Camden Power Station

ESKOM GENERATION

ROAD MAINTENANCE AT CAMDEN POWER STATION FOR A PERIOD OF 5 YEARS : BILLS OF QUANTITIES

CONTRACT NUMBER :

CONTRACTOR :

CONTRACT AMOUNT (Excluding VAT) :

CONTRACT AMOUNT INCLD VAT) :

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MODEL PREAMBLES

The Association of South African Quantity Surveyors
Die Vereniging van Suid-Afrikaanse Bourekenaars

MODEL PREAMBLES FOR TRADES 2008

forming part of
the bills of quantities

Project:

Contract Reference Number:

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EXPLANATORY NOTES AND INSTRUCTIONS ON THE USE OF THESE MODEL PREAMBLES

1. The document

1.1 This document is published by and is available from the Association of South African Quantity Surveyors, P.O. Box 3527, Halfway House, 1685. Telephone (011) 315 4140. E-mail: administration@asaqs.co.za

1.2 The contents of this document are intended to cover workmanship and materials encountered in a significant majority of projects. If a material is not encountered in a significant majority of projects, its preamble will in all likelihood not be included in this document

1.3 By its very nature, this document is a “Model” document and one that is designed to act as a basis upon which to build. It is anticipated that it will be supplemented by a “Supplementary Preambles” document included in the text of the bills of quantities that will include, inter alia, the following:

1.3.1 supplementary clauses of a general nature that practitioners may deem necessary to cover their own individual requirements,

1.3.2 additional clauses pertaining to specific materials incorporated in a project and not covered by the Model Preambles,

1.3.3 amendments to anything contained in the Model Preambles. A clause has been incorporated in the “General” section of the document stipulating that anything contained in the “Supplementary Preambles” which is at variance to that which is contained in the Model Preambles, will take precedence over the Model Preambles and apply to the works in hand

1.4 It is intended that this document will be used by reference only in the text of the bills of quantities and will NOT be bound or reproduced therein

2. The basic philosophy

2.1 Wherever possible, reference has been made throughout the preambles to South African National Standards (SANS) to describe materials and methods respectively. It is therefore incumbent on the users of these preambles to have ready access to the relevant Specifications and Codes. Where such Specifications or Codes do not exist, suitable preambles have been compiled

2.2 These preambles have been designed to assist in abbreviating descriptions in the text of the bills of quantities and practitioners are encouraged to make use of this facility. e.g. The description of a stormwater catchpit would read:

“Brick stormwater catchpit size internally 600 x 400 x 1 200mm deep to invert fitted with and including a 450 x 300mm x 59kg cast iron grating and frame”

2.3 Wherever alternatives exist in respect of materials or workmanship, specific choices have been made in these preambles. Should users require different choices to specific items, these should be referred to in the Supplementary Preambles as outlined in clause 1.3

3. Additional notes in the use of these Model Preambles

3.1 Concrete, Formwork and Reinforcement

The Project Specification embodied in these preambles was compiled in collaboration with the Authors of SANS 1200G, which forms the basis for the Concrete, Formwork and Reinforcement model preambles

Users of these preambles are advised to submit a copy of the Model Preambles to the Engineers involved in a project for their scrutiny. Any amplifications, amendments, etc required by individual Engineers would then be incorporated in the Supplementary Preambles referred to in item 1.3

3.2 Roof Coverings

The roof coverings included in these Model Preambles are limited in their content and therefore any roofing material not included in these Preambles will need to have its full preamble included in the Supplementary Preambles

3.3 Structural Steelwork

The comments made under item 3.1 apply equally to Structural Steelwork

Note that the protective treatment of the structural steel covers only the treatment up to and including the primer (and patching after erection). The finishing coats of paint must be fully described and included either in the “Structural Steelwork” or in the “Paintwork” trade, as the practitioner wishes

MODEL PREAMBLES FOR TRADES

CONTENTS

A. GENERAL

A.1 APPLICATION OF CLAUSES

These Model Preambles for Trades, and any Supplementary Preambles, shall be read in conjunction with and shall form part of the descriptions of items in the bills of quantities

Where descriptions or Supplementary Preambles in the bills of quantities differ from these Model Preambles for Trades, the descriptions or Supplementary Preambles in the bills of quantities shall take precedence. Where supplementary preambles differ from descriptions in the bills of quantities, the descriptions in the bills of quantities shall take precedence

Except where otherwise stated, all preambles contained in any individual Trade Preamble shall apply equally to any work of a similar nature in all other trades

A.2 ABBREVIATIONS

The following abbreviations shall apply:

AASHTO – American Association of State Highway and Transportation Officials

AISI – American Institute of Steel Industries

BS – British Standard

CKS – Coordinating Specifications issued by the Central Coordinating Committee under the auspices of the South African Bureau of Standards

CSIR – Council for Scientific and Industrial Research

SANS – South African National Standards and the number following shall refer to the relevant specification or code of practice as the case may be

A.3 MATERIALS AND WORKMANSHIP

Materials and workmanship shall be the best of their respective kinds. Only new and undamaged materials shall be used in the Works. Materials to be permanently installed into the works shall not be used for any temporary purposes on site. Work shall be to the approval of the Project Manager and shall be executed in accordance with the relevant manufacturer's written recommendations and instructions where applicable

A.4 PROPRIETARY PRODUCTS

For the purposes of submission of tenders, rates for items described in the bills of quantities by trade names, catalogue references, etc shall be for the particular type and manufacture specified

The approval of the Project Manager shall be obtained prior to any substitution and where products or materials etc other than those specified are used, adjustments in the rates will be made if necessary

A.5 ASSEMBLING

Rates for manufactured items shall include assembling complete and handing over in proper working order

A.6 REFERENCES IN DESCRIPTIONS

Any references given in brackets at the end of certain descriptions shall refer to the relevant references on the drawings or schedules

A.7 WATER

Water shall be clean and free from injurious amounts of acids, alkalis, organic matter and other substances and shall be suitable for its intended use

A.8 APPLICATION OF THE NATIONAL BUILDING REGULATIONS

All work shall be executed in accordance with the requirements of SANS 10400

A.9 ACCURACY IN BUILDINGS

The dimensional and positional accuracy of the buildings and their component parts shall comply with Grade II requirements of SANS 10155 unless otherwise stated

A.10 REFERENCES TO OTHER DOCUMENTS

References in these “Model Preambles for Trades” to other documents, including SANS, CKS and BS, shall pertain to the latest edition thereof including all amendments thereto at the date for submission of the tender

B. ALTERATIONS

B.1 ALTERATIONS

In taking down and removing existing work the utmost care shall be observed to prevent any structural or other damage to remaining portions of the building. The Contractor shall ensure the stability of all structures during alteration work

Special care shall be exercised during the progress of the work to ensure that any electrical installations, water supply pipes, telephone and other services which may be encountered are not interfered with and notice shall be given to the Project Manager if any disconnection or alterations become necessary

The Contractor shall take all precautions necessary to prevent any nuisance from dust whilst carrying out the work

B.2 MATERIALS FROM THE ALTERATIONS, CREDIT, ETC

Materials recovered from the alterations (except where described as to be re-used or to be handed over to the Employer) will become the property of the Contractor, who may allow credit in respect thereof where provided for in the bills of quantities. Such materials shall not be re-used in new work without written permission from the Project Manager

Materials described as “removed” shall be removed from the site immediately.

Materials described as “handed over to the Employer” shall be carefully dismantled where necessary, neatly stored under cover on the site where directed and protected from damage, until required

Materials described as “set aside for re-use” shall be carefully dismantled where necessary, cleaned, neatly stored under cover and protected from damage until required for re-use. Any damage caused to such materials during removal, storage or refixing shall be made good at the Contractor’s expense

B.3 DISPOSAL OF DEBRIS ETC

The Contractor shall be responsible for the removal from the site of all materials, debris and rubbish resulting from the alterations

B.4 MAKING GOOD DAMAGED WORK

The Contractor shall make good in all trades to existing work where damaged or disturbed through the alterations with all necessary new materials to match the existing

B.5 FORMING NEW OPENINGS OR ALTERING OPENINGS IN EXISTING WALLS

Where new openings are formed or openings altered in existing walls, the wall above the opening shall be broken out and a new brick, in situ concrete or prestressed concrete lintel inserted, complete with all necessary reinforcement, formwork, turning piece, etc, the jambs and portions of openings as described shall be built up with new brickwork or blockwork properly toothed and bonded to existing, cavities of hollow walls shall be closed where necessary and finishes shall be made good all round and into reveals

B.6 BUILDING UP OPENINGS

Where existing openings are given in number as built up, the existing surfaces all round shall be prepared as necessary, brickwork or blockwork properly toothed and bonded to existing, wedged up to underside of existing lintel and finishes shall be made good on both sides

C. EARTHWORKS

C.1 DEMOLITIONS

C.1.1 Nature and extent

Descriptions of demolitions give a rough guide only as to the scope of the work. Tenderers are therefore advised to visit the site before submitting a tender and to acquaint themselves with the nature and extent of the work to be done and the value of recoverable materials which are not to be re-used or handed over to the Employer. Unless otherwise stated, loose furniture, kitchen and other equipment, apparatus, machinery, etc shall remain the property of the Employer and the removal thereof does not fall within the scope of this Contract

The Contractor shall completely demolish the buildings etc in a careful, skilful, practical and safe manner down to 150mm below ground level

Demolitions shall include breaking up and removing:

all floors and surface beds;

all external screen walls, steps, ramps, aprons, surface water channels, rainwater sumps, gulleys, etc attached to the building to be demolished;

all services, manholes, etc in ground to a point not less than 1m beyond the perimeter of the building including plugging off ends of all remaining pipes, drains, etc, filling in holes where necessary and ramming and levelling to ground level

Where only a portion of a building is to be demolished, it shall be done without damage to the remaining portion of the building. Any such damage shall be made good by the Contractor at his own expense

C.1.2 Notices etc

The Contractor shall, before commencing work, obtain all necessary authorisation for carrying out the work, by whatever means including the use of pneumatic equipment or blasting, give all necessary notices and pay all charges and fees in connection therewith. He shall also comply with all regulations pertaining to rodent extermination and he shall obtain the requisite Rodent Extermination Clearance Certificate and pay all necessary fees. All receipts and certificates shall be left in the safekeeping of the Project Manager. All the abovementioned charges and fees shall be paid by the Contractor and included in his prices

The Contractor shall give ample notice to the Project Manager and Local Authorities regarding any disconnections necessary prior to the removal or interruption of electrical or telephone cables, water and sanitary services etc

C.1.3 Loss

After the handing over of the site to the Contractor, the full risk of any loss or damage to buildings to be demolished shall be the responsibility of the Contractor and he shall take such precautions as he deems necessary against such loss or damage

C.1.4 Materials from the demolitions, credit, etc

Materials recovered from the demolitions will become the property of the Contractor, who may allow credit in respect thereof where provided for in the bills of quantities. Such materials shall not be re-used in any new work without written permission from the Project Manager

C.1.5 Disposal of debris etc

The Contractor shall be responsible for the removal from the site of all materials, rubble, debris and rubbish resulting from the demolitions

C.2 SOIL INSECTICIDES

The application of soil insecticides shall be carried out in accordance with “The application of soil insecticides for the protection of buildings” - SANS 10124 4

C.3 FILLING ETC

C.3.1 Filling generally

Filling over site shall be spread, levelled, watered and consolidated in layers not exceeding 300mm

Filling under floors and backfilling to excavations shall be suitable inert material, free from clay, vegetable matter, large stones, etc, having a maximum plasticity index of 10, spread, levelled and compacted to a density of at least 90% Mod. AASHTO

C.3.2 Hardcore

Hardcore shall be broken stone or other approved hard material graded from 25mm to 75mm with the finer material on top and shall be spread, levelled and consolidated

C.4 EXCAVATIONS

C.4.1 Classification of excavated material

“Hard rock” shall mean granite, quartzitic sandstone or other rock of similar hardness, the removal of which requires drilling, wedging and splitting or the use of explosives

“Soft rock” shall mean hard material the removal of which warrants the use of pneumatic tools and includes hard shale, ferricite, compact ouklip and material of similar hardness

“Earth” shall mean all ground other than that classified as “hard rock” or “soft rock” and shall include made-up ground and any loose stones or pieces of concrete not exceeding 0,03m3 in volume

D. CONCRETE, FORMWORK AND REINFORCEMENT

D.1 SPECIFICATION FOR CONCRETE WORK GENERALLY

All in situ concrete work (plain and reinforced) shall comply with SANS 1200G supplemented by the following Project Specification. Where SANS 1200G and the Project Specification are in conflict, the Project Specification shall take precedence

Wherever the term “Engineer” appears in SANS 1200G or in the following Project Specification this shall be deemed to mean the Project Manager’s representative responsible for this section of the Works

PROJECT SPECIFICATION

The following amplifications, additions and amendments to SANS 1200G shall constitute the Project Specification. Clause numbers refer to either the existing clauses in SANS 1200G or to new clauses, which are related to the existing clauses

1. SCOPE

This clause is amended to include:

1.1 This specification does not cover the methods by which the finished structure is to be measured for the purpose of payment and the “Standard System of Measuring Building Work” shall apply

2. INTERPRETATIONS

2.1 SUPPORTING SPECIFICATIONS
Clause 2.1(b) shall not apply

2.2 APPLICATION
This clause shall not apply

4. PLANT

4.5 FORMWORK

4.5.2 Finish
Unless otherwise stated the quality of all formwork shall be such that the finished surface of the concrete is “Rough” in terms of clause 5.2.1(a)

5. CONSTRUCTON

5.2 FORMWORK

5.2.1 Classification of Finishes

(a) Rough. No treatment of the surface of the concrete will be required after the striking of the formwork. The finish of the concrete need not be more accurate than Degree of Accuracy III

(b) Smooth. Imperfections such as small fins, bulges, irregularities, surface honeycombing and surface discolorations shall be made good and repaired by approved methods. The finish of the concrete shall be accurate to Degree of Accuracy II

(c) Special

(i) Smooth and fair

This class of finish requires the highest standard of concrete work, formwork, accuracy and technique

Concrete placed in any one structure to give this finish shall be made from cement and aggregates from the same source. The grading of the aggregate shall be kept constant

Formwork shall be metal, wrot timber or other approved material in new condition designed and constructed to suit the particular job in hand and with shutter bolts and joints between panels in a regular pattern approved by the Project Manager. Joints between panels shall be watertight, but the use of sealing tape which will mark the concrete shall not be permitted

Designated joints shall be in the position and of the details shown upon the working drawings. Should the Contractor wish to incorporate further construction joints or amend the position of those shown to suit his own requirements or technique, this may be allowed provided that all design considerations are met, that the prior approval of the Engineer is obtained and that any extra costs are borne by the Contractor

In the case of horizontal construction joints, the top edge of the concrete on the smooth and fair finished side shall be struck true and level with a trowel

Special care shall be taken to ensure that forms are clean and free of all pieces of tying wire, nails and other debris at the time of concreting

The standard of finish shall be such that upon removal of the formwork, no further treatment, other than treatment of bolt holes if required, shall be found necessary to provide a straight, smooth and uniform finish of good quality and consistent colour and texture, free of all honeycombing etc. Any defect shall be made good by either removing and replacing the defective concrete or, in certain instances only, by patching

5.5 CONCRETE

5.5.1.6 Prescribed mix concrete

Where prescribed mix concrete is specified the proportions of constituents, the maximum size of coarse aggregate and the estimated minimum compressive strength shall be as specified in the following table:

Cement shall comply with SANS 50917-1 of strength 32,5N or higher
Should cement and aggregates be mixed by volume, the contents of a 50kg sack of cement shall be taken to be 0,033m3

Notwithstanding the requirements contained in SANS 1200G, the Project Manager may permit certain items of non-structural concrete to be mixed by hand

If the concrete is mixed by hand, it shall first be mixed in a dry state on a clean non-absorbent surface until it is of uniform colour and consistency. Just enough water shall then be added to permit mixing and working, at which stage the concrete shall continue to be mixed until it is of uniform colour and consistency

5.5.1.7 Strength concrete

Where strength concrete is specified it shall be designated by its specified strength followed by the size of stone used in its manufacture, eg 30 MPa/19mm

The water/cement ratio shall be as Table 5 of clause 5.5.1.5 for moderate exposure conditions

5.5.1.8 “No-Fines” concrete

“No-fines” concrete shall consist of one part cement to eight parts aggregate graded from minimum 6mm to maximum 13mm size

The quantity of water used shall be just sufficient to form a smooth grout which shall completely coat every particle of aggregate and also to ensure that the grout is just wet enough to form a small fillet at each point of contact between the stones. “No-fines” concrete mixed with excessive water, which results in a thin grout, which drops off the aggregate, will be rejected

“No-fines” concrete shall be placed in its final position within 20 minutes of mixing and shall be placed in continuous horizontal layers. Concrete shall be spade worked sufficiently to ensure that it fills the forms but vibrating, tamping or ramming will not be permitted

5.5.3.2 Ready-mixed concrete

The use of ready-mixed concrete and the acceptability of test results from a central concrete production facility shall be subject to the written approval of the Engineer

6. TOLERANCES

Degree of Accuracy II shall apply for all work unless otherwise stated

7. TESTS

7.1 FACILITIES AND FREQUENCY OF SAMPLING

7.1.2 Frequency of sampling

7.1.2.5 The frequency of sampling shall be as directed by the Engineer, but not less than one set of cubes from every 50m^3 cast

8. MEASUREMENT AND PAYMENT

This clause shall not apply

D.2 AGGREGATES OF LOW DENSITY

Aggregates of low density shall comply with SANS 794

D.3 HOLLOW BLOCKS, PREFABRICATED BLOCK BEAMS AND PLANKS, ETC

Blocks, block beams, planks, etc shall be fixed and supported in such a manner that no movement can take place before or during the casting of concrete. No broken components shall be used

D.4 SUPERVISION

A competent and experienced foreman shall superintend personally the whole of the concrete construction and pay special attention to:

(a) The quality, testing and mixing of materials,
(b) The placing and compaction of concrete,
(c) The construction and removal of formwork and
(d) The sizes and position of reinforcement

The Contractor shall obtain the permission of the Project Manager before commencing concreting of foundations or reinforced structure

No inspection, approval, authorisation to proceed, comment or instructions following from such an inspection, or failure of the Project Manager to comment on any particular aspect of the work, shall be deemed to relieve the Contractor in any way from his obligation to ensure through his own supervision that the work is constructed in every way in accordance with the Drawings, Specification and Conditions of Contract, nor relieve him from his obligations to make good any fault or defect, nor shall it be deemed that there is any obligation on the Project Manager to inspect all or any part of the Works or that such inspection is necessarily complete in every respect

D.5 GENERAL

Concrete

Rates for concrete work shall include all “construction joints” other than “designated joints” as defined in SANS 1200G clause 2.4.3 which are measured separately, and for the design of strength concrete mixes and all testing of concrete and materials other than compressive strength testing of concrete samples taken from concrete being placed in the Works. The Contractor shall only be entitled to payment for those samples and compressive strength tests called for by the Engineer and which pass the test requirements

Surface beds cast in panels shall be cast in panels approximately 9m2

Formwork

Formwork to slabs and beams shall be cambered where required

Rates for formwork to soffits shall include propping not exceeding 3,5m high unless otherwise described. Formwork to walls and columns is not exceeding 3,5m high above bearing level unless otherwise described

Reinforcement

Standard welded steel fabric reinforcement shall be as included in Table 1 of SANS 1024 and shall have 300mm wide laps.

The mass of binding wire is not included in the mass of the reinforcement and the cost thereof shall be included in the rates for the reinforcement

E. PRECAST CONCRETE

E.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Precast concrete paving slabs SANS 541

Cement, water, aggregates and reinforcement shall be as described under D. CONCRETE, FORMWORK AND REINFORCEMENT

E.2 CONCRETE

Concrete shall be as described under D. CONCRETE, FORMWORK AND REINFORCEMENT and unless otherwise stated shall be prescribed mix concrete Class C but with coarse aggregate of an appropriate size

E.3 MOULDS

Before each casting, moulds shall be coated with a suitable release agent which will not in any way discolour the surface of the finished product or impair its strength. Where items are described as “finished smooth from the mould” or as “precast terrazzo”, moulds shall be made to a high degree of accuracy and shall be such as to leave even and smooth surfaces

E.4 FINISHES TO BLOCKS

Where described as “precast terrazzo”, such surfaces shall have a facing of terrazzo described under O. PLASTERING. The facing shall be poured into the moulds in a wet state (not dry pressed) and thoroughly worked up against finished faces to ensure that it finishes smooth from the mould

Projections shall be rubbed off and faces shall be of even colour and free from blemishes, cracks and other imperfections. Salient angles shall be arris rounded

E.5 CASTING ETC

Items shall be suitably cured, shall not be handled whilst still green and shall not be built in within 21 days of casting

E.6 REINFORCEMENT

Unspecified reinforcement required for manufacturing, handling and erection purposes and for reinforcing projecting and other unwieldy portions of blocks shall be provided by the Contractor at his discretion

E.7 BEDDING, JOINTING AND POINTING

Blocks shall be bedded and jointed solidly in Class I mortar as described under F. MASONRY and shall be pointed with slightly keyed joints

Blocks finished with “precast terrazzo” shall have joints raked out and pointed with slightly keyed joints in tinted waterproofed mortar composed of one part cement and three parts sand to match terrazzo facing

E.8 GENERAL

Precast concrete work shall include reinforcement required for manufacturing, handling and erection purposes, steel rod or wire hooks and/or mortices for lewis bolts required for handling and transporting, any necessary temporary propping and strutting and bedding, jointing and pointing

F. MASONRY

F.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Burnt clay masonry units	SANS 227
Limes for use in building	SANS 523 {Slaked (hydrated) limes}
Aggregates from natural sources – fine aggregates for plaster and mortar	SANS 1090
Concrete masonry units	SANS 1215
Prestressed concrete lintels	SANS 1504
Burnt clay paving units	SANS 1575
Metal ties for cavity walls	SANS 28
Common cement	SANS 50197-1 (Class 32,5N)

Masonry cement	SANS 50413-1 (Class 22,5X)
Concrete masonry construction	SANS 10145
The structural use of masonry	SANS 10164-1
Masonry walling	SANS 10249
Concrete floors	SANS 10109-1&2

F.2 SAND

Sand shall be washed where necessary and screened through a 2,4mm mesh sieve

F.3 BURNT CLAY BRICKS

Burnt clay bricks shall be of nominal size 222 x 106 x 73mm unless otherwise stated

Common bricks shall be General Purpose bricks

Extra hard burnt bricks shall be General Purpose (Special) bricks

Facing bricks shall exhibit a liability to efflorescence not in excess of “Slight” and water absorption when tested in conformity with the requirements of SANS 227 shall not exceed 14%

Particular care shall be taken to preserve arrisses and faces of facing and paving bricks during transit and handling

F.4 CONCRETE BRICKS

Concrete bricks shall have a nominal compressive strength of 8 MPa

F.5 QUARRY TILES ETC

Quarry, cement and similar tiles shall be of approved manufacture, even in shape and size, free from cracks, twists or blemishes and uniform in colour

F.6 WIRE TIES

Wire ties shall be of galvanized steel of the single wire type for solid walls and either the “Butterfly” or Modified PWD type for hollow walls. Ties shall be of sufficient length to allow not less than 75mm of each end to be built into brickwork or embedded in concrete

F.7 BRICKWORK REINFORCEMENT

Brickwork reinforcement shall be manufactured from hard drawn steel wire conforming to BS 785 and shall consist of two 2,8mm diameter main wires with 2,5mm diameter cross wires at 300mm centres welded at intersections

Brickwork reinforcement shall be lapped not less than 300mm at end joints and for a length equal to the width of the widest reinforcement at intersections

F.8 MORTAR

Mortar shall comply with the following table:

Mortar shall be Class II unless otherwise specified

Mortar plasticizers may only be used with the approval of the Project Manager

The materials shall be mixed dry until of uniform colour, water added and the mixture turned over until the ingredients are thoroughly incorporated

Mortar shall be produced in such quantities as can be used before commencement of set and no mortar that has set shall be used

F.9 COMPO MORTAR

Compo mortar shall be Class III mortar in accordance with clause F.8 but with a lime content of 80 litres

The lime and sand shall be mixed dry until of uniform colour, water added and the mixture turned over until the ingredients are thoroughly incorporated. Immediately before use, the cement shall be mixed in and the requisite amount of water added. Compo mortar shall be produced in such quantities as can be used before commencement of set and no compo mortar that has set shall be used

F.10 BRICKWORK

Wherever practicable, brickwork shall be built in stretcher bond. Unless legitimately required to form bond, no false headers shall be used. English bond shall only be used where specifically so indicated or where stretcher bond is not practicable

Brickwork, unless otherwise described, shall be built in Class II mortar

Bricks shall be laid on a solid bed of mortar and all joints shall be grouted up solid

The brickwork shall be carried up in a uniform manner, no part being raised more than 1,2m above adjoining work

Where necessary, bricks shall be wetted before being laid and the course of bricks last laid shall be well wetted before laying a fresh course upon it

Walls in thicknesses of more than one skin shall have at least five wire ties per square metre. Linings to concrete, unless otherwise specified, shall be tied to the concrete with at least five wire ties per square metre

Hollow walls, unless otherwise specified, shall be built of two half brick skins with cavity between, tied together with at least five wire ties per square metre. The cavities shall be kept free of all rubbish, mortar droppings and projecting mortar. Mortar joints to brickwork shall be not less than 8mm or more than 12mm thick

F.11 BLOCKWORK

Unless otherwise described, all blockwork shall be built in stretcher bond. Whole blocks shall be used except where bats or closers are required to form bond. Blockwork, unless otherwise described, shall be built in Class II mortar

Solid blocks shall be laid on a solid bed of mortar and all joints shall be grouted up solid

Hollow blocks shall be laid in shell bedding, ie only the inner and outer shells of the blocks shall be covered with mortar. Vertical joints shall be similarly formed

The blockwork shall be carried up in a uniform manner, no part being raised more than 1,2m above adjoining work

Clay blocks shall be wetted before being laid and the course of blocks last laid shall be well wetted before laying a fresh course upon it

F.12 CENTRES AND TURNING PIECES

Centres and turning pieces to soffits of arches and lintels shall be left in position for not less than 14 days

F.13 FACE BRICKWORK

Face brickwork shall be built in stretcher bond, unless otherwise specified, to a true and fair face. Perpends shall be vertically aligned

Facing bricks shall be mixed to ensure that the proper blending of bricks within the colour range of each facing brick being used is obtained

F.14 PAVINGS, SILLS, COPINGS, ETC

Clay bricks and tiles shall be wetted before fixing and shall be solidly bedded and jointed in Class I mortar and pointed with slightly keyed joints

G. WATERPROOFING

G.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Bituminous damp-proof courses	SANS 248 (Type FV)
Polyolefin film for damp- and waterproofing in buildings (walls, sills, etc)	SANS 952 (Type B)
Polyolefin film for damp- and waterproofing in buildings (floors and basements)	SANS 952 (Type C)
Mastic asphalt for roofing	SANS 297
Mastic asphalt for damp-proof courses and tanking	SANS 298
Bituminous roofing felt	SANS 92 (Type 60)
Polyolefin film for damp- and waterproofing in buildings (flat roofs)	SANS 952 (Type A)
Chloroprene rubber sheet (for waterproofing)	SANS 580
Sealing compounds for the building industry, two-component, polysulphide base	SANS 110 (Type 2 - Gun Grade)
Sealing compounds for the building and construction industry, two- component, polyurethane base	SANS 1077

The waterproofing of buildings (including damp-proofing and vapour barrier installation)	SANS 10021

G.2 WATERPROOFING TO ROOFS, BASEMENTS, ETC

Waterproofing to roofs, basements, etc shall be carried out by workmen who are experienced in this type of work

G.3 DAMP-PROOF COURSE TO WALLS

All joints in damp-proof course to walls shall be lapped a minimum of 150mm except at junctions and corners where the lap shall equal the full thickness of the wall

H. ROOF COVERINGS ETC

H.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Concrete roofing tiles	SANS 542
Clay roofing tiles	SANS 632
Sawn softwood timber battens	SANS 1783-4
Fibre-cement sheets (flat and profiled)	SANS 685
Aluminium alloy corrugated and troughed sheets	SANS 903
Continuous hot-dip zinc-coated carbon steel sheet of commercial, lock-forming and drawing qualities	SANS 3575
Continuous hot-dip zinc-coated carbon steel sheet of structural quality	SANS 4998
Polyolefin film for damp- and waterproofing in buildings	SANS 952
Metal roofing tiles	SANS 1022
Glass-reinforced polyester (GRP) laminated sheets (profiled or flat)	SANS 1150
Fasteners for roof and wall coverings in the form of sheeting	SANS 1273
Materials for thermal insulation of buildings	SANS 1381-1&4
Expanded polystyrene thermal insulation boards	SANS 1508
Fixing of concrete interlocking roofing tiles	SANS 10062
Roof and side cladding	SANS 10237

Sheet zinc	BS 849
Sheet lead	BS 1178
Sheet aluminium	BS 1470
Sheet copper	BS 2870

H.2 GALVANIZED STEEL PROFILED SHEETS ETC

Galvanized steel profiled sheets, ridge and hip coverings, etc shall be coated with a minimum of 275 g zinc per m2 and shall be free of white rust

H.3 GALVANIZED SHEET IRON

Galvanized sheet iron shall be rolled steel sheet coated on both sides with a minimum of 275 g of zinc per m2 and shall be free from white rust

H.4 NAILING AND SCREWING

Where nailing and screwing is required:

• galvanized iron nails and screws shall be used for galvanized sheet iron and sheet zinc

• copper or copper alloy nails and screws for sheet copper and sheet lead

• aluminium alloy or stainless steel nails and screws for sheet aluminium

H.5 LAPS

Sheet metal flashings shall have minimum 100mm laps and linings to valleys, secret gutters, etc minimum 225mm laps

H.6 GENERAL

Rates for profiled sheet roofing and rolled edges, ridge and hip coverings, flashing pieces, etc of metal, fibre-cement, plastic, etc shall include fixing accessories

I. CARPENTRY AND JOINERY

I.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Sawn softwood timber : General requirements	SANS 1783-1
Sawn softwood timber : Stress-graded structural timber and timber for frame wall construction	SANS 1783-2
Sawn softwood timber : Brandering and battens	SANS 1783-4
Softwood flooring boards	SANS 629
Hardwood furniture timber	SANS 1099
Hardwood block and strip flooring	SANS 281
Wooden ceiling and panelling boards	SANS 1039

Laminated timber (glulam)	SANS 1460
Gypsum plasterboard	SANS 266
Fibreboard products	SANS 540
Wood-wool panels (cement bonded)	SANS 637
Fibre-cement sheets (flat and profiled)	SANS 685
Fibre-cement boards	SANS 803
Plywood and composite board	SANS 929
Wooden ceiling and panelling boards	SANS 1039
Particle boards	SANS 50312-1to7
Decorative laminates	SANS 4586
Wooden doors	SANS 545
Fire doors	SANS 1253
Materials for thermal insulation of buildings	SANS 1381-1,2,4&6
Expanded polystyrene thermal insulation boards	SANS 1508
Mild steel nails	SANS 820
Metal screws for wood	SANS 1171
Wood-preserving creosote	SANS 539

Softwood shall bear the relevant SABS mark and shall be ordered in the sizes in which it will be used as no scantlings of marked timber will be allowed. Should SABS marked timber be unavailable, the Project Manager's prior permission shall be obtained before using unmarked timber

I.2 HARDWOODS

All hardwoods shall be specially selected, well seasoned, free from sapwood and well kiln dried. Meranti shall be Red or Medium Brown Meranti, even in grain and colour, selected from "Standard and Better" quality from Malaysia

I.3 INFECTION AND PRE-TREATMENT OF TIMBER

All timber used on the site, whether for permanent or temporary work, shall be free of borer or other beetle and termite infection. If the work under this contract falls within an area designated under Government Notice R2577 of 1978-12-29, permanent softwood fixed in the building shall be treated against borer etc in accordance with Government Notice R451 of 1969-03-28 using Class B or C preservative

When treated timbers are cut, the cut surfaces shall be effectively brushed with at least two coats of preservative solution

I.4 CONSTRUCTION IN GENERAL

Where applicable, construction methods shall comply with SANS 10082. Wood and laminate flooring shall be installed in accordance with SANS 10043. Roof trusses shall be manufactured, erected and braced in accordance with SANS 10243

I.5 STRUCTURAL TIMBER

Timbers generally shall be in single lengths and jointing of timbers will only be permitted when the required length is unobtainable. Only the absolute minimum of joints to obtain a particular length will be permitted and such joints are to be evenly spaced along the length of the timber

Finger-jointing of structural timber will be permitted, in which case it shall be manufactured in accordance with SANS 10096

I.6 PLATE NAILED TIMBER ROOF TRUSSES

Plate nailed timber roof trusses shall be of approved design and manufacture and constructed with softwood structural timber by a truss Fabricator holding a current Certificate of Competence awarded by the Institute of Timber Construction

Each roof truss shall have all its members accurately cut and closely butted together and rigidly fixed by CSIR approved patented galvanized metal spiked connectors, precision pressed on both sides of each intersection by an approved method, all in accordance with the manufacturer's instructions

The design, manufacture and transportation of the roof trusses, bracing, etc shall be under the control of a registered Structural Engineer in accordance with SANS 1900, SANS 10160 and SANS 10163, who shall, after erection, provide a certificate confirming that the design, manufacture, transportation, erection and bracing has been carried out in accordance with this specification

The design shall include for all live loads, wind loads and for dead loads imposed by roof covering, purlins, ceilings, etc

Fully detailed shop drawings of all trusses etc, indicating sizes, bracing, loading, etc, shall be submitted to the Project Manager for approval prior to fabrication

Unless specific erection instructions are given, erection shall be carried out in accordance with the procedures and recommendations of the manual "The Erection and Bracing of Timber Roof Trusses" published by the Institute for Timber Construction and the Council for Scientific and Industrial Research or as detailed by the designer

Roof trusses and bracing shall include design and preparation of shop drawings

I.7 TONGUED AND GROOVED BOARDING

Tongued and grooved boards for floors, panelling, etc shall be in long varying lengths with joints tightly cramped up and secret nailed. Flooring boarding shall be flush jointed with staggered heading joints and machine sanded after fixing

I.8 JOINERY

Skirtings, cornices, rails, etc shall be in single lengths wherever practicable and shall have splayed heading joints where necessary. Skirtings shall be trenched at back

All horns of door frames shall be checked and splayed back where frames are fixed projecting or flush with surface and built in

Heads of screws in exposed faces of hardwood joinery shall be sunk and match pelleted

Joinery shall have arris rounded angles and shall be blocked and planted on

I.9 VENEERS

All face veneers shall be of kiln dried timber, free from knots, cracks, patchwork, sapwood and other defects, selected and glued, dried and machine-sanded to a smooth finish. All veneers shall be applied under hydraulic pressure

I.10 DOORS

Flush doors shall have solid timber edge strips with concealed edges. Where doors are to be finished with a transparent finish, the veneer and the edge strips shall be timber of the same species and as far as possible of matching colour. Unless otherwise described all flush doors shall be of interior quality, but where exterior quality doors are specified the glue used shall be of the WBP type

Framed and ledged batten doors described as filled in with V-jointed boarding shall be filled in flush on one side with tongued and grooved vertical boarding, V-jointed on one or both sides and of the thickness stated. The boarding shall be in narrow widths, closely cramped up, rebated or tongued on outer edges and housed to grooves in stiles and rails and twice countersunk brass screwed at each intersection with ledges and braces and the inner edges of the abutting stiles and rails shall be chamfered to form a V-joint at junction with the board

Unless otherwise described double doors shall have rebated meeting stiles

I.11 FIXING

All nails and screws shall be of the size, length and type appropriate to their respective uses. All screws for hardwood joinery work shall be brass

Items described as “plugged” shall be screwed to fibre, plastic or metal plugs at not exceeding 600mm centres. Where items are described as “bolted”, the bolts have been given separately

I.12 ADHESIVES

Adhesives shall comply with BS 1204 and 4071 where applicable. Adhesives used in the manufacture of external joinery exposed to excessive moisture (eg kitchen and laboratory worktops) shall be of the WBP type

J. CEILINGS, PARTITIONS AND ACCESS FLOORING

J.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Gypsum plasterboard	SANS 266
Fibreboard products	SANS 540
Gypsum cove cornice	SANS 622
Wood-wool panels (cement-bonded)	SANS 637
Sawn softwood timber : Brandering and battens	SANS 1783-4

Sawn softwood timber : Timber for frame wall Construction	SANS 1783-2
Fibre-cement boards	SANS 803
Plywood and composite board	SANS 929
Wooden ceiling and panelling boards	SANS 1039
Materials for thermal insulation of buildings	SANS 1381-1&4
Expanded polystyrene thermal insulation boards	SANS 1508
Raised access flooring	SANS 1549

J.2 TONGUED AND GROOVED BOARDING

Tongued and grooved boarding for ceilings shall be in long varying lengths, V-jointed one side and with joints tightly cramped up and secret nailed

J.3 CEILINGS ETC

J.3.1 Brandering

Brandering for ceilings and eaves soffit coverings shall be symmetrically arranged with necessary smaller panels. Main branders shall be at right angles to roof timbers, with cross branders cut in between and branders shall be fixed with galvanized wire nails driven in on skew alternately in opposite directions

J.3.2 Ceiling boards

Ceiling boards shall be in long lengths symmetrically arranged with necessary smaller panels, closely butted and secured at 150mm centres to brandering with galvanized or cadmium-plated clout-headed nails

J.4 GYPSUM SKIM PLASTER

Gypsum skim plaster shall be pure gypsum plaster finished with a steel trowel

J.5 EXPOSED TEE-SYSTEM SUSPENDED CEILINGS

The ceiling panels shall be as described in the items and the panels shall be stiffened at back as recommended by the manufacturer to prevent bowing or sagging

The exposed surfaces of all ceiling panels and supporting members shall be uniform in colour and free from surface blemishes

The suspension grid system shall be an approved patent suspension system comprising 38mm galvanized steel main and cross tee bearers spaced in both directions at centres to suit sizes of ceiling panels used, with the cross bearers fitted between and notched to form flush fit with main bearers. The exposed flange of the tees shall be 25mm wide, covered with a rolled aluminium cap painted a low sheen satin white. Cornices etc shall be as described in the items and shall be finished to match the exposed tees

The main tee bearers shall have holes for cross tees at 300mm centres and holes for hangers at 50mm centres. In addition, main and cross tee bearers shall be holed as necessary for and provided with timber wedges or steel clips where recommended by the manufacturer to prevent ceiling panels from lifting

The web of the exposed cross tee bearers shall extend to form a positive interlock with the main tee bearers and the lower flange shall be cut back to provide a joint free appearance

All hangers shall be galvanized and shall be at centres to meet the requirements of the specification with one end fixed to the suspension grid main bearers and the other end fitted with suitable galvanized fixing cleat securely fixed to the structure. Fixing points shall be agreed to by the Project Manager before any power shot fixings are made. Hangers shall not be suspended from air-conditioning ducts. Where recommended by the manufacturer, hangers shall be of the rigid type

Component parts and fixings shall be non-corrosive and able to withstand atmospheric pollution. Surfaces of aluminium which are in contact with other materials when fixed, particularly metals, shall be suitably insulated to prevent electrolytic corrosion

Ceilings shall comprise hangers, suspension grid system and ceiling panels, shall be constructed in a manner suitable for carrying air-conditioning diffusers and light fittings in the positions required, shall be set out to layouts approved by the Project Manager and shall have the standard suspension systems modified as necessary to work around any pipes or light fittings

J.6 FLUSH PLASTERED SUSPENDED CEILINGS

Gypsum plasterboard panels of the specified thickness generally in 1200mm widths and in long lengths shall be fixed grey side down with self-tapping screws to the suspension system with the joints between boards loosely butt jointed and covered with 50mm wide strips of self-adhesive fibre tape

The plasterboard panels shall be finished with gypsum skim plaster trowelled to a smooth polished surface to the thickness etc recommended by the manufacturer

The suspension system shall be an approved patent concealed suspension system consisting of galvanized mild steel bearers suspended on approved non-rusting metal hangers spaced generally at 1200mm centres or to suit layout of air-conditioning ducts and other services etc above ceiling with one end bolted to the bearer and the other end fitted with a galvanized fixing cleat securely fixed to the structure as required

Fixing points shall be agreed to by the Project Manager before any power shot fixings are made. Hangers shall not be suspended from air-conditioning ducting

Ceilings shall comprise hangers, suspension system, ceiling panels and plaster finish, shall be constructed in a manner suitable for carrying air-conditioning diffusers and light fittings in the positions required, shall be set out to layouts approved by the Project Manager and shall have the standard suspension system modified as necessary to work around any pipes or light fittings

K. FLOOR COVERINGS, WALL LININGS, ETC

K.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Semi-flexible vinyl floor tiles	SANS 581
Resin modified vinyl floor tiles	SANS 586
Flexible vinyl flooring	SANS 786
Hardwood block and strip flooring	SANS 281
Wood mosaic flooring	SANS 978
Textile floor coverings (pile construction)	SANS 1375
Textile floor coverings (needle-punched construction)	SANS 141
Carpet underlays	SANS 1419
The installation of wood and laminate flooring	SANS 10043
The installation of resilient thermoplastic and similar flexible floor covering materials	SANS 10070
The installation of textile floor coverings	SANS 10186
Sheet linoleum (calendered types), cork, carpet and linoleum tiles	BS 810
Solid rubber flooring	BS 1711
Felt backed linoleum	BS 1863

K.2 LAYING OF MATERIAL

Floor tiles shall be laid with continuous joints in both directions

Patterned floor coverings shall be matched at joints

K.3 GENERAL

Floor coverings, wall linings, skirtings, nosings, etc shall include all preparatory work to screeded or plastered surfaces etc, priming coats and adhesives

Floor coverings and wall linings shall be dressed around and into corners. Wood block and wood mosaic flooring shall be sanded with a sanding machine and sealed with a coat of approved penetrating sealer

Plastic handrails shall have welded and polished butt joints

L. IRONMONGERY

L.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Locks, latches and associated furniture for doors. (Domestic type)	SANS 4
Kitchen cupboards: Built-in and free-standing	SANS 1385
Single action closers	SANS 1510
Padlocks	SANS 1533
Fasteners	SANS 1700
Chalk writing boards for schools	CKS 36

L.2 KEYS

Locks shall have the minimum possible number of interchangeable keys. Cylinder locks and locks described as “en suite” shall be clearly marked with consecutive numbers and each key shall be punched with the corresponding number of the relative lock

L.3 FIXING

Unless otherwise described, ironmongery is to be fixed to wood

Items described as “plugged” shall be screwed to fibre, plastic or metal plugs

Screws, bolts, etc for fixing of ironmongery shall be of matching metal and finish, except for aluminium ironmongery or ironmongery fixed to aluminium in which cases stainless steel screws may be used

All necessary preparation of pressed steel door frames for the fixing of ironmongery to the frames has been included with the pressed steel door frames

L.4 KITCHEN CUPBOARDS

Steel cupboards shall be finished with baked enamel. Tops of floor cupboards shall have laminated plastic covering

Cupboards shall be fitted with all necessary hinges, handles, catches, etc. Cupboards shall be securely fixed with all necessary screws and fibre, plastic or metal plugs

Where cupboards are described as a “series”, tops shall be continuous and cupboards shall be bolted or screwed together, including bolts, screws, holes, etc

M. STRUCTURAL STEELWORK

M.1 SPECIFICATION

All structural steelwork shall comply with SANS 1200H or 1200HA as applicable. Structural fasteners shall comply with SANS 1700

Whenever the term “Engineer” appears in SANS 1200H or 1200HA or in the following Project Specification this shall be deemed to mean the Project Manager’s representative responsible for this section of the Works

M.2 PROJECT SPECIFICATION INCORPORATING AMPLIFICATIONS, ADDITIONS AND AMENDMENTS TO SANS 1200H AND 1200HA

The following amplifications, additions and amendments to SANS 1200H and SANS 1200HA shall apply and clause numbers refer to either the existing clauses in the relevant SANS or to new clauses which are related to the clauses therein

SANS 1200H

3.1.1 Weldable structural steel

Weldable structural steel shall comply with SANS 1431

5.1.2 Contractor provides shop details

The Contractor shall be responsible for the preparation of all shop detail drawings

5.1.3 Engineer provides shop details

This clause shall not apply

5.3.9 Protective treatment

Structural steelwork shall be cleaned and prepared by wire brushing in accordance with SANS 10064 and all surfaces shall be primed as specified to a minimum dry film thickness of 30 micrometres before leaving the workshop. Upon delivery to the site and again after erection all bared surfaces shall be made good with similar primer

8. Measurement and payment

This clause shall not apply

SANS 1200HA

5.2.10 Protective treatment

Structural steelwork shall be cleaned and prepared by wire brushing in accordance with SANS 10064 and all surfaces shall be primed as specified to a minimum dry film thickness of 30 micrometres before leaving the workshop. Upon delivery to the site and again after erection all bared surfaces shall be made good with similar primer

5.3.7 Repairs to paint and site painting

This clause shall not apply

8. Measurement and payment

This clause shall not apply

N. METALWORK

N.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Fasteners	SANS 1700
Expanded metal	SANS 190-1&2
Windows and doors made of rolled mild steel sections	SANS 727
Hot-dip galvanized zinc coatings on fabricated iron and steel articles	SANS 121
Strongroom and vault doors	SANS 949
Anodized coatings on aluminium (for architectural applications)	SANS 999
Steel door frames	SANS 1129
Mushroom- and countersunk-head bolts and nuts	SANS 1143
Welding of metalwork	SANS 1044
Adjustable glass-louvred windows	CKS 413
Aluminium sheet and strips	BS 1470
Aluminium extruded tube and hollow sections	BS 1474
Aluminium bars and sections	BS 1476

N.2 STEEL

Steel shall be mild steel of approved commercial quality. Steelwork shall be cleaned and prepared by wire brushing in accordance with SANS 10064 and given one coat of primer as specified before leaving the workshop

N.2.1 Galvanizing of steel

Steelwork described as “galvanized” shall be galvanized by means of the hot-dip process after fabrication. Where welding on site is unavoidable, such welded joints shall be cleaned down and cold galvanized to approval

N.3 STAINLESS STEEL

Stainless steel shall be AISI Type 304 stainless steel and shall be buffed to an even satin finish. Stainless steel screws shall be used for fixing stainless steel

N.4 ALUMINIUM

Aluminium extrusions shall be of 6063-T6 alloy and temper. Aluminium sheet and strips shall be of 1200-H4 alloy and temper.

Joints in all aluminium members shall be formed in an approved manner so that the joints are practically invisible. Screw heads, pins, rivets, etc shall be concealed as far as possible. 300 Series stainless steel screws and bolts shall be used for jointing and fixing aluminium work

The surfaces of all aluminium which are in contact with other materials when fixed shall be suitably insulated with a non-absorbent insulating material to prevent corrosion. All aluminium work shall be suitably protected against damage, deterioration or discolouration caused by mortar droppings, paint, etc by taping with removable tape, covering with temporary casings or by covering with motor oil

N.4.1 Anodizing of aluminium

Aluminium described as “anodized” shall be treated with Grade 25 coating thickness for exterior use or Grade 15 for interior use as specified, to the required finish. All alloys to be anodized shall be suited to anodizing

N.5 BOLTS AND NUTS

Nuts shall be of at least the strength grade appropriate to the grade of bolt or other threaded element with which they are used

N.6 SCREWING OF METALWORK TO STEEL, WOOD, CONCRETE, ETC

Metalwork described as “screwed” to steel, wood, etc or “plugged” to brickwork, concrete, etc shall be fixed at not exceeding 500mm centres, with necessary holes, countersinking, threading, screws, set screws, self-tapping screws and fibre, plastic or metal plugs

N.7 BOLTING OF METALWORK

Where metalwork is described as “bolted” to steel, wood, brickwork, concrete, etc the bolts are measured elsewhere

N.8 WELDING OF METALWORK

All welds shall be cleaned and filed or ground off smooth to approval. All welded joints shall be continuous

N.9 METALWORK GENERALLY

Metalwork shall have all sharp edges ground smooth. Tubular and pipe work shall include running joints. Rails etc described as “continuous” shall be in long lengths with welded joints

N.10 PRESSED STEEL DOORS, FRAMES, ETC

N.10.1 Door frames

Frames shall project not less than 20mm into floor finish. Except where described as galvanized, frames shall be primed as specified before leaving the factory. Frames are to jambs and heads of openings. Frames for single doors shall be provided with two 100mm steel butt hinges and an adjustable striking plate for a mortice lock and frames for double doors shall be provided with four 100mm steel butt hinges. Butt hinges shall be steel butts with loose pins, welded to frames. Where necessary mortar caps shall be welded to frames and back plates shall be welded on behind tappings for screws

N.10.2 Cupboard door frames

Cupboard door frames shall be as described in N.10.1, but with thresholds of unequal channel section, two 100mm steel butt hinges to hanging stiles, two 75mm steel butt hinges to hanging stiles above transoms, necessary striking plates for mortice locks and keeps for barrel bolts

N.10.3 Combination doors and frames

Combination doors and frames shall be manufactured of 1,6mm thick steel plate. Frames shall be as described in N.10.1. Doors shall be standard design and required profile, with a 44mm wide edge all round, vertical reinforcing ribs pressed in and with two reinforcing rails welded on. The door shall be provided with two lever mortice lock with lock box welded to inside. Doors shall be welded to steel butts

N.10.4 Transformer room doors and frames

Transformer room doors and frames shall be manufactured of 1,6mm thick steel plate. Frames shall be as described in N.10.1. Doors shall be of standard design with a 44mm wide edge all round, vertical reinforcing ribs pressed in and with three reinforcing rails welded on. Single doors shall be fitted with a padlock cleat and two 100mm brass pintle hinges and double doors shall be fitted with a padlock cleat, two 150mm bolts and four 100mm brass pintle hinges. Each leaf shall be fitted with a louvered ventilation panel of standard design backed with 6mm mesh galvanized wire vermin proof screen

N.10.5 Sizes

The frame widths given refer to unfinished wall thicknesses

N.10.6 Glazing beads

Where specified, glazing beads shall be 12 x 12mm standard metal glazing beads mitred at angles and countersunk screwed on at not exceeding 300mm centres with self-tapping screws

N.11 STEEL WINDOWS, DOORS, ETC

N.11.1 Windows, doors, etc

All fittings to windows, doors, etc shall be chromium plated. Fixed lights and opening sashes shall be in single squares. Windows etc of single unit construction shall have weather bars at transoms above opening sashes

Composite windows not of single piece construction shall be coupled with standard coupling mullions and transoms that correspond with the window section used

Kicking plates and panels shall be 1,6mm metal plate fixed with standard metal glazing beads mitred at angles and countersunk screwed on at not exceeding 300mm centres with self-tapping screws

Except where described as galvanized, windows, doors, burglar bars, etc shall be primed as specified before leaving the factory

N.11.2 Burglar bars and flyscreens

Where windows are described as fitted with burglar bars or flyscreens, these shall be standard type fitted over opening sashes

N.12 ADJUSTABLE LOUVRE UNITS

Adjustable louvre units shall be suitable for hand or longarm operation

Louvre units shall include glass louvres with polished edges and installation, including holes, screws, rivets, preparation of openings, etc

N.13 ALUMINIUM WINDOWS AND DOORS

The foregoing preambles “N.4 – ALUMINIUM” shall apply to aluminium windows, doors, etc in all respects in so far as they are applicable. Aluminium windows and doors shall be manufactured from extruded aluminium members of 6063T6, 6261-T6 or 6082-T6 alloy and temper

Ancillary members such as sills, flashings, infill panels and the like formed from flat sheet material shall be of an appropriate alloy selected from 1200, 3004 or 5251 complying with BS 1470 of a temper suitable for the method of forming and a composition suitable for anodizing or painting as required

Windows, doors, etc shall be of an approved standard system, manufactured by an approved firm experienced in this type of work, and shall meet with the minimum recommended performance requirements as set out by the Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA) in the latest edition of the Selection Guide

The fittings for all opening sashes shall be substantial and, unless otherwise described, shall be of high quality aluminium alloy finished to match the windows, doors, etc on which they occur. Samples of all fittings shall be supplied to the Project Manager for approval

Top, side and bottom hung opening sashes shall be hung on two aluminium hinges with 300 Series stainless steel pins, nylon bushes and stainless steel washers. Side hung sashes shall have fasteners and sliding stays, top hung sashes shall have peg stays and bottom hung sashes shall have spring catches and concealed arms

Projected out sashes shall have aluminium fasteners and concealed arms of a non-corrosive material compatible with aluminium

The frames which are to be built into openings in brickwork shall be fitted with the manufacturer’s standard type fixing lugs, not less than 20 x 3 x 150mm long, screwed to frame and placed one near each corner and intermediately not more than 450mm apart to sides, top and bottom and where fixed to concrete reveals, wood sub-frames or to preformed openings in brickwork shall have countersunk holes for screws, one near each corner and intermediately not more than 450mm apart to sides, top and bottom

N.13.1 Glazing beads

Where so described, openings and sashes of windows and doors shall be fitted with approved channel section aluminium glazing beads sufficient in size and profile to suit the method of glazing employed, finished to match the windows, doors, etc and neatly mitred. Screws where necessary shall be of aluminium or 300 Series stainless steel and have pan or raised heads finished to match the beads

N.13.2 Finishes

Windows, doors, etc described as “anodized” shall be treated with Grade 25 coating thickness. Windows, doors, etc described as “factory painted” shall have an electrostatically applied oven baked polyester paint coating not less than 25 micrometres thick

N.13.3 General

Aluminium windows, doors, etc shall include glass as described, fixing in position, sealing and protection against damage, deterioration or discolouration by taping with removable tape or covering with temporary casings or motor oil and removing same on completion

N.14 STRONGROOM AND RECORD ROOM DOORS

Strongroom and record room doors shall not be built in as the work proceeds, but shall be fixed later in the openings provided. The Contractor shall ensure that the lock or other important parts of the door are not tampered with. Should any such tampering occur, the Contractor will be held responsible and at the Project Manager’s discretion shall provide a new door or lock and keys at his own expense. The keys shall not be delivered together with the doors to the building site. The Contractor shall arrange for the manufacturer to send the keys direct to the Project Manager per registered post. If these instructions are not complied with, a new lock and keys shall be provided by the Contractor at his own expense

N.15 STEEL ROLLER SHUTTERS

Roller shutters shall be of approved manufacture comprising curtain, vertical channel guides and top mechanism. The curtain shall be constructed of 1mm thick machine-rolled galvanized interlocking slats with mild steel end locks spot welded to alternate strips. The bottom shall be provided with a galvanized rail riveted on and vertical edges shall slide in galvanized channel guides formed of steel not less than 2,5mm thick bolted to sides of openings

The mechanism shall be covered in a galvanized sheet iron box. The ungalvanized sections shall be primed as specified before leaving the factory 28

O. PLASTERING

O.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Common cement	SANS 50197-1(Class 32,5N)
Masonry cement	SANS 50413-1(Class 225X)
Limes for use in building	SANS 523 {Slaked (hydrated) limes}
Aggregates from natural sources – Fine aggregates for plaster and mortar	SANS 1090

O.2 PREPARATORY WORK

Surfaces shall be clean and free of oil and thoroughly wetted directly before any plastering or other in situ finishes are commenced. Concrete surfaces shall be slushed with a mixture of one part cement and one part coarse sand or otherwise treated to form a proper key. Preparatory coats shall be thoroughly scored and roughened to form a proper key

O.3 FINISH

All coats of paving and plastering shall be executed in one operation without any blemishes

O.4 SCREEDS

Screeds shall be composed of one part cement and four parts sand

O.5 CEMENT RENDER

Cement render shall be composed of one part cement and three parts sand finished with a steel trowel to a smooth polished surface and cured for at least seven days after laying

Cement render finish shall be divided into panels not exceeding 6m2 with V-joints and deep trowel cuts

O.6 GRANOLITHIC

Granolithic shall be composed of one part cement, one part fine sand, two parts coarse sand and one part granite or other approved stone aggregate that will pass through a 5mm sieve, finished with a steel trowel to a smooth polished surface and cured for at least seven days after laying

Coloured granolithic shall be carried out in two coats in one operation and shall be tinted to the required colour with approved colouring pigment mixed into the finishing coat. Under no circumstances is the pigment to be sprinkled on and trowelled in after the granolithic is laid

Granolithic shall be divided into panels not exceeding 6m2 with V-joints and deep trowel cuts

O.7 TERRAZZO

Terrazzo shall be applied in two coats. The undercoat shall be composed of one part cement and three parts sand and shall be finished with a wooden float. The finishing coat shall be composed of one part cement and two parts marble or stone aggregate of a colour and size to obtain the required colour and texture and shall be at least 12mm thick, and applied before the undercoat has dried out. The finishing coat shall be compacted by tamping or rolling until superfluous water has been expelled, finished with a steel trowel and cured for at least seven days after laying. The finished surface shall show at least 80% of the aggregate

Surfaces described as “polished” shall be polished by machine using various grades of abrasive and grouting with tinted cement as necessary between polishings

Surfaces described as “polished” shall be polished by machine using various grades of abrasive and grouting with tinted cement as necessary between polishings

Surfaces described as “brushed” shall be brushed with a steel wire brush on the day the terrazzo has been laid to expose the aggregate as required

Where required, brass or other dividing strips shall be embedded in the undercoat to finish flush with the finished surface

Three sample blocks, each size 300 x 300mm, as separately measured shall be prepared for approval by the Project Manager and kept in an accessible place on the site until the completion of the contract

O.8 SKIRTINGS

Skirtings shall not exceed 25mm thick and shall have a fair edge with arris or rounded external angle at top edge or V-joint to finish flush with plaster and coved or square junction with floor finish

O.9 THICKNESS OF PLASTER

All plaster, other than skim plaster, shall be not less than 10mm and not more than 20mm thick

O.10 CEMENT PLASTER

Cement plaster shall comply with the following table:

O.11 COMPO PLASTER

Compo plaster shall be composed of one part cement, two parts lime and nine parts sand

O.12 GYPSUM SKIM PLASTER

Gypsum skim plaster shall be pure gypsum plaster finished with a steel trowel

O.13 TWO COAT PLASTER WITH GYPSUM FINISH

Two coat plaster with gypsum finish shall comprise an undercoat of Class II cement plaster finished with a wooden float and a finishing coat of gypsum skim plaster

O.14 ROUGH-CAST PLASTER

Rough-cast plaster shall be applied in two coats. The undercoat shall be composed of one part cement and five parts sand finished with a wooden float. The finishing coat shall be composed of one part cement and three parts stone aggregate that will pass through a 4mm sieve. The finishing coat shall be flicked on with a machine before the undercoat has set to obtain an even texture

O.15 FINE ROUGH-CAST PLASTER

Fine rough-cast plaster shall be as for rough-cast plaster but the finishing coat shall be composed of one part cement and three parts coarse sand

0.16 GENERAL

Rates for plastering described as being on vertical surfaces of brickwork or blockwork shall include concrete columns, beams and lintels flush with the face of the wall

P. TILING

P.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Glazed ceramic wall tiles and fittings	SANS 22
Ceramic wall and floor tiles	SANS 1449
Common cement	SANS 50197-1(Class 32,5N)
Masonry cement	SANS 50413-1(Class 22,5X)
Aggregates from natural sources – Fine aggregates for plaster and mortar	SANS 1090
The design and installation of ceramic tiling	SANS 10107

P.2 TILES, MOSAICS, ETC

Tiles, mosaics, etc shall be even in shape and size, free from cracks, twists or blemishes and uniform in colour

P.3 PREPARATORY WORK

Surfaces shall be clean and free of oil and thoroughly wetted directly before any tiling is commenced. Concrete surfaces shall be slushed with a mixture of one part cement and one part coarse sand or otherwise treated to form a proper key

P.4 CERAMIC WALL AND FLOOR TILING

Where tiles are fixed to plaster or screeds with an adhesive, the adhesive shall be as recommended by the manufacturer of the tiles. Joints shall be straight, continuous and flush pointed with an approved grouting compound

P.5 GENERAL

Tiling described as “on walls” is on brick walls or block walls unless otherwise stated and shall include concrete columns, beams and lintels flush with the face of the wall

Q. PLUMBING AND DRAINAGE

Q.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Sheet metal

Sheet zinc	BS 849
Sheet aluminium	BS 1470
Sheet copper	BS 2870

Rainwater systems

Unplasticized poly(vinyl chloride) (PVC-U) components for external rainwater systems	SANS 11

Pipes and fittings

Steel pipes : Pipes suitable for threading and of nominal size not exceeding 150mm	SANS 62
Plain-ended solid drawn copper tubes for Potable water	SANS 460
Malleable cast iron fittings threaded to ISO 7-1	SANS 4
Polyethylene (PE) pipes for water supply – Specifications	SANS 4427
Cast iron fittings for asbestos cement pressure pipes	SANS 546
Vitrified clay sewer pipes and fittings	SANS 559
Reinforced concrete pressure pipes	SANS 676
Concrete non-pressure pipes	SANS 677
Cast iron pipes and pipe fittings for use above ground in drainage installations	SANS 746
Unplasticized poly(vinyl chloride) (PVC-U) sewer and drain pipes and pipe fittings	SANS 791
Fibre-cement pipes, couplings and fittings for sewerage, drainage and low-pressure irrigation	SANS 819
Pitch-impregnated fibre pipes and fittings and jointing	SANS 921
Unplasticized poly (vinyl chloride) (PVC-U) pressure pipe systems	SANS 966-1
Unplasticized poly(vinyl chloride) (PVC-U) soil, waste and vent pipes and pipe fittings	SANS 967
Rubber joint rings (non-cellular)	SANS 974-1
Copper-based fittings for copper tubes	SANS 1067-1&2
Fibre-cement pressure pipes and couplings	SANS 1223
Polypropylene pressure pipes	SANS 1315
Non-metallic waste traps	SANS 1321-1&2
Vent valves for drainage installations	SANS 1532
Heavy duty cast iron pipe fittings for drainage and gas and water supplies	BS 78

Lead pipes	BS 602
Cast iron pressure pipes for use in drainage and gas and water supplies	BS 1211
Stainless steel pipes for use with compression fittings	BS 4127

Sanitary fittings etc

Stainless steel sinks with draining boards (for domestic use)	SANS 242
Stainless steel wash-hand basins and wash troughs	SANS 906
Stainless steel sinks for institutional use	SANS 907
Stainless steel stall urinals	SANS 924
Acrylic sanitary ware : Baths	SANS 1402-1
Glazed ceramic sanitary ware	SANS 497
WC flushing cisterns	SANS 821
Flush valves for WC flushing cisterns	SANS 1509

Taps, valves etc

Water taps (metallic bodies)	SANS 226
Water taps (plastic bodies)	SANS 1021
Single control mixer taps	SANS 1480
Float valves	SANS 752
Plastic floats for ball valves	SANS 1006
Functional control valves and safety valves for Domestic hot and cold water supply systems	SANS 198
Cast iron gate valves for waterworks	SANS 664
Automatic shut-off flush valves for water closets and urinals	SANS 1240
Check valves (flanged and wafer types)	SANS 1551-1&2

Fire extinguishers

Portable refillable fire extinguishers	SANS 1910
Portable rechargeble fire extinguishers : Halogenated hydrocarbon type extinguishers	SANS 1151

Water heaters and fire hose reels

Fixed electric storage water heaters	SANS 151
Fire hose reels (with semi-rigid hose)	SANS 543

Drainage covers, gratings, etc

Cast iron surface boxes and manhole and inspection covers and frames	SANS 558
Cast iron gratings for gullies and stormwater drains	SANS 1115
The installation of polyethylene and poly (vinyl chloride) (PVC-U and PVC-M) pipes	SANS 10112
Water supply and drainage for buildings	SANS 10252-1&2
Cast iron step irons	BS 1247

Q.2 GENERAL

Q.2.1 Excavations

Excavations shall be deemed to be in “earth”. Backfilling to excavations shall be executed in 300mm thick layers, watered and compacted. Surplus excavated material shall be spread and levelled over site as directed

Q.2.2 Concrete

Unreinforced concrete shall be Class B prescribed mix concrete and reinforced and precast concrete shall be Class C prescribed mix concrete

Q.2.3 Brickwork

Brickwork shall be of extra hard burnt bricks built in Class I mortar

Q.2.4 Plaster

Plaster shall be 1:3 cement plaster finished smooth with a steel trowel. All angles shall be rounded

Q.2.5 Diameters of pipes etc

Diameters stated for pipes, traps, valves, etc are internal diameters except PVC, polyethylene, stainless steel and copper pipes and traps for which external diameters are stated

Q.3 SHEET METAL WORK

Q.3.1 Galvanized sheet iron

Galvanized sheet iron shall be rolled steel sheet coated on both sides with Class Z275, unless otherwise specified, zinc coating complying with SANS 3575/4998. Sheets shall be free from white rust

Q.4 EAVES GUTTERS

Q.4.1 Galvanized sheet iron gutters

Galvanized sheet iron gutters shall have beaded edges and all joints shall be riveted and soldered. Angles shall be strengthened with 50 x 0,6mm galvanized sheet iron strips soldered on over the internal faces of mitres

Gutters shall be fixed with falls to outlets on 30 x 3mm galvanized mild steel brackets, bent to the shape of gutters, with front ends taken up to the underside of beaded edge of gutter and each screwed to roof timbers or bolted to fibre-cement fascias with 6mm galvanized gutter bolts. Gutters shall be bolted to brackets at front with 6mm galvanized gutter bolts, one to each bracket

Brackets shall be positioned at joints of gutters and intermediately at not exceeding 1,25m centres

Q.4.2 Fibre-cement gutters

Fibre-cement gutters shall have spigot and socket joints. Gutters shall be fixed with falls to outlets on standard aluminium alloy brackets, screwed or bolted to roof timbers or fascias

Q.4.3 Unplasticized polyvinyl chloride (UPVC) gutters

Gutters shall be fixed with falls to outlets on brackets as supplied by the manufacturer, screwed or bolted to roof timbers or fascias

Q.4.4 Aluminium gutters

Aluminium gutters shall be roll formed on site to required lengths and profiles from 3003H14-3SH4 alloy strip not less than 0,7mm thick factory coated on both sides with baked enamel and two coats of silicone modified polyester to a total minimum thickness of 20 micrometres. Angles, stopped ends, etc shall be prefabricated units pop riveted to gutters with joints sealed with mastic. The guttering shall be in continuous lengths between angles, stopped ends, etc

Q.5 RAINWATER PIPES

Q.5.1 Galvanized sheet iron pipes

Galvanized sheet iron pipes shall have seams at the back and shall be jointed with soldered slip joints. Pipes shall be fixed to walls etc with galvanized mild steel holderbats spaced at not exceeding 2m centres with tails driven in or cut and pinned in 1:3 cement mortar

Q.5.2 Fibre-cement pipes

Fibre-cement pipes shall have spigot and socket joints. Pipes shall be fixed to walls etc with standard aluminium alloy holderbats with tails driven in or cut and pinned in 1:3 cement mortar

Q.5.3 Unplasticized polyvinyl chloride (UPVC) pipes

Pipes shall be fixed to walls etc with patented UPVC or aluminium clips and holderbats as supplied by the manufacturer of the pipe

Q.5.4 Aluminium pipes

Aluminium pipes and fixing straps shall be formed from 3003H14-3SH4 alloy strip not less than 0,7mm thick factory coated on both sides as described for aluminium gutters. Pipes shall be in continuous lengths with formed angles, offsets, shoes, etc. Pipes shall be fixed to walls etc with 20 x 0,6mm straps at not exceeding 1,5m centres screwed to 25 x 75 x 100mm hardwood chamfered and oiled blocks plugged to walls

Q.6 STORMWATER CHANNELS

In-situ concrete stormwater channels shall be constructed of unreinforced concrete with segmental channel formed in top. Channels shall be laid to falls on a well rammed earth bottom and finished smooth on exposed surfaces

Precast concrete channels shall be of 25 MPa concrete, generally in 1m lengths, finished smooth from the mould on exposed surfaces, laid to falls on a well rammed earth bottom, jointed in 1:3 cement mortar and pointed with keyed joints

Q.7 JOINTS

Q.8 FIXING OF PIPES

Q.9 PIPES LAID IN GROUND

Q.10 CLEANING EYE LIDS

Q.11 CLEANING EYES

Cleaning eyes shall consist of cast iron frames and lids with letters “CE” (or “SO”) cast in lids. The lids shall be secured with non-ferrous metal screws. Frames shall be jointed to vertical drain pipes. Cleaning eyes shall be encased in unreinforced concrete taken up to ground level and plastered on exposed surfaces

Q.12 INSPECTION EYE MARKER SLABS

Inspection eye marker slabs shall be 350 x 350 x 50mm thick precast concrete finished smooth from the mould, with letters “IE” (or “IO”) formed in top and placed flush in ground or paving

Q.13 GULLEYS

Gulleys shall be built up of traps, vertical piping and gulley heads with loose gratings, all encased in unreinforced concrete to finish flush with gulley head top and taken up to at least 50mm above surrounding finished surfaces. The outer top edge of the concrete encasing shall be splayed and the exposed surfaces plastered

Q.14 DISHED GULLEYS

Dished gulleys shall be built up of traps, vertical piping and gulley heads with loose gratings, all encased in unreinforced concrete and with dished unreinforced concrete hopper size 450 x 450mm overall around gulley head with rounded kerb 50mm wide to front and sides and 25mm wide at back, 100mm high above top of dishing and the hopper plastered on exposed surfaces. Top of hopper shall be taken up to at least 50mm above surrounding finished surfaces

Q.15 SUMPS, CATCHPITS, INSPECTION CHAMBERS, ETC

Q.15.1 Rainwater sumps

Rainwater sumps shall be built with half-brick sides on 100mm thick unreinforced concrete bottom, plastered internally on walls and with 80mm high unreinforced concrete kerb at top rebated for grating or cover and plastered on exposed surfaces

Q.15.2 Stormwater catchpits and inspection chambers

Brick catchpits and inspection chambers shall be built with one-brick sides on 150mm thick unreinforced concrete bottom projecting 100mm beyond walls all round, plastered internally on walls and with 100mm thick reinforced concrete cover slab with opening rebated for frame of grating or cover and plastered on exposed surfaces

Precast concrete catchpits and inspection chambers shall be constructed in accordance with the applicable details shown on Drawing LE-1 of SANS 1200LE. Precast concrete manhole sections and slabs shall comply with SANS 1294 and pipes shall be SC type and in accordance with SANS 677

Q.15.3 Sewer inspection chambers

Brick inspection chambers shall be built as for brick stormwater inspection chambers and with the bottom of the chamber well benched around half round channels, bends, junctions, etc up to sides of chamber in unreinforced concrete finished smooth

Precast concrete inspection chambers shall be constructed in accordance with the applicable details shown on Drawing LD-5 of SANS 1200LD. Precast concrete manhole sections and slabs shall comply with SANS 1294 and the pipes shall be SC type in accordance with SANS 677

Q.15.4 Stormwater drain junction boxes

Junction boxes shall be formed of 150mm thick unreinforced concrete bottom and sides to suit the various sizes of the drain pipes and built after the pipes have been laid, with the sides taken up slightly higher than the highest pipe and finished level on top for and covered with a 75mm thick loose precast concrete slab

Q.15.5 Step irons

Where inspection chambers exceed 1,2m deep, cast iron step irons shall be provided, built into the wall at 300mm centres and staggered regularly in vertical rows spaced at 200mm centres horizontally

Q.16 STOPCOCK AND METER BOXES

Stopcock and meter boxes shall be built with half-brick sides with a cast iron box and lid complying with SANS 558 set in 75mm wide unreinforced concrete kerb for the full depth of the cast iron box and plastered on exposed surfaces

Q.17 VALVE CHAMBERS

Valve chambers shall be built with half-brick sides with 100mm thick unreinforced concrete kerb to top with rebate for cover and frame to finish flush with adjacent paving or finished ground level and plastered on exposed surfaces

Q.18 CAST IRON COVERS, GRATINGS, ETC

All cast iron covers, gratings, frames and surface boxes shall be coated with preservative solution. Frames shall be cast into concrete. Covers, except covers to stormwater drainage or electrical cable inspection chambers, shall be set in grease

Q.19 CONCRETE ENCASING

Concrete encasing for pipes, bends, traps, gulleys, grease traps, etc shall be unreinforced concrete not less than 100mm thick all round

Q.20 SANITARY FITTINGS

Q.20.1 General

Glazed ceramic, acrylic and porcelain enamelled sanitary fittings and component parts shall be white. Accessories for sanitary fittings shall be chromium plated brass

Waste outlets for baths, basins, etc shall comprise chromium plated brass waste union with grating, rubber washers and locknut, fitted with rubber or vulcanite plug on a chromium plated brass chain and stay

Q.20.2 Stainless steel sanitary fittings

Stainless steel sinks and draining boards, basins, wash troughs and urinals shall be AISI Type 304 satin finished stainless steel. All stainless steel fittings shall be treated on the back with a vermin proof sound deadening coating. Sinks, basins and wash troughs shall be provided with 40mm diameter screwed waste outlets

Q.20.3 Precast concrete wash troughs

Reinforced precast concrete wash troughs shall have a sloping front with ribbed rubbing surface and shall be finished smooth on exposed faces with top edges and inner angles rounded. Each compartment shall be fitted with a 40mm diameter waste outlet. Wash troughs shall each be supported on two reinforced precast concrete pedestals finished smooth on exposed faces

Q.20.4 Steel baths

Steel baths shall be porcelain enamelled internally and painted externally and fitted with waste outlet and overflow grating with coupling

Q.20.5 Acrylic resinous baths

Acrylic resinous baths shall be fitted with waste outlet and overflow grating with coupling

Q.20.6 Acrylic resinous wash hand basins

Acrylic resinous wash hand basins and vanity units shall have a smooth high gloss finish, with outlet openings, soap recesses, tap-holes and integral overflow and shall be fitted with waste outlet and overflow grating with coupling

Q.20.7 Glazed ceramic sanitary fittings

Sinks shall be provided with integral weir overflows

Washdown closet pans shall have washdown action and be provided with smooth finished injection moulded polypropylene heavy duty double flap seats fixed with non-ferrous bolts. Urinal channels shall be provided with outlet gratings fitted in bitumen

Q.20.8 Flush and sparge pipes

Flush pipes for high level cisterns shall be of plastic or drawn galvanized steel

Flushpipes for low level cisterns shall be of plastic

Flush and sparge pipes for urinals with high level cisterns shall be of chromium plated copper piping and of the sizes recommended by the manufacturer of the urinal

Q.21 INSTALLATION OF SANITARY FITTINGS

Sanitary fittings shall be installed as follows:

Q.21.1 Precast concrete wash troughs

Precast concrete wash troughs shall be bedded on top of pedestals which shall be bedded on floors in 1:3 cement mortar

Q.21.2 Stainless steel wash troughs and wash hand basins

Stainless steel wash troughs and wash hand basins shall be fixed to walls on a pair of galvanized mild steel gallows brackets bolted to wall with 6mm diameter expanding bolts

Q.21.3 Acrylic resinous wash hand basins

Acrylic resinous wash hand basins shall be fixed to walls on a pair of standard painted cast iron brackets screwed to underside of basin and bolted to wall with 6mm diameter expanding bolts

Q.21.4 Ceramic wash hand basins

Ceramic wash hand basins shall be fixed to walls on a pair of standard painted steel or cast iron brackets bolted to wall with 6mm diameter expanding bolts

Q.21.5 Acrylic resinous baths

Acrylic resinous baths shall be bedded in 1:5 cement mortar on three cross rows of bricks or bedded solid on a layer of dry river sand and fixed to wall with galvanized steel brackets under edges (in the middle of the sides against walls) bolted to wall with 6mm diameter expanding bolts and sealed along top against wall finishes with patent mildew resistant silicone rubber

Q.21.6 Washdown closet pans and cisterns

Washdown closet pans shall be bedded on floors in 1:3 cement mortar. Cisterns shall be fixed to walls with 6mm diameter expanding bolts

Q.21.7 Ceramic urinals

Ceramic stall and slab urinals shall be bedded on floors and against walls in 1:3 cement mortar. Slabs, channels, treads, etc shall be jointed in 1:3 cement mortar and pointed in white cement

Ceramic bowl urinals shall be fixed to walls on standard steel brackets bolted to wall with 6mm diameter expanding bolts. Cisterns shall be fixed to walls on standard brackets bolted to wall with 6mm diameter expanding bolts

Q.21.8 Stainless steel urinals

Stainless steel stall and slab urinals shall be bedded on floors in 1:3 cement mortar and with backs and sides against walls filled in with fine unreinforced concrete. Cisterns shall be fixed as cisterns for ceramic urinals

Q.22 FIRE HOSE REELS

Fire hose reels shall each be fitted with a 30m long hose of internal diameter not less than 19mm with a 4,8mm internal diameter chromium plated brass nozzle

Q.23 FIRE EXTINGUISHERS

All fire extinguishers shall be fully charged

Q.24 TESTS

Sewerage pipe lines, sanitary plumbing including fittings and hot and cold water supply and fire service shall be tested to the approval of the Project Manager and Local Authority

The Contractor shall provide all testing apparatus, material and labour required for the tests and inspections

R. GLAZING

R.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Glass in building	SANS 50572-1 to 5
Glazing putty for wooden and metal window frames	SANS 680
Silvered glass mirrors for general use	SANS 1236
Safety and security glazing materials for buildings	SANS 1263-1 to 3
Sealing compounds for the building industry, one Component, silicone-rubber based	SANS 1305
The installation of glazing materials in buildings	SANS 10137
Work on glass for glazing	SANS 1817

R.2 PUTTY ETC

Glazing putty shall be Type I for wooden sashes and Type II for steel sashes. Putty for glazing to unpainted hardwood shall be tinted to match the colour of the wood

Back putty shall not exceed 3mm thick. Putty shall not be painted until it has formed a surface crust, and if the putty does not form a surface crust it shall be replaced

Butyl putty shall be used where glass is to be fixed in aluminium sashes with glazing beads

Non-setting compounds shall be used where laminated glass is fixed in sashes with glazing beads

S. PAINTWORK

S.1 MATERIALS AND WORKMANSHIP

Materials and workmanship shall comply with the following standards:

Decorative paint for interior use	SANS 515
Decorative high gloss enamel paints	SANS 630
Primers for wood (for external work)	SANS 678
Primers for wood (for internal work)	SANS 678
Zinc phosphate primer for steel	SANS 1319
Undercoats for paints (except emulsion paint)	SANS 681
Aluminium paint	SANS 682
Varnish for interior use	SANS 887
Emulsion paints	SANS 1586

Materials for paintwork shall be delivered to the site in unopened containers and applied in accordance with the manufacturer's instructions. Materials shall be suitable for application to the surfaces concerned. Undercoats shall be as recommended by the manufacturer of the finishing coats

S.2 PREPARATORY WORK

S.2.1 Plastered surfaces etc

Plastered surfaces shall be thoroughly inspected and, if necessary, washed down and brushed in order to remove any traces of efflorescence and allowed to dry completely before any paint finish is applied. Before any paint is applied, holes, cracks and irregularities in plaster and other surfaces shall be filled with a suitable filler and finished smooth. Unfinished concrete surfaces shall have all projections rubbed off and shall be thoroughly cleaned with a spirits-of-salts solution (1 part concentrated spirits-of-salts to 4 parts water)

S.2.2 Metal surfaces

Metal surfaces shall be sanded, where necessary, washed with a suitable cleaning agent and left smooth

Protective coatings applied by manufacturers to galvanized metal surfaces shall be removed with a suitable agent and the surfaces washed down

Rust, grease and defective factory primers on metal surfaces, as well as pitch on cast iron pipes, shall be removed

S.2.3 Wood surfaces

Knots in woodwork shall be treated with knotting. Minor blemishes shall be filled with a suitable filler. Wood surfaces shall be sanded smooth

S.3 APPLICATION OF PAINT

Primers to wood surfaces shall be applied by brush. Primers to other surfaces may be applied by roller with the approval of the Project Manager. Undercoats and finishing coats may be applied by brush or roller

Paint shall not be sprayed on except in the case of cellulose and other special paints where spray painting is the accepted method of application

Before subsequent coats of paint are applied the previous coat shall be properly dry and shall be sanded down where necessary 42

S.4 COLOUR SCHEME

A colour scheme comprising colours and the blending of colours approved by the Project Manager shall be used for the paintwork. The tints of the undercoats shall closely match the finishing coat but nevertheless differ sufficiently to indicate the number of undercoats. Colour samples of the finishing coats shall be provided in all cases

S.5 GENERAL

Paintwork shall include the preparation of surfaces, filling, stopping, sanding and priming of nail heads and screws. Where windows, sashes, etc are to be painted, the rebates of the openings to be glazed shall be primed

T. PAPERHANGING

T.1 PREPARATORY WORK

Plaster surfaces to be papered shall be dry, thoroughly cleaned down, filled with a suitable filler as necessary to obtain a smooth surface and painted thereafter with a single coat of emulsion paint

Wood surfaces to be papered shall be knotted, stopped and sanded

T.2 PAPERHANGING

Wallpaper shall be hung in vertical long lengths. Vertical joints shall be close-fitted and plumb and the paper shall be tightly fitted to skirtings, ceilings, door frames, windows, etc. Horizontal joints will not be allowed

U. EXTERNAL WORKS

U.1 GENERAL

U.1.1 Excavations

Excavations shall be deemed to be in “earth”

U.2 LANDSCAPING

U.2.1 Topsoil

Topsoil shall vary between sandy loamy soil and sandy clayey soil with an ideal composition of 15% to 25% clay, 10% silt/sludge and 65% to 75% sand, with a minimum ratio of organic material of 2%. All material shall be free of harmful deposits as well as unwanted seeds

U.2.2 Compost

Compost shall be composed of properly decayed organic material, free from harmful deposits, salts, seeds and other waste material and shall have a pH of more than 4 and less than 7

U.2.3 Mulch

Mulch shall be approved organic material free from small particles of bark residue, fungus, disease, etc

U.2.4 Lime

Lime shall be agricultural lime of an approved manufacture

U.2.5 Fertilizer

Fertilizer shall be of the type specified, mixed thoroughly into the soil as prescribed. No fertilizer shall be added more than two weeks prior to planting

U.2.6 Backfilling

Backfilling in plant and tree holes shall be composed of two parts topsoil to one part compost mixed thoroughly together and compacted by foot in 100mm layers. Fertilizer shall only be added if prescribed

U.2.7 Pebbles

Pebbles shall be smooth with a uniform colour and form and ranging in size from 50mm to 75mm diameter. Removal of pebbles from river beds shall be done selectively to avoid any major disruption to the ecology of the river and environment

U.2.8 Plant material

U.2.8.1 General

All plant material (plants, shrubs, trees, etc) shall be obtained from a registered nursery and shall be free from damaged parts, parasites, fungus, other plant diseases or insects. No container-bound plants will be acceptable

U.2.8.2 Trees

The height of trees described in the bills of quantities shall be measured from the top of the root ball to the top of the tree. Where trees are pruned, such prune wounds shall not be more than 25mm in diameter and be sealed with an approved sealing compound

U.2.8.3 Shrubs and small plants

Shrubs and small plants shall meet the requirements for height and spread as specified. Thin or sparsely branched plants shall not be accepted. Branches shall be well spread with ample young branches and the plant as a whole shall be growing well

U.2.8.4 Groundcover

Groundcover shall be dense and healthy and shall comply with the minimum requirements for leaf density as specified

Formal grass shall be planted as runners in 50mm deep drills at 150mm centres unless otherwise described

U.2.9 Cultivation and preparation of planting areas etc

All surface rocks and stones larger than 50mm shall be removed before commencing cultivation and preparation. The entire area shall be ripped and rotavated using approved machinery by breaking up the earth to a depth of 300mm at 600mm centres in both directions, unless otherwise described, and then levelled. Where fertilizer or compost is specified, it shall be worked into the topsoil after ripping and rotavation to a depth of 300mm and finished to final levels

All fertilizer to areas to be grassed shall be strewn on the final layer before final finishing is commenced and worked mechanically into the top 150mm soil

U.2.10 Planting procedure

Holes for shrubs and groundcover shall be as follows:

Shrubs – 500 x 500 x 500mm deep

Groundcover – 300 x 300 x 300mm deep (if not planted in drills)

Holes for trees shall be square, of adequate size to accommodate the root system and suitable for the height of the tree

All plant material shall be watered thoroughly before careful removal from the container and planted in the prescribed planting medium with the top of the soil in the container finishing level with the surrounding area. Water dams size 800mm diameter x 150mm deep and 500mm diameter x 150mm deep shall be formed around trees and shrubs respectively and all planting material shall be watered immediately after planting. Trees, shrubs, etc shall be properly staked or stayed, depending on their size, on the prevailing windy side with patent tree ties

U.2.11 Maintenance

All planted areas shall be maintained for a period of three months after practical completion as defined in the contract with the exception of hydroseeded areas which shall be maintained for 12 months after an acceptable cover has been obtained

This maintenance shall consist of keeping clear of weeds and litter, loosening soil where necessary every two weeks, replacing damaged, diseased or dead plants, pruning, cutting and mowing as necessary and watering so as to keep the plant material in a healthy growing condition

U.3 ROADWORK

U.3.1 Filling

Filling under roads etc shall be of inert material having a maximum plasticity index of 10, free from large stones etc spread, levelled, watered and compacted in layers not exceeding 200mm thick to a density of 98% Mod AASHTO

U.3.2 Preparation of sub-grade

The sub-grade shall be prepared by scarifying for a depth of 150mm and compacting to a density of 98% Mod. AASHTO, including trimming to the correct levels and grades

U.3.3 Base course

The base course shall consist of crusher run stone compacted to a density of 98% Mod. AASHTO and finished to the correct levels and grades

U.3.4 Weed killer

The completed sub-grade shall be treated with an approved total weed killer

U.3.5 Bituminous premix road surfacing

Before spreading the premix material, the base course shall be swept clean and free from all dust, dirt and loose particles, lightly wetted and sprayed with a prime coat of cutback bitumen complying with SANS 308 at the rate of 1 litre/m2

The material shall consist of semi-gap graded crushed stone aggregate having the following grading:

Sieve size (mm)	**% By mass passing sieve**
13,2	100
4,75	45-60
2,36	42-55
1,18	40-52
0,3	25-45
0,075	5-12

The aggregate shall be mixed with bituminous road tar binder complying with SANS 748 at the rate of 1m3 of stone to 120 litre of emulsion at atmospheric temperature

The binder shall be added to the stone and mixed until the stone is uniformly coated. Thereafter 5% of clean, dry quartzitic sand shall be added and mixed until evenly distributed through the mixture

The premix shall be applied only after the primer has dried out completely and shall be spread immediately after mixing and rolled on the same day

Spreading shall be done evenly over the prepared base course to a loose depth sufficient to ensure the consolidated thickness specified

Rolling shall commence as soon as the binder has set sufficiently, followed after three days by a final rolling

U.3.6 Precast concrete block road surfacing

Paving blocks shall be precast concrete blocks complying with SANS 1058

Blocks shall be laid to true levels and grades on and including a 25mm thick layer of river sand with joints exceeding 2mm and not exceeding 6mm wide

After laying, the paving shall be compacted by means of a vibrating plate compactor, with joints between the blocks filled in, after compaction, by sweeping in fine sand

Infill areas at edges of paving constituting less than 25% of a full block unit and of 25mm minimum dimension shall be filled with Class C prescribed mix unreinforced concrete with top surface trowelled smooth to match blocks. Smaller areas shall be filled with 1:4 cement mortar

U.3.7 Precast concrete kerbs and channels

Precast concrete kerbs and channels shall comply with SANS 927, generally in 1m lengths and finished smooth from the mould on exposed surfaces. Kerbs and channels shall be bedded on and jointed in 1:3 cement mortar and pointed with keyed joints. Bases to kerbs shall be Class B prescribed mix unreinforced concrete

U.3.8 Process control tests

The Contractor shall be responsible for carrying out all necessary process control tests on the density and moisture content of the compacted sub-grade, base course, etc to ensure that the required compaction is being attained

U.4 FENCING ETC

U.4.1 Materials

Materials and workmanship shall comply with the following specifications and requirements :

Wooden poles, droppers, guardrail posts and spacer blocks	SANS 457-2&3
Zinc-coated fencing wire	SANS 675
Prefabricated concrete components for fencing	SANS 1372
Chain-link fencing and its wire accessories	SANS 1373
Fasteners	SANS 1700
Anti-intruder fences	CKS 451
Metal droppers and standards	CKS 451

U.4.2 Galvanized wire

All galvanized wire shall be zinc coated wire with Class B zinc coating. Straining wire shall be 4mm diameter galvanized mild steel wire. Tie wire shall be 1,6mm diameter galvanized mild steel wire

U.4.3 Plastic coated wire

Plastic coated straining wire shall be 3,15mm diameter Class C galvanized mild steel wire plastic coated to an overall diameter of 3,95mm

Plastic coated tie wire shall be 1,8mm diameter Class C galvanized mild steel wire plastic coated to an overall diameter of 2,5mm

U.4.4 Galvanized barbed wire

Galvanized barbed wire shall be 2,5mm diameter mild steel double strand reverse twist zinc coated barbed wire with Class A zinc coating

U.4.5 Galvanized wire mesh

Galvanized wire mesh shall be 50mm mesh chain link netting of 2,5mm diameter Class C galvanized mild steel wire

U.4.6 Plastic coated wire mesh

Plastic coated wire mesh shall be 50mm mesh chain link netting of 2,5mm diameter Class C galvanized mild steel wire plastic coated to an overall diameter of 3,25mm

U.4.7 Galvanized welded wire mesh

Galvanized welded wire mesh shall be fabricated from pre-galvanized wires to rectangular pattern welded together at each intersection using a welding method which forms a zinc oxide protective coating at each intersection

U.4.8 Razor wire

Razor wire shall be fabricated from 2,5mm diameter galvanized high tensile steel wire fitted with razor barbs formed of 0,5mm galvanized steel strip clipped on at 37,5mm centres

U.4.9 Metal droppers and standards

Droppers shall be of ridged T-section mild steel with a mass of not less than 0,55kg/m. Standards shall be of I-section mild steel with a mass of not less than 3kg/m or of ridged edge Y-section mild steel with a mass of not less than 2,5kg/m, and shall be driven 600mm deep into the ground

Droppers and standards shall have either galvanized, sprayed metal or painted finish as described in the items and in accordance with CKS 451. In addition, those surfaces of standards embedded in the ground shall be coated with bitumen

U.4.10 Metal posts and stays

Posts and stays shall comply with CKS 451 and shall be of black galvanized mild steel tubing as specified

Straining posts shall be of 108mm outside diameter x 3mm wall thickness tubing, each with a 300 x 300 x 5mm thick mild steel sole plate and a steel cap welded on

Intermediate posts shall be of 50mm outside diameter x 2,5mm wall thickness tubing, each with a 230 x 230 x 5mm thick mild steel sole plate and a steel cap welded on

Stays for straining posts shall be of 50mm outside diameter x 2,5mm wall thickness tubing, each with a 230 x 230 x 5mm thick mild steel sole plate welded on and fixed raking with top end flattened, bent, holed and bolted to straining post with and including a 5mm diameter galvanized mild steel bolt with nut and washer

Posts and stays shall have either galvanized or painted finish as described in the items and in accordance with CKS 451. In addition, sole plates and portions of posts and stays embedded in ground shall be coated with bitumen

U.4.11 Timber posts, stays and droppers

Timber posts shall be 125mm diameter, timber stays shall be 100mm diameter and timber droppers shall be 30mm diameter

U.4.12 Prestressed concrete posts and stays

Prestressed concrete posts and stays shall be finished smooth from the mould and uniformly stressed by means of high tensile longitudinal prestressing wires with concrete cover to wires of not less than 20mm

Corner and straining posts shall be 100 x 100mm and intermediate posts and stays shall be 75 x 75mm. Stays shall be fixed raking with top end splayed and glued to posts with a suitable epoxy compound

U.4.13 Bolts, nuts and washers

Straining eye bolts, hinge bolts, bolts, nuts and washers shall be galvanized

U.4.14 Precast concrete fencing

Precast concrete fencing over sloping terrain shall be stepped to suit terrain, including the use of increased lengths of posts as necessary, excavation, etc

U.4.15 Concrete bases

Bases in ground for posts, stays, etc shall be of Class B prescribed mix concrete with tops 100mm below surface of ground

Sizes of concrete bases for posts, stays, etc shall be as follows:

Straining and gate posts	–	450 x 450 x 700mm deep
Intermediate posts	–	300 x 300 x 600mm deep
Stays	–	600 x 300 x 500mm deep

U.4.16 Security overhangs

Where fencing is described as having a security overhang, the posts and standards shall have angular (single arm) extension arms

Extension arms shall be attached to the posts and standards by welding in the case of steel and by spiking in the case of timber

Concrete extension arms shall be cast integrally with the post or standard

Barbed wire to security overhangs shall be tightly strained and wired at each intersection with extension arms and shall have barbed wire braces at 450mm centres between standards, posts, etc wired onto the barbed wire and the top straining wire

U.4.17 Gates

Gates shall be formed of 40mm outside diameter x 2,5mm wall thickness mild steel tubular framework with welded joints, strongly braced as necessary and filled in with wire mesh as described above, properly strained and securely bound to framework with tie wire

NOTES TO TENDERERS

ROAD MAINTENANCE AT CAMDEN POWER STATION

NOTES TO TENDERERS

NOTES TO TENDERERS

1. BILLS OF QUANTITIES

This document comprises Notes to Tenderers and Bills of Quantities and is hereafter referred to as "the Bills of Quantities".

The Tenderers are to note that this is a Contract with a Bills of Quantities.

2.1 CONTRACT DOCUMENTS

The contract documents will consist of:

2.1.1 The NEC3 Engineering and Construction Contract Third Edition 2013 together with all amendments.

2.1.2 These Bills of Quantities, including all annexures and supplementary documentation referred to therein.

2.1.3 Documents to be provided by the Contractor in terms of the requirements of these Bills of Quantities.

2.1.4 Construction Regulations 2014

2.1.5 Occupational Health and Safety Act of 1993

2.1.6 National Road Traffic Act 1966(Act no 93 of 1966) and National Road Traffic Regulation 2000

2.1.7 The South African National Roads Agency Limited ("SANRAL") was established in terms of the South African National Roads Agency Limited and The National Roads Act, 1998 (Act No 7 of 1998) ("the SANRAL Act").

2.1.8 SANRAL Act provides for the establishment of SAMRAL to manage and control the Republics national roads system and take charge of the development, maintenance, and rehabilitation of national roads within the framework of government policy.

2.2 DRAWINGS

There are no drawings availble for this project

3.VALUE ADDED TAX

Tenderers should compute their rates from the net costs (excluding Value Added Tax). Value Added Tax at the current rate of 15% is to be added to the net sub-total on the final summary page by means of a single sum calculation to establish the tender price.

4.SCOPE OF WORK

As a guide only, the work comprises as follows:-

Maintenance of the External and Internal roads at Camden Power station including but not limited to fixing of Pot Holes, Gravel roads, Repair of inlet drains, cleaning stormwater side drains and Road Markings.

5. POSSESSION OF SITE

The date of which possession of the Site shall be given to the Contractor shall be within 7 **working days** of the acceptance of this tender.

6.CONSTRUCTION PERIOD - DATES FOR PRACTICAL COMPLETION

The intended date for practical completion and penalty for each calendar day for non-completion shall be:

Practical Completion: _60_Month from the date of Site Handover

7. TENDERS

Tenderers are required to visit the site of the Works before tendering and must obtain a signature from the Employer or his duly authorised representative to the effect that they have done so. Failure to visit the site and to submit the Certificate of Acquaintance with the tender will result in the rejection of the tender.

A Non compulsory site inspection will be conducted.

The Employer will not be liable for any costs incurred in the preparation of the tender nor will he be bound to accept the lowest or any portion of any tender.

8. COMMON LAW OR BY-LAW REQUIREMENTS

No liability for not specifically mentioning any normal contractual, Common Law or By-Law requirements will be accepted by the Employer, or Contracts Manager.

9. AREA OF WORKS

The Tenderer shall ascertain by personal viewing of the site any restrictions to the area that may be occupied by the contractor including any restrictions imposed by any buildings, etc. and any limitations or restrictions that may be imposed by Eskom Engineers.

Access to the site shall be logically planned and enclosed to ensure minimum disruption to existing user operations.

The contractor is deemed to have allowed for all necessary temporary fencing, screening, hoardings, etc.

Space for the storage of Materials must be arranged with the Contracts Manager

The Contractor shall make all necessary provisions in all rates to take into account these requirements as no claims for extras arising from these matters will be subsequently entertained as admitted. Tenderers will be held responsible for any misunderstanding of incorrect information, however obtained, except information which may have been given in writing over the signature of the Contracts Manager.

10.MANAGEMENT OF WORKS

The Contractor shall, to the satisfaction of the Contracts Manager, provide, in addition to the Contractor's Site Representative, the services of an experienced and competent Construction Manager.

The names and CV's of the Contractor's proposed Management Team shall be submitted to the Contracts Manager prior to commencement on site and, after the Contracts Manager's agreement on the composition and competence thereof has been obtained, no changes shall be made nor shall any member of the said team be removed from the project while remaining in the employ of the Contractor without the Contracts Manager's prior written approval.

The Contractor shall make necessary provisions in all rates to take into account these requirements as no claims for extras arising from these matters will be subsequently entertained or admitted.

11. INSPECTION OF WORK

The Contractor shall obtain all local authority approvals if required and shall ensure that all work is also approved by the Contracts Manager prior to covering up. The fact that the work will be inspected periodically in no way absolves the Contractor from total responsibility for the quality of his workmanship and for compliance with the specification. He shall timeously notify the Contracts Manager so that inspections can be arranged.

12. SITE CLEANLINESS

The Contractor shall clear away all dirt, rubbish and superfluous material as they accumulate and leave the whole of the site clean and tidy on completion to the satisfaction of the Contracts Manager. The Contractor is advised that the adjacent site is functional at all times and that the incumbents should not be unduly inconvenienced.

13. ORDERING OF MATERIALS

No claims will be entertained due to non-availability of materials or labour. The Tenderer is therefore required to investigate and ensure that the specific materials and components required for the works will be available at the relevant estimated construction times, at the time of tendering.

14. PROGRAMME

The Contractor will be required to submit an outline programme of work to completion of the contract with the issue of the Form of Offer and Acceptance.

15. CONTRACT PRICE ADJUSTMENT

The Contract Sum shall be be subject to CPA

16. PRICED BILLS OF QUANTITIES:

Tenderers must submit to the Contracts Manager a copy of the Bills of Quantities fully priced and extended, with his tender. After the Bills have been checked, and when called upon, each page of the Bills of Quantities shall be initialled and the Index page and the Final Summary page signed in full by the Tenderer.

17. PAYMENT OF PRELIMINARIES:

Tenderers are to note that the Payment of Preliminaries & Generals shall be on the NEC3 Engineering and Construction Engineering and Construction Standard Contract third Edition third Edition [Prorated to the Value of Work Executed]

18. ADJUSTMENT OF PRELIMINARIES:

Tenderers are to note that the Adjustment of Preliminaries & Generals shall be on NEC3 Engineering and Construction Standard Contract third Edition third Edition [Fixed - 10%, Value - 15% and Time - 75%]

19. DIFFERENCE AND DISCREPANCIES:

Should there be any difference or discrepancy between the prices or particulars contained in the official Tender Form and those contained in any covering letter from the Tenderer, the prices contained in the official Tender Form shall prevail.

Every Tenderer shall be deemed to have waived, renounced and abandoned any conditions printed or written upon any stationery used by him for the purpose of or in connection with the submission of his Tender, which are in conflict with the Conditions of Tender or Special and General Conditions of the NEC Contract.

Tenderers are warned that any material divergence from the official conditions or specifications may render their Tenders liable to disqualification.

The Tenderers are to note that if there are any arithmetical errors in the Tenderers' form of tender in calculation of the Tender Sum, the Contracts Manager will correct the calculation accordingly.

20 COMMUNICATION WITH MEMBERS OF THE CLIENT COMPANY OR PROFESSIONAL TEAM

A Tenderer shall not in any way communicate with a member of the Client Company or Professional Team or with any officer on a question affecting any contract or the supply of goods or for any work, undertaking or service which is the subject of a Tender during the period between the closing date for receipt of Tenders and the despatch of the written notification of the Employer's decision on the award of the contract; provided that a Tenderer shall not hereby be precluded from obtaining from the Employer or his authorised representative information as to the date upon which the award of the contract is likely to be made or, after the decision upon the award has been made by the Contracts Manager to which the Employer had delegated its powers, information as to the nature of the decision or such information as was publicly disclosed at the opening of Tenders.

21. IMPORT PERMITS:

Tenderers must apply direct for any import permit and/or currency required, however the Contracts Manager will furnish successful Tenderers with a supporting statement if required.

22.BILLS OF QUANTITIES:

No alteration, erasure, omission or addition is to be made to the text and conditions of these Bills of Quantities and should any such alteration, amendment, note or addition be made, the same will not be recognised, but the reading of the Bills of Quantities as prepared by the Contracts Manager will be adhered to.

It should be understood that the system of measurement herein adopted is the only system of measurement which will be recognised in connection with this contract. Before the signing of the contract, the Contracts Manager will be entitled to call for adjustments of individual rates and rectify discrepancies, as he considers necessary without alterations to the Tender Amount.

23. TRAFFIC AUTHORITIES AND REGULATIONS (N/A)

The Contractor shall comply with all requirements of the Authorities in connection with traffic control, gaining access to the site, prevention or disruption of the flow of traffic, transporting of materials and equipment to and from the site and he shall make all necessary arrangements, pay all deposits, fees and charges in connection therewith.

24. PROTECTION OF PERSONS AND PROPERTY

The Contractor shall adopt all safety measures in compliance with all statutes, regulations, etc., and shall take all measures to protect all property and to secure the safety and freedom from injury of all persons.

The Contractor shall in addition take all necessary steps to prevent nuisance from dust and the like and shall use every endeavour to minimise noise emanating from the Contract Works. The Contractor is referred to the various forms that require his attention prior to commencing work on site - All forms duly completed and signed must be forwarded to the Contracts Manager.

Tenderers are to note that the building will remain occupied for the duration of the Works except for the sections of the Works under construction in terms of the requirements of the Sectional Completion.

25 EXISTING AND ADJOINING PROPERTIES, PAVINGS ETC.

The Contractor shall execute the whole of the Contract Works with the minimum of disturbance to the existing and adjoining premises and occupants thereof. He shall keep the Site dust free and clean, and shall keep pavements, surrounding roads etc., free of builder's rubble and clean to the entire satisfaction of the Contracts Manager and the Authorities.

The Contractor shall leave such buildings, structures, fences, pavings, roadways, kerbs, gardens, municipal pavements, streets, etc., in the same condition at completion as they were at the commencement of the Contract. Before commencing work, the Contractor shall arrange with the owners of the existing and adjoining buildings and/or the Authorities for an inspection to be made jointly with themselves, the Contractor and the Contracts Manager in order to make written notes of any defects, etc. which may later be claimed to have been caused by the operations under this Contract. Should defects be disclosed, the Contractor shall submit same in writing to the Contracts Manager before commencing the Contract, failing which it shall be understood that no such defects existed and the Contractor shall be liable for all claims in this connection.

26. PROCEDURE OF WORKS

The Contractor shall be solely responsible for ensuring that the procedure of works is kept to and no deviations will be entertained.

Should this, however not be possible then the Contractor shall timeously notify the Contracts Manager

The Contractor shall make any and all necessary allowances in his pricing for the disruption and costs that will be required to comply with any such restrictions.

SPECIAL CLAUSES

27. TRADE NAMES, ETC.

All materials, fittings, finishes, etc. specified under a "Trade Name", catalogue number or reference shall be either exactly as described or of equal quality, specification and weight to those described.

The Contracts Manager’s written approval must be obtained for any departure from the specification before the submission of tenders, failing which specified materials, fittings, finishings, etc. shall be deemed to have been allowed for in the tenders.

Where articles other than what the manufacturer specified are used, an adjustment of the prices will be made and Variation Orders issued to cover these adjustments.

The Contractor must take delivery of, handle, store, use, apply and/or fix all proprietary branded products in strict accordance with the manufacturer's instructions after consultation with the manufacturer's authorised representative.

All references in these Bills of Quantities to Specifications of the Bureau of Standards shall be deemed to be reference to the latest issues of such Specifications, and any subsequent amendments thereto. All articles, materials or items described as to conform to the SABS Specifications must bear the SABS mark.

28. CONTRACTOR'S RESPONSIBILITY

The Contracts Manager and the other Professional Consultants shall not be responsible for any act or omission on the part of the Contractor, which may result in any patent or latent defects, in materials or workmanship, breach or neglect of any local regulations. The Contractor shall at all times be responsible for any such neglect, deviation or wrong act, whether the same is discovered before or after the final certificate, or any other Certificate, has been approved.

29. SITE INSTRUCTIONS AND RECORDS

The Contractor shall supply and have available at the site of the works at all times, the following site books:-

a) Site Instruction Book

Receiving and recording instructions in a suitable A4 size triplicate book kept on site. Instructions issued shall be recorded by the Contracts Manager or other Employer's Agents to whom the Contracts Manager has delegated Authority in the book.

Only site instructions issued in such a book shall be recognised.

b) Daily Record Book

The Contractor shall record in a suitable A4 size triplicate book kept at the site, a daily record of work done, all site visits by the Contracts Manager and other professional personnel and all events affecting the Works, such as progress, issue of plans, breakdown of machinery, etc. The labour, plant and material on site shall be recorded as well as work performed. Entries must be made by the Contractor and must be signed and forwarded to the Contracts Manager for his counter signature on a daily basis. Copies of these records shall be for the Contracts Manager, Employer and Contractor.

30. LOCATION OF TEMPORARY BUILDING AND TEMPORARY SERVICES

The Contractor shall provide all necessary temporary works, including temporary roads, tracks, crossings, hard standing and services, etc. required for his own and Sub-Contractor's use during the construction and maintenance period.

There is no guarantee given or implied that Site Conditions will be such that the Contractor will be able to erect such offices, stores and temporary accommodation within the site boundaries and it shall be the Contractor's responsibility to adopt whatever measures he deems necessary in this regard and to obtain permission and pay all cost in connection therewith.

By the submission of a tender, any Tenderer will, if awarded the contract to which this tender document relates, be deemed to be the mandatory as envisaged by Section 37 (2) of the Act. As a mandatory the successful Tenderer will be deemed to be the " Contractor" and an Employer in his/her/their own right with duties as prescribed in the Act and accordingly will be deemed to have agreed to be solely responsible for ensuring that in connection with the service to which this tender document relates, all work will be performed and machinery and plant used in accordance with the Act. Should the Contractor, for whatever reason be unable to perform as required by the Act, the Contractor undertakes to inform the Employer accordingly.

The Contractor (mandatory) will be required to:-

1 Provide the Employer with a Health and Safety programme and plan specifically related to the Works and ensure that the programme and plan are implemented and maintained, with the programme being subject to audit, at least once a month, by the Contracts Manager;

2 Exercise discretion and appoint a Full-time Safety Officer (in writing) to assist in the control of all safety related aspects, and to give input into the health and safety plan;

3 Appoint (in writing) a full time competent Supervisor (as defined in the Regulation in terms of the Act) to supervise the project;

4 Provide the Employer and any Sub-Contractors that may be engaged by the Contractor and/or Nominated Sub-Contractors with a programme of construction for the Works as well as a method statement with the necessary details and procedures for execution;

5 Provide the Employer both before commencing and during construction work with a copy of a risk assessment performed by a competent person who has been appointed in writing by the Contractor, and the risk assessment must form part of the health and safety plan;

6 Ensure that every employee or person (including visitors) who enters the site of the Works undergoes health and safety induction training pertaining to hazards identified on the site of the Works and upon such training having been successfully completed, the Contractor must issue written confirmation by a competent person to the trained employees or persons who shall be further instructed to carry such confirmation with them at all times whilst on the site of the Works;

7 Issue, on loan, the necessary personal protective equipment to visitors to the site of the Works; and

8 Be in good standing with the Compensation Commissioner at all times during the duration of the Contract.

9 The Contractor is to sign a Non-Disclosure Agreement prior to collecting or receiving any proprietary information from Eskom, drawings, documentation, reports and photographs

The Contractor will be deemed to have satisfied himself with his obligations in terms of the Act and to have allowed for all costs arising from compliance with the Act as no claim for extra costs arising from compliance with, and obligations in terms of the Act will be entertained.

31 CONTRACTORS TO VISIT SITE PRIOR TO SUBMISSION OF TENDER

The contractors are urged to visit the site that has been identified to get an overview of the nature of works and the location of the building prior to pricing this document.

32 PRICING OF THESE GENERAL NOTES

The Contractor must allow in his pricing for any additional costs arising from these "General Notes" as no later claims for additional costs will be considered.

33 TAX COMPLIANCE

Failure to provide mandatory information required in this Bid will result in the submissions being deemed null and void and shall be considered non-responsive. An Electronic Tax Compliance Status (TCS) System will be used to verify the bidder’s tax compliance status so bidders must request a unique security personal identification number (PIN) from SARS which must be submitted with the bid

No alternative tender offers will be considered.

These Bills are not to be used for the purpose of ordering materials.

All Bill rates are to include for material, labour, plant, wastage, transport and profit.

ROAD SPECIFICATIONS

ROAD SPECIFICATIONS

General Preambles

The Tenderer is referred to the Model Preambles for Trades as recommended and published by the Association of South African Quantity Surveyors (2008 Edition), which are to be read in conjunction with and shall apply to all items in these Bills of Quantities and supplemented by the following Supplementary Preambles as well as all supplementary documentation referred to in the Bills of Quantities and all annexures appended thereto.

Where Model Preambles for Trades and Supplementary Preambles are in conflict, the Supplementary Preamble shall take precedence.

Supplementary Preambles

The following amplifications, additions and amendments to the Model Preambles for Trades shall constitute the Supplementary Preambles.

1 Material and Workship Generally

The standard of workmanship and the quality of materials to be utilised throughout this Contract shall be the best of their respective kinds and shall comply in all respects with the latest South African Bureau of Standards Specifications, Codes of Practice, co-ordinating Specifications and Standard methods or where not available, with the latest relevant British Standards.

NOTE: All references to Standards are to signify the latest amendments or issue thereof. No substitutes whatsoever shall be permitted from those materials specified and any work which is not of the highest standard shall be rejected and required to be re-done at the Contractor's expense. Furthermore, references to "SANS No" shall mean the "South African National Standard No".

2 Rates

All rates inserted in the Bills of Quantities shall cover all costs, charges and profit that may be considered necessary for the carrying out and observance for the provisions of these "Preambles to all Trades".

The Tenderer shall insert the amount required against each item which he wishes to price and not insert a lump sum covering a series of items. Only such priced items shall be considered in respect of any adjustment to the Contract Sum. Items left unpriced will be understood to be covered in the rates for other items throughout these Bills of Quantities.

3, Approved

"Approved" means approved by the Contracts Manager in writing.

4, Net Measurements

Unless otherwise stated herein, all work is measured net as fixed in position, in accordance with the "Standard System of Measuring Builder's Work in South Africa" - Seventh Edition as amended 2015, no allowance being made for cutting and waste. The term "measured net" means the finished surface or quantity; i.e. with all wants deducted and no allowance made for passings and laps except where otherwise described.

To assist the Contractor certain items may have the words "Measured Net" after the respective descriptions, but it is to be clearly understood that this practice does not establish a precedent.

5, Ditto

"Ditto..." shall mean as the foregoing item plus the new qualification.

"Ditto, but..." or "Ditto...ditto" shall mean as the foregoing item but a substitute of the new qualification for the relevant clause in the foregoing item.

Scope of Work

The contractor shall provide all necessary management, supervision, administrative support, personnel, labour, material, tools, plant, miscellaneous supplies, and equipment necessary to successfully perform the required contained in this SOW. The roads at Camden are mainly asphalt and gravel, the asphalt roads have sections with concrete. These sections are along the old train rail which passes the roads inside the station, and the intersection at oak road to the coal stockyard.

A. Description of work to be done

A.1 Potholes in asphalt surfacing

- Prepare surface by cutting around damaged surface with a diamond saw.
- Remove failed material to the required depth.
- All loose and unbounded material must be removed.
- For small potholes (area <09 m2), both cold and hot mix patching materials can be successfully used to rebuild the top of the road surface. Repairs of shallow (<15 cm) potholes can be done using patching materials only when an appropriate repair process is used
- For small but deeper potholes, where a softening of the base and subbase layers has occurred, prior to placing the patching material in the hole, the softened material must be recomputed back in place with the addition of more base aggregate if necessary.
- For large shallow potholes (>09 m2, <15 cm deep), resurfacing the road using a variety of approaches like hot mix, cold mix, cold-in-place recycle, or similar proprietary processes work best.

For large and deep potholes where there is a loss of strength in the entire structure (surface, base, subbase, and subgrade), deep patching is the only repair approach which will produce satisfactory results.

• Fill with layers of crushed stone or G4 material to within between 75 and 50 mm of surface.
• Seal around edges to prevent pothole from expanding.
• Seal joints properly to avoid letting in water and establishment of vegetation

A.2 Hot-mix asphalt

• Must comply with current specifications (COLTO section 4203).
• Minimum working temperature must be adhered to (varies with mix but usually 135°).
• Coat covering entire patched area should not be thicker than 75mm or thinner than 25mm.
• Cold-mix asphalt.
• Supplier/Contractor to use product or material that will give a good strong and durable patch.
• Material to be approved by the client.

A3. Natural Grave

Should have properties as close as possible to existing material.
• Should comply with COLTO, (1998) and TRH 4/14.
• Compact to same density as original materials.
• Require similar permeability and strength.
• Edge break repairs.
• The damaged areas to be removed should be marked out clearly along the side of the road.
• Ensure that the area marked out covers the full extent of the damaged road edge.
• The loose material to be removed to a depth of a maximum 150mm.
• The entire exposed area to be coated with the diluted emulsion to assist in creating a bond between new and existing layer material.
• The bitumen stabilised material to be placed in the repair area and to the required level.
• The finished level should allow for a thickness of 40mm.
• Either hot mix or cold mix wearing material depending on the size of repair area.
• To allow for a compaction the loose asphalt should be about 10mm proud of existing road surface.
• The finished surface level should be checked with the straight edge in both directions.

A4. Gravel road shoulder

The existing shoulder gravel should be loosened along the length of the repair area.
• If required, additional material should be added.
• The gravel material is placed and moistened and compacted level with the outer surfacing.
• Ensure that this operation does not disturb or damage the new repairs
•Import G5 material as and when required to make up levels

A.5 Gravel roads Cross-section

• Reshape the cross-section of the gravel road to promote adequate drainage. This shall include the road's shoulder and the adjacent drainage trenches. The intervals for this activity shall be as stated on [3] during the Contract's period.
• Repair depressed areas according to 240-142483465 [3].
• Execute chemical dust suppression using dustex or similar approved material on an as and when required basis during the Contract's period.
•Import G5 material as and when required to make up levels

A6. Road Drainage Maintenance

• As part of the Scope of work, the contractor shall repair damaged inlet drain structures, this shall also road kerbs and manholes.
• Contractor to clean the stormwater side drains of the roads on an as-and-when-required basis. This shall be for both gravel and asphalt roads.

A7. Road Marking and Signage

A7.1) Road marking

• No road marking shall be done until the setting out and pre-marking have been inspected by the client and the contractor's representative. The area to be marked shall be dry, free of damage ad be cleaned (using mobile street sweepers or other) prior to marking. All temporary traffic control measures for the works shall be the responsibility of the Contractor.
• Personnel executing the works shall be experienced and qualified to operate the equipment and handling the road marking paint and chemicals thereof.
• Application of the road marking products shall be according to the manufacturer's instructions. The marking product to have a uniform thickness and a smooth surfaced crosse-section throughout its entire length on the road.
• All spoiled markings to be removed permanently using methods that will not damage the road's surface and compromise the road's drainage.
• Pre-marking to be done using paint spots (10mm in diameter) of the same colour as the final lines, symbols, and marks. The paint spots to be not more than 1.5m apart to ensure marking accuracy.
• The dimensions and positions of the road markings shall be as indicated by the Technician. Road markings shall be constructed to accuracy within the tolerances given below.

Width: The Width of The lines and other markings shall not be less than The specified width, nor shall it exceed the specified width by more than 10mm.

Position: The Position of The lines, letter, figures, arrows, retro-reflective road studs and other markings shall not deviate from the true position by more than 100mm in the longitudinal and 20mm in the transverse direction.

When an unbroken line and a broken line are painted alongside each other, the beginning and/or the end of the adjacent lines shall coincide.
When existing lines are repainted, the new marking shall not deviate more than 100mm in the longitudinal direction and 10 mm in the transverse direction from the existing marking.

Alignment of marking: The Alignment of The edges of longitudinal lines shall not deviate from the true alignment by more than 10mm in 15m.

Broken lines: The length of segments of Broken longitudinal lines shall not be shorter than the specified length or deviate by more than 150mm from the specified length.

LED solar cat eyes: Supply and install flashing LED solar cat eyes on an as and when required basis. LED solar cat eyes to be installed properly as per national road act standard

A8. Road Signage

• Contractor to ensure that all road signs are cleaned and repaired when broken and replaced where missing

A9. Material

a) Hot mix asphalt

• Must comply with current specifications (COLTO section 4203)

• Minimum working temperature must be adhered to (varies with mix but usually 135°)

• Coat covering entire patched area should not be thicker than 75mm or thinner than 25mm

b) Cold-mix asphalt

• Supplier/Contractor to use product or material that will give a good strong and durable patch

• Material to be approved by the client.

c) Natural gravel

• Should have properties as close as possible to existing material.
• Should comply with COLTO, (1998) and TRH 4/14.
• Compact to same density as original materials.
• Require similar permeability and strength.

d.) Chemical Dust suppression

• Application shall be done using a water tanker with nozzles that have been set to the manufacturer's recommended application pressure.

• The selected product must allow for timeous return to service of the road to traffic.

• The road's surface preparation and that of the of the product and application thereof must be according to the manufacturer's instructions. This includes the moisture content of the road's surface, mixing ratio of the product, etc.

• The application shall ensure that the product adequately penetrates and covers all parts of the roadbed.

f.) Compaction

• Compact each layer to expected original densities.
• Base 98% Mod AASHTO
• Subbase 95% Mod
• Cemented materials 97% Mod.
• Upper selected 93% Mod
• Other layers 93% Mod

g.) Signage

• All repair/replaced signage shall be according to the South African road traffic signs manual.

h) Road Marking Paint and other marking material

• Road marking to be done using water base and reflective methods and thermoplastic on identified areas. The paint shall comply with the requirements of SANS 731-1 type 1, type 2, or type 4 paint. The paint shall be delivered at the site in sealed containers bearing the name of the manufacturer and the type of paint. Marking shall be in accordance with SANS 731-1. The viscosity of the paint shall be such that t can be applied without being thinned down.

• Retro-reflective road -marking paint shall comply with the requirements of CKS 192 and SANS 731.

• The colours to be used shall be bright white, yellow and/or red, and black paint. The colour of the yellow and red paint shall be as specified in SANS 731. The black paint shall be used to remove/ erase undesired lines.

• The retro-reflective beads shall be glass beads that comply with the requirements for glass beads specified in CKS 192. The beads shall be delivered at the site in sealed bags, marked with the name of the manufacturer, the batch number, and an inspection seal of the SABS

PRELIMINARIES AND GENERAL

DESCRIPTION	UNIT	QNTY	Rate	AMOUNT
SECTION No. 1				
BILL No. 1				
PRELIMINARIES				
NOTES				
1.The Section of The Works information headed Part 1 : Preliminaries shall be taken to be incorporated herein.				
The Agreement shall be the NEC 3 Engineering and Construction Standard Contract, Third Edition (referred to elsewhere in this tender document) April 2013 edition together with the folowing additional conditions Z1 to Z15 which always will apply				
Tenderers are referred to the abovementioned documents for the full intent and meaning of each clause thereof. These clauses are hereinafter referred to by clause number and heading only (for which such allowance must be made as may be considered necessary). Where standard clauses or options are not applicable to the contract such modification/ corrections or supplements as are necessary are given under each relevant clause heading. Tenderers shall allow opposite each clause for any costs involved in complying with such clause. Only priced items will be considered in respect of any adjustment to this Section.				
Any items left unpriced will be understood to be provided free of charge and no claim for any extras arising out of the Tenderer's omission to price any item will be entertained.				
SECTION A				
PART 1 : CORE CLAUSES				
General				
Actions Clause 10	Item	1		R
Identified and defined terms. Clause 11	Item	1		R
Law Clause 12	Item	1		R
Communications Clause 13	Item	1		R
The Project Manager and the Supervisor Clause 14	Item	1		R

Early warning	Clause 16	Item	1		R	
The Contractor's main responsibilities						
Providing the Works	Clause 20	Item	1		R	
The Contractor's Design	Clause 21	Item	1		R	
People	Clause 24	Item	1		R	
Working with the Employer and Others	Clause 25	Item	1		R	
Time						
Starting and Completion	Clause 30	Item	1		R	
The programme	Clause 31	Item	1		R	
Defects						
Test and Inspections	Clause 40	Item	1		R	
Testing and Inspection before delivery	Clause 41	Item	1		R	
Searching for and notifying Defects	Clause 42	Item	1		R	
Correcting Defects	Clause 43	Item	1		R	
Accepting Defects	Clause 44	Item	1		R	
Uncorrected Defects	Clause 45	Item	1		R	
Payment						
Assessing the amount due	Clause 50	Item	1		R	
Payment	Clause 51	Item	1		R	
Compensation events						
Compensation events	Clause 60	Item	1		R	
Notifying compensation events	Clause 61	Item	1		R	

Quotations for compensation events	Clause 62	Item	1		R
Assessing compensation events	Clause 63	Item	1		R
Title					
Objects and materials within the site	Clause 70	Item	1		R
Removing Equipment					
Removing Equipment	Clause 72	Item	1		R
Limitation of Liability, Indemnities and Insurance					
Limitation of liability	Clause 81	Item	1		R
Indemnities	Clause 83	Item	1		R
Insurance Cover	Clause 84	Item	1		R
Termination and Disputes					
Termination and reasons for termination	Clause 90	Item	1		R
Reasons on Termination	Clause 91	Item	1		R
Procedures on Termination	Clause 92	Item	1		R
Payment on Termination	Clause 93	Item	1		R
The Adjudicator	Clause W1.1	Item	1		R
Reference to the tribunal	Clause W1.1	Item	1		R
SECTION B : PRELIMINARIES					
SUPPLEMENTARY DOCUMENTATION					
Bills of Quantities		Item	1		R
The pages of the Bills of Quantities are numbered consecutively. The Tenderer shall check the numbers of the pages and should any be missing or duplicated, or the reproduction be indistinct, or if any doubt exists as to the full intent and meaning of any description, or these Bills of Quantities contain any obvious errors, the Tenderer shall notify the Contracts Manager at once who shall promptly give a written directive. No liability whatsoever will be admitted in respect of errors in any tender due to the abovementioned causes.					

Items in these Bills of Quantities are to be read and priced in conjunction with and the descriptions regarded as amplified by the Works Information and no claim arising from brevity of description of items fully described in the Trade Preambles will be entertained. Where appropriate, rates for similar items in the various sections of the Bills of Quantities must be the same. The Quantity Surveyor shall be at liberty to make adjustments to any individual rates or not, as will eliminate errors, discrepancies or what he considers to be unreasonable or unbalanced rates, without altering the Contract Sum, prior to signing.					
TOTAL CARRIED TO COLLECTION Prime Cost and Provisional Amounts, etc., contained herein may be omitted or reduced at the Contracts Manager's sole discretion and the Contractor shall not be entitled to claim for any loss by way of reduction or omission of any discount, or percentage relating to Prime Cost and Provisional Amounts, etc., or loss of profit related thereto.	Item	1		R	
Interest of Agents Should any Employer's Agent have any interest other than a professional interest or involvement with the project, such interest shall be disclosed under this heading.	Item	1		R	
Priced documents. All Tenderers shall deposit the priced documents with their tenders. Such documents shall have all items properly priced, extended and cast.	Item	1		R	
Inspection of documents Drawings illustrating the broad scope of the works accompany these Bills of Quantities for tender purposes. Notwithstanding the issue of the abovementioned drawings it will remain the responsibility of the Tenderer to study all available drawings (Refer Works Information) at the offices of the following consultants during office hours to acquaint himself with all the cost implications of the design and the execution of the Works.	Item	1		R	
THE SITE					
Defined Works Area Any restriction to the area, including servitudes and the like, the Contractor may occupy are defined. The Contractor shall not extend his operations beyond such a defined area.	Item	1		R	
Site soil investigation No geotechnical investigation is included with this tender document.	Item	1		R	
Inspection of the Site	Item	1		R	

The Tenderer is to inspect the site and any existing structures thereon and thoroughly acquaint himself with the conditions under which the Works are to be executed including the means of access to the Works, the condition of the roads and generally of all matters which may influence the execution of the Works.					
Existing premises occupied Although the area of the Works shall not be occupied, Contractors are to note that the site forms part of an existing working area. The existing premises will be in use and occupied during the execution of the Works. The Contractor shall execute the Works as will least interfere with the general routine of the occupants of the premises and minimise any nuisance from dust, noise or other causes. Specific requirements of the Employer are described in clauses.	Item	1		R	
Services known All known existing services are described indicating whether such services are to be terminated, diverted or continue in use either temporarily or permanently. Contractors are to study the drawings forming part of this contract to familiarise themselves with any such identified services.	Item	1		R	
Service - unknown Upon encountering any unknown services such as underground cables, pipes or sewers during the execution of the Works the Contractor shall immediately suspend all affected work in the vicinity and notify the Contracts Manager forthwith and request a contract instruction in regard thereto.	Item	1		R	
Protection of trees Trees and shrubs shall not be removed, cut back or disturbed in any way without the consent of the Contracts Manager. Specific requirements of the Employer are described in detail in the Works Information.	Item	1		R	
Inspection of adjoining properties, etc. Before commencing the Works the Contracts Manager and Contractor shall arrange with the owners of adjacent buildings and properties and representatives of local authorities to inspect, among others, the buildings, structures, pavings, kerbs, channels and fences. The Contractor shall note in writing all conditions that the Works could affect and copy the Project Manager accordingly. The Contractor should pay particular attention to cracks, defects and existing levels related to structures, pavings, kerbs, channels and fences, which later could be claimed to have been caused or disturbed by the construction operations.	Item	1		R	

Where instructed by the Project Manager, levels and photographs shall be taken by the Contractor and the cost thereof shall be for the Employer's account. Certified copies shall be lodged with the Project Manager.					
MANAGEMENT OF CONTRACT					
Programme for the Works					
The Contractor shall provide with his bid full construction methodology and approved programme, per the programme dates listed in the Contract Data, outlining in detail how the Works will be handled:-					
a) Personnel					
b) Equipment					
c) Plant and materials					
d) Vertical and horizontal transportation					
e) Site facilities					
f) Hoists, access, scaffolding					
g) Rubble removal					
h) Inspection and handover procedures					
i) Security					
j) Safety					
k) Quality control and reporting plan					
l) Targeted procurement plan - 40% minimum level					
m) Environmental					
The Contractor shall prepare and be responsible for a programme for the Works in sufficient detail as to represent the units of work to enable the Contracts Manager to assess the progress of the Works. The Contractor, who shall co-ordinate Sub-Contractor's programmes with his own, shall programme the Works. Where required by the Contractor, the Sub-Contractor shall prepare and update his programme for the Works in sufficient detail to meet the needs of the programme. The Contractor shall implement and modify the programme should any significant deviations take place. The Contractor shall provide copies of the programme and its supporting documents with all updates for the Contracts Manager and/ or the Sub-Contractor where relevant.	Item	1		R	
Progress Meetings	Item	1		R	
The Contracts Manager, Contractor's representative and other Agents as required shall hold meetings related to the progress of the Works at regular intervals and at such other times as may be necessary.					
Sub-Contractors shall not be present at progress					

meetings unless specifically requested by the Contractor or Contracts Manager. The Contracts Manager shall record and distribute the Minutes of the Meetings. The Contractor shall report on his own and all Sub-Contractors' progress and on all matters affecting progress and execution of the Works. The Contractor shall convene additional regular meetings with his Sub-Contractors and Suppliers in order to monitor their progress and to discuss and co-ordinate all aspects of the Contract.					
Technical Meetings	Item	1		R	
The Contractor shall arrange regular separate meetings to review technical matters with Sub-Contractors prior to the Progress Meetings for consideration as necessary at such Progress Meetings. Minutes of these meetings are to be distributed to the Professional Team prior to Progress Meetings.					
MATERIALS AND WORKMANSHIP					
Samples of materials	Item	1		R	
The Contractor shall furnish samples of materials and specimens of finishes as may be called for by the Contracts Manager for his approval.					
Workmanship samples	Item	1		R	
The Contracts Manager may instruct the Contractor to furnish samples of workmanship for his approval. Where the Contracts Manager requires an assembly of various elements of the building or installation, which is not incorporated in the Works, the Contractor shall arrange such an assembly at the Employer's expense and the contract value shall be adjusted accordingly. The Contracts Manager may reject any workmanship not corresponding with approved samples. Approved samples are to be kept on site until the completion of the Works and thereafter removed if not required in the finished work. Adequate access and viewing facilities shall be provided.					
Ordering of materials	Item	1		R	
Should the Bill of Quantities be used for ordering materials, this shall be entirely at the Contractor's risk.					
TEMPORARY WORKS AND PLANT					
Deposits and fees	Item	1		R	
The Contractor shall pay all deposits, fees and charges according to any Act of Parliament, Regulation or By-Law of any Local Authority which relate to hoardings, the use of pavements, street encroachment or crossings, permission for the suspension of parking facilities and the like.					

Enclosure of Works The Contractor must erect, maintain and remove at completion, hoardings with gantries, fences, safety screens, barriers, access gates, covered gangways and the like as necessary for the enclosure of the Works and elements thereof all for the protection of the public and others. The Contractor must erect and maintain 1.80m Bonnox fencing (hoarding) for the duration of the contract and remove on completion. Any existing streets, pavements and kerbs are to be kept and left in good condition on completion of the Works, to the satisfaction of the Project Manager. The Tenderer is deemed to have priced against this item for all costs in respect of these requirements.	Item	1		R	
Advertising All advertising rights on the site and the hoardings are reserved exclusively for the Employer.	Item	1		R	
Plant, equipment, sheds and offices The Contractor shall provide, maintain and remove on completion: a)All plant, equipment, scaffolding, tools and the like required by the Contractor for the due and proper fulfilment of the Works. b) Temporary sheds for the proper storage of materials and the use of the Contractor's workers. c) Office accommodation for meetings held on the site, which shall be kept clean and fit for use at all times. Specific office requirements of the Employer are described in detail in the schedule.	Item	1		R	
Special Scaffolding Special scaffolding is not separately measured as these Bills of Quantities are based on the Sixth Edition of Standard System for Measuring Builder's Work.	Item	1		R	
Contractor's Offices and Sheds The Contractor shall provide, maintain and remove on completion office accommodation for meetings held on site. The office shall be provided with tables and chairs sufficient for the maximum number of persons attending meetings and shall be kept clean.	Item	1		R	
Main noticeboard The Contractor shall provide a main noticeboard of an approved design with the title of the project and the names of the Employer, the Contracts Manager, the Agents and the Contractor signwritten thereon The Contracts Manager shall instruct the Contractor where the board is to be erected.	Item	1		R	

Sub-Contractor's noticeboard	Item	1		R
The Contractor shall provide a secondary noticeboard of an approved design with the designation and names of the Sub-Contractors thereon. The Contracts Manager shall instruct the Contractor where the board is to be erected. The Contractor shall not allow Sub-Contractors' individual boards or advertising material on site without the Contracts Manager's approval.				
Temporary Services				
Location	Item	1		R
The Contractor shall agree the location of all temporary services with the Contracts Manager before installation and on completion remove the same and make good.				
Water	Item	1		R
The Contractor shall provide all water for the Works at his own expense and shall pay all charges levied by the owners of or the controllers of any water supply and from which he may reach his requirements. If this Contract embodies work at a Building or Institution where water is already laid on, the Contractor may by arrangement, and only by arrangement by the Contracts Manager and with his written approval, use water from such supply. Permission must be obtained from the Contracts Manager before any water is thus obtained and any connection and metering of water usage including payment therefore, or extension of the supply required must be carried out at the Contractor's expense. Such permission shall not relieve the Contractor of his responsibility of providing all water for the Works.				
Electricity and Lighting	Item	1		R
The Contractor shall provide any artificial lighting which may be necessary or required for the proper execution of any portion of the Works, and provide electric power for any purpose required in connection with the Works, including for all electric light and power required by all Sub-Contractors. The Contractor shall give all notices and pay all fees in connection with temporary electrical connections and pay for all current consumed.				
Telecommunication equipment	Item	1		R
The Contractor shall provide a telephone and facsimile machine for use by all persons engaged upon the Works. The Contractor shall be entitled to recover from such persons their usage cost of the facility.				
Toilets	Item	1		R
The Contractor shall provide ablution facilities for the workers and shall maintain the same in a				

thoroughly clean and tidy condition.					
FINANCIAL ASPECTS					
Taxes, etc	Item	1		R	
Value added Tax (VAT) shall not be included in the prices and/ or rates of all measured items. The value in respect of VAT shall be added as a Lump Sum inserted against the appropriate item on the final summary page. Notwithstanding anything to the contrary contained herein, should the rate of VAT be changed between the tender closing date and the date of issue of the final payment certificate, any additional tax payable by the Contractor resulting from such change in VAT shall be for the account of the Employer and any reduction in tax likewise resulting shall be for the benefit of the Employer.					
Payment of Preliminaries	Item	1		R	
The payment of preliminaries shall be calculated from the priced items in the Bills of Quantities. The Contractor and the Contracts Manager shall agree on a division of the priced preliminaries items into: a) An initial or establishment charge, payment of which shall be made to the Contractor on proof that the relevant expenditures have been made; b) A monthly charge; c) A final or disestablishment charge All excluding VAT. In arriving at such a division cognisance shall be taken of such factors as: i) Premiums for annually renewable insurance policies ii) Plant, scaffolding and the like remaining the property of the Contractor or the hiring company and the capital costs thereof not treated as part of the initial charge Where the initial construction period is extended the monthly charge shall be recalculated on the same basis as was originally applied but taking into account the revised construction period and the amounts already paid to the Contractor. Should the Contractor and the Contracts Manager be unable to agree such division then the Contracts Manager shall make a division of the preliminaries to be incorporated in the valuations for each monthly payment certificate.					
Adjustment of Preliminaries					
The amount or items of preliminaries shall be adjusted to take account of the theoretical					

financial effect which changes in time and/or value have on preliminaries. Such an adjustment shall be based on the particulars provided by the Contractor, and shall apply notwithstanding the actual employment of resources by the Contractor in the execution of the Works. For the adjustment of the preliminaries both the Contract Sum and the Contract Value shall exclude: a) VAT; b) The amount of preliminaries; c) Any contingency sum; and d) Any amount in respect of Contract Price Adjustment Provisions Should the Contractor fail to provide such information within the period stipulated, the following shall apply: The amount of preliminaries shall be adjusted in the following categories: (a) An amount which shall not be varied (b) An amount which shall be varied in proportion to the contract value as compared with the Contract Sum (c) An amount which shall be varied in proportion to the construction period (excluding revisions allowed in terms of the agreement) as compared to the initial construction period. Where sectional completion is required in terms of the agreement, the Contractor shall give the Contracts Manager the division of the above categorised amounts into sections. Should the Contractor fail to provide such information within the period stipulated the categorised amounts shall be pro-rata to the value of each section.	Item	1		R	
GENERAL					
Protection of the Works Specific protection measures required by the Employer are described in detail in the Works Information	Item	1		R	
Protection of existing and/or partially occupied Works The Contractor shall provide all reasonable temporary measures to protect/ isolate the existing and/ or sections of the occupied Works and remove such measures on completion.	Item	1		R	
Site Security - Works Information In order to maintain the integrity of the site during construction, it shall be necessary to implement security measures applicable to Contractor's employees. It is expected of the Contractor's					

Site Supervisors to exercise control over their staff and maintain order. The Contractor shall take all appropriate measures for general site security and shall ensure that the following requirements are adhered to at all times: a) All workers to be in new company overalls, safety helmets, boots, etc. b) Eskom shall not accept any responsibility for theft or damage to the Contractor's equipment while on site. It is expected that the Contractor shall provide own site security service. c) The following items will not be allowed on site: i) Fire arms or other dangerous weapons ii) Explosives iii) Liquor iv) Narcotic drugs					
Disturbance	Item	1		R	
The Contractor shall execute the Works with a minimum of disturbance to adjoining premises, any parts of the Works already handed over and the occupants of those premises and/ or parts. Any specific requirements are stated in the Works Information.					
Works cleaning and clearing	Item	1		R	
The Contractor shall regularly clean and clear away all rubbish and excess materials as the Works proceed and leave the Works in a clean and satisfactory state for use and occupation in terms of the agreement.					
Vermin	Item	1		R	
The Contractor shall take all necessary precautions to keep the Works and site free from vermin and shall leave the Works vermin-free on completion.					
Overhand work	Item	1		R	
No provision has been made for overhand work. Where necessary, the Contractor shall make his own arrangements with the owners of adjoining properties to execute such work.					
Boundary beacons, setting out pegs, etc.	Item	1		R	
The Contractor shall maintain the beacons, setting out pegs and master datum during building operations and shall arrange for and bear any costs for resurveying should they be disturbed or lost.					
Project Manager and Supervisor	Item	1		R	
Where the works information in a drawing,					

specification or other document referred to therein, refers to the words Architect or Engineer, these shall be interpreted as: a) Supervisor, where the context clearly refers to a testing or inspection activity in terms of the Supervisor's role as deemed in the NEC. b) Contracts Manager, in all other cases.					
Occupational Health and Safety Act The contractor shall for the duration of this contract be deemed to be the mandatory Eskom for the purposes of the Occupational Health and Safety Act No. 85 of 1993, and he shall prior to taking occupation of the site satisfy Eskom by means of written representations that he has fully compiled with the relevant requirements of the said act. Acceptance by Eskom of the contractors written representations in terms of the above shall constitute an agreement in writing to the arrangements and procedures between the parties to ensure compliance by the contractor with the provision of the act referred to therein, for the purpose of section 37(2) of the said act. performance of the contractor hereunder pending compliance by the contractor with any requirement, regulation and direction referred to. Eskom shall be entitled to set off against any amount owed by the Eskom to the contractor hereunder any loss or damage suffered by it as a result of the suspension of the contractors performance in the circumstances envisaged above. The tenderer shall price for all necessary items to comply with the Occupational Health and Safety Act Specification.	Item	1		R	
Contract Price Adjustment This priced contract is subject to price escalations	Item	1		R	
Retention Retention will initially be 5% of the value of work done, up to a maximum of 5% of the tendered value. Release of retention will only occur after 52 weeks from Practical completion. All retention, less any monies by the Contractor due to the Employer, will be released with the issue of the Defects Certificate.	Item	1		R	
Surety The Tenderer must allow for all charges in connection with the Performance Bond, which is to be furnished by the Contractor in terms of Clause A5 - Provision of a Surety of the Contract Data	Item	1		R	
SECTION C : SPECIFIC PRELIMINARIES					
SUPPLEMENTARY DOCUMENTATION					
Shop Drawings					
Definition The term "shop drawings" shall mean drawings, diagrams, illustrations, schedules, performance	Item	1		R	

charts, brochures, operating manuals and other data which are prepared by the Contractor or any Sub-Contractor, manufacturer, supplier or distributor and which illustrate some portion of the Works.					
General Responsibilities	Item	1		R	
The Contractor shall provide a person or persons who shall be available immediately upon commencement of the Contract, whose responsibility will be: (a) To familiarise himself with all drawings produced by the Professional Team. This will involve a clear understanding of services and element co-ordination performed by the Contracts Manager, in order that Sub-Contractors can be properly briefed. (b) To provide the Professional Team with comprehensive lists of shop drawings to be prepared by relevant Sub-Contractors. c) To check all shop drawings for sufficiency prior to submission to the relevant Consultant in the Professional Team. It is expected that such checking will include all co-ordination and pro-active resolution of any conflicting services and elements. It is also noted that resolution of co-ordination problems will require attendance at Services and Element Co-Ordination Meetings, called by the Contracts Manager as and when necessary.					
Procedures The Contractor shall, at his own expense, prepare and submit one reproducible print of shop drawings of all fabricated work, working or setting out drawings, shop details and schedules to the Contracts Manager for approval by the Contracts Manager, the relative Consulting Engineer, and/ or the Employer as is appropriate and such work shall not be performed by the Contractor until such approval has been given. The Contractor shall take cognisance of and adhere to the Project Document Numbering System, if any, in use on this Contract The Contractor shall present a complete schedule showing the sequence of submission of shop drawings, including submission dates, for all trades and the scheduled dates for approval of all drawings. This schedule shall take into account that the Contracts Manager and the relative Consulting Engineer and the Employer reserve a two weeks check period from the date of the receipt of all shop drawings and/or catalogue data. All submissions shall be on dates as indicated in the above schedule and sufficiently in advance to permit the Contractor to meet fabrication deadlines; no claim for extensions to the contract time will be granted to the Contractor by reason of his failure in this respect.					

The Contractor shall submit four copies of catalogues and data for approval. The Contractor shall check all submissions for conformity with the contract drawings and specifications and correct any errors, omissions or deviations before their transmission to the Contracts Manager. All submissions shall bear the Contractor's dated stamp of approval as evidence that they have been so checked and corrected by the Contractor. Any drawings, schedule or catalogue submitted without this stamp will not be considered by the Contracts Manager and will be returned. When the Contracts Manager advises the Contractor that shop drawings have been approved, he shall immediately submit to the Contracts Manager the original transparencies of such drawings so that the Contracts Manager's stamp of approval may be appended thereto. Thereafter the Contractor shall furnish to the Contracts Manager four prints of the approved shop drawings, setting out drawings and schedules. The Contractor shall also furnish to the Works as many prints of the approved shop drawings and schedules as may be required. No work shall be performed from any shop drawings and/ or catalogues not stamped with the Contracts Manager's approval. The Contractor shall be responsible for ensuring that all dimensions conform to the dimensions of built work. The Contracts Manager's approval of any document or drawing shall not in any way vary his contractual or delictual obligations and liabilities to the Employer or any other party, nor does it vary the contractual or delictual obligations and liabilities of the party submitting such document or drawing for approval. If the submissions differ from the requirements of the contract, the Contractor shall make specific mention of each difference in his letter of transmission with a request for substitution, together with his reasons for same, in order that, if acceptable, suitable action may be taken by the Contracts Manager. Otherwise the Contractor will not be relieved of the responsibility for executing the work in accordance with the requirements of the contract.					
Corrections of shop drawings by the Contracts Manager shall not change the scope of work. Should any such correction be considered to constitute a change of scope of work, the Contractor shall notify the Contracts Manager in writing within not more than seven calendar days of such change and shall not proceed with the fabrication until so authorised by the Contracts Manager. Claims for change of scope made after performance of the work constituting the claimed change of scope will not be considered. Unless otherwise agreed with the Contracts Manager, shop drawings shall be prepared to show all details of installation, including reticulation, fixing, etc., of all components and assemblies, or if the Contractor desires to	Item	1		R	

deviate from the design then these drawings shall be all in accordance with the above procedures and at the Contractor's expense.					
As built drawings	Item	1		R	
The position of construction breaks and the extent of individual concrete pours are to be recorded by the Contractor on the Structural Engineer's drawings and are to be submitted to the Architect and the Structural Engineer for their records.					
Labour Record	Item	1		R	
At the end of each week the Contractor shall provide the Contracts Manager with a written record, in schedule form, reflecting the number and description of tradesmen and labourers employed by him and all Sub-Contractors on the Works each day.					
Plant Record	Item	1		R	
At the end of each week the Contractor shall provide the Contracts Manager with a written record, in schedule form, reflecting the number, type and capacity of all plant, excluding hand tools, currently used on the Works.					
Unauthorised Persons/ Workmen on Premises	Item	1		R	
The Contractor shall at all times strictly exclude all unauthorised persons from the Works and the site and shall set up notice boards to that effect.					
Safety Helmets and Protective Clothing	Item	1		R	
The Contractor shall take all necessary steps to ensure that all workmen employed on the Works comply with regulations regarding the wearing of safety helmets. The Contractor shall provide and keep on site an adequate supply of clean safety helmets and protective clothing for the use of all Employer's agents and all authorised visitors. Notice boards shall be erected warning all workmen and visitors to wear safety helmets on or about the Works.					
MANAGEMENT OF CONTRACT	Item	1		R	
Co-Ordination					
The Contractor is to submit a schedule of information required to all parties concerned, giving dates upon which such information and details are required on site Timeous advance notice is to be given by the Contractor of information or drawings which are required on site.					
MATERIALS AND WORKMANSHIP					

Testing of Flat Roof Waterproofing to Ensure Watertightness A waterproofing method statement shall be required and shall include as a minimum that as waterproofing is completed, areas shall be prepared with small sand dykes around them of a size and enclosing an area approved by the Contracts Manager, flooded with water and kept "ponded" for at least 36 hours as a test to ensure the watertightness of the waterproofing concerned before any further construction work is carried out above the waterproofing.	N/A				
GENERAL					
Media Releases, Advertising, etc. All rights of publication of articles in the media, together with any advertising relating to, or in any way connected with this project shall invest in the Employer The Contractor together with his Sub-Contractors shall not, without the written consent of the Employer, cause any statement or advertisement to be printed, screened or aired by the media.	Item	1		R	
Scale and Dimensions All dimensions will be figured on the drawings or may be calculated from figured dimensions and are always to be followed. No dimensions shall be obtained by scaling.	Item	1		R	
Manufacturer's Recommendations All commodities are to be handled, stored, used, applied and/or fixed in strict accordance with the manufacturer's instructions and recommendations and after consultation with the manufacturer's authorised representative. Should these instructions and/ or recommendations conflict with other specified requirements the Contracts Manager must be notified timeously.	Item	1		R	
Commodities to be New All commodities, goods, articles or materials throughout the building are to be new so as to ensure that they are likewise in perfect condition when handed over at completion of the Work.	Item	1		R	
Standard of Workmanship and Materials In the absence of detailed specifications for any item or items, National Building Regulations, the latest applicable South African Bureau of Standards Specification, or where such does not exist, then the latest applicable British Standard Specification shall apply.	Item	1		R	
Removal and Making Good of Temporary Works, etc., on Completion The Contractor shall remove all temporary Works, roads, services and the like used for this Contract and shall make good to the entire	Item	1		R	

satisfaction of the Contracts Manager any damage resulting therefrom.				
Cost of Claims	Item	1		R
All costs incurred by the Contractor in the preparation of claims to the satisfaction of the Contracts Manager and/ or Quantity Surveyor shall be borne by the Contractor.				
Signage	Item	1		R
All warning signage must be in English				
Environmental requirements	Item	1		R
All costs related to the compliance of the Environmental Requirements must be allowed for by the Contractor under this item				
Police Clearance	Item	1		R
The Contractor shall provide Eskom Safety Reps with Police Clearances for all staff				
Medicals	Item	1		R
The Contractor shall provide Eskom Safety Reps with Medicals for all staff				
Level 2 First Aid Traning	Item	1		R
The Contractor's staff shall possess Level 2 First Aid Training				
TOTAL BROUGHT FORWARD FROM PAGE:	1			R
	2			R
	3			R
	4			R
	5			R
	6			R
	7			R
	8			R
	9			R
	10			R
	11			R
	12			R
	13			R
	14			R
	15			R
	16			R
	17			R
	18			R
	19			R
	20			R
	21			R
	22			R
	23			R
	24			R
	25			R
	26			R
	27			R
	28			R
	29			R
	30			R
CARRIED TO FINAL SUMMARY				R

SHE BILLS OF QUANTITIES

ROADS BOQ					
Item		**Unit**	**Quantity**	**Rate**	**Amount**
	SECTION 2: OCCUPATIONAL HEALTH AND SAFETY BOQ The Contractors attention is drawn to the provisions of the Construction Regulations, 2014 issued in terms of the Occupational Health and Safety Act, 1993 in which it is specifically stated that the Employer shall ensure that the Contractor has made provision for the cost of health and safety measures during the execution of the works. The contractor is referred to the Occupational Health and Safety Specification for Construction attached to this document and the contractor shall price for compliance with the Act and the regulations and the provisions of the aforementioned Health and Safety Specification. The legal requirements contemplated in Construction Regulations CR 5 (1) (g) "A Client must ensure that potential principal contractors submitting tenders, have made adequate provision for the cost of health and safety measures" and CR 5 (1) (h) "A Client must ensure that the principal contactor to be appointed has the necessary competencies and resources to carry out the construction work safely" shall apply and failure to price the Health and Safety items will result in the tender being deemed non - responsive. The contractors attention is further drawn to Section 41 of the OCCUPATIONAL HEALTH AND SAFETY ACT NO. 85 1993: THIS ACT NOT AFFECTED BY AGREEMENTS Subject to the provisions of sections 10 (4) and 37 (2), a provision of this Act or a condition specified in any notice or direction issued there under or subject to which exemption was granted to any person under section 40, shall not be affected by any condition of any agreement, whether such agreement was entered into before or after the commencement of this Act or before or after the imposition of any such condition, as the case may be. Prior to pricing the Contractor must familiarize him/ herself with the Project-Specific Health & Safety Specifications, OCCUPATIONAL HEALTH AND SAFETY ACT No. 85 of 1993 as well as the Construction Regulations, 2014, other Relevant Regulations and Standards. **General**				

Notify the Provincial Director Department of Labour in writing of the commencement of construction work with and including submission of a letter of receipt and acknowledgement of the aforementioned notice by the director or his/ her representative	Item	1		R
Allow for the necessary Workmans Compensation Fund or FEM contributions for the duration of the project with and including renewals.	Item	1		R
Allow for the preparation and approval of project - specific H&S Plan & File(CR7 (1) (a))	Item	1		R
Allow for the implementation and maintenance of project specific H&S Plan & File. (CR 7)	Item	1		R
Allow for the appointment of a Full - Time Competent Health & Safety Officer to assist in thecontrol of all health and safety related aspects on site as per CR8 (5)	Item	1		R
Provide for appointment of responsible and competent person/s to manage and supervise the works and administer and enforce health and safety on site as per CR 8 (1), (2) and (7)	Item	1		R
Allow for provision of telecommunication facilities for the appointed Construction Health and Safety Officer	Item	1		R
Allow for provision of Basic Emergency Preparedness and Response equipment and minimum Level 2 First Aider/s	Item	1		R
following SANS approved Personal Protective Equipment & Clothing as per the site - specific	Item	1		R
Hard Hats (High Density polyethylene with 6 - point lining)	Item	1		R
Overall / work suit (100% Cotton)	Item	1		R
High visibility reflective vests and / or bibs	Item	1		R
Safety boots / shoes (Steel - toe)	Item	1		R
Safety gumboots (Steel - toe)	Item	1		R
Ear Plugs/ Muffs	Item	1		R
Dust Masks (at least FF2 type)	Item	1		R

	Respirators	Item	1		R	
	Safety goggles	Item	1		R	
	Temporary handrails, toe boards, etc other than for access scaffolding	Item	1		R	
	Personal fall arrest and rescue equipment with and including life lines and associated equipment	Item	1		R	
	SANS approved safety netting (orange colour minimum 1,2 meters high)	Item	1		R	
	Temporary warning signs and symbols	Item	1		R	
	Road traffic signs in terms of the South African Road Traffic Signs Manual	Item	1		R	
	Medical Examinations					
	Allow for pre-employment medical examinations	Item	1		R	
	Allow for baseline psychological examinations	Item	1		R	
	Allow for exit medical examinations	Item	1		R	
	Health and Safety Education					
	Allow for HIV/AIDS Awareness and Implementation programmes, including STI and TB	Item	1		R	
	Allow for all compulsory health and safety awareness programmes (e.g. Inductions, Toolbox Talks, Safety Promotions, H&S related training, etc.)	Item	1		R	
	Environmental					
	Provide for adequate handling and storage of materials so as to minimize contamination of ground, air or water	Item	1		R	
	Provide for the adequate and safe collection and disposal of waste material and effluent from site by and approved method.	Item	1		R	
	Provide Facilities and Eating Area for workers	Item	1		R	
	Provide for rehabilitation on completion of site areas and temporary access routes not covered by construction or landscaping specifications	Item	1		R	

	Provide for adequate dust control measures, including regular watering of access routes. Provide for an Environmental Officer or responsible person to prepare and update Method Statements, conduct regular inspections, maintain records and report to the Contracts Manager	Item Item	1 1		R R	
	CARRIED TO FINAL SUMMARY				**R**	
16	F..... V .....T……..	Item	1	0.00	R	-
	Respirators					
17	F..... V .....T……	Item	1	0.00	R	-
	Safety goggles					
18	F..... V .....T……	Item	1	0.00	R	-
	Temporary handrails, toe boards, etc other than for access scaffolding					
19	F..... V .....T…….	Item	1	0.00	R	-
	Personal fall arrest and rescue equipment with and including life lines and associated equipment					
20	F..... V .....T……	Item	1	0.00	R	-
	SANS approved safety netting (orange colour minimum 1,2 meters high)					
21	F..... V .....T……	Item	1	0.00	R	-
	Temporary warning signs and symbols					
22	F..... V .....T……	Item	1	0.00	R	-
	Road traffic signs in terms of the South African Road Traffic Signs Manual					
23	F..... V .....T……	Item	1	0.00	R	-
	<u>Medical Examinations</u>					
	Allow for pre-employment medical examinations					
24	F..... V .....T……..	Item	1	0.00	R	-
	Allow for baseline psychological examinations					

25	F..... V .....T……	Item	1	0.00	R	-
	Allow for exit medical examinations					
26	F..... V .....T……	Item	1	0.00	R	-
	Health and Safety Education					
	Allow for HIV/AIDS Awareness and Implementation programmes, including STI and TB					
27	F..... V .....T……..	Item	1	0.00	R	-
		Carried forward to Collection		R	**R**	**-**
	Allow for all compulsory health and safety awareness programmes (e.g. Inductions, Toolbox Talks, Safety Promotions, H&S related training, etc.)					
28	F..... V .....T……..	Item	1	0.00	R	-
	Environmental					
	Provide for adequate handling and storage of materials so as to minimize contamination of ground, air or water					
29	F..... V .....T……..	Item	1	0.00	R	-
	Provide for the adequate and safe collection and disposal of waste material and effluent from site by and approved method.					
30	F..... V .....T……..	Item	1	0.00	R	-
	Provide Facilities and Eating Area for workers					
31	F..... V .....T……..	Item	1	0.00	R	-
	Provide for rehabilitation on completion of site areas and temporary access routes not covered by construction or landscaping specifications					
32	F.....V .....T……	Item	1	0.00	R	-
	Provide for adequate dust control measures, including regular watering of access routes.					
33	F.....V .....T……	Item	1	0.00	R	-

34	Provide for an Environmental Officer or responsible person to prepare and update Method Statements, conduct regular inspections, maintain records and report to the Contracts Manager F..... V .....T……	Item	1	0.00	R	-
		Carried forward to Collection		R	**R**	**-**
	COLLECTION					
	TOTAL BROUGHT FORWARD FROM PAGE:		1		R	-
			2		**R**	
			3		**R**	**-**
			4		**R**	**-**
	CARRIED TO FINAL SUMMARY				**R**	**266 000.00**

ROADWORKS BILLS OF QUANTITIES

No.	DESCRIPTION	UOM	QUANTITY	RATE	AMOUNT
	BILL NO.1 : ROADWAY ETC				
	PREAMBLES				
	For Model Preambles refer to SANS Documents which is obtainable on request for the full descriptions of materials and work to be done in this Bill.				
	SUPPLEMENTARY PREAMBLES				
	Rate aprovals:				
	The tenderer is advised that any rate that is required for new work must include the following breakdown:				
	Material, labour, plant, wastage, transport and profit.				
	Rate approvals must be authorised by the Principal Agent prior to work being carried out.				
	NATURE OF GROUND				
	The Tenderer must acquaint himself with the nature of the material to be excavated. The nature of the ground is assumed to be medium, dense and very dense material, therefore earth, but possibly interspersed with "hard rock" or "intermediate material".				
	A soils investigation has been carried out on site by the Engineer and the report is annexed to these bills of quantities. Descriptions of excavations shall be deemed to include all ground conditions classifiable as "earth" described in the above report and where conditions of a more difficult character are indicated these are separately measured.				
	LABOUR INTENSIVE ITEMS				
	All items marked (LI) must be executed in a labour intensive manner, no deviations will be accepted. The Contractor must take this method of construction into consideration when programmes the work.				
	SCOPE OF WORKS				
	The contractor are to refer to the Road Specification Document enclosed to these Bills of Quantities. The contractors are urged to study this Scope of works prior to pricing.				
	RATE ONLY ITEMS				
	The contractor is reffered to the following items where RATE ONLY appears.The contractor is encourage to price these item with markerted related prices as these RATE ONLY items will be used during the course of the 5 year contract and Eskom will not renegoiate these rates,				
	PLANT REQUIREMENTS FOR THIS CONTRACT				
	The contractors are to review the Scope of work,Specifications and the Bills Of Quantities and are provide all necessary Plant and Equipment to fullfil the contractual obligations for this contract				
	RIPPING UP AND REMOVE OF EXISTING				
1	Ripping up and remove G8 material compacted to 95% Mod AASHTO density	m^3	1		RATE ONLY
2	Ripping up and remove G7 material compacted to 93% Mod AASHTO density	m^3	1		RATE ONLY
3	Ripping up and remove G5 material compacted to 95% Mod AASHTO density to Roadway	m^3	1		RATE ONLY
4	Ripping up and remove G2 material compacted to 95% Mod AASHTO density to Roadway	m^3	1		RATE ONLY
5	60mm Premix paving and prepare surface for new	m^2	1		RATE ONLY
	REMOVE REINFORCED CONCRETE PAVING				
	25MPa/26mm Reinforced concrete				
6	Break up and remove in situ paving to concrete.	m^3	1		RATE ONLY
7	Break up and remove paving to secure pipeline below, in roadways, etc in panels between construction joints etc.	m^3	1		RATE ONLY
	30MPa/26mm Reinforced concrete				
8	Break up and remove paving to roadways, etc in panels between construction joints etc.	m^3	1		RATE ONLY
	REMOVE EXISTING PRECAST CONCRETE KERBING				
9	Carefully remove 125 x 230 high Kerb fig 6.	m	1		RATE ONLY
10	Carefully remove 125 x 230mm high Kerb fig 6 circular to radius exceeding 4m.	m	1		RATE ONLY

11	Carefully remove Kerb with 300 x 100mm strip foundation and 150 x 150mm haunching at back.	m	1		RATE ONLY
12	Carefully remove 125 x 230mm high Kerb fig 6 and 300mm x 170mm thick channel.	m	1		RATE ONLY
13	Carefully remove 125 x 230 high Kerb fig 6 and 300mm x 170mm thick channel circular to radius exceeding 4m.	m	1		RATE ONLY
14	Carefully remove 125 x 230mmKerb fig 6 and 400mm x 170mm thick channel	m	1		RATE ONLY
15	Carefully remove 125 230mm high Kerb fig 6 and 600mm x 170mm thick channel.	m	1		RATE ONLY
	BREAK UP AND REMOVING OF EXISTING CAST CONCRETE ANCHOR BLOCKS				
16	Break up and remove In-situ Concrete Anchor Block In Block Paving.	m3	1		RATE ONLY
	ROADWAY PAVINGS AND WALKWAYS				
	Bulk excavation in earth:				
17	Reduced levels over site (L.I.)	m³	1		RATE ONLY
	Extra over all excavations for carting away:				
18	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor (L.I.)	m³	1		RATE ONLY
	Extra over bulk excavation in earth for:				
19	Soft rock material	m³	1		RATE ONLY
20	Hard rock material	m³	1		RATE ONLY
	Selected earth filling obtained from the excavations and/or prescribed stock piles on site compacted in 150mm thick layers to 93% Mod. AASHTO density:				
21	Forming banks and slopes.	m³	1		RATE ONLY
	Selected earth filling obtained from the excavations and/or prescribed stock piles on site compacted in 150mm thick layers to 100% Mod. AASHTO density:				
22	Under road pavings.	m³	1		RATE ONLY
23	Keeping excavations free of all water other than subterranean water. (L.I.)	Item	1		RATE ONLY
	Earth filling supplied by the contractor compacted in 150mm thick layers:				
24	Under pavings,asphalt, etc of G7 material in accordance with SANS 1200 DM compacted to 95% Mod AASHTO density (L.I.)	m³	1		RATE ONLY
25	Under pavings,asphalt, etc of G2 material in accordance with SANS 1200 DM compacted to 98% Mod AASHTO density (L.I.)	m³	1		RATE ONLY
26	Under pavings,asphalt, etc of G3 material stabilized with 3% cement in accordance with SANS 1200 DM compacted to 95% Mod AASHTO density accurately graded to falls and cross falls as directed (L.I.)	m³	1		RATE ONLY
	Compaction of surfaces:				
27	Compaction of ground surface under roadway paving including scarifying for a depth of 300mm in two 150mm layers, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density (L.I.)	m²	1		RATE ONLY
	Approved brand of anti-termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years:				
28	Under floors, paving, etc including forming and poisoning shallow furrows against foundation walls, etc, filling in furrows and ramming. (L.I.)	m²	1		RATE ONLY
	Weed killer:				
29	Weedmaster Turfmaster' or equal approved weed killer mixed in the proportion of 1 litre weed killer to 50 litres of water and applied at a rate of 0,5 litres/m2 to surface below paving (L.I.)	m²	1		RATE ONLY
	Prescribed density tests on filling				
30	In-situ dry density (sand replacement) test in accordance with method A10 (a) of TMH 1	No	1		RATE ONLY
31	Maximum dry density and optimum moisture content test in accordance with method A7 of TMH 1	No	1		RATE ONLY

32	Atterberg limits test in accordance with methods A2 to A4 of TMH1	No	1		RATE ONLY
33	UCS test in accordance with method A14 of TMH1	No	1		RATE ONLY
	Bituminous premix road surfacing, by approved asphalting specialist, at municipal entrance:				
34	Sealer coat of cutback bitumen spread over base course at the rate of 0,7 litre per m2.	m²	1		RATE ONLY
35	20mm Medium mix asphalt to roads.	m²	1		RATE ONLY
36	40mm Medium mix asphalt to roads.	m²	1		RATE ONLY
37	60mm Medium mix asphalt to roads.	m²	1		RATE ONLY
	BARRIER KERBS				
	Precast concrete finished smooth on exposed surfaces including 1:3 cement mortar bedding, jointing and pointing:				
38	Barrier kerb (SANS 927 fig 6 125x 230mm high with Class 15 unreinforced concrete 100 x 100mm haunching at back and 300 x 100mm strip footing including excavation, backfilling, formwork, etc (L.I.)	m	1		RATE ONLY
39	Barrier kerb (SANS 927 fig 6) 125 x 230mm high with Class 15 unreinforced concrete 100 x 100mm haunching at back and 300 x 100mm strip footing laid circular to not exceeding 4m radius including excavation, backfilling, formwork, etc (L.I.)	m	1		RATE ONLY
40	Barrier kerb (SANS 927 fig 6) 125x 230mm high with Class 15 unreinforced concrete 100 x 100mm haunching at back and 300 x 100mm strip footing laid circular to exceeding 4m radius including excavation, backfilling, formwork, etc (L.I.)	m	1		RATE ONLY
41	Barrier kerb (SANS 927 fig 3) 150 x 300mm high with Class 15 unreinforced concrete 100 x 100mm haunching at back and 300 x 100mm strip footing including excavation, backfilling, formwork, etc (L.I.)	m	1		RATE ONLY
42	Barrier kerb (SANS 927 fig 3) 150 x 300mm high with Class 15 unreinforced concrete 100 x 100mm haunching at back and 300 x 100mm strip footing laid circular to not exceeding 4m radius including excavation, backfilling, formwork, etc (L.I.)	m	1		RATE ONLY
43	Barrier kerb (SANS 927 fig 3) 150 x 300mm high with Class 15 unreinforced concrete 100 x 100mm haunching at back and 300 x 100mm strip footing laid circular to exceeding 4m radius including excavation, backfilling, formwork, etc (L.I.)	m	1		RATE ONLY
	Mountable Kerbs				
	230 x 125mm high Mountable Kerb with Class 20/19 continuous concrete base and channel size 600 x 155mm and Class 15/13 continuous concrete haunching 150 x 100mm haunching at back, including excavation, backfilling, formwork, etc.:				
44	Mountable Kerb fig 6.	m	1		RATE ONLY
45	Mountable Kerb fig 6 circular to radius not exceeding 4m	m	1		RATE ONLY
46	Mountable Kerb fig 6 circular to radius exceeding 4m.	m	1		RATE ONLY
	ROAD PAINTWORK				
	Approved roadmarking paint:				
47	Line 100mm wide (L.I.)	m	1		RATE ONLY
48	Line 200mm wide (L.I.)	m	1		RATE ONLY
49	Line 300mm wide (L.I.)	m	1		RATE ONLY
50	Line 500mm wide (L.I.)	m	1		RATE ONLY
51	100mm Interrupted line on concrete block surfaces. (L.I.)	m	1		RATE ONLY
52	100mm Interrupted traverse line on concrete island surfaces any colour. (L.I.)	m	1		RATE ONLY
53	Directional arrow size 750 x 1500mm on concrete block surfaces. (L.I.)	No.	1		RATE ONLY
54	Paraplegic symbol size 1500 x 1500mm on concrete block surfaces. (L.I.)	No.	1		RATE ONLY
55	5600 x 2200mm Demarcated pedestrian crossing. (L.I.)	No.	1		RATE ONLY

56	White lettering and symbols	No	1		RATE ONLY	
	SPECIAL SIGNS					
57	Super bright LED 4 X 8M double sided solar stud with NI-CD 1200M AH battery and weight 650g	N0	1		RATE ONLY	
	ROADWORK REPAIRS					
	The contractor is to take note that they will be monthly site inspections with the Engineering department to review the state of the of the roads and stormwater lines and to determine remedial action in line with the scope of the works and role out plans.The contractor must allow for any cost related to these meetings.					
	The contractor is to study the scope of work and is is encourage to visit the site to determine the the requirements of this contract so that the pricing of the document is line with the Scope Requirments					
	The quantittes below represents all the roads at Camden Power Station and only a small portiion of these roads will be required to be fixed over the 5 year period.					
	Fixing of small to medium Potholes in asphalt surfacing inside and outside the Power station					
58	The contractor must attend to Pot Hole repairs as and when they appear for the duration of the contract as per the detailed Road Specifications Document.The contractor must allow for all works related to the fixing of pot holes	m2	42 780		R	
	Fixing of large Potholes in asphalt surfacing inside and outside the Power station					
59	The contractor must attend to Pot Hole repairs as and when they appear for the duration of the contract as per the detailed Road Specifications Document.The contractor must allow for all works related to the fixing of pot holes	m2	42 780		R	
	Fixing gravel road Shoulder and cross section outside the Power station					
60	The contractor must attend to Gravel Road repairs as and when they appear for the duration of the contract as per the detailed Road Specifications Document .The contractor must allow for all works related to the fixing of the gravel road incuding importing G5 materrial as and when required.	m2	74 520		R	
	Fixing gravel road Shoulder and cross section inside the Power station					
61	The contractor must attend to Gravel Road repairs as and when they appear for the duration of the contract as per the detailed Road Specifications Document.The contractor must allow for all works related to the fixing of the Garvek Road including importing G5 material as and when required.	m2	37020		R	
	Road Drainage Maintenance					
62	Reparing damage inlet structures including cleaning stormwater side drains as and when required for the duration of the contract s per the detailed Road Specifications Document	m2	42 780		R	
	Precast Kebing					
63	Reparing damage kerbing to match existing as as and when required for the duration of the contract s per the detailed Road Specifications Document	m	15 760		R	
	Road Signage					
64	The contractor must attend to all Road Signage repairs as and when they appear for the duration of the contract as per the detailed Road Specifications Document	m2	42780		R	
	Road Marking					
65	The contractor must attend to all Road Signage repairs as and when they appear for the duration of the contract as per the detailed Road Specifications Document	m2	42780		R	

66	**Chemical Dust suppression** **Preamble** Application shall be done using a water tanker with nozzles that have been set to the manufacturer's recommended application pressure. The selected product must allow for timeous return to service of the road to traffic. The road's surface preparation and that of the of the product and application thereof must be according to the manufacturer's instructions. This includes the moisture content of the road's surface, mixing ratio of the product, etc. The application shall ensure that the product adequately penetrates and covers all parts of the roadbed. Repair the roads' defects. This shall include re-establishing the cross-sectional shape and side drains of all roads for adequate drainage. On the roads with ash pipes in the middle, ensure that the road drains away from this median. **NB!** All material (G5) and yellow plant (roller compactor, grader, dump truck etc.) for the above shall be provided and applied/operated by the Contractor. The material for the wearing coarse and subgrade shall be placed and compacted as per [3]. The above shall be done via the Camden's roads maintenance contract, and it must be done prior to the chemical dust suppression of the roads. The actual scope for chemical dust suppression shall include but not limited to: Supply and apply ***dustex*** or ***similar approved product*** on all the identified roads Application shall be done using a water tanker with nozzles that have been set to the manufacturer's recommended application pressure. The selected product must allow for timeous return to service of the road to traffic. The road's surface preparation and that of the of the product and application thereof must be according to the manufacturer's instructions. This includes the moisture content of the road's surface, mixing ratio of the product, etc. The application shall ensure that the product adequately penetrates and covers all parts of the roadbed. Supply and apply ***dustex*** or ***similar approved product*** on Gravel roads Application shall be done using a water tanker with nozzles that have been set to the manufacturer's recommended application pressure.	m2	93240		
67						
	PROVISIONAL SUMS NOTE: All P.C. Amounts and Provisional Sums appearing in these Bills of Quantities are Net Costs excluding Value Added Tax (VAT) and the Contractor must add for any profit, etc. If required against the item immediately following the P.C Amount or Provisional Sum concerned. The Provisional Sums are all NET amounts (exclusive of commission or discount for the contractor) Under no circumstances may any Provisional or Budgetary amount be extended at an amount lower than the amount given in the descriptions.					

	Provisional Sums and Budgetary allowances contained herein may be omitted or reduced at the Contracts Manager discretion and the Contractor shall not be entitled to claim for any loss by way of reductions or omission of any discount or percentage relating to Provisional amounts and Budgetary sums or any loss of profit related thereto.					
66	Provide the amount of R2 000,000.00 (Two million Rands) for undertaking any unforseen work that might be required during the contruction period	Item	1		R	2 000 000.00
67	Profit on above item.	Item	1			
68	Attendance on ditto.	Item	1			
	Bill Total Carried to Final Summary				**R**	

FINAL SUMMARY

ROADS BOQ

FINAL SUMMARY

No.	Description			Amount
1	Preliminaries			R
2	SHE BOQ			R
2	Bills Of Quantites			R
	Sub Total			**R**
	Value Added Tax			
	Allow 15 per cent (15%) of the above sub-total for Value Added Tax			R
	Carried to form of tender			**R**