erected above ground level.

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

- 22.1 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.
- 22.2 The cost of supervision by an Authorised Person and the provision of earthing shall, unless otherwise agreed, be borne by the Contractor.

- 22.3 The provisions of clauses 22.1 and 22.2 shall also apply to the erection or removal of columns, antennae, trees, posts, etc.
23. **USE OF WATER**
- 23.1 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.
24. **USE OF CONSTRUCTION PLANT**
- 24.1 "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.
- 24.2 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.
- 24.3 The cost of any supervision by an Authorised Person and the provision of earthing shall, unless otherwise agreed, be borne by the Contractor.
- 24.4 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.
- 24.5 Clauses 24.1 to 24.4 shall apply mutatis mutandis to the use of maintenance machines of any nature.
25. **WORK PERFORMED UNDER DEAD CONDITIONS UNDER COVER OF A WORK PERMIT**
- 25.1 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.
- 25.2 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.
26. **TRACTION RETURN CIRCUITS IN RAILS**
- 26.1 DANGEROUS CONDITIONS CAN BE CREATED BY REMOVING OR SEVERING ANY BOND.
- 26.2 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 PRASA personnel.
- 26.3 The Contractor shall not break any permanent bonds between rails or between rails and any structure. He shall give the Technical Officer at least 7 days written notice when removal of such bonds is necessary.

26.4 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.

27. **BLASTING**

27.1 The Contractor shall obtain the permission of the Electrical Officer (Contracts) before blasting, and shall give at least 14 days notice of his intention to blast.

27.2 No blasting shall be done in the vicinity of electrified lines unless a member of PRASA's electrical personnel is present.

27.3 The terms of clause 13 hereof shall be strictly adhered to.

28. **HIGH-VOLTAGE ELECTRICAL EQUIPMENT NOT MAINTAINED AND/OR OPERATED BY PRASA**

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

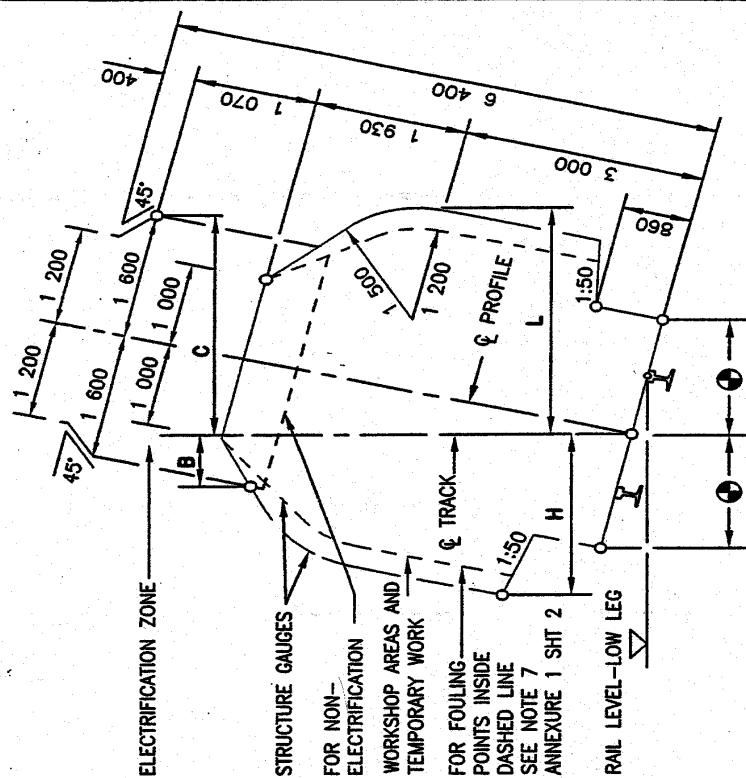
Such equipment includes:-

- (i) Eskom and municipal equipment;
- (ii) the Contractor's own power supplies; and
- (iii) electrical equipment being installed but not yet taken over from the Contractor.

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ANNEXURE 1
SHEET 1 of 5
AMENDMENT

HORIZONTAL CLEARANCES :
1 065mm TRACK GAUGE



RADIUS (m)	WITH CANT		NO CANT		WITH CANT	
	H (mm)	L (mm)	H & L	B (mm)	C (mm)	
90	2 730	3 090	2 780	1 130	2 100	
100	2 700	3 030	2 750	1 140	2 050	
120	2 650	2 970	2 700	1 160	2 010	
140	2 620	2 920	2 660	1 175	1 990	
170	2 590	2 870	2 630	1 190	1 970	
200	2 570	2 820	2 600	1 205	1 950	
250	2 550	2 790	2 580	1 230	1 920	
300	2 540	2 760	2 560	1 250	1 900	
350	2 530	2 730	2 540	1 270	1 890	
400	2 520	2 710	2 530	1 290	1 875	
500	2 510	2 680	2 520	1 320	1 850	
600	2 500	2 660	2 510	1 340	1 830	
800	2 490	2 620	2 500	1 365	1 790	
1 000	2 480	2 600	2 490	1 380	1 760	
1 200	2 480	2 580	2 490	1 200	1 730	
1 500	2 480	2 550	2 480	1 415	1 700	
2 000	2 480	2 500	2 480	1 440	1 660	
3 000	2 470	2 470	2 470	1 500	1 600	
>5 000	2 460	2 460	2 460	1 600	1 600	

REMARKS:

1. H AND B IS THE REQUIRED HORIZONTAL CLEARANCE ON THE OUTSIDE OF THE CURVE BASED ON MINIMUM CANT.
2. L AND C IS THE REQUIRED HORIZONTAL CLEARANCE ON THE INSIDE OF THE CURVE BASED ON MAXIMUM CANT.
3. INTERMEDIATE VALUES MAY BE INTERPOLATED BY THE ENGINEER IN CHARGE.
4. FOR WORKSHOP AREAS AND TEMPORARY WORK, CLEARANCES H AND L MAY BE REDUCED BY 300mm.
5. SEE ANNEXURE 1 SHEET 3 FOR PLATFORM CLEARANCES.
6. ALSO REFER TO REMARKS 4 TO 8 OF ANNEXURE 1 SHEET 2.

E4E SAFETY ARRANGEMENTS AND PROCEDURAL COMPLIANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT

ANNEXURE 1
SHEET 3 of 5
AMENDMENT

CLEARANCES : PLATFORMS

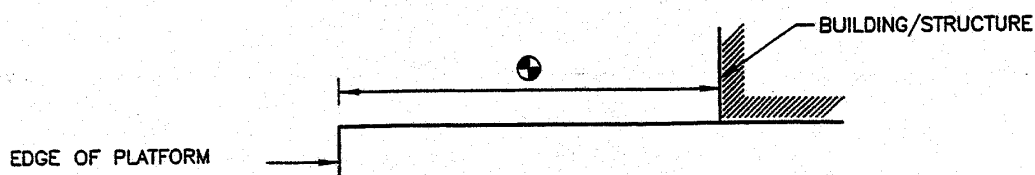
PLATFORMS : TRACK GAUGE 1 065mm

PASSENGERS					GOODS
					<p style="text-align: center;">(NO CANT)</p>
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



(ACT 85 OF 1993) AND APPLICABLE REGULATIONS

1. General

- 1.1 The Contractor and South African Rail Commuter Corporation Ltd (hereinafter referred to as “PRASA are individual employers, each in its own right, with their respective duties and obligations set out in the Occupational Health and Safety Act, Act 85 of 1993 (the Act) and applicable Regulations.
- 1.2 The Contractor accepts, in terms of the General Conditions of Contract and in terms of the Act, his obligations as an employer in respect of all persons in his employ, other persons on the premises or the Site or place of work or on the work to be executed by him, and under his control. He shall, before commencement with the execution of the contract work, comply with the provisions set out in the Act, and shall implement and maintain a Health and Safety Plan as described in the Construction Regulations, 2003 and as approved by PRASA, on the Site and place of work for the duration of the Contract.
- 1.3 The Contractor accepts his obligation to complying fully with the Act and applicable Regulations notwithstanding the omission of some of the provisions of the Act and the Regulations from this document.
- 1.4 PRASA. accepts, in terms of the Act, its obligations as an employer of its own employees working on or associated with the site or place of work, and the Contractor and Technical Officer or his deputy shall at all times, co-operate in respect of the health and safety management of the site, and shall agree on the practical arrangements and procedures to be implemented and maintained during execution of the Works.
- 1.5 In the event of any discrepancies between any legislation and this specification, the applicable legislation will take precedence.

2. Definitions

- 2.1 In this Specification any word or expression to which a meaning has been assigned in the Construction Regulations, shall have the meaning so assigned to it, unless the context otherwise indicates: -
- 2.2 The work included in this Contract shall for the purposes of compliance with the Act be deemed to be "**Construction Work**", which, in terms of the Construction Regulations, 2003 means any work in connection with: -
 - (a) the erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure;
 - (b) the installation, erection, dismantling or maintenance of fixed plant where such work includes the risk of a person falling;
 - (c) the construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure; or
 - (d) the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work;
- 2.3 “**competent person**” in relation to construction work, means any person having the knowledge, training and experience specific to the work or task being performed: Provided that where appropriate qualifications and training are registered as per the South African Qualifications Authority Act, 1995 these qualifications and training shall be deemed to be the required qualifications and training;
- 2.4 “**contractor**” means principal contractor and “subcontractor” means contractor as defined by the Construction Regulations, 2003.

- 2.5 **“fall protection plan”** means a documented plan, of all risks relating to working from an elevated position, considering the nature of work undertaken, and setting out the procedures and methods applied to eliminate the risk;
- 2.6 **“health and safety file”** means a file, or other record in permanent form, containing the information required to be kept on site in accordance with the Act and applicable Regulations;
- 2.7 **“Health and Safety Plan ”** means a documented plan which addresses the hazards identified and include safe work procedures to mitigate, reduce or control the hazards identified;
- 2.8 **“Risk Assessment”** means a programme to determine any risk associated with any hazard at a construction site, in order to identify the steps needed to be taken to remove, reduce or control such hazard;
- 2.9 **“the Act”** means the Occupational Health and Safety Act No. 85 of 1993.

3. Procedural Compliance

- 3.1 The Contractor who intends to carry out any construction work shall, before carrying out such work, notify the Provincial Director in writing if the construction work:-
- (a) includes the demolition of a structure exceeding a height of 3 metres; or
 - (b) includes the use of explosives to perform construction work; or
 - (c) includes the dismantling of fixed plant at a height greater than 3m,
- and shall also notify the Provincial Director in writing when the construction work exceeds 30 days or will involve more than 300 person days of construction work and if the construction work:-
- (a) includes excavation work deeper than 1m; or
 - (b) includes working at a height greater than 3 metres above ground or a landing.
- 3.2 The notification to the Provincial Director shall be on a form similar to Annexure A of the Construction Regulations, 2003, also shown in Annexure 1 of this Specification. The Contractor shall ensure that a copy of the completed notification form is kept on site for inspection by an inspector, Technical Officer or employee.
- 3.3 The Contractor shall, in accordance with the Act and applicable Regulations, make all the necessary appointments of competent persons in writing on a form similar to Annexure 2 of this Specification and deliver copies thereof to the Technical Officer. Copies should also be retained on the health and safety file.
- 3.4 Subcontractors shall also make the above written appointments and the Contractor shall deliver copies thereof to the Technical Officer.
- 3.5 In the case of a self-employed Contractor or any subcontractor who has the appropriate competencies and supervises the work himself, the appointment of a construction supervisor in terms of regulation 6.1 of the Construction Regulations, 2003 will not be necessary. The Contractor shall in such a case execute and sign a declaration, as in Annexure 3, by which he personally undertakes the duties and obligations of the "Chief Executive Officer" in terms of section 16(1) of the Act.
- 3.6 The Contractor shall, before commencing any work, obtain from the Technical Officer an access certificate as in Annexure 4 executed and signed by him, permitting and limiting access to the designated site or place of work by the Contractor and any subcontractors under his control.
- 3.7 Procedural compliance with Act and Regulations, as above, shall also apply to any subcontractors as

employers in their own right. The Contractor shall furnish the Technical Officer with full particulars of such subcontractors and shall ensure that they comply with the Act and Regulations and PRASA safety requirements and procedures.

4. Special Permits

Where special permits are required before work may be carried out such as for hotwork, isolation permits, work permits and occupations, the Contractor shall apply to the Technical Officer or the relevant authority for such permits to be issued. The Contractor shall strictly comply with the conditions and requirements pertaining to the issue of such permits.

5. Health and Safety Programme

5.1 The Tenderer 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.

5.2 The Contractor's Health and Safety Programme shall be based on a risk assessment in respect of the hazards to health and safety of his employees and other persons under his 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.

5.3 The Contractor shall cause a risk assessment contemplated in clause 5.2 above to be performed by a competent person, appointed in writing, before commencement of any Construction Work and reviewed during construction. The Risk Assessments shall form part of the Health and Safety programme to be applied on the site and shall include at least the following:

- (a) The identification of the risks and hazards that persons may be exposed to;
- (b) the analysis and evaluation of the hazards identified;
- (c) a documented Health and Safety Plan, including safe work procedures to mitigate, reduce or control the risks identified;
- (d) a monitoring and review plan.

5.4 The Health and Safety Plan shall include full particulars in respect of: -

- (a) 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;
- (b) the safe working methods and procedures to be implemented to ensure the work is performed in compliance with the Act and Regulations;
- (c) the safety equipment, devices and clothing to be made available by the Contractor to his employees;

- (d) the site access control measures pertaining to health and safety to be implemented;
- (e) 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 8 of the Act and with the pertinent clause of the General Conditions of Contract forming part of the Contract and
- (f) the introduction of control measures for ensuring that the Safety Plan is maintained and monitored for the duration of the Contract.

- 5.5 The Health and Safety programme shall be subject to the Technical Officer's approval 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, in the Technical Officer's opinion, are necessary to ensure full 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.
- 5.6 The Contractor shall take reasonable steps to ensure that each subcontractor's Health and Safety Plan is implemented and maintained on the construction site: Provided that the steps taken, shall include periodic audits at intervals mutually agreed to between the them, but at least once every month.
- 5.7 The Contractor shall stop any subcontractor from executing any construction work, which is not in accordance with the Contractor's, and/or subcontractor's Health and Safety Plan for the site or which poses a threat to the health and safety of persons.
- 5.8 The Contractor shall ensure that a copy of the Health and Safety Plan is available on site for inspection by an inspector, Technical Officer, agent, subcontractor, employee, registered employee organisation, health and safety representative or any member of the health and safety committee.
- 5.9 The Contractor shall consult with the health and safety committee or, if no health and safety committee exists, with a representative group of employees, on the development, monitoring and review of the Risk Assessment.
- 5.10 The Contractor shall ensure that all employees under his control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the Risk Assessment.
- 5.11 The Contractor shall ensure that all subcontractors are informed regarding any hazard as stipulated in the Risk Assessment before any work commences, and thereafter at such times as may be determined in the Risk Assessment.
- 5.12 The Contractor shall ensure that all visitors to a construction site undergoes health and safety induction pertaining to the hazards prevalent on the site and shall be provided with the necessary personal protective equipment.

5. Fall Protection Plan

- 6.1 In the event of the risk and hazard identification, as required in terms of clause 5.3 of this Specification, revealing risks relating to working from an elevated position the contractor shall cause the designation of a competent person, responsible for the preparation of a fall protection plan;
- 6.2 The Contractor shall implement, maintain and monitor the fall protection plan for the duration of Contract. The Contractor shall also take such steps to ensure the continued adherence to the fall protection plan.
- 6.3 The fall protection plan shall include: -
 - (a) A Risk Assessment of all work carried out from an elevated position;

- (b) the procedures and methods to address all the identified risks per location;
- (c) the evaluation of the employees physical and psychological fitness necessary to work at elevated positions;
- (d) the training of employees working from elevated positions; and
- (e) the procedure addressing the inspection, testing and maintenance of all fall protection equipment.

7. Hazards and Potential Hazardous Situations

The Contractor and the Technical Officer shall immediately notify one another of any hazardous or potentially hazardous situations which may arise during performance of the Contract by the Contractor or any subcontractor and, in particular, of such hazards as may be caused by the design, execution and/or location and any other aspect pertaining to the contract work.

8. Health and Safety File

- 8.1 The Contractor shall ensure that a health and safety file is opened and kept on site and shall include all documentation required as per the Act and applicable regulations, and made available to an inspector, the Technical Officer, or subcontractor upon request.
- 8.2 The Contractor shall ensure that a copy of the both his Health and Safety Plan as well as any subcontractor's Health and Safety Plan is available on request to an employee, inspector, contractor or the Technical Officer.
- 8.3 The Contractor shall hand over a consolidated health and safety file to the Technical Officer upon completion of the Construction Work and shall in addition to documentation mentioned in the Act and applicable Regulations include a record of all drawings, designs, materials used and other similar information concerning the completed structure.

ANNEXURE 1

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993

Regulation 3(1) of the Construction Regulations

NOTIFICATION OF CONSTRUCTION WORK

1. (a) Name and postal address of principal contractor:

- (b) Name and tel. no of principal contractor's contact person:

2. Principal contractor's compensation registration number: _____
3. (a) Name and postal address of client:

- (b) Name and tel no of client's contact person or agent:

4. (a) Name and postal address of designer(s) for the project:

- (b) Name and tel. no of designer(s) contact person:

5. Name and telephone number of principal contractor's construction supervisor on site appointed in terms of regulation 6(1).

6. Name/s of principal contractor's construction sub-ordinate supervisors on site appointed in terms of regulation 6(2). _____
7. Exact physical address of the construction site or site office:

8. Nature of the construction work:

9. Expected commencement date: _____
10. Expected completion date: _____

11. Estimated maximum number of persons on the construction site: _____

12. Planned number of contractors on the construction site accountable to the principle contractor:

13. Name(s) of contractors already chosen.

Principal Contractor

Date

Client

Date

* THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE.

* **ALL PRINCIPAL CONTRACTORS** THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER PRINCIPAL CONTRACTOR ON THE SAME SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.

ANNEXURE 2

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT 85 OF 1993):

SECTION/REGULATION: _____

REQUIRED COMPETENCY: _____

In terms of _____ I, _____
representing the Employer) do hereby appoint _____

As the Competent Person on the premises at _____
(physical address) to assist in compliance with the Act and the applicable Regulations.

Your designated area/s is/are as follows: -

Date: _____

Signature: - _____

Designation: - _____

ACCEPTANCE OF DESIGNATION

*I, _____ do hereby accept this Designation and acknowledge that I
understand the requirements of this appointment.*

Date: _____

Signature: - _____

Designation: - _____

ANNEXURE 3

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT 85 OF 1993) :

DECLARATION

In terms of the above Act I, _____ am personally assuming the duties and obligations as Chief Executive Officer, defined in Section 1 of the Act and in terms of Section 16(1), I will, as far as is reasonably practicable, ensure that the duties and obligations of the Employer as contemplated in the above Act are properly discharged.

Signature: - _____

Date: _____

ANNEXURE 4

SITE ACCESS CERTIFICATE

Access to: _____ (Area)

Name of Contractor/Builder: - _____

Contract/Order No.: 723/2011/CTN/INFRA

The contract works site/area described above are made available to you for the carrying out of associated works
In terms of your contract/order with **Metrorail**
(company)

Kindly note that you are at all times responsible for the control and safety of the Works Site, and for persons under your control having access to the site.

As from the date hereof you will be responsible for compliance with the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) as amended, and all conditions of the Contract pertaining to the site of the works as defined and demarcated in the contract documents including the plans of the site or work areas forming part thereof.

Signed: _____ Date: _____
TECHNICAL OFFICER

ACKNOWLEDGEMENT OF RECEIPT

Name of Contractor/Builder: - _____ I,

do hereby acknowledge and accept the duties

and obligations in respect of the Safety of the site/area of Work in terms of the Occupational Health and Safety Act; Act 85 of 1993.

Name : _____ Designation : _____

Signature : _____ Date : _____

RISK ASSESSMENT FOR								PREPARED BY: METRORAIL				
No.	ACTIVITY (GENERIC)		HAZARD	RISK	Severity	Exposure	Frequency	PRIORITY	SAFE WORKING METHOD (REFER CONTRACTOR'S METHOD STATEMENT FOR MORE DETAIL)			
1.	Working adjacent to live 3Kv DC high voltage electrical environment.		Electrical shock	Injury to commuter, public and contractor's workforce. Damage to PRASA assets. Delays to train service	5	5	5	5	a) Compliance with SPK 7/1 specifications where applicable. b) No person/s and/or equipment is to work closer than 3m to live high-voltage overhead equipment. Where extendable ladders are used the 3m clearance would apply when the ladder is fully extended. c) No ladders/scaffolding manufactured from conductive material is to be used underneath/adjacent to live high-voltage overhead equipment. Only ladders manufactured from wood, fibreglass or other similar non-conducting material will be allowed in this instance. This to be read in conjunction with (b) above. d) No hose-pipes or high pressure cleaners are to be used underneath/adjacent to live high-voltage overhead equipment.			
2.	Working adjacent to railway and crossing of railway lines by contractor's employees and/or vehicles.		Collision with train	Injury to public and contractor's workforce. Damage to PRASA assets. Delays to train service	5	5	3	4.3	a) Compliance with SPK 7/1 specifications where applicable. b) Contractor to make use of authorised vehicle crossings only or alternatively any temporary railway crossing authorised by Metrorail. c) No crossing of railway lines will be permitted without authority and supervision by Metrorail. Where appropriate Metrorail will train the contractor's staff to perform the function of flagmen/watchmen.			
SEVERITY (S)	5	Catastrophic - Multiple fatalities		EXPOSURE (E)	5	Almost certain to inevitable			FREQUENCY(F)	5	Hazard permanently present	
	4	Critical - Fatality or number or disabling injuries.			4	Probable				4	Hazard arises at any time	
	3	Serious - Serious/ disabling injuries.			3	Improbable				3	Hazard arises at pre-determined intervals	
	2	Marginal - Minor injuries.			2	Less than even chance				2	Hazard arises more once but less than 5 times throughout the contract period	
	1	Negligible - First aid treatment			1	Highly improbable				1	Hazard arises less than once throughout the contract period	
PRIORITY = ((S + E + F) / 15) x 5												

RISK ASSESSMENT FOR								PREPARED BY: METRORAIL				
No.	ACTIVITY (GENERIC)		HAZARD	RISK	Severity	Exposure	Frequency	PRIORITY	SAFE WORKING METHOD (REFER CONTRACTOR’S METHOD STATEMENT FOR MORE DETAIL)			
3.	Working in a high flow operational environment.		Exposed construction works	Injury to commuter, public, Metrorail and contractor’s workforce.	4	5	5	4.7	a) No vehicles/construction equipment are allowed in station concourses, at any time unless written permission has been given by the Technical Officer. b) Cordon off all work areas with suitable hoardings, temporary fencing, barrier tape as deemed necessary by the Technical Officer. c) Erect adequate warning signage to advise commuters/public of potentially hazardous conditions.			
4.	Working on low voltage electrical distribution networks.		Electrical shock	Injury to public and contractor’s workforce. Damage to PRASA assets.	3	4	3	3.3	a) The contractor is to contact Metrorail’s electrical department before commencing any work on the electrical distribution. Access to the electrical kiosk will be arranged for the contractor to enable him to turn off the power at the distribution board before doing any work.			
SEVERITY (S)	5	Catastrophic - Multiple fatalities		EXPOSURE (E)	5	Almost certain to inevitable			FREQUENCY(F)	5	Hazard permanently present	
	4	Critical - Fatality or number or disabling injuries.			4	Probable				4	Hazard arises at any time	
	3	Serious - Serious/ disabling injuries.			3	Improbable				3	Hazard arises at pre-determined intervals	
	2	Marginal - Minor injuries.			2	Less than even chance				2	Hazard arises more once but less than 5 times throughout the contract period	
	1	Negligible - First aid treatment			1	Highly improbable				1	Hazard arises less than once throughout the contract period	
PRIORITY = ((S + E + F) / 15) x 5												

RISK ASSESSMENT FOR								PREPARED BY: METRORAIL				
No.	ACTIVITY (GENERIC)		HAZARD	RISK	Severity	Exposure	Frequency	PRIORITY	SAFE WORKING METHOD (REFER CONTRACTOR'S METHOD STATEMENT FOR MORE DETAIL)			
5.	Working on/removal of asbestos materials		Exposure to asbestos dust	Health risks to commuters, public, Metrorail and contractor's workforce.	4	4	3	3.7	a) Compliance with Occupational Health and Safety Act and Asbestos Regulations. b) All work on asbestos material to be done by contractor registered with the Department of Labour to perform such work. c) All work to be registered with the Department of Labour prior to commencement.			
6.	Working at heights exceeding 3m e.g. roof work, multiple storey buildings		Falling from height	Injury to contractor's workforce.	4	5	4	4.3	a) Contractor to submit "Fall Protection Plan" which shall include a risk assessment specifically for this hazard. This to be done in accordance with the Construction Regulations clause 8. b) Contractor to supply suitable fall prevention equipment or fall arrest equipment where this is not possible. c) All scaffolding to be erected by trained personnel in accordance with relevant SANS standards and regulations.			
SEVERITY (S)	5	Catastrophic - Multiple fatalities		EXPOSURE (E)	5	Almost certain to inevitable			FREQUENCY(F)	5	Hazard permanently present	
	4	Critical - Fatality or number or disabling injuries.			4	Probable				4	Hazard arises at any time	
	3	Serious - Serious/ disabling injuries.			3	Improbable				3	Hazard arises at pre-determined intervals	
	2	Marginal - Minor injuries.			2	Less than even chance				2	Hazard arises more once but less than 5 times throughout the contract period	
	1	Negligible - First aid treatment			1	Highly improbable				1	Hazard arises less than once throughout the contract period	
PRIORITY = ((S + E + F) / 15) x 5												

RISK ASSESSMENT FOR								PREPARED BY: METRORAIL				
No.	ACTIVITY (GENERIC)		HAZARD	RISK	Severity	Exposure	Frequency	PRIORITY	SAFE WORKING METHOD (REFER CONTRACTOR'S METHOD STATEMENT FOR MORE DETAIL)			
7.	Unsafe working practice/non-compliance to safe working method		Unsafe working methods which will safety of workforce and public.	Injury to commuters and workforce. Damage to PRASA assets	3	4	4	3.7	a) Any Metrorail employee who observes that the workforce is working unsafe has the authority to stop the work. b) The contractor will adhere to any instruction issued by the Electrical Officer and Safety Officer and they shall be granted access to Contractor's Site Instruction Book.			
8.	Permits and Occupations		Major disruptions to Metrorail operations. Could have disastrous consequences if all the instructions and procedures are not followed correctly	Injury to commuters and contractor's workforce. Damage to PRASA assets	5	5	3	4.3	Contractor must approach Technical Officer for application and planning of occupations and work permits. Work under permits and occupations: a) No work shall commence until Metrorail has issued work permit for that particular period and section on which the work is to be performed. When an occupation and permit is needed for the same activity the occupation may only go ahead after authority has been given by the Electrical Department and CCT. b) The occupation must be uplifted before the permit can be signed off. c) No work shall continue after termination of the work permit. d) All work shall be completed and made safe by the time stipulated in the work permit and shall be subject to the approval of Metrorail. e) Only a trackmaster or accredited person can take and terminate occupations.			
SEVERITY (S)	5	Catastrophic - Multiple fatalities		EXPOSURE (E)	5	Almost certain to inevitable			FREQUENCY(F)	5	Hazard permanently present	
	4	Critical - Fatality or number or disabling injuries.			4	Probable				4	Hazard arises at any time	
	3	Serious - Serious/ disabling injuries.			3	Improbable				3	Hazard arises at pre-determined intervals	
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PRIORITY = ((S + E + F) / 15) x 5												

RISK ASSESSMENT FOR								PREPARED BY: CONTRACTOR		
No.	ACTIVITY (CONTRACT SPECIFIC)		HAZARD	RISK	Severity	Exposure	Frequency	PRIORITY	SAFE WORKING METHOD (REFER CONTRACTOR'S METHOD STATEMENT FOR MORE DETAIL)	
SEVERITY (S)	5	Catastrophic - Multiple fatalities	EXPOSURE (E)	5	Almost certain to inevitable			FREQUENCY (F)	5	Hazard permanently present
	4	Critical - Fatality or number or disabling injuries.		4	Probable				4	Hazard arises at any time
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	2	Marginal - Minor injuries.		2	Less than even chance				2	Hazard arises more once but less than 5 times throughout the contract period
	1	Negligible - First aid treatment		1	Highly improbable				1	Hazard arises less than once throughout the contract period
PRIORITY = ((S + E + F) / 15) x 5										

RISK ASSESSMENT FOR								PREPARED BY: CONTRACTOR				
No.	ACTIVITY (CONTRACT SPECIFIC)		HAZARD	RISK	Severity	Exposure	Frequency	PRIORITY	SAFE WORKING METHOD (REFER CONTRACTOR'S METHOD STATEMENT FOR MORE DETAIL)			
SEVERITY (S)	5	Catastrophic - Multiple fatalities		EXPOSURE (E)	5	Almost certain to inevitable			FREQUENCY(F)	5	Hazard permanently present	
	4	Critical - Fatality or number or disabling injuries.			4	Probable				4	Hazard arises at any time	
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PRIORITY = ((S + E + F) / 15) x 5												

RISK ASSESSMENT FOR								PREPARED BY: CONTRACTOR		
No.	ACTIVITY (CONTRACT SPECIFIC)		HAZARD	RISK	Severity	Exposure	Frequency	PRIORITY	SAFE WORKING METHOD (REFER CONTRACTOR'S METHOD STATEMENT FOR MORE DETAIL)	
SEVERITY (S)	5	Catastrophic - Multiple fatalities	EXPOSURE (E)	5	Almost certain to inevitable			FREQUENCY (F)	5	Hazard permanently present
	4	Critical - Fatality or number or disabling injuries.		4	Probable				4	Hazard arises at any time
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