

SPOORNET

A division of Transnet limited

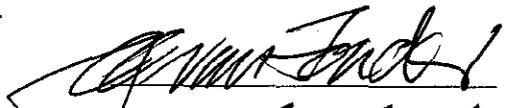
**TECHNICAL
CONFIGURATION MANAGEMENT
SPECIFICATION CONTROL PAGE**

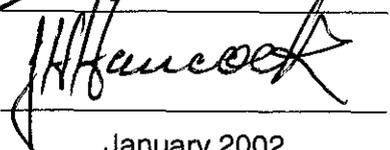
**DRAWINGS, CATALOGUES, INSTRUCTION MANUALS
AND SPARES LISTS FOR ELECTRICAL EQUIPMENT
SUPPLIED UNDER CONTRACT**

Statement of authorisation:

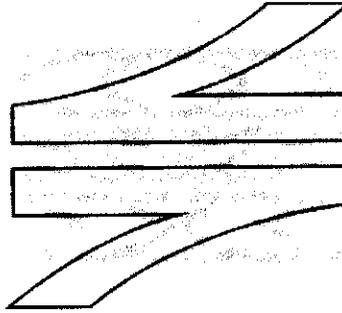
There is no SABS specification available for similar material / equipment and as far as can be ascertained no other specification / standard suitably covers Spoornet requirements. The specification has been compiled in a manner which shall favour / encourage local manufacture of material / equipment to a maximum degree.

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Date: 

 January 2002

This page is for control purposes only and shall not be issued with the specification.



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**TECHNICAL
CONFIGURATION MANAGEMENT
SPECIFICATION**

**DRAWINGS, CATALOGUES, INSTRUCTION MANUALS
AND SPARES LISTS FOR ELECTRICAL EQUIPMENT
SUPPLIED UNDER CONTRACT**

Circulation restricted to:

Technical

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1.0 SCOPE

This specification covers Spoornet's requirements for drawings, catalogues, and instruction manuals and spares lists of electrical equipment supplied under contract.

2.0 DEFINITIONS

- 2.1 "Design drawings for approval" defines those drawings, which have to be submitted to Spoornet for approval prior to manufacture of equipment.
- 2.2 "Installation drawings" defines those drawings, which are required for the installation of the equipment.
- 2.3 "As Built drawings" defines those drawings, which reflect all the various approved designs, layouts, etc., of the actual final accepted state of the equipment.

3.0 STANDARDS AND SPECIFICATIONS

- 3.1 The following standards and specifications are referred to:

CEE.0012: Method of Tendering

SABS 0111: Engineering Drawings.

BS 308: Engineering Drawing Practice.

NRS 002: Graphical Symbols for Electrical Diagrams.

IEC 617: Graphical Symbols for Diagrams.

ASHRAE: American Society of Heating Refrigeration Air-conditioning Engineers Standard.

- 3.1.1 The following Spoornet standard (Electrical) symbol drawings are listed for reference:

CEE-PA-19: Symbols for Electrical Installations.

CEE-PA-42: Symbols for Distribution and Transmission Layout.

CEE-PA-101: Symbols for Air-conditioning installations.

CEE-TA-62: Standard Electrification Symbols.

- 3.2 Tenderers and contractors shall ensure that they work to the latest issues and amendments of the above standards and specifications.

4.0 APPENDIX

The following appendix forms an integral part of this specification:

Appendix 1: SCHEDULE OF REQUIREMENTS

This appendix calls for specific requirements applicable to the contract.

5.0 METHOD OF TENDERING

- 5.1 Tendering shall be in accordance with Spoornet (Electrical) specification CEE.0012.

5.2 Tenderers shall indicate clause by clause compliance or non-compliance with the specification. This shall take the form of a separate document listing all the specification clause numbers indicating the individual statement of compliance or non-compliance.

5.3 The Schedule of Requirements, Quantities and Prices, Appendix 1 to this specification shall be fully completed by Tenderers. Failure to submit a fully completed sheet may preclude a tender from further consideration.

6.0 LANGUAGE AND UNITS OF MEASURE

Drawings and documents shall be prepared in English and the ISO unit of measure. Other offers will be considered on merit.

7.0 DRAWINGS

7.1 Drawings shall be generated in either Microstation or any CAD format, which can be read by Microstation, but offers on other media will be considered on merit.

7.2 Drawings shall be prepared in such a manner that they fully comply with the requirements of SABS 0111 and/or BS 308.

7.3 Symbols, with their explanations used on the drawings but not covered by the NRS 002, IEC 617, ASHRAE or Spornet's symbol drawings shall be furnished i.e. then included on the drawing or supplied on a separate symbol list which is to be cross referenced to the drawing.

7.4 Where the publications referred to in clause 3.1 are at variance, the practice detailed in SABS 0111 shall take preference.

7.5 Drawings shall be prepared for ISO; "A" series size sheets and shall not be greater than A1 size except as detailed below.

7.5.1 Where under exceptional circumstances the nature of the work is such that a size A1 is impractical, then the A0 size may be used.

7.5.2 Long drawings, where necessary for wiring/circuit diagrams, cable run diagrams, track layouts, etc., shall be prepared with widths equal to the widths of the "A" series sheets as required, but preferably not exceeding the length of an A0 sheet.

7.6 All interrelated drawings shall be clearly and adequately cross-referenced.

7.7 The Contractor hereby grants to Transnet a non-exclusive licence, in accordance with the provisions of section 22 of the Copyright Act, 1978;

7.7.1 to copy any plan, diagram, drawing, specification, bill of quantities, design calculation or other similar document made by the Contractor, other than under the direction or control of Transnet, in connection with the extent of work;

7.7.2 to make free and unrestricted use thereof for its own purposes;

7.7.3 to provide copies thereof to consultants to Transnet to be used by them for the purpose of such consultations and consulting services and-

7.7.4 to provide other parties with copies thereof for the purpose of tenders invited by Transnet.

- 7.7.5 Such non-exclusive licence shall apply *mutatis mutandis* to any plan, diagram, drawing, specification, bill and/or schedule of quantities, design calculation or other similar document made, other than under the direction or control of Transnet, by any principal or sub-contractor of the Contractor. The provisions of this clause shall not apply to documents made, in the case of plant or equipment to be supplied, for the manufacturing process of such equipment, but only to the equipment supplied itself.
- 7.7.6 Transnet shall make no separate or extra payment in respect of any non-exclusive licence granted in terms hereof.
- 8.0 INFORMATION REQUIRED ON DRAWINGS**
- 8.1 A title block shall be provided in the lower right hand corner of each drawing, indicating:
- 8.1.1 Descriptive title.
- 8.1.2 Contractor's drawing number.
- 8.1.3 Space for Spoornet's drawing number (as requested in clause 7.7).
- 8.1.4 Place of installation.
- 8.1.5 Contract / Order number.
- 8.1.6 Contractor's name.
- 8.1.7 Signature or name of approving officer (as requested in clause 8.0).
- 8.1.8 Approval date.
- 8.1.9 Issue number.
- 8.1.10 Projection symbol for multi-view drawings, if required.
- 8.2 Successful Tenderers can obtain a copy of Spoornet's standard title block (Microstation or DXF formats) free of charge by contacting the Documentation Management section.
- 8.3 On wiring and circuit diagrams, the following shall be specified:
- 8.3.1 Cable and wire sizes.
- 8.3.2 Values of resistance.
- 8.3.3 Breaking capacity of switches.
- 8.3.4 Ratings of equipment.
- 8.4 On each assembly or sub-assembly drawing, the following shall be given:
- 8.4.1 Description of item.
- 8.4.2 Quantity required for assembly depicted.
- 8.4.3 Material manufactured from.
- 8.4.4 The classification of the material according to the relevant SABS specification or other specifications referred to herein.

-
- 8.4.5 The class or process of finish and/or coating.
- 8.4.6 Where special parts are specified, the name of the manufacturer, the size, capacity and the name or catalogue number of each part shall be furnished.
- 8.4.7 The mass of finished item depicted on the drawing.
- 8.4.8 Dimensions from a proper reference surface.
- 8.4.9 Dimension tolerances.
- 8.5 *On electrification drawings, the following shall be specified:*
- 8.5.1 Kilometre distances.
- 8.5.1.1 Kilometre distances of all new and existing masts measured from the preceding kilometre post.
- 8.5.2 Civil
- 8.5.2.1 The following civil information shall be shown:
- 8.5.2.1.1 Bridges.
- 8.5.2.1.2 Tunnels.
- 8.5.2.1.3 Pipes.
- 8.5.2.1.4 *Culverts.*
- 8.5.2.1.5 Subways.
- 8.5.2.1.6 Manholes.
- 8.5.2.1.7 Off track platforms.
- 8.5.2.1.8 Water-furrows along track.
- 8.5.2.1.9 Service roads that may influence electrification.
- 8.5.2.1.10 Level crossings.
- 8.5.2.1.11 All banks and cuttings.
- 8.5.2.1.12 Retaining walls.
- 8.5.2.1.13 Gradient markers and gradients.
- 8.5.2.1.14 Boundary fences (where relevant).
- 8.5.2.1.15 The beginning and ending of transition and circular curves and the radius.
- 8.5.2.3 On all station plans the beginning and ending of the platforms to be indicated, as well as all buildings and structures on the platform which may effect electrification. All secondary platforms/structures/obstacles, which may effect electrification, must also be shown.
- 8.5.2.4 All points with stock rail joints, intersection of centre lines and all ends of point positions to be shown, as well as the type of point, e.g. 1:9 LH (left hand).

-
- 8.5.3 Electrical
- 8.5.3.1 The following electrical information shall be shown:
- 8.5.3.1.1 New and existing masts and structures with appropriate sizes.
- 8.5.3.1.2 Span lengths.
- 8.5.3.1.3 Tension lengths.
- 8.5.3.1.4 Mast to track centres.
- 8.5.3.1.5 Tension type (spring or weight).
- 8.5.3.1.6 Transmission lines, Transnet and Eskom (Showing crossing heights above rail level).
- 8.5.3.1.7 Telkom lines.
- 8.5.3.1.8 Height gauges.
- 8.5.3.1.9 Power and Lighting kiosks.
- 8.5.3.1.10 Electrical cables nearer than 3,2m from track centre, as well as cables crossing the track.
- 8.5.3.2 Wire profiles showing clearances/wire heights for all transmission and telecommunication lines that cross the tracks shall be shown on the drawing at the point of crossing, in either tabular or graphic format.
- 8.5.3.3 *Wire profile for all bridges and tunnels shall be shown on separate drawings.*
- 8.5.3.4 Important information that shall be noted are:
- 8.5.3.4.1 Basic span.
- 8.5.3.4.2 Ruling contact wire height.
- 8.5.3.4.3 Reference to bonding drawings.
- 8.5.3.4.4 Wire sizes.
- 8.5.3.4.5 Types of structures and foundations.
- 8.5.3.4.6 Tables for traction and transmission line (Showing wire heights).
- 8.5.3.4.7 Dropper chart.
- 8.5.3.4.8 Overlaps.
- 8.5.3.4.9 Jumpers.
- 8.5.3.4.10 Staggering.
- 8.5.3.4.11 References to switching diagram drawings.
- 8.5.3.4.12 Any other relevant information.
- 8.5.4 Signal.
- 8.5.4.1 The following signal information shall be shown:
-

- 8.5.4.1.1 Signal gantries (showing direction of aim).
- 8.5.4.1.2 Independent signals (showing direction of aim).
- 8.5.4.1.3 Signal kiosks.
- 8.5.4.1.4 Telephones.
- 8.5.4.1.5 Signal relay rooms.
- 8.5.4.1.6 Radio repeater rooms.
- 8.5.4.1.7 Signal cables nearer than 3,2m from track centre, as well as cables crossing the track.
- 8.5.5 Electrification information must be clearly indicated on drawings (see also drg no CEE-TA-62 for Standard Electrification Symbols).

8.7 The successful tenderer shall obtain Spoornet's drawing numbers from the Documentation Management section of Spoornet well in advance in writing, wherein details of all relevant drawings, i.e. titles and makers numbers are quoted. Against this information Spoornet will allocate its own numbers for inclusion by the Contractor on the original drawings.

9.0 CERTIFICATION OF DRAWINGS

The contractor against a date to certify that the drawing has been checked and is correct in all respects shall approve each drawing. This also includes changes.

10.0 CHANGES TO DRAWINGS

Any drawing returned to the Contractor for changes shall be re-submitted to Spoornet within 21 days with the appropriate changes endorsed thereon.

11.0 SUBMISSION OF TENDER DRAWINGS

The Tenderer shall submit drawings of all major items of equipment with the tender. The drawings shall be sufficiently detailed (e.g. safety factors) to enable suitability of the design to be judged and to enable Spoornet to prepare a reasonably accurate estimate of the cost of maintenance.

12.0 DRAWINGS TO BE SUPPLIED BY SUCCESSFUL TENDERER

- 12.1 Two prints of each design drawing for approval to be submitted prior to commencement of work or manufacture of any equipment to Spoornet. This includes drawings of general layouts, cable routes, schematic diagrams, foundations, equipment etc.
- 12.2 Two prints of each installation and/or erection drawing to be submitted to Spoornet. This includes drawings of modular steel buildings, structures etc. and shall be delivered at the same time the delivery of the equipment commences.
- 12.3 The successful tenderer shall supply one complete set of approved (signed) "As Built" working drawings as well as the electronic files thereof. Drawings shall be fully dimensioned, fully detailed, clear and neat. The set shall comprise all electrical and mechanical drawings considered necessary by Spoornet and shall include drawings of all renewable parts or items. "As Built" drawings of all enclosures, structures and foundations shall also be supplied.

- 12.4 All relevant "As Built" drawings required shall be delivered to SpoorNet within 90 days of completion of the installation and delivery of equipment.
- 12.5 Until all relevant drawings called for in the contract are delivered, the contract will be considered incomplete.
- 13.0 CATALOGUES**
- 13.1 Tenderers shall submit a separate quotation for the supply of the itemised part catalogues when specified in the Schedule of Requirements. The size shall be A4 (297 mm x 210 mm). Consideration shall be given on merit of the supply of these catalogues electronically (PDF format).
- 13.2 The information contained in the catalogues shall be classified into convenient sectors and be indexed. Thumb tabs shall be provided for quick reference to sections. All apparatus shall be illustrated by means of photographs or detailed sketches on which both the parts and the catalogue numbers of the parts are clearly shown. Catalogues shall have exploded views of components for clarity where needed.
- 13.3 The following information shall be given in tabular form:
- 13.3.1 Designation of apparatus or item of equipment.
- 13.3.2 Description of part including information such as dimensions, sizes, resistance values, stranding, material, current ratings, etc.
- 13.3.3 Catalogue number.
- 13.3.4 Manufacturer's name.
- 13.3.5 "As Built" drawing and item number where applicable.
- 13.3.6 Quantity of parts required for each piece of apparatus.
- 13.3.7 Illustrating photographs or sketch number.
- 13.3.8 Nato registration where applicable.
- 13.4 In a suitable section of the catalogue the following information shall be given:
- 13.4.1 Index to "As Built" Drawings.
- 13.4.1.1 "As Built" drawing number.
- 13.4.1.2 Heading.
- 13.4.1.3 Parts shown on drawing.
- 13.4.2 Index to catalogue numbers.
- 13.4.2.1 Catalogue numbers in numerical order.
- 13.4.2.2 Catalogue volume number, where applicable.
- 13.4.2.3 Section in which part is listed.
- 13.4.2.4 Page number.

- 13.4.3 Special tools.
- 13.4.3.1 Designation and description of special tools.
- 13.4.3.2 Catalogue number.
- 13.5 Each volume shall be neatly bound in hard serviceable cover on which the contract numbers volume number and titles are printed. All the information in the catalogues shall be given in a clear legible manner. The catalogues shall include all items of equipment to be supplied by the successful tenderer.
- 13.6 *Catalogues shall be delivered before date of completion of the contract.*
- 14.0 INSTRUCTION MANUALS**
- 14.1 Tenderers shall submit a separate quotation for the supply of the number of copies of instruction manuals specified in the Schedule of Requirements. The size shall be A4 (297 mm x 210 mm). Consideration shall be given on merit of the supply of these catalogues electronically (PDF format).
- 14.2 The successful tenderer shall submit draft instruction manuals for approval prior to final printing/compiling and delivery.
- 14.3 The approved instruction manuals shall be delivered before commissioning the equipment. If this cannot be met, the successful tenderer shall furnish at least three copies of preliminary instruction manuals, suitable for the use of maintenance staff, until the final instruction manuals are to hand (which shall be before the date of completion of the contract).
- 14.4 The construction, method of operation and purpose of all items of equipment shall be fully explained by means of descriptions and photographs, sketches, drawings or circuit diagrams showing all details.
- 14.5 The information contained in the instruction manuals shall be classified into convenient sections and indexed. Where multiple models are produced each model shall be described in a separate section in such a manner that models not applicable can be omitted. Where possible the sections shall be subdivided as follows:
- 14.5.1 Installation and commissioning.
- 14.5.2 General description and method of operation.
- 14.5.3 Maintenance and inspection.
- 14.5.4 Overhaul and repair of equipment.
- 14.5.5 Technical and maintenance data.
- 14.5.6 Test procedure flow charts.
- 14.5.7 Fault finding and trouble shooting.
- 14.6 The method of calibrating, setting or adjusting all equipment requiring such attention shall be described and where necessary illustrated. The necessary data shall be given in each case to enable the equipment to be checked by measurement if required.

- 14.7 Full step-by-step instructions regarding the servicing and repair of the equipment shall be given together with all the necessary data such as dismantling and assembling procedures, working clearances, tolerances, limits, fits, maximum permissible wear, recommended lubricants, use of special tools, insulation and winding data, spring pressures and tensions, brush data, fuse data, etc. Recommended servicing/rework/replacement of parts frequencies shall also be included in the maintenance and inspection section of the instruction manual.
- 14.8 Any delay in delivery of the complete supply of satisfactory instruction manuals/preliminary manuals as provided for in this clause, will subject the Contractors to a deduction from the contract sum, of a penalty as defined in the tender, counting from the specified delivery time until such time as the said manuals are delivered.

15.0 COMBINED DOCUMENTS

If desired the catalogues and instruction manuals specified in clauses 12.O and 13.O may be combined into single volumes. Tenderers shall state whether or not it is their intention to do so. In this case the delivery shall be as specified in clause 13.3, alternatively the conditions described in clause 13.8 applies.

16.0 SPARES LIST

- 16.1 To enable Spornet to catalogue and timeously acquire all spares required, the following information shall be submitted before commissioning of equipment:
- 16.1.1 An itemised schedule of the spares (with reference to alternatives) which are recommended for normal maintenance purposes.
- 16.1.2 The quantity recommended to be held against each item on the spares list and where sets are supplied, the types and quantity per type to make up a set.
- 16.1.3 A full and complete ordering description and number of each individual spare with drawing number if relevant.
- 16.1.4 Where the ordering description and number differs from that of the original manufacturer's catalogue, description and number, the original manufacturer's name, description, type and ordering number shall be listed as well as all other relevant data available.
- 16.1.5 The national stock number - Nato - number of each spare where the particular spare was imported from a Nato country and where a national stock number was allocated.
- 16.2 Initially the spares list containing the above information will suffice, but this list shall not in any way replace or supersede the spare parts catalogue mentioned in clause 12.O.

17.0 PACKING OF DRAWINGS, CATALOGUES, INSTRUCTION MANUALS AND SPARES LISTS

All items shall be packed in such a way that they are received in good condition.

18.0 SUBSTITUTION

This specification replaces specification CEE.0224.94

TENDERER'S SIGNATURE: _____

DATE: _____

FOR SPOORNET: _____

GRADE: _____

END

“PREVIEW COPY ONLY”

SCHEDULE OF REQUIREMENTS

“PREVIEW COPY ONLY”

FOR SPOORNET: _____

GRADE: _____

END

**SPOORNET
(INFRASTRUCTURE) (ELECTRICAL)**

SPECIFICATION No. CEE.0229.95

**DRY-OUT AND REGENERATION OF INSULATING OIL AND RECLAIMING AND
DE-SLUDGING OF TRANSFORMERS**

This specification covers Spoornet's requirements for in situ dry-out and de-sludging of power transformers and reclaiming insulating oil by means of regeneration

“PREVIEW COPY ONLY”

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“PREVIEW COPY ONLY”

SPECIFICATION No. CEE.0229.95

1.0 SCOPE

This specification covers Spoornet's requirements for the dry-out and de-sludging of power transformers and reclaiming of insulating oil by means of regeneration.

2.0 REFERENCE AND STANDARDS

The following publication is referred to herein.

South African Bureau of Standards

SABS 555 : Mineral Insulating Oil for Transformers and Switch gear.

3.0 METHOD OF TENDERING

3.1 Tendering shall be in accordance with Spoornet (Infrastructure) (Electrical) specification CEE.0012.

Complies/Does not comply

3.2 Tendering prices shall be based on cost of the process that will achieve the results required as per clause 9.0 for each individual transformer described in Appendix 1,2 & 3.

Complies/Does not comply

3.3 Tenderer's shall quote separately for the replacement of lost oil if required, (per litre).

Complies/Does not comply

3.4 Spoornet reserves the right to inspect the Tenderer's facilities prior to awarding the contract in order to ensure that suitable equipment is available for the type of operation.

Complies/Does not comply

4.0 APPENDICES

The following appendices form an integral part of this specification:

Appendix 1: Schedule of transformers to be regenerated.

Appendix 2: Schedule of transformers to be de-sludged.

Appendix 3: Schedule of transformers to be dried-out.

Appendix 4: Moisture content of oil leaving transformer at which dry-out process must be terminated for various transformers temperatures.

SPECIFICATION No. CEE.0229.95

5.0 TRANSFORMER DRY-OUT (DE-ENERGISED)

5.1 Note: Any moisture present in the transformer will be partly in the oil and partly in the layers of solid insulation. Normally more than 95 percent of moisture in the transformer is trapped in the insulation and less than 5 percent in the oil. Removal of moisture from the solid insulation in situ is a slow process due to the slow rate of diffusion of moisture between insulation and oil. No quick dry-out processes (eg 48 hours) will thus be accepted, as this will dry-out the oil only and not the solid insulation.

5.2 The dry-out plant shall include a vacuum type drier, or alternative dry-out method with suitable filter (see clause 6.2.1) to remove the solid particles and a suitable pump (see clause 6.2.2).

Complies/Does not comply

5.2.1 The hoses between the dry-out plant and the transformer shall have a built-in earth conductor to avoid static electricity to be charged to a high potential. The filter and tanks in the plant shall also be connected to earth.

Complies/Does not comply

5.2.2 The transformer tank shall not be subjected to a vacuum in excess of the maximum possible indication on the transformer name plate.

Complies/Does not comply

5.2.3 The oil temperature inside the transformer tank shall not exceed 90 degrees Celsius while the dry-out process is in progress.

Complies/Does not comply

5.3 The silica gel crystals in the transformer breather shall be replaced at the start of the dry-out process and the colour change shall be monitored during the process. New crystals shall be provided when more than 50 percent of the crystals are coloured pink.

Complies/Does not comply

5.4 ON LOAD DRY-OUT

5.4.1 When using an on load dry-out plant the Contractor shall work in close conjunction with the Regional Engineer Electrical staff, who will lay down the requirements for safe operation of the plant.

Complies/Does not comply

6.0 REGENERATION OF OIL (Purification)

6.1 In order to remove acidic and colloidal contaminants an activated clay or Fuller's earth process shall be used to achieve the results required as per clause 9.0.

Complies/Does not comply

SPECIFICATION No. CEE.0229.95

- 6.1.1 The purification plant shall include provision for heating, automatic vacuum degasser, and shall be able to draw a vacuum in the transformer as well as circulate the oil in the transformer.

Complies/Does not comply

- 6.2 In the event of reclaiming of oil only being required, the complete volume of oil in the transformer may be replaced with new or factory regenerated oil as alternative to clause 6.1. When pumping oil into electrical equipment, the following precautionary measures shall be taken:

- 6.2.1 A paper filter (0,5 micron) shall always be installed between the pump and the equipment.

Complies/Does not comply

- 6.2.2 Pumps shall not have metal-to-metal friction which can release conductive metal particles into the oil.

Complies/Does not comply

- 6.2.3 The Contractor shall ensure that no air is trapped in the transformer while new oil is being added to the transformer. The tenderer shall indicate what method will be used to prevent air being trapped.

Complies/Does not comply

- 7.0 DE-SLUDGING OF TRANSFORMERS

- 7.1 The transformer shall be de-sludged in situ, completely filled with oil in accordance with the following process:-

Complies/Does not comply

- 7.1.1 The oil shall be heated and maintained at a temperature of approximately 90 degrees Celsius in the transformer, where the sludge in the transformer will go from a solid to a solution, re-entering the oil. A temperature of approximately 80 degrees Celsius should be reached in the core of the transformer and shall then be subjected to multiple passes of hot oil, for sufficient time to dissolve the sludge inside the transformer. The dissolved sludge is to be removed from the oil by passing the oil through an activated clay or Fuller's earth medium.

Complies/Does not comply

- 7.2 If required, and in agreement with Spoornet, the transformer may be kept on load to minimise the amount of external energy to obtain the laid down temperature of approximately 80 degrees Celsius in the core.

SPECIFICATION No. CEE.0229.95

8.0 REPLACEMENT OF LOST OIL

On completion of the process the oil level in the conservator shall be at the original level prior to the commencement of the dry-out, reclaiming or the de-sludging processes.

Complies/Does not comply

9.0 TESTS ON OIL

9.1 The oil shall be tested by Spoornet immediately after completion of the process to confirm compliance with the requirements of SABS 555 for both reclaiming and de-sludging. The requirements for dielectric strength shall be 65kV.

Comply/Does not comply

9.2 During the filtration dry-out process the oil shall be tested by the contractor periodically and the process shall be stopped if the moisture content in the oil leaving the transformer core is in accordance with the moisture content values as stipulated in appendix 4.

Complies/Does not comply

9.2.1 Tests shall be carried out 2 weeks after termination of the dry-out process to ensure that the moisture content in the oil is still within the permissible limits (see Appendix 4).

Complies/Does not comply

10.0 PRECAUTIONARY MEASURES

10.1 If reclamation is done on the transformer oil in the main tank with positive head pressure, a non-return check valve shall be installed between the transformer and the outlet hose from the filtration plant, in order to prevent excessive spilling of oil in the event of failure of the outlet hose.

Complies/Does not comply

10.2 An automatic isolating valve must be coupled to the transformer valve on the inlet side of the plant which will be closed automatically, in the event of a plant malfunction or when the oil level in the tank drops due to an inlet hose failure.

Complies/Does not comply

10.2.1 The following protection alarms must be provided on the dry-out plant if not attended full time:

10.2.1.1 Thermal motor failure.

Complies/ Does not comply

10.2.1.2 Pressure loss by using pressure switches.

Complies/ Does not comply

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10.2.1.3 The plant must have a leak proof base, with an automatic detection device to shut off the plant.

Complies/ Does not comply

10.2.2 The above alarms can be coupled via the Spornet tellecontrol to give an alarm indication to Electrical Control.

10.2.3 Precautionary measures shall be taken to prevent environmental pollution.

Complies/Does not comply

11.0 INSPECTION

11.1 Spornet reserves the right to be present during any stage of the process and must be timeously advised of dates of recommencement of any process.

Complies/Does not comply

12.0 GUARANTEE

12.1 The Contractor shall guarantee the transformer oil for a period of 12 months after the reclaiming and de-sludging process has been completed to comply with the requirements of clause 9.1, except for dielectric strength and water content.

Complies/Does not comply

12.2 The moisture content of the transformer shall be guaranteed to comply with the requirements of clause 9.2.1.

Complies/ Does not comply

12.3 Should the oil fail the tests as stated in clause 9.0, the Contractor shall repeat the process at his own cost.

Complies/Does not comply

TENDERER'S SIGNATURE

DATE

CHIEF ENGINEER (INFRASTRUCTURE)
(ELECTRICAL)

SCHEDULE OF TRANSFORMERS TO BE REGENERATED

Identification / Location: _____			
1. Type of transformer: _____			
2. Volume of oil inside transformer: _____ litres.			
Oil Properties	Before	After	After 12 Months
3. Acid content (mg KOH/g oil):	_____	_____	_____
4. Moisture content (ppm):	_____	_____	_____
5. Dielectric strength (kV):	_____	_____	_____
6. Sludge content (< 0,02%):	_____	_____	_____

Identification / Location: _____			
1. Type of transformer: _____			
2. Volume of oil inside transformer: _____ litres.			
Oil Properties	Before	After	After 12 Months
3. Acid content (mg KOH/g oil):	_____	_____	_____
4. Moisture content (ppm):	_____	_____	_____
5. Dielectric strength (kV):	_____	_____	_____
6. Sludge content (< 0,02%):	_____	_____	_____

CHIEF ENGINEER (INFRASTRUCTURE)
(ELECTRICAL)

REFERENCE :

SCHEDULE OF TRANSFORMERS TO BE DE-SLUDGED

Identification / Location: _____			
1. Type of transformer: _____			
2. Volume of oil inside transformer: _____ litres.			
Oil Properties	Before	After	After 12 Months
3. Acid content (mg KOH/g oil):	_____	_____	_____
4. Moisture content (ppm):	_____	_____	_____
5. Dielectric strength (kV):	_____	_____	_____
6. Sludge content (> 0,02%):	_____	_____	_____

Identification / Location: _____			
1. Type of transformer: _____			
2. Volume of oil inside transformer: _____ litres.			
Oil Properties	Before	After	After 12 Months
3. Acid content (mg KOH/g oil):	_____	_____	_____
4. Moisture content (ppm):	_____	_____	_____
5. Dielectric strength (kV):	_____	_____	_____
6. Sludge content (> 0,02%):	_____	_____	_____

CHIEF ENGINEER (INFRASTRUCTURE)
(ELECTRICAL)

REFERENCE :

SCHEDULE OF TRANSFORMERS TO BE DRIED-OUT

Identification / Location: _____			
1. Type of transformer: _____			
2. Volume of oil inside transformer: _____ litres.			
3. Maximum permissible tank vacuum: _____ torr			
Oil Properties	Before	After	After 2 Weeks
4. Moisture content (ppm):	_____	_____	_____
5. Transformer oil temp (deg C)	_____	_____	_____
6. Dielectric strength (kV):	_____	_____	_____

Identification / Location: _____			
1. Type of transformer: _____			
2. Volume of oil inside transformer: _____ litres.			
3. Maximum permissible tank vacuum: _____ torr			
Oil Properties	Before	After	After 2 Weeks
4. Moisture content (ppm):	_____	_____	_____
5. Transformer oil temp (deg C)	_____	_____	_____
6. Dielectric strength (kV):	_____	_____	_____

CHIEF ENGINEER (INFRASTRUCTURE)
(ELECTRICAL)

REFERENCE :

MOISTURE CONTENT OF OIL LEAVING TRANSFORMER AT WHICH DRY-OUT PROCESS MUST BE TERMINATED FOR VARIOUS TRANSFORMER TEMPERATURES.

Oil Temperature Degrees Celsius	Moisture Content of Oil ppm (mg/kg)	Oil Temperature Degrees Celsius	Moisture Content of Oil ppm (mg/kg)
10	1,5	55	16,0
15	2,0	60	21,0
20	2,5	65	28,0
25	3,3	70	35,5
30	4,2	75	44,0
35	5,5	80	54,0
40	7,2		
45	9,3		
50	12,0		

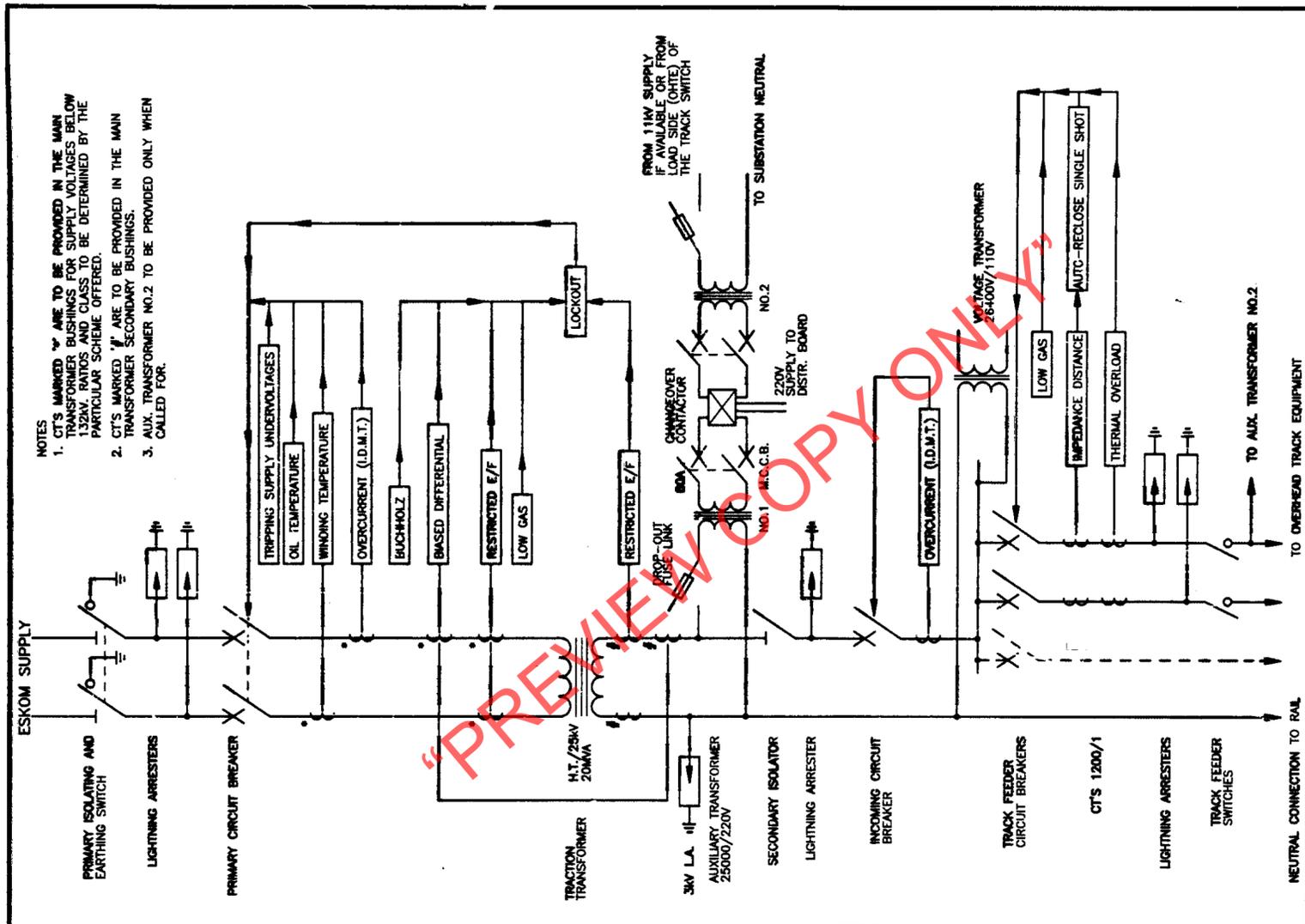
Note 1: This table is based on moisture content of not more than 2,0 percent in the paper.

Note 2: The oil temperature shall be the top oil temperature of the transformer.

Note 3: For temperatures falling in between the numbers in the table, use the next lower value.

CHIEF ENGINEER (INFRASTRUCTURE)
(ELECTRICAL)

REFERENCE :

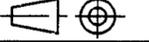


NOTES
 1. CTS MARKED 'V' ARE TO BE PROVIDED IN THE MAIN TRANSFORMER BUSHINGS FOR SUPPLY VOLTAGES BELOW 132KV. RATIOS AND CLASS TO BE DETERMINED BY THE PARTICULAR SCHEME OFFERED.
 2. CTS MARKED 'W' ARE TO BE PROVIDED IN THE MAIN TRANSFORMER SECONDARY BUSHINGS.
 3. AUX. TRANSFORMER NO.2 TO BE PROVIDED ONLY WHEN CALLED FOR.

AMENDMENTS		
NO	NAME	DATE
1	A MACPHERSON	98-07-08
REDRAWN AND REVISED DO REF: T98/030		
2	LO BORCHARD	98-10-30
TRACK FEEDER CIRCUIT BREAKERS LOW GAS LOCKOUT REMOVED. DO REF: T98/054		

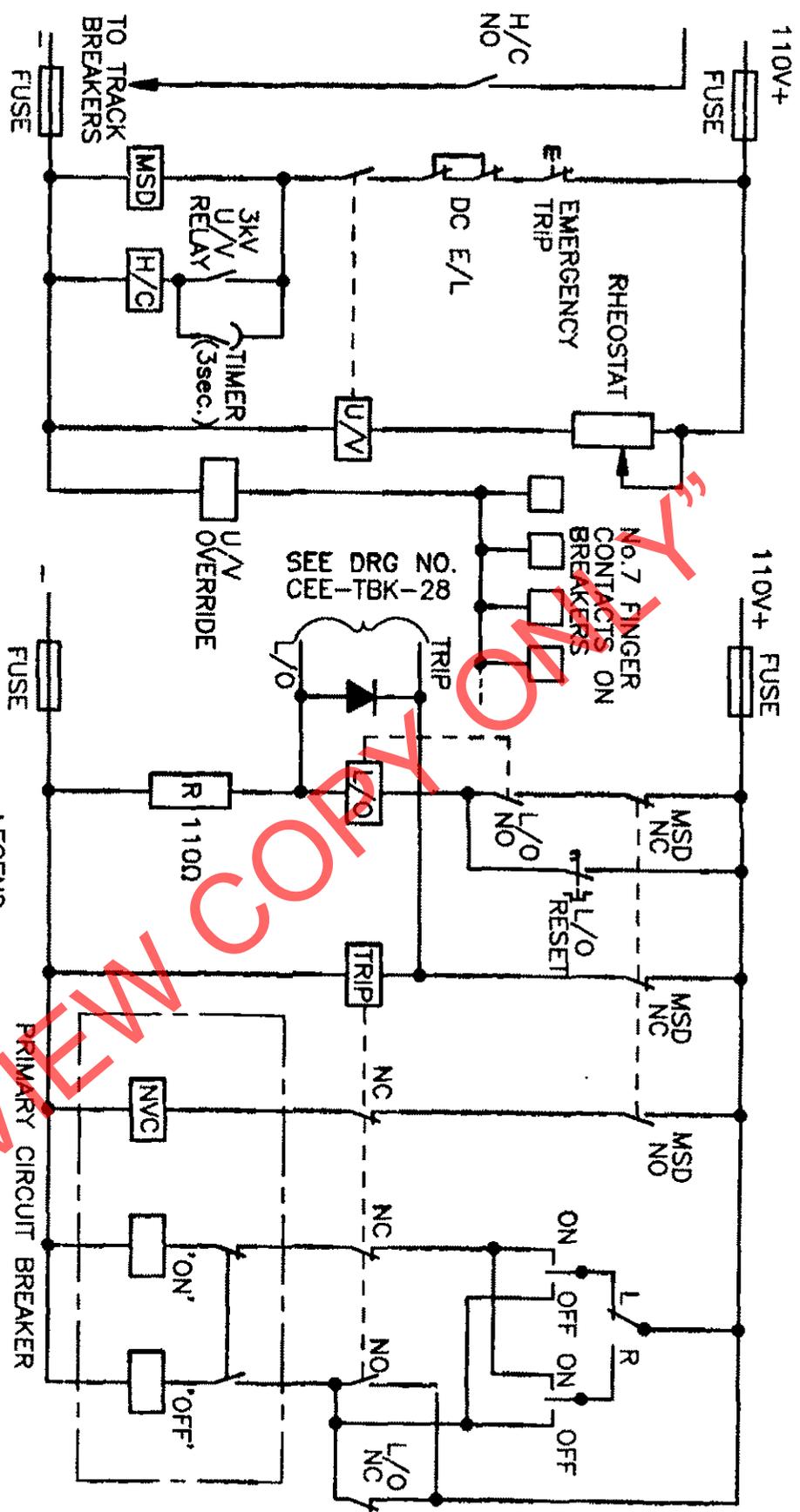
DO REF: T1/84/82 GEN TOL: LIN± - ANG± -
 DRN: P O'GORMAN CKD: J SWIEGERS DATE: 84-11-02
 ENG: _____ R S MANN for CHIEF ENG
 INFRASTRUCTURE (ELECTRICAL) **SPOORNET**

25KV AC TRACTION SUBSTATION: SINGLE LINE DIAGRAM AND PROTECTION REQUIREMENTS

DIMENSIONS: mm
 SCALE: NTS
 **A3**
 DRAWING NO CEE-
TBB-109
 SHEET - OF -

2 3 4 4 3 2

AMENDMENTS	
NO	NAME



LEGEND:

- H/C - MAIN H/C CONTACTOR COIL
- L/O - LOCKOUT RELAY COIL
- NVC - NO VOLT COIL
- MSD - MASTER SHUTDOWN RELAY COIL
- NO - NORMALLY OPEN
- NC - NORMALLY CLOSED

DO REF: T98/005 GEN TOL: LNF ANGE
 DRN: M SITHOLE CKD: JVT DATE: 98-01-21
 ENGL0 BORCHARD LO BORCHARD for CHIEF ENG

CONTROL CIRCUIT DIAGRAM:
 NO-VOLT COIL PROTECTION

INFRASTRUCTURE
 (ELECTRICAL) **SPOORNET**

SF6 PRIMARY CIRCUIT BREAKER
 TRACTION SUBSTATIONS

DIMENSIONS: mm
 SCALE: NTS
 A4

DRG NO CEE-
TBK-27
 SHT - OF -

TRANSNET LIMITED

S420

SPECIFICATION FOR CONCRETE WORK

CONTENTS

1. SCOPE
 2. INTERPRETATIONS
 3. MATERIALS
 4. PLANT AND EQUIPMENT
 5. CONSTRUCTION
 6. TOLERANCES
 7. TESTING
 8. MEASUREMENT AND PAYMENT
- APPENDIX A : STONE FOR CONCRETE WORK
- APPENDIX B : SAND FOR CONCRETE WORK
- APPENDIX C : BLASTFURNACE SLAG FOR USE IN CONCRETE
- APPENDIX D : LIST OF RELATED SPECIFICATIONS

1. **SCOPE**

This specification covers requirements for plain and reinforced concrete.

2. **INTERPRETATIONS**

2.1 **SUPPORTING SPECIFICATION**

Plain and reinforced concrete shall comply with SABS 1200 G and with the supplementary requirements contained herein.

3. **MATERIALS**

3.1 **CEMENT AND BLASTFURNACE SLAG**

3.1.1 Blastfurnace slag shall comply with Appendix C hereto. If the use of a mixture of blastfurnace slag and either portland cement or portland cement 15 is permitted, the quantity of portland cement or portland cement 15 in the blend shall be not less than 50% by mass.

3.1.2 Within 1 km of the sea, unless otherwise specified in the project specification, only portland blastfurnace cement certified as containing not less than 40% blastfurnace slag, or a 50/50 blend of either ordinary portland cement or portland cement 15 and blastfurnace slag shall be used in concrete other than prestressed concrete.

3.2 **AGGREGATES**

3.2.1 Coarse aggregate shall comply with Appendix A hereto.

3.2.2 Fine aggregate shall comply with Appendix B hereto.

3.2.3 Where the aggregates have constituents which, in the opinion of the Engineer, may give rise to damage due to alkali-aggregate reaction, the equivalent alkali content of the cement, as defined in SABS 471, and the quantity of cement per m³ of concrete shall be limited as directed. Certificates stating the equivalent alkali content of each delivery of cement, or of cement contained in each batch of ready-mixed concrete delivered to the site, shall be supplied by the Contractor.

3.3 **CURING COMPOUND**

The curing compound shall be a clear or white pigmented membrane-forming resin-based compound complying with ASIM C 309.

3.4 **REINFORCEMENT**

Hot-rolled deformed mild steel bars, cold worked to increase the yield stress (i.e. cold-twisted bars) shall be manufactured under the SABS standardisation mark scheme.

4. **PLANT AND EQUIPMENT**

Refer to SABS 1200 G.

5. **CONSTRUCTION**

5.1 **APPROVAL OF AGGREGATES**

Evidence of compliance of the aggregates with the requirements of 3.2 shall be furnished as early as practicable. If required by the Engineer, the Contractor shall submit 40 kg samples for approval at least 6 weeks before concrete construction is to be commenced. No aggregates shall be delivered for use in the works until approval is given.

5.2 **CONCRETE QUALITY**

5.2.1 Before the start of any concrete work on the site, the Contractor shall supply the Engineer with a statement of the mix proportions which he proposes to use and the target strength for each grade of concrete.

5.2.2 Measures, subject to the approval of the Engineer, shall be applied to reduce heat development in concrete of which the minimum dimension to be placed during a single pour is larger than 600 mm, provided that the cement content exceeds the following :

	Portland cement or blends of Portland cement and milled granulated blast furnace slag (mgbfs)	Blends of Portland cement and pulverized-fuel ash (pfa) (not less than 25% pulverized-fuel ash (pfs) by volume)
	-----	-----
	kg/m ³	kg/m ³
Reinforced concrete	400	450
Prestressed concrete	500	550

5.3 **BATCHING**

5.3.1 **CEMENT**

If the use of site-mixed blastfurnace slag and portland cement is permitted by the Engineer, the quantity of blastfurnace slag in the blend shall not exceed 50% by mass.

5.3.2 **AGGREGATES**

5.3.2.1 All aggregates shall be measured by mass unless otherwise permitted by the Engineer.

5.3.2.2 Should any variation in the composition of the aggregate become apparent, the Engineer shall be notified and a further sample of aggregate submitted immediately for his approval.

5.4 **CONCRETE PLACING**

5.4.1 The size, shape and depth of any excavation shall be approved by the Engineer before concrete is placed.

5.4.2 Unless otherwise permitted by the Engineer, no concrete shall be placed until the fixed reinforcement has been accepted by him.

5.5 CONSTRUCTION JOINTS

- 5.5.1 Construction joints not shown on the drawings shall be as far apart as possible, consistent with reasonable precautions against shrinkage. They shall be at right angles to the sides and shall be located at points of minimum shear.
- 5.5.2 Concreting shall be carried out continuously up to the construction joint, and concrete shall be ended off against a stop board on a vertical face or on a radial face in the case of arches.
- 5.5.3 Joint lines shall be so arranged that they coincide with features of the finished work.

5.6 CURLING

- 5.6.1 Before any curing compound is used, the Contractor shall submit a litre sample of the compound, with full technical details, for approval by the Engineer. Technical details referred to shall include a recent SABS report showing the following :
- (i) Compliance with ASTM C 309.
 - (ii) The relative density of the compound.
 - (iii) The percentage non-volatiles in the compound.
 - (iv) The infra-red spectrum of the compound.
- 5.6.2 On slopes flatter than 1 in 1 only a white pigmented compound shall be used. The application rate shall be as specified by the manufacturer or 0,3 litres m³, whichever is greater.
- 5.6.3 On all other surfaces only clear compound shall be used. The application rate shall be as specified by the manufacturer.
- 5.6.4 Curing in accordance with SABS 1200 G shall commence on all concrete surfaces as soon as it is practicable in the opinion of the Engineer.
- 5.6.5 When the wind velocity exceeds 5 m/s and/or the ambient temperature is above 25 °C and/or the relative humidity is below 60%, the initial 24 h curing of concrete surfaces not covered by formwork shall be carried out by ponding, covering with constantly wetted sand or mats, or continuous spraying in accordance with SABS 1200 G, unless otherwise permitted by the Engineer.
- 5.6.6 If plastic shrinkage cracks occur, the concrete, while still plastic, shall be thoroughly revibrated and refinished, whether or not curing has commenced, and thereafter fully cured.

5.7 RECORDS

The Contractor shall maintain the following daily records for every part of the concrete structure and make these available at all times during the progress of the work for inspection by the Engineer :

- (i) The date and times during which concrete was placed.
- (ii) Identification of the part of the structure in which the concrete was placed.
- (iii) The mix proportions and specified strength.
- (iv) The type and brand of cement.
- (v) The slump of the concrete.
- (vi) The identifying marks of test cubes made.

- (vii) Curing procedure applied to concrete placed.
- (viii) The times when shuttering was stripped and props were removed.
- (ix) The date of despatch of the cubes to the testing laboratory.
- (x) The test results.

The records shall be delivered to the Engineer each week except in the case of sub-standard concrete, when the Engineer shall be informed immediately.

6. **TOLERANCES**

Deviations shall be within the limits listed in SABS 1200 G for Degree of Accuracy II unless otherwise specified in the project specification.

7. **TESTING**

7.1 **FREQUENCY OF SAMPLING**

Frequency of sampling and testing shall be as specified in SABS 1200 G, subject to the testing of a minimum of 3 sets of samples per day from each grade of concrete placed in each independent structure if the concrete quantity from which these samples were taken exceeds 40 m³, and the testing of a minimum of 2 sets of samples per day when such quantity is equal to or less than 40 m³.

7.2 **ACCEPTANCE CRITERIA**

7.2.1 If the Contractor disputes the results of the tests on concrete cubes, the concrete represented by the cubes will be considered acceptable if the Contractor, at his own cost, proves to the satisfaction of the Engineer that the estimated actual strength of cores taken from the structure, determined in accordance with SABS Method 865, is not less than the specified strength.

7.2.2 If the strength of concrete fails to meet the acceptance criteria stipulated, the Engineer may in his sole discretion and in addition to the options listed in SABS 1200 G –

- (i) accept the concrete subject to approved remedial measures being undertaken by the Contractor; or
- (ii) permit the concrete to remain subject to the payment of a penalty.

7.3 The penalty referred to in 7.2.2 (ii) will be determined as follows :

$$\text{Penalty} = V \times R \times F$$

Where

V = Volume (in the opinion of the Engineer) of concrete of unsatisfactory strength represented by the test result.

R = Relevant scheduled rate.

$$F = 1 - \sqrt{\frac{\text{Average strength of unsatisfactory concrete}}{\text{Specified strength} + 6 \text{ Mpa}}}$$

When the relevant scheduled rate (R) includes the cost of formwork.

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$$F = \frac{1 - \text{Average strength of unsatisfactory concrete}}{\text{Specified strength} + G \text{ Mpa}}$$

When the relevant scheduled rate (R) excludes the cost of formwork or where no formwork was involved.

8. **MEASUREMENT AND PAYMENT**

- 8.1 Unless otherwise provided for in the schedules of quantities, only permanent work will be measured for payment. The cost of temporary work shall be included in the rates tendered.
- 8.2 If the drawings and/or specifications provide for any item which is not separately listed in the schedules of quantities, such item shall be considered as an integral portion of the structure, and its cost shall be included in the rates for related items listed in the schedules of quantities.
- 8.3 All costs arising out of compliance with 3.2.3 including removal of unsatisfactory materials, shall be borne by the Contractor.

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APPENDIX A

STONE FOR CONCRETE WORK

A1. **GENERAL**

Stone for concrete work shall comply with the relevant clauses in SABS 1083 and shall have properties within the limits recommended in the appendixes to this specification and those stated in clause A2 hereof.

A2. **QUALITY**

A2 : In the soundness test described in clause A3 hereof, the loss in mass shall not exceed 5%.

A2 : The Los Angeles abrasion value determined in accordance with ASTM C131-69 grading B, shall not exceed 30% for concrete subject to abrasion and 35% for any other concrete.

A2 : The relative density shall be between 2.5 and 3.1.

A3 **????? FOR SOUNDNESS OF AGGREGATE (SODIUM SULPHATE METHOD)**

A3.1 : **TEST SOLUTION**

A saturated solution of anhydrous Na₂SO₄ or crystalline Na₂SO₄·10H₂O, in distilled or demineralised water between 33 °C and 35 °C shall be prepared using sufficient of the salt to leave excess crystals after thorough stirring. The solution shall be cooled to between 22 °C and 24 °C, kept at this temperature for at least 16 h and stirred thoroughly before use.

A3.2 : **PREPARATION OF TEST SPECIMEN**

From a representative sample of stone, a random specimen shall be taken of at Least 500 g passing a 19 mm sieve and retained on a 13,2 mm sieve. The specimen shall be washed to remove all adhering material, dried at 105 °C in a well ventilated oven and the mass determined after cooling. Drying shall continue until the decrease in mass after each of 2 successive drying periods a 4 h does not exceed 0.1% of the total mass. Let this mass be MI.

A3.3 : **PROCEDURE**

A3.3.1 : The specimen shall be placed in a porcelain dish and covered Fully with test solution between 20 °C and 25 °C for 7 h. Thereafter the solution shall be decanted taking care that no Stone is lost.

A3.3.2 : The specimen shall be dried for 15 h at 105 °C and allowed to cool for 2 h, thus completing one cycle of the soundness test.

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A3.3.3 : The cycle described in A3.3.1 and A3.3.2 shall be repeated 10 times. After the fifth cycle, the specimen shall be washed on a 1,70 mm sieve with hot water until no crystalline sulphate is visible and the test continued with material retained on a 170 mm sieve.

A3.3.4 : After the tenth cycle, the specimen shall be washed in hot water until the washings are free of sodium sulphate, dried to constant mass and screened on a 1,70 mm sieve. Let the mass retained on this sieve be M2.

A3.4 **LOSS**

The percentage loss in mass shall be calculated from the formula

$$\frac{M1 - M2}{M1} \times 100\%$$

M1

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APPENDIX B

SAND FOR CONCRETE WORK

- B1. Sand shall comply with the relevant clauses of SABS 1083 and all tests shall be carried out in accordance with SABS 1083. Where this specification is at variance with SABS 1083, this Specification shall prevail.
- B2. The relative density of the sand shall be between 2,5 and 3,1.
- B3. The sand shall contain no harmful organic or inorganic material in sufficient quantity to adversely affect the strength, durability or appearance of the concrete.
- B4. The sand shall not cause drying shrinkage in mortar in excess of 150% of the shrinkage obtained with a similarly graded Reef quartzite under similar conditions.
- B5. The sand equivalent value shall be not lower than 50.

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APPENDIX C

BLASTFURNACE SLAG FOR USE IN CONCRETE

C1. DISCRIPTION

Blastfurnace slag shall be granulated and milled.

C2. PRINCIPAL REQUIREMENTS

C2.1 The workability and the 28 d strength of average quality concrete shall not be adversely affected if half the portland cement or portland cement 15 is replaced by an equal mass of blastfurnace slag.

C2.2 Blastfurnace slag shall pass the acceptance test outlined hereinafter. In this test considerable deviation in materials and methods is permissible, on the clear understanding that the test involving the neat portland cement shall not differ from those involving the blend of portland cement and blastfurnace slag in significant detail.

C3. ????? TEST

C3.1 MATERIALS

The following materials are required :

- (i) 16 kg of ordinary portland cement complying with SABS 471.
- (ii) 44 kg of rod-milled Reef quartzite crusher sand having a fineness modules between 2,2 and 2,8
- (iii) 44 kg of crushed Reef quartzite stone passing a 19 mm and retained on a 13,2 mm sieve.

C3.2 TESTING PROCEDURE

C3.2.1 The sement shall be divided into 2 portions using a sample splitting device. One portion shall be Reduced to exactly 7 200 g. The other portion shall be subdivided with the splitter and one subportion shall be mixed with an equal mass of the blastfurnace slag to be tested. The mixture is referred to as the blend.

C.3.2.2 The sample of neat portland cement and the blend shall each be used on the same day in the following concrete mix :

7,2 kg neat portland cement or blend.
22,0 kg sand,
22,0 kg stone, and
4,8 kg water

C3 **SLUMP TESTS**

The blastfurnace slag shall be deemed unacceptable if the slump of the concrete made with the blend differs from the slump of the concrete made with neat portland cement by more than 25 mm.

C3 **CUBE TESTS**

C3.4.1 Twelve 150 mm cubes shall be cast in accordance with SABS method 863. Six cubes shall be made with portland cement and 5 with the prepared blend.

C3.4.2 The cubes shall be stripped after 24 h. They shall then be stored in water or in a curing room with a relative humidity of at least 90% and at a temperature between 22 °C and 25 °C.

C3.4.3 Three cubes of each type shall be tested for crushing strength at 7 d and the remaining 3 of each Type at 28 d.

C3.4.4 The average 7 d and 28 d crushing strengths of the cubes made from the blend shall be not less Than $(0,5.P7 + 4)$ MPa and $(0,5.P28 + 12)$ MPa respectively where P7 and P28 are the average 7 d and 28 d crushing strengths in MPa of the cubes made with neat portland cement.

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APPENDIX D

LIST OF RELATED SPECIFICATIONS

<u>01D</u>	<u>NEW</u>	
<u>NO.</u>	<u>NO.</u>	
		S421 SLIDING FORMWORK
		S422 UNDERWATER CONCRETING
		S423 NO-FINES CONCRETE
		S424 PRESTRESSED CONCRETE
		S427 SPRAYED CONCRETE
E8/8		S428 HEAVY CONCRETE PAVEMENT ON A TREATED BASECOURSE
		S429 SLAB TRACK WITH CONTINUOUSLY SUPPORTED RAILS
		S430 SEGMENTED PAVING
		S431 CONCRETE PAVING BLOCKS
CCE/4/2		S432 PRECAST CONCRETE DRAINAGE CHANNELS
		S435 PRECAST CONCRETE CROSSING BLOCKS FOR LEVEL CROSSINGS
		S436 CONCRETE (SMALL WORKS)

Old numbers will continue to be used until specifications are re-issued.



MINIMUM COMMUNAL HEALTH REQUIREMENTS IN AREAS OUTSIDE THE JURISDICTION OF A LOCAL AUTHORITY : TEMPORARY FACILITIES FOR CONTRACTOR'S PERSONNEL

1. CAMPS

- 1.1 Prior to the erection of any camp, the Contractor shall submit to the Employer's Deputy, for his approval, details of his proposals as to the site, water supply, sanitation, and size and type of buildings. Where the site is on private land, the Contractor shall submit the written approval for the use of the site of the relevant statutory authority and of the owner and occupier of the land (as applicable).
- 1.2 Camps must not be erected on land infested with field rodents.
- 1.3 Adequate drainage shall be provided to carry off storm and waste water.
- 1.4 Buildings shall be built to a neat and orderly pattern.
- 1.5 All buildings shall have smooth, hard, impervious floors, graded to provide effective drainage and to permit washing.
- 1.6 Camps shall be maintained by the Contractor at his own expense in a clean and tidy condition. The Contractor shall take such steps as the Employer's Deputy and landowner/occupier may demand to prevent the creation of a nuisance.
- 1.7 When so instructed by the Employer's Deputy, the Contractor shall, at his own expense, erect suitable screens between the camp and any public road, thoroughfare or railway line.
- 1.8 After removal of a camp, the Contractor shall, at his own expense, restore the site to its original condition to the satisfaction of the Employer's Deputy and of the landowner and occupier where the site is on private land.

2. HOUSING

- 2.1 Every living room shall have cross ventilation, both constant and occasional. Where only one window is provided, it shall not be in the same wall as the door.
- 2.2 Dimensions of living rooms shall be sufficient to allow 3.5 square metres of floor area and 11 cubic metres of air space for each person over the age of 10 years. The floor area of any living room shall not be less than 7,8 square metres.

- 2.3 Flat-roofed quarters shall have a minimum roof height of 3 metres above floor level. For quarters with pitched roofs, the wall height shall be not less than 2,6 metres above the floor with a minimum height above floor of 3 metres at the top of the pitch.
- 2.4 Doors shall not be less than 2m x 0,75m and must be halved.
- 2.5 Windows of each living room shall have an area not less than one twelfth of the floor area and shall be capable of opening to at least half their full area.
- 2.6 In areas where malaria is prevalent, doors and windows must be fitted with gauze screens.
- 2.7 Cooking shelters shall comprise roofed structures, three sides of which shall be enclosed by a weatherproof material, approved by the Employer's Deputy to a height of at least **1m** above ground level.
- 2.7.1 Sleeping quarters shall not accommodate more than 8 persons per room.
- 2.7.2 Pegboards shall be carried on metal or concrete supports and shall be separated by partitions not less than 0,4 metres high extending to within 150mm of the end of the bunk. Pegboards shall be removable for cleaning.

3. **WATER SUPPLY AND ABLUTION FACILITIES**

- 3.1 The Contractor shall ensure that an adequate and conveniently situated supply of potable water is provided.
- 3.2 Separate buildings for ablution facilities shall be provided. Where approval has been obtained for the housing of both males and females, separate facilities for each sex shall be provided. The proportion shall be 1 cubicle for 20 persons.
- 3.3 Waste water shall be hygienically disposed of.

4. **SANITATION**

- 4.1 Separate buildings for latrine facilities shall be provided. Where housing are provided for both males and females, separate facilities for each sex shall be provided. The proportions shall be at least one squatting seat for every 15 persons or less in the case of pit latrines, or one for every 10 persons or less in case of pail latrines.

Latrines shall be fly proof and sited at least 10 metres from any other building, and shall not face on any public road, thoroughfare, railway line or residential property. Pits shall not be less than 2,5 metres deep and sited not less than 120 metres from nearest underground water source.

- 4.2 Latrines shall be so constructed, situated and maintained, and night soil so disposed of as to prevent access by animals, breeding of flies, pollution of streams and domestic water supplies, and other nuisances. Where a night soil removal service is operated by a competent authority, use of such service shall be obligatory, and the use of pit latrines and atria pits will not be permitted.

- 4.3 At least one refuse bin of adequate size with close fitting lid shall be provided for each building. Refuse bins shall be emptied and cleaned out daily.
- 4.4 Labour shall be employed on camp sanitation duties on the following basis:-
- 4.4.1 Where the number of persons living at the camp is 20 or less - one unit.
- 4.4.2 For additional numbers over 20 living at the camp - one unit per 100 or part thereof.
- 4.5 Unless refuse is removed by a competent authority, it shall be disposed of in pits and covered over daily with a layer of earth or ash of sufficient thickness to prevent depredations by rodents and the breeding of flies.
- 4.6 Adequate measures shall be taken against all vermin and insects responsible for the spread of disease. Any instructions of a competent health authority shall be carried out promptly and implicitly.
- 4.7 Buildings and bedboards shall be treated whenever necessary with an approved insecticide.
- 4.8 The Contractor shall permit and facilitate inspection of the camp and structures on the site by the staff of Transnet or any other competent authority, and shall comply with any reasonable request by such staff or any other competent authority to eliminate any unsanitary condition.
- 4.9 Any outbreak of infectious disease shall immediately be reported telephonically and confirmed in writing to the Employer's Deputy.
- 4.10 The keeping of animals of any sort is not permitted.
- 4.11 The Contractor shall have on hand at the camp the necessary tools, disinfectants and cleaning materials to maintain and clean the sanitary facilities.

5. **RATIONS**

Rations, where supplied by the Contractor, shall be stored in a suitable and rodent proof building with sufficient shelving.

P02b-06 (JLH)

TRANSNET SOC LIMITED

(Registration no. 1990/000900//06)

SAFETY ARRANGEMENTS AND PROCEDURAL COMPLIANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993) AND APPLICABLE REGULATIONS

1. General

- 1.1 The Contractor and Transnet SOC Limited (hereinafter referred to as "Transnet") 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 Transnet, 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 Transnet 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 Project Manager 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, Project Manager 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 Project Manager. 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 Project Manager.
- 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 Project Manager 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 Project Manager with full particulars of such subcontractors and shall ensure that they comply with the Act and Regulations and Transnet's 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 Project Manager 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 Project Manager 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.
- 5.4 The Health and Safety programme shall be subject to the Project Manager'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 Project Manager'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 Project Manager or his deputy shall be allowed to attend meetings of the Contractor's safety committee as an observer.
- 5.5 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.
- 5.6 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.
- 5.7 The Contractor shall ensure that a copy of the Health and Safety Plan is available on site for inspection by an inspector, Project Manager, agent, subcontractor, employee, registered employee organisation, health and safety representative or any member of the health and safety committee.
- 5.8 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.
- 5.9 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.
- 5.10 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.
- 5.11 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.
- 6. 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 Project Manager 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 Project Manager, 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 Project Manager.

8.3 The Contractor shall hand over a consolidated health and safety file to the Project Manager 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: _____

“PREVIEW COPY ONLY”

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.

“PREVIEW COPY ONLY”

ANNEXURE 2

(COMPANY LETTER HEAD)

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

(COMPANY LETTER HEAD)

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

DECLARATION

In terms of the above _____ am personally assuming the
Act I, _____ 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 : _____

“PREVIEW COPY ONLY”

ANNEXURE 4

(LETTER HEAD OF BUSINESS DIVISION OR UNIT OF TRANSNET SOC LIMITED)

SITE ACCESS CERTIFICATE

Access to : _____ (Area)
Name of _____
Contractor/Builder :- _____
Contract/Order No.: _____

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
(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 :** _____ -

PROJECT MANAGER

ACKNOWLEDGEMENT OF RECEIPT

Name _____ **of** _____ **I,**
Contractor/Builder :- _____
_____ **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 :** _____



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 Transnet Contracts)

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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 Freight Rail'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 Transnet 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 Transnet 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.

Executive Officer. The person appointed by Transnet 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 Transnet 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 Transnet 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 Transnet 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.

PART A - GENERAL SPECIFICATION**2. AUTHORITY OF OFFICERS OF TRANSNET**

- 2.1 The Contractor shall co-operate with the officers of Transnet and shall comply with all instructions issued and restrictions imposed with respect to the Works which bear on the existence and operation of Transnet's railway lines and high-voltage equipment.
- 2.2 Without limiting the generality of the provisions of 2.1, any duly authorised representative of Transnet, having identified himself, may stop the work if, in his opinion, the safe passage of trains or the safety of Transnet 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 Transnet 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 Transnet 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. Transnet does not undertake to grant an occupation or work permit for any particular date, time or duration.
- 4.5 Transnet 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 Transnet 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 Transnet's and the Contractor's personnel and assets, the public and including trains. Transnet 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 Transnet personnel providing protection.

6. **ROADS ON TRANSNET 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 Transnet's property.

7. **CLEARANCES**

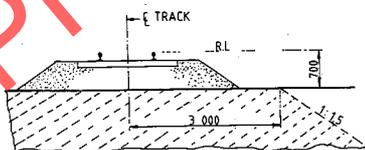
- 7.1 No temporary works shall encroach on the appropriate minimum clearances set out in Annexure 1 BE97-01 Sheets 1,2, 3 and 5 of 5.

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.
- 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 Transnet 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 Transnet, are for the protection of trains and Transnet 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 Transnet 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 Transnet.

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.

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

17. **GENERAL**

- 17.1 This specification is based on the contents of Freight Rail'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 Transnet, 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 Transnet 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**

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 Freight Rail 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 Transnet.

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 Transnet, 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, which exceeds 2 metres in length, shall be carried completely below head height near live high-voltage equipment. For maximum safety two or more persons so as 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 Transnet 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 Transnet'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 TRANSNET**

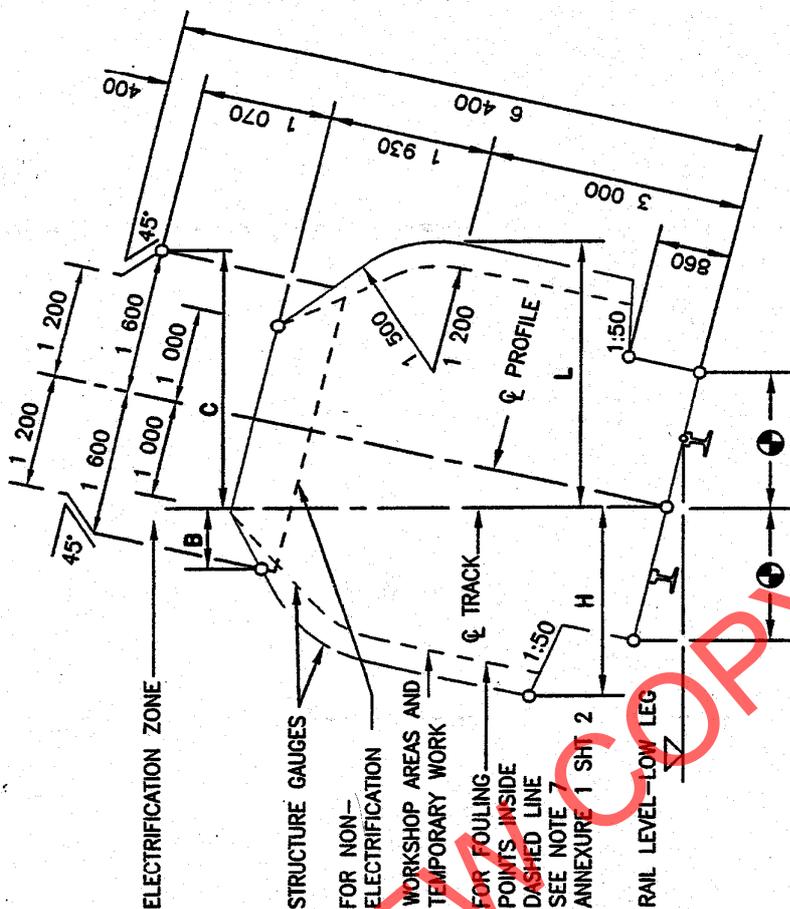
Where the work is undertaken on or near high-voltage electrical equipment which is not maintained and/or operated by Transnet, the Occupational Health and Safety Act No. 85 of 1993, and Regulations and Instructions, or the Mines Health and Safety Act (Act 29 of 1996), shall apply.

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.

ANNEXURE 1
SHEET 1 of 5
AMENDMENT

HORIZONTAL CLEARANCES :
1 065mm TRACK GAUGE



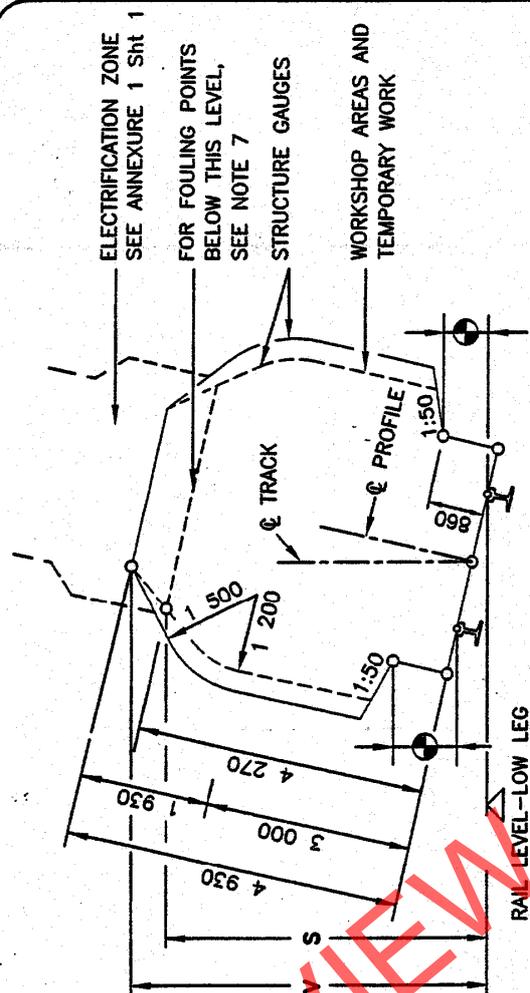
RADIUS (m)	WITH CANT		NO CANT		WITH CANT	
	H (mm)	L (mm)	H & L	B (mm)	C (mm)	
90	2 730	3 090	2 780	1 130	2 100	
100	2 700	3 030	2 750	1 140	2 050	
120	2 650	2 970	2 700	1 160	2 010	
140	2 620	2 920	2 660	1 175	1 990	
170	2 590	2 870	2 630	1 190	1 970	
200	2 570	2 820	2 600	1 205	1 950	
250	2 550	2 790	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.

ANNEXURE 1
SHEET 2 of 5
AMENDMENT

VERTICAL CLEARANCES :
1 065mm TRACK GAUGE



LOCATION	NOT ELECTRIFIED	ELECTRIFIED (PRESENT OR FUTURE)	
		3kV & 25kV	50kV
	S (mm)	V (mm)	V (mm)
	100	5 050	5 400
	300	5 020	5 370
	600	5 000	5 350
	1 000	4 990	5 340
	1 500	4 960	5 310
	2 000	4 940	5 290
	>3 000	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 * BELOW THOSE INDICATED BY

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.

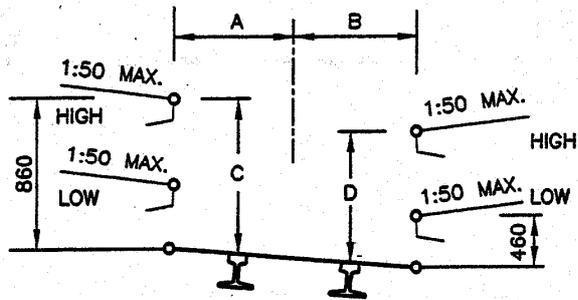
BE 97-01 Sht 2 of 5 DATE : JUNE 2000

ANNEXURE 1
SHEET 3 of 5
AMENDMENT

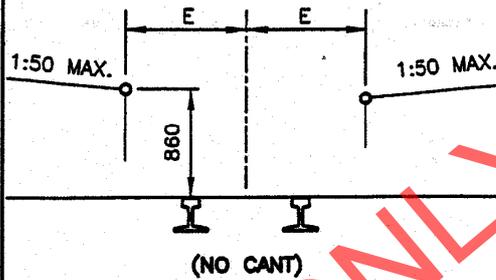
CLEARANCES : PLATFORMS

PLATFORMS : TRACK GAUGE 1 065mm

PASSENGERS



GOODS

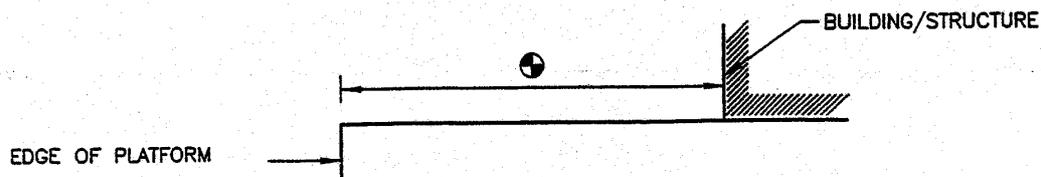


RADIUS (m)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
90	1 690	1 820	890	810	1 840
100	1 650	1 790	890	810	1 810
120	1 610	1 740	890	810	1 760
140	1 580	1 700	890	810	1 720
170	1 550	1 660	890	810	1 690
200	1 530	1 630	890	820	1 670
250	1 520	1 600	890	820	1 640
300	1 520	1 580	890	830	1 620
350	1 520	1 560	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.

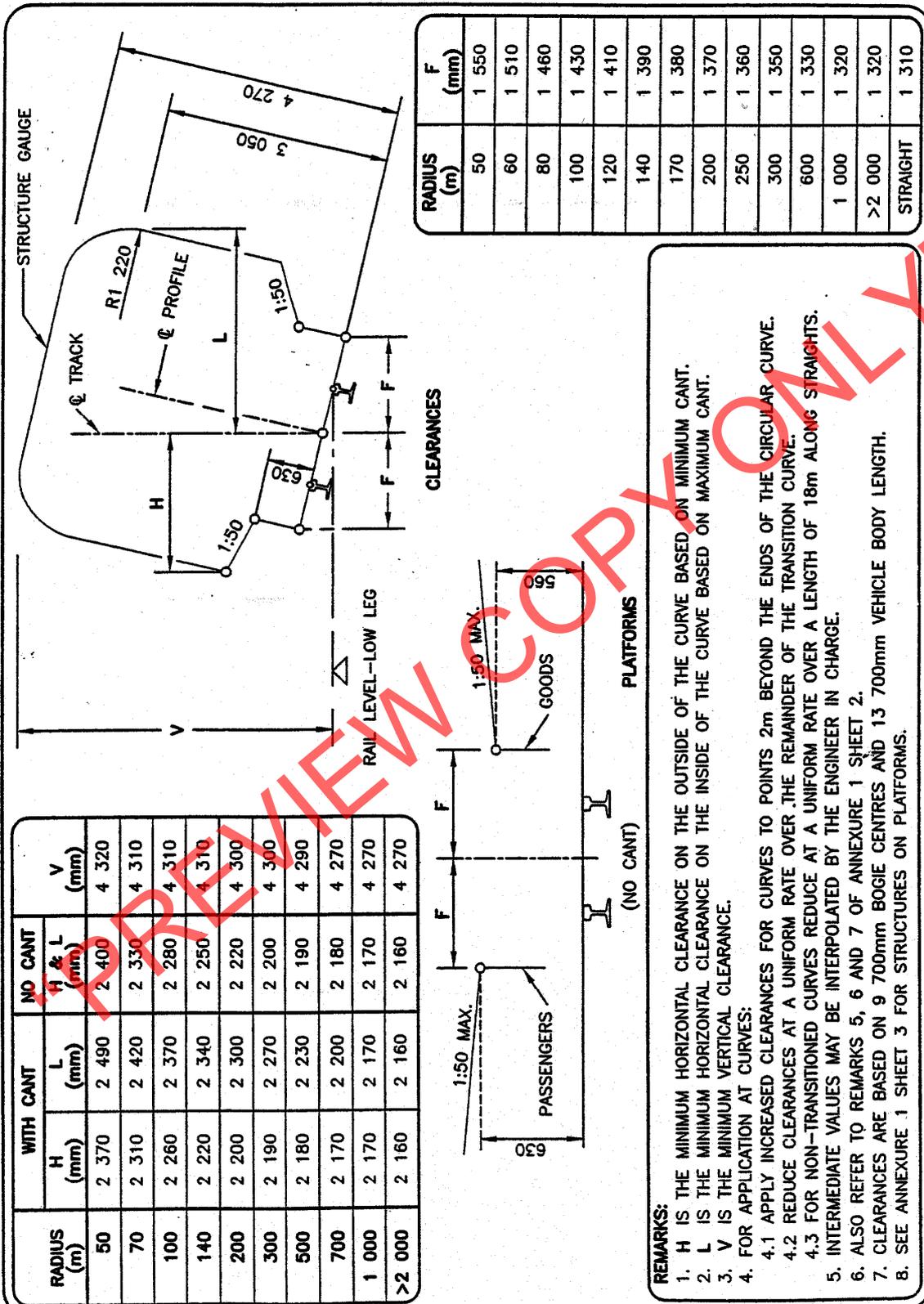
STRUCTURES ON PLATFORMS : 1 065mm AND 610mm TRACK GAUGE



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

ANNEXURE 1
SHEET 5 of 5
AMENDMENT

CLEARANCES : 610mm TRACK GAUGE



RADIUS (m)	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

RADIUS (m)	F (mm)
50	1 550
60	1 510
80	1 460
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

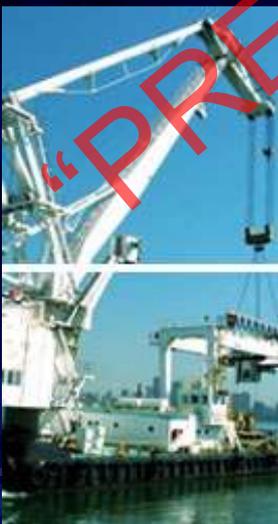
REMARKS:

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

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



Transnet Procedure Manual
Contract Works / Contractors Public Liability
Principal Controlled Insurance
2010 /2011



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**Procedure Manual
Principal Controlled Insurance 2010 / 2011**

Introduction

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Procedure Manual Principal Controlled Insurance 2010 / 2011

Introduction

TRANSNET LIMITED insure all Projects / Contracts on a Principal Controlled Insurance Programme basis (including the Assembly and/or Erection of Plant and Machinery) in respect of Contract Works and Contractors Public Liability.

Philosophy of the programme

- Transnet Limited and its Operating Divisions and Specialist Units wish to control the risk exposures in this regard.
- Transnet Limited, as a large organization, bulk-buys - resulting in preferential rates and cover.
- Simplified administration.
- Eliminates potential problems which usually occur when individual Contractors are responsible to arrange separate insurance.
- Includes the Contractor and/or Subcontractors as an insured party.

- It is therefore important that Tender and eventual Contract documents reflect the fact that Transnet as the Principal (i.e. the Employer) arranges certain covers which incorporates cover on behalf of Contractor's and / or Subcontractor's.
- The concept does not relieve the contracting parties of their responsibilities for, amongst others, care of the works and liabilities to third parties

**Procedure Manual
Principal Controlled Insurance 2010 / 2011**

Insurance Responsibilities

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Procedure Manual Principal Controlled Insurance 2010 / 2011

Insurance Responsibilities

1. Cover arranged by Transnet as the Principal (Employer)

1.1 Insurance Cover Applicable To All Contracts

1.1.1 Contract Works Cover

Covering fortuitous physical loss or damage to the works, temporary works and materials for incorporation into the works whilst in transit and whilst at the contract site.

Limited to **R100,000,000** any one contract. (Inclusive of VAT)

1.1.2 Contractors Public Liability Cover

Covering legal liability arising out of or connection with the performance of the works on the contract site or sites designated by the Principal for purposes of the performance of the contract.

Limited to **R10,000,000** any one occurrence.

1.1.3 Riot / Strike Cover (Contract Works)

Provided by:

SASRIA (*South African Special Risks Insurance Association*) in respect of risks with RSA.

NASRIA (*Namibian Special Risks Insurance Association*) in respect of risks within Namibia.

1.2 Additional Insurances (Optional)

1.2.1 Marine Transit Cover

Covering imports until delivered and checked on site.

1.2.2 Project Delay Cover

Covering consequential financial exposures due to delays following indemnifiable loss or damage to the works.

1.2.3 Removal of Lateral Support

Covering legal liability incurred in respect removal of or weakening of or interference with support to land or property or buildings adjacent to, on or in the vicinity of the Contract site.

Limit of indemnity **R25,000,000** any one occurrence.

Procedure Manual Principal Controlled Insurance 2010 / 2011

- The above information (including limits of insurance purchased) should be clearly spelt out in Tender and eventual Contract documentation including the deductible (excess) which are applicable and the fact that Contractor's and/or Subcontractor's are responsible for the deductible.

2. Cover to be arranged by Contractor's/Subcontractor's

All Contractor's/Subcontractor's still remain fully responsible to arrange insurance in respect of the following:

- As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 as amended.
- Employers Common Law Liability.
- Own plant, machinery, equipment and tools.
- Motor Vehicles Liability.
- Professional Indemnity (Defective Design).

- This should also be clearly spelt out in Tender and eventual Contract documentation.

3. Cover to be arranged by Consulting Engineers, Architects & Other Professionals

Professional Indemnity (defects in Design, Plan or Specification).

Please ensure that Professional Service Providers do not contract out of their liability in this regard. (Please refer to Transnet Group Insurance for recommendation and approved limits).

**Procedure Manual
Principal Controlled Insurance 2010 / 2011**

Summary of Cover

General

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Procedure Manual Principal Controlled Insurance 2010 / 2011

Summary of Cover

The Insured Parties

- Transnet Limited and / or its Affiliated / Subsidiary / Associated Companies as Principal or Employer.
- All Contractor's undertaking work for or on behalf of the Principal in execution of the Contract.
- All Subcontractor's employed by the Contractor and all other Subcontractor's (whether nominated or otherwise) engaged in the fulfillment of the Contractor.
- To the extent required by any Contract or Agreement suppliers manufacturers vendors or other persons engaged on the contract sites but only to the extent of loss damage or liability originating at the Contract Site (other than while the Property Insured is in transit) arising out of the performance of their Contract Site obligations.

Cover

- Contract Works – as detailed herein.
- Contractors Public Liability – as detailed herein.

Insured Contracts

- All contracts up to a maximum value of R100,000,000 (**Inclusive of VAT**) any one contract.
- Limited to a maximum contract period of 36 months followed by a maximum Defects Liability / Maintenance period of 12 months.

Excluded Contracts

- Where the contract value exceeds R100,000,000 (**Inclusive of VAT**)
- Where the contracted duration of the contract exceeds 36 months.
- Where contracted Defects Liability / Maintenance period exceeds 12 months.
- Contracts involving harbor wet risks*, dams, tunneling, mining, shaft sinking, underground work, quarrying, alterations to water courses being River Diversions or Cofferdams.
- Contracts outside of the territorial limits.

* NOTE

Harbor Wet Risks defined as:-

“Harbor Wet Risks shall mean all work entailing or involving work in or upon water whether partially or fully submerged such as but not limited to quay walls, seawalls, caissons, breakwaters, jetties, piers, deepening widening and dredging of ports and other off shore risks”

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- Contracts involving construction and erection of Petrochemical Plant(s) but this exclusion is limited to contracts involving Petrochemical Manufacturing Plant such as Sasol and the like
- On an existing airport runway or airstrip or in or on any aircraft.

Contract Site

Any location upon which the Insured Contract(s) is to be executed or carried out as more fully defined in the Insured Contract(s) documents together with so much of the surrounding area as may be designated for the performance of the Insured Contract(s).

Territorial Limits

The Republic of South Africa and to the extent permitted by the applicable Insurance Acts the territories of Lesotho, Namibia, Swaziland, Botswana, Zimbabwe and Mozambique.

N.B.

In terms of local legislation enacted in some of the above territories it is required that insurance cover be placed within their local markets. It is therefore important that the Broker be advised timeously (prior to Tender documents being issued) should any contracts, whether as Principal or Contractor, take place in any of the above territories.

If Contracts are to take place in any territories not listed above, the Broker also needs to be advised of same at feasibility stage.

Cover Limitations / Warranties

Unsealed / Unprimed Base Course

- Unsealed / unprimed base course – cover limited to a maximum of 5,000 metres.

Open Trench

- Open trench – cover limited to a maximum indemnity of 5,000 metres.

- It is essential that the above limitations are brought to the attention of Contractor's. Where this restriction is not practical, specific arrangements for cover can be made with Underwriters. They will, however, require detailed underwriting information and an additional premium may be charged.

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Laid Pipes

- Pipes with a diameter not exceeding 500mm, and all pipes intended for the transportation of Petroleum Products or Fuel Gases irrespective of diameter, are to be end capped on the termination of each days work to avoid ingress of mud silt water debris detritus and the like.
- Pipes with a diameter exceeding 500mm are to be capped on the termination of each days work with steel mesh to allow ingress of water to avoid floatation but avoiding ingress of large debris or detritus.

NB If above not conformed with cover is forfeited.

Rail Track Re-Profiling

- The maximum speed of any grinding unit shall not exceed 11.00km per hour.
- All Guards, Curtains, Spark Deflectors are to be in place and correctly positioned prior to the commencement of each grind.
- Maximum grinding distance in any one execution shall not exceed 10,000 metres.
- Any changes in prevailing weather conditions must be recorded and appropriate remedial action taken.
- The Insured Parties are to comply with all Fire Fighting requirements as set out in the Project Specification For Track Maintenance With An On Track Grinding / Profiling Machine and any amendments / deviations to this Project Specification are to be advised to the Insurer prior to work being undertaken.

NB If above not conformed with cover is forfeited.

- It is essential that the above Warranties are brought to the attention of Contractor's.

Used Plant – Basis of Loss Settlement

Insured property which has operated under service conditions prior to attachment of cover:-

- Up to 5 years – cost of repair / reinstatement / replacement.
- In excess of 5 years - agreed value (calculated on basis of each life year (or part thereof) on present day New Replacement Value reduced proportionally over 20 years subject to residual of 20%).

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Claims Reporting

- All incidents that could give rise to claim under the Principal Controlled Insurances, **HAVE TO BE** reported to the Broker / Insurer within a **90 (Ninety)** day period.
Failing this, all benefits in terms of the Policy shall be voidable from date of occurrence.
- All claims must be registered in terms of requirements applicable to Risk Console unique claim number condition.

It is essential that the above Condition is brought to the attention of Contractors in Tender / Contract Documents.

Rating Structure

- The rates include both Contract Works and Contractors Public Liability cover per current policy limits, terms and conditions.

Minimum premium requirement are:-	Track Re-profiling	R8,000
	Burning of Fire Breaks	R8,000
	Chemical Vegetation Control	R4,000
	Vegetation Rehabilitation	R4,000
	Ballast Tamping	R4,000
	Geotechnical & Exploratory	R4,000
	All Other	R6,000
	SASRIA	R 500

(Above are inclusive of VAT)

- To extend the contract period beyond **36 months** will attract an additional premium.
(See Administrative Procedures herein).

**Procedure Manual
Principal Controlled Insurance 2010 / 2011**

Summary of Cover

Contract Works Insurance

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Procedure Manual Principal Controlled Insurance 2010 / 2011

1. Contract Works Insurance

Synopsis of Cover

Fortuitous Physical loss of or damage:

- During dismantling of property in connection with the Insured Contracts.
- Whilst in transit, including loading and unloading, or whilst temporarily stored at any premises en route to or from The Contract Site within the Territorial Limits;
- During the preparation of The Contract Site and thereafter until the Property Insured has been officially accepted by the Employer and becomes his responsibility by means of a Notice of Completion Certificate or similar evidence of legal transfer of risk in the whole or permanent works under the Insured Contract to the Employer;
- Where testing and commissioning of Property Insured is conducted by the Employer "completion" for purposes of this insurance to occur only after successful completion of all testing and commissioning of the whole of the permanent works under the Insured Contract;
- Where the permanent property insurance arranged by the Employer indemnify the Insured for completed portions of the Property Insured prior to completion of the whole of the permanent works under the Insured Contract, this insurance in respect of such completed portions of the Property Insured shall cease except as provided below;
- Work uncompleted or outstanding in terms of any certificate of completion, certificate of handover or similar document shall continue to be insured until its completion and the inception of the Contractual Defects Liability or Maintenance Period (as may be described in the Insured Contract) for such uncompleted or outstanding work where after the provisions of (g) below shall apply in respect of such work;
- During the Contractual Defects Liability or Maintenance Period (as may be described in the Insured Contract) pertaining to any part of the permanent works but only in respect of loss or damage:
 - i) arising from a cause occurring prior to commencement of such period of maintenance or defects liability period
 - ii) arising from any act or omission of the Insured their Servants, Agents, Suppliers or Subcontractors in pursuance of the Insured's obligations.

for which the Insured Contractor is responsible under the Contract.

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Contract Period Limitation

Maximum Contract period	36 months
Maximum Defects Liability / Maintenance Period	12 Months

Limits of indemnity

Contract Works (Any One Contract)	R100,000,000
Work done on Marine vessels	R10,000,000
Surrounding Property	R10,000,000
Surrounding Property – Worked Upon	R50,000,000
Surrounding Property – Watercraft	R10,000,000
Removal to Gain Access	R1,000,000
Documentation	R100,000
Debris Removal	R2,500,000
Claims Preparation Costs	R500,000
Maximum testing / commissioning period	60 days
Maximum un-sealed / un-primed base course limitation	5,000 metres
Maximum open trench limitation	5,000 metres

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Deductibles

The deductible (excess) is the amount which the Contractor and/or Sub-Contractor is responsible for and this obligation must be reflected in the Tender and/or Contract Documents and the responsibility for same made clear.

The deductibles apply to each and every occurrence and in respect of all Contracts.

The deductibles are:

Loss or damage arising out of major perils (where the term shall include storm, rain, tempest, wind, flood, theft and / or malicious damage, subsidence, collapse, earthquake, testing, commissioning)	R 25,000
Loss or damage arising from any other cause	R 15,000
Removal of Debris	R 25,000
Loss or damage to Surrounding Property	R 25,000
Loss or damage to Surrounding Property – Worked Upon	R 75,000
Loss or damage to Documentation	R 5,000
Road Reserve / Servitude	R250,000

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All Contracts Entailing Trenching and / or Layer Works

Following additional Deductibles apply over and above the aforesated deductibles: - i.e. in excess of 1,000 metres

Up to a maximum of 3,000metres 20% of loss / minimum R50,000

Up to a maximum of 5,000metres 20% of loss / minimum R100,000

- It is essential that this is brought to the attention of Contractor's. Where this restriction is not practical, specific arrangements for cover can be made with underwriters. They will, however, require detailed underwriting information and an additional premium may be charged.

Property Insured

The actual Contract Works and all material intended for incorporation into the Works (*including Free Issue Material* the value of which has to be included in the Contract Value declared*) and Temporary Works.

N.B.

Temporary works does not include mobile plant, constructional aids, equipment, structures or works (not being part of the permanent works) which are not intended to be removed from the Contract Site on completion of the Contract (other than scaffolding shuttering and formwork as well as construction equipment specifically designed and/or constructed for the Insured Contract and which is not intended for immediate re-use on another contract) or have no residual value at completion of the Contract (other than scrap value), solely due to their specialised nature.

*** Note:** Where Transnet for the purposes of the Contract issues materials 'free of charge' to the Contractor such materials shall be and remain the property of the Transnet. Free Issue Material shall mean any material provided by or on Transnet's behalf which is to be used in the provision of the Service or incorporated into the Contract.

Main Exceptions

- The amount of the policy deductible.
- Loss or damage of money or the like.
- Aircraft, waterborne vessels or craft.
- Construction plant, tools or equipment.
- Losses by disappearance / shortage discovered by taking of routine inventory.
- Defective material workmanship design plan or specification (but resultant damage covered).

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- Cost of re-design, improvement, betterment or alteration.
- Consequential loss.
- Liquidated damages or penalties for delay in connection with guarantee or performance or efficiency.

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- Air transit (unless in territorial limits).
- Ocean transit or whilst in storage thereafter (unless immediately inspected by an independent party after offloading from vessel).
- During the Contractual Defects Liability or Maintenance Period (as may be described in the Insured Contract) pertaining to any part of the permanent works but only in respect of loss or damage:
 - i) arising from a cause occurring prior to commencement of such period of maintenance or defects liability period
 - ii) arising from any act or omission of the Insured his Servants or Agents, in the course of the work carried out in pursuance of the Insured's obligations with regard to maintenance under the Contract.
- Wear, tear, gradual deterioration rust, corrosion or oxidation and normal up-keep.
- Electrical or mechanical breakdown or explosion to machinery or plant which has operated under load conditions prior to commencement of the Insured Contract or which has occurred after the Testing / Commissioning Period specified in the Policy.
- Damage to any property insured due to ingress of mud, silt, water, debris unless pipe ends have been sealed on termination of each days work by means of end caps as prescribed in the policy.
- Damage to any unsealed / unprimed or base course in excess of limitations as stated in the policy.
- Damage to any open trench in excess of the limitations as stated in the policy.
- War, asbestos and nuclear risks.
- Sinking (whether partial or in whole) of any watercraft arising out of or in consequence of any work undertaken below the load line (international load line / plimsoll line).

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**Procedure Manual
Principal Controlled Insurance 2010 / 2011**

Summary of Cover

Contractors Public Liability Insurance

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2. Contractors Public Liability Insurance

Insured Contracts

- All contracts up to a maximum value of R100,000,000 (**Inclusive of VAT**) any one contract.
- Limited to a maximum contract period of 36 months followed by a maximum Defects Liability / Maintenance period of 12 months.

Synopsis of Cover

Legal Liability to pay as compensation for and in consequence of:

- Accidental death of or injury to or illness or disease contracted by any person.
- Accidental loss of / or physical damage to tangible property.

Occurring during the period of insurance and arising out of or in connection with the performance of the Insured Contract(s).

- **First Party Property*** Extension will apply to the Lateral Support policy extensions.

*** Note:** Coverage for the insured's personal and real property.

Type Of Contract

All Contracts undertaken including:-

- Chemical Vegetation Control
- Vegetation Rehabilitation
- Ballast Tamping
- Rail Track Re-profiling including the contract works
- Burning of Fire Breaks
- Geotechnical and Exploratory Works

N.B.

The above noted contract types attract specific differentiated rates and are insured by way of a separate policy.

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Limits Of Indemnity

Contractors Public Liability	R10,000,000 any one occurrence / unlimited for the Period of Insurance
Removal of Lateral Support	R25,000,000 unlimited for the Period of Insurance (provided on request only)
Statutory Legal Defence Costs	R500,000 any one occurrence
Arrest / Assault / Defamation	R500,000 any one occurrence
Emergency Medical Expenses	R500,000 any one occurrence
Prevention of Access	R500,000 any one occurrence
Trespass / Nuisance	R500,000 any one occurrence
Claims Preparation Costs	R500,000 any one occurrence

Deductibles

The deductible (excess) is the amount which the Contractor and/or Sub-Contractor is responsible for and this obligation must be reflected in the Tender and/or Contract Documents and the responsibility for same made clear.

The deductibles apply to each and every occurrence and in respect of all Contracts.

The deductibles are:

Loss of or damage to public utilities	R25,000
Spread of fire	R250,000
Spread of fire – track re-profiling	R250,000
Loss of or damage to any other property	R25,000
Loss of or damage arising from removal of lateral support	R25,000
Loss of or damage arising from the burning of fire breaks	R250,000
Loss of or damage arising out of vegetation control including but not limited to the use of pesticides and or herbicides	R250,000

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Main Exceptions

- The amount of the policy deductible.
- Death or injury to own employees.
- Motor vehicle liabilities under legislation or as defined in Multi-lateral Motor Vehicles Accident Fund No. 93 of 1989 as amended.
- Claims in connection with ownership or use of aircraft or watercraft.
- Property belonging to the Insured or in his care custody and control (as defined in the Policy).
- Property forming part of Contract Works.
- Liquidated damages or penalties for delays or in respect of performance or efficiency guarantees.
- Liability arising out of defects in workmanship materials design plan or specification in any part of the Property insured.
- Arising from or in connection with design plan or specification.
- Gradual pollution and contamination.
- Sudden unintended and unforeseen seepage, pollution or contamination including the cost of removing, nullifying or cleaning up in respect of both ocean and harbour going watercraft outside of dry dock.
- After completion and handover (inclusive of the contractual Defects / Maintenance period).
- Punitive damages.
- Ownership hiring or leasing of any airport or airstrip.
- War, asbestos and nuclear risks.

Cover Limitations / Warranties

Rail Track Re-Profiling

- The maximum speed of any grinding unit shall not exceed 11.00km per hour.
- All Guards, Curtains, Spark Deflectors are to be in place and correctly positioned prior to the commencement of each grind.
- Maximum grinding distance in any one execution shall not exceed 10,000 metres.
- Any changes in prevailing weather conditions must be recorded and appropriate remedial action taken.
- The Insured Parties are to comply with all Fire Fighting requirements as set out in the Project Specification For Track Maintenance With An On Track Grinding / Profiling Machine and any amendments / deviations to this Project Specification are to be advised to the Insurer prior to work being undertaken.

NB: Failure to thoroughly pre-plan and document the safety measures to be adopted with specific regards to the incidence of fires being initiated during the execution of the work will invalidate indemnity provided in respect of fire arising out of track re-profiling works.



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- It is essential that this requirement is brought to the attention of Contractor's. Where this restriction is not practical, specific arrangements for cover can be made with underwriters. They will, however, require detailed underwriting information and an additional premium may be charged.

Other Limitations

- Indemnity for removal of lateral support is limited to R25,000,000.

If a higher limit of indemnity is required, the Employers Insurance Broker's personnel needs to be advised and underwriting information will need to be provided in advance (i.e prior to Tender stage) and this will entail an additional premium.

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Principal Controlled Insurance 2010 / 2011**

Administrative Procedures

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Administrative Procedures

Arranging Insurance cover

The Operating Divisions and Specialist Units must

Prior to the commencement of each Contract:-

- Complete the Declaration Form per Part A as per Annexure 1 herein.
- Date and sign the Declaration Form.
- Submit the Declaration Form to the Broker.
- **In addition, if the Declaration is being submitted after the commencement date, a separate letter is required stating that, after specific enquiry, The Insured is not aware of any incidents which may give rise to claim/s under this policy. (No Known Incidents Declaration).**
On receipt of late declarations which are not accompanied by a "No Known Incidents Declaration", the Insurance declaration will not be accepted and no cover will be in force.
- Record the Declaration on the Contract Monthly Register and submit this Register at the end of each month to Transnet Group Insurance and the Broker.

On receipt of the Declaration Form the Broker will submit it to the Insurer and the following documents will be issued and provided to the Operating Divisions and Specialist Units:-

- An Insurance Certificate and a SASRIA Coupon evidencing cover.
- A Debit Note in respect of the premiums due (based on agreed rates).

NB In terms of SASRIA Regulations, where the Contract Value exceeds R2 million, the physical address of the contract is mandatory. If no physical address i.e. where Track is being worked upon, the start and end points are required.

Prior to the expiry of each Declarations estimated completion date:-

- Confirm to the Broker that the contract will be completed on time.
 - On completion submit to the Broker a Declaration of the final contract value per Part B as per Annexure 1 herein.
- NB** If the original completion date is not going to be achieved, the period of insurance on the Declaration document will need to be extended and the Broker needs to be notified **prior to original completion date**.

The Operating Divisions and Specialist Units (**prior to the expiry date of the certificate period**) has to advise the Broker in writing to extend the period of insurance and provide the new estimated completion date.

NB If a completion date needs to be extended and the Broker is not advised prior to the original completion date, all SASRIA cover will cease on the originally declared completion date as there is no hold covered arrangement with SASRIA.

A new SASRIA Coupon will then only be issued for the extension period from the date when the Insurer is advised in writing by the Broker.

Under these circumstances the new SASRIA Coupon will be subject to an additional premium, subject to the minimum premium.



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This process needs to be followed by the Operating Divisions and Specialist Units until the time of completion is achieved.

Once the Contract has been completed:-

- The Operating Divisions and Specialist Units have to declare the final contract value to the Broker per Part B as per Annexure 1 herein.
- The deposit premium will then be adjusted accordingly.

Failure by the Operating Divisions and Specialist Units to conform to the above procedure will result in cover being voided.

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Contracts that require specific arrangements

All contracts that fall outside the scope of this Principal Controlled Insurance Programme have to be advised to the Broker prior to Tender and specific "One Off" cover will need to be negotiated. These will be:

- Where the Contract Value exceeds R100,000,000 (**Inclusive of VAT**)
- Where the Contracted period exceeds 36 months.
- Where the Contracted Defects Liability Maintenance period exceeds 12 months.
- Other excluded Contracts as described on Page 8 /9 herein.
- Contracts involving harbor wet risks*, dams, tunneling, mining, quarrying, shaft sinking, underground work, alterations to water courses being river diversions or coffer dams.
- Contracts outside of the Territorial Limits.

In this regard contact the Employers Insurance Broker's personnel as detailed on Page 33 herein.

Contracts where cover limitations will be exceeded or where cover warranties cannot be complied with need to be discussed with the Employers Insurance Broker's personnel prior to contract award date to enable the Broker to make specific arrangements with Underwriters. This will however require detailed Underwriting Information and an additional premium may be charged.

- In order to ensure that Contractor's and site staff are aware of procedures a copy of this Procedure Manual must be supplied to the contract administrators and each Contractor on award of contract.

*** Note:** Harbour Wet Risks shall mean all work entailing or involving work in or upon water whether partially or fully submerged such as but not limited to quay walls, wharfs seawalls, caissons, breakwaters, jetties, piers, deepening or widening and dredging of ports and other off-shore risks

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Important Considerations

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Important Considerations

Cognizance must be taken of the following important considerations:-

- For contracts involving assembly or erection of plant and machinery or repairs maintenance or overhaul thereto, **THE FULL NEW REPLACEMENT VALUE OF THE PLANT/MACHINERY** involved must be declared **AND NOT ONLY THE CONTRACT VALUE**, for example.:
 - Cranes (*repairs or final assembly*)
 - Machinery being moved
 - Maintenance or new works on existing Portnet Vessels whilst moored or in dry dock.
- Specific arrangements are in place to cover certain contracts where the exposure to own damage (*damage to the works*) is nil or negligible, but where a high third party liability exposure exists. For example:
 - Chemical control of vegetation
 - Vegetation rehabilitation
 - Ballast tamping
 - Re-profiling of Track
 - Burning of Fire Breaks
 - Geotechnical and Exploratory Works

Contracts of this nature must be clearly identified on the Declaration Form.

- Contract value must include the replacement value of any Free Issue Material provided.
- VAT must be added to all contract value declarations in order to comply with local legislation.
- All policy limits and deductibles are Vat inclusive.

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Claims Procedure

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Claims Procedure

In the event of any incident or occurrence, which is likely, to give rise to a claim under the Insurance arranged by the Principal the following procedures shall be adhered to in addition to any statutory or other requirements contained in the Contract.

All incidents that could give rise to claim under the Principal Controlled Insurances, **HAVE TO BE** reported to the Broker / Insurer within a **90 (Ninety)** day period from date of loss.

IMMEDIATELY advise **Aon Construction & Engineering Risks (Attention Sandra Botha)**.

At the same time complete the **Incident Advice Form (Annexure 2 herein)** and submit to **Aon Construction & Engineering Risks**.

- Losses involving **theft or malicious damage** must be reported to the police and a police reference number obtained and recorded.
- The Employer, Contactor(s) or Sub-Contractor(s) shall allow free access to Insurers' Loss Adjuster(s) and / or Employer's Insurance Broker for the purpose of investigation and assessing the loss or damage.
- The Employer, Contractor(s) shall **not** deal direct with the Insurers other than by co-operating with their Loss Adjuster(s) and / or the Employers Insurance Broker.
- No **Admission of Liability** shall be made by the Employer, Contractor(s) or Sub-Contractor(s) in the event of damage, loss or injury to third party property or persons.
- Letters from claimants should be passed to **Aon Construction & Engineering Risks** as soon as possible via the Employer if necessary.
- In the event of immediate repairs being necessary in the interest of safety, the Contractors may with the Employer's permission proceed with such repairs.
- The Employer shall immediately advise Sandra Botha at **Aon Construction & Engineering Risks**.
- Other than in the circumstances described above the Contractor shall not proceed with the making good of any loss without the prior authorization of the Employer who shall advise the Insurer's appointed Loss Adjuster(s) and Sandra Botha of **Aon Construction & Engineering Risks**.
- Upon commencement of the making good of any loss, the Contractor shall keep separate records of the costs involved in making good such loss and these records must be authenticated by the Employer for submission to the Insurer's or their Loss Adjuster(s). Such records shall include, inter alia, the entire cost of labour, materials, transport and equipment.
- The basis upon which the Insurers will indemnify loss or damage is the cost of repair or replacement of the loss or damage including, inter alia, transport and overheads.
- On completion of the making good of any loss the records of the costs involved having been authenticated by the Employer shall be sent to the Insurer's via their Loss Adjuster(s) and copied to **Aon Construction & Engineering Risks (Mrs. Sandra Botha)** for processing.



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- Upon the amount of the loss or damage being agreed upon by the Insurer's Loss Adjuster(s) and the Contractor, an "Agreement of Loss" form will be signed by the Contractor and Employer.
- The amount agreed upon by the Insurers, the Contractor and the Employer shall be paid by the Insurers to the Employer net of the deductible, who will arrange for the payment to be made to the Contractor as appropriate after deduction of the first amount payable.

- All incidents which could give rise to a claim under the insurances arranged by the Principal / Employer must be notified to the Broker without delay, per the procedures set out above

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**Aon South Africa Personnel
Construction and Engineering Division**

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**Procedure Manual
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Aon South Africa Personnel

Construction and Engineering Division

Aon South Africa personnel are at all times available for advice, please feel free to contact :-

- **George Davis**
Senior Accounts Executive
Tel No. (011) 944 7103
Fax No. (086) 505 9558
E-Mail george_davis@aon.co.za

- **Judy Bath**
Account Administrator
Tel No. (011)944 7053
Fax No. (086)505 9553
E-Mail judy_bath@aon.co.za

- **Sandra Botha**
Claims Manager
Tel No. (011)944-7118
Fax No. (086)556 7169
E-Mail sandra_botha@aon.co.za

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**Procedure Manual
Principal Controlled Insurance 2010 / 2011**

Annexure 1

**Transnet Principal Controlled Construction Insurance
Programme Contract Award Declaration (Part A) And
Contract Completion Declaration (Part B)**

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**TRANSNET PRINCIPAL CONTROLLED INSURANCE PROGRAMME
CONTRACT DECLARATION**

CONTRACT NUMBER.....

PURCHASE ORDER NUMBER.....

Send to

Aon South Africa (Pty) Ltd
Construction and Engineering
PO Box 1874
Parklands
2121
Attention : Judy Bath
Tel No. (011) 944-7053
Fax No. 086 505 9553
E-Mail: judy_bath@aon.co.za

From (Operating Unit/Specialist Div).....
Postal Address
.....
.....
Represented by
E-Mail Address
Tel No.
Fax No.

PART A – CONTRACT AWARD INFORMATION

TYPE OF CONTRACT
MARK WITH AN 'X' IF APPLICABLE:

LONG TERM MAINTENANCE / MULTIPLE WORKS CONTRACT with a SERVICE LEVEL AGREEMENT	<input type="checkbox"/>	OTHER	<input type="checkbox"/>
--	--------------------------	-------	--------------------------

NAME OF CONTRACTOR _____

CONTRACT AWARD DATE _____

CONTRACT COMMENCEMENT DATE _____

EXPECTED CONTRACT COMPLETION DATE _____

DESCRIPTION OF CONTRACT WORKS _____

PHYSICAL ADDRESS WHERE CONTRACT IS TAKING PLACE (COMPULSARY FOR ALL CONTRACTS R2M AND OVER)

MAINTENANCE PERIOD (MONTHS) _____

CONTRACT VALUE AT AWARD _____

IF PLANT AND MACHINERY INCLUDE REPLACEMENT VALUE

ESTIMATED VALUE OF FREE ISSUED SUPPLIED TO CONTRACTOR _____

DOES THIS CONTRACT ENTAIL WORK IN RESPECT OF THE FOLLOWING CATEGORIES WHERE THE EXPOSURE TO OWN DAMAGE (DAMAGE TO WORKS) IS NIL OR NEGLIGIBLE

[I] CHEMICAL CONTROL OF VEGETATION	YES/NO
[II] VEGETATION REHABILITATION	YES/NO
[III] BALLAST TAMPING	YES/NO
[IV] TRACK RE-PROFILING	YES/NO
[V] BURNING OF FIRE BREAKS	YES/NO
[VI] GEOTECHNICAL AND EXPLORATORY WORKS	YES/NO

OPTIONAL INSURANCE REQUIRED

[I] IS REMOVAL OF LATERAL SUPPORT COVER REQUIRED?	YES/NO
[II] DOES THIS CONTRACT EVIDENCE AN EXPOSURE WHICH CAN BE COVERED BY PROJECT DELAY INSURANCE?	YES/NO
[III] WILL THE EMPLOYER/CONTRACTOR/SUB-CONTRACTOR MAKE ANY DIRECT IMPORTS OF REQUIREMENTS FOR THE CONTRACT THAT REQUIRE MARINE IMPORT INSURANCE?	YES/NO

IF SO DETAILS NEED TO BE PROVIDED TO THE BROKER SO THAT THIS FORM OF COVER CAN BE ARRANGED

SIGNATURE DATE:

**TRANSNET PRINCIPAL CONTROLLED INSURANCE PROGRAMME
CONTRACT COMPLETION DECLARATION**

ORIGINAL CONTRACT NO.
PURCHASE ORDER NO.

PART B – CONTRACT COMPLETION DECLARATION

CONTRACT NUMBER

TITLE OF CONTRACT

CONTRACT COMPLETION DATE

ENDORSEMENT/CERTIFICATE NUMBER

EXPIRY OF MAINTENANCE PERIOD

FINAL CONTRACT VALUE

ACTUAL VALUE OF FREE ISSUE SUPPLIED TO CONTRACTOR

SIGNATURE:.....

DATE:.....

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Annexure 2

Incident Advice Form

ALL INCIDENTS HAVE TO BE REPORTED WITHIN 90 DAYS OF OCCURRENCE

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TRANSNET PRINCIPAL CONTROLLED INSURANCE PROGRAMME

INCIDENT ADVICE FORM
TRANSNET UNIQUE CLAIM NUMBER

Send to

Aon South Africa (Pty) Ltd
Construction and Engineering
PO Box 1874
Parklands
2121
Attention : Sandra Botha
Tel No. (011) 944 7118
Fax No. (086) 556 7169
E-Mail: Sandra_botha@aon.co.za

From
Represented by
Tel No.
Fax No.

PRINCIPAL (PER CONTRACT DOCUMENT)

CONTRACT NUMBER

ORIGINAL DECLARATON NO.

TITLE OF CONTRACT

ORIGINAL CONTRACT COMMENCEMENT DATE

DATE OF LOSS OR DAMAGE

DATED REPORTED TO SITE AGENT

REPORTED BY

REPORTED TO BY

DATE

LOCALITY OF INCIDENT

DETAILS OF HOW THE LOSS OR DAMAGE OCCURRED

DETAILS AND NATURE OF LOSS OR DAMAGE TO CONTRACT WORKS / TO THIRD PARTY PROPERTY

DETAILS OF OTHER DEATH OR INJURY TO PARTIES

ESTIMATED COST (SEPARATE RECORDS OF ALL COSTS MUST BE KEPT)

WHO OR WHAT APPEARS TO BE RESPONSIBLE FOR THE CAUSE OF THE LOSS / DAMAGE

PERSON WHOM ASSESSOR SHOULD CONTACT

DESIGNATION:

TELEPHONE (LANDLINE)

CELLPHONE NO.

E-MAIL ADDRESS

ALL INCIDENTS HAVE TO BE REPORTED WITHIN 90 DAYS OF OCCURRENCE

SIGNED BY:

SIGNATURE:

COMPANY:

DATE:



Annexure 3

Annual Contract Works & Contractors Public Liability
And Lateral Support Policy Wording

“PREVIEW COPY ONLY”



Annexure 4

Annual Contractors Public Liability Policy Wording

In respect of Contracts entailing:-

- Chemical Vegetation Rehabilitation
- Vegetation Rehabilitation
- Ballast Tamping
- Rail Track Re-Profiling
- Burning of Fire Breaks
- Geotechnical and Exploratory Works