



ANNEXURE A - TECHNICAL FMS : REQUIREMENTS FOR THE SERVICE AND PRICE LIST

**THE PROVISION OF FACILITIES MANAGEMENT SERVICES
(TECHNICAL SERVICES) FOR KWAZULU NATAL**

AREA: KWAZULU-NATAL

HOME CENTRE : _____

CONTRACT NUMBER :

CONTRACTOR :

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SECTION A - NOTES TO CONTRACTOR

1. BILLS OF QUANTITIES

This document comprises Notes to Contractors, model preambles , supplementary preambles and Bills of Quantities and is hereafter referred to as "the Bills of Quantities".

2.1 CONTRACT DOCUMENTS

The contract documents will consist of:

2.1.1 The NEC3 Term Service Contract

incorporated within the text of these Bills of Quantities, accordingly the contractor is urged to make careful reference to this Document for its full intent and meaning.

therein.

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

2.2 DRAWINGS

There are certain as built drawings available , but should the contractor require to view these drawings , these are available at Employers office.

3 PREAMBLES TO ALL TRADES

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by the Association of South African Eskom ERE (KZN) Officials) and the "Supplementary Preambles to All Trades" (Supplementary Preambles pages 1-10 hereof) for the full descriptions and specifications referred to in these Bills of Quantities. It should be noted that descriptions in these Bills of Quantities generally appear in brief, but whether specific reference to the Model Preambles and the "Supplementary Preambles" is made or not, they shall be deemed to apply fully to and augment the descriptions of the relevant items. No claim whatsoever will be allowed in respect of errors or omissions in pricing due to brevity of descriptions of items in the Bills of Quantities which are fully described when read in conjunction with the relevant requirements of the Model Preambles and the "Supplementary Preambles to All Trades". pricing these Bills of Quantities and all prices inserted in these Bills of Quantities shall cover all costs and charges that may be considered necessary by the Contractor for the carrying out and observance of the Provisions of the Model Preambles and the "Supplementary Preambles to All Trades". Where requirements of descriptions in the Bills of Quantities differ from the relevant requirements of the Model Preambles and the "Supplementary Preambles to All Trades", the requirements of the descriptions in the Bills of Quantities

4 VALUE ADDED TAX

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.

5 SCOPE OF WORK

Quantities.

6 POSSESSION OF SITE

obligations. Since this is a maintenance contract, the site will always be occupied by the Employer at all times.

7 TENDERS

Contractors are required to make themselves familiar with the sites before tendering, since no rates changes will be allowed after tender submission.

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, Eskom ERE (KZN) Official or Eskom ERE (KZN) Official.

9 AREA OF WORKS

The Contractor 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 the Municipal Engineer or the Local Authorities.

The contractor is deemed to have allowed for all necessary temporary fencing, screening, hoardings, etc. Space for the storage of Building Materials must be arranged with the Eskom ERE (KZN) Official.

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. Contractors 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 Eskom ERE (KZN) Official.

10 MANAGEMENT OF WORKS

The Contractor shall to the satisfaction of the Eskom ERE (KZN) Official provide, the services of an experienced Supervisor and / Manager.

ERE (KZN) Official prior to commencement on site and, after the Eskom ERE (KZN) Official'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 Eskom ERE (KZN) Official'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

approved by the Eskom ERE (KZN) Official 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 Eskom ERE (KZN) Official so that foundation and other inspections can be arranged.

12 SITE CLEANLINESS

whole of the site clean and tidy on completion to the satisfaction of the Eskom ERE (KZN) Official. 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 Contractor 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 a programme when required by the Employer.

15 PRICED BILLS OF QUANTITIES:

Contractors must submit to the Eskom ERE (KZN) Official 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 first and last pages signed in full by the Contractor.

16 IMPORT PERMITS:

Contractors must apply direct for any import permit and/or currency required, however the ESKOM HOLDINGS LIMITED will furnish successful Contractors with a supporting statement if required.

17 BILLS OF QUANTITIES:

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 Eskom ERE (KZN) Official will be adhered to.

measurement, which will be recognised in connection with this contract. Before the signing of the contract, the Eskom ERE (KZN) Official will be entitled to call for adjustments of individual rates and rectify discrepancies, as he considers necessary without alterations to the Tender amount.

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.

18 TRAFFIC AUTHORITIES AND REGULATIONS

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.

19 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.

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 Eskom ERE (KZN) Official.

20 SETTING OUT OF THE CONTRACT WORKS

works. The Contractor shall set out the Contract Works and shall be held solely responsible and liable for the correct centre lines, levels, and gradients.

21 KEEP EARTHWORKS FREE FROM WATER, MUD ETC.

The Contractor shall keep the earthworks free from water, mud, etc. by hand or machinery (including day and night attendance as necessary) as no water, mud, etc., shall be allowed to stand or accumulate.

The Contractor must cut all necessary trenches etc., and build embankments in order to divert stormwater and/or ground water and to protect the earthworks. The Contractor shall be solely responsible for any damage caused by storms, rains, surface or underground water or water from other causes.

On completion of the Contract, the Contractor shall fill in temporary trenches including compacting, and shall remove any temporary embankments all at his sole cost.

22 EXISTING AND ADJOINING PROPERTIES, PAVINGS ETC.

existing and adjoining premises and occupants thereof. He shall keep the Site well watered where necessary, and take all other steps, to prevent dust and shall keep pavements, surrounding roads etc., clean to the entire satisfaction of the Eskom ERE (KZN) Official and the Authorities.

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 Eskom ERE (KZN) Official in order to make written notes of any cracks defects, etc. which may later be claimed to have been caused by the operations under the Contract. Should defects be disclosed, the Contractor shall submit same in writing to the Eskom ERE (KZN) Official before commencing the Contract, failing which it shall be understood that no such defects existed and the Contractor shall be

23 PROCEDURE OF WORKS

deviations will be entertained.

Official.

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

24 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.

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.

strict accordance with the manufacturer's instructions after consultation with the manufacturer's authorised representative.

25 CONTRACTOR'S RESPONSIBILITY

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.

26 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

shall be recorded by the Eskom ERE (KZN) Official or other Employer's Agents to whom the Eskom ERE (KZN) Official has delegated Authority in the book.

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

b) Daily Record Book

all site visits by the Eskom ERE (KZN) Official 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 Eskom ERE (KZN) Official for his counter signature on a daily basis. Copies of these records shall be for the Eskom ERE (KZN) Official, Eskom ERE (KZN) Official and Contractor.

27 LOCATION OF TEMPORARY BUILDING AND TEMPORARY SERVICES

hard standing and services, etc. required for his own and Sub-Contractor's use during the construction and maintenance period.

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.

28 CONTRACTORS TO VISIT SITES PRIOR TO SUBMISSION OF TENDER

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

29 PRICING OF THESE GENERAL NOTES

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

PLEASE NOTE , UPON CONTRACT AWARD , ALL TERMINOLOGY THAT REFERS TO "ContractorS " IN THIS DOCUMENT , WILL HAVE THE SAME MEANING AS CONTRACTOR.

SECTION B - MODEL PREAMBLES

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

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

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

"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

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

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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

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

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

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. Contractors 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

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

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 oukclip 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. CONSTRUCTION

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

(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

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 50m³ 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

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

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

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. Perpendents 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

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

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

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

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

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,

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

I.8 JOINERY

Skirtings, cornices, rails, etc shall be in single lengths wherever practicable and shall have splayed heading joints 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

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

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

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 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

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

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

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

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

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 toppings 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

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

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

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

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

O.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

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

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 rechargeable 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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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 ..

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

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

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

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

SECTION C - SUPPLEMENTARY PREAMBLES

SUPPLEMENTARY PREAMBLES TO ALL TRADES

GENERAL PREAMBLES

The Contractor 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 MATERIALS AND WORKMANSHIP 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 Contractor 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

3 TRADE NAMES, ETC.

All materials, fittings, finishes, etc. specified under a "Trade Name", catalogue number of reference shall be either exactly as described or of equal quality, specification and weight to those described. The Eskom ERE (KZN) Official'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

4 APPROVED

"Approved" means approved by the Eskom ERE (KZN) Official in writing.

5 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" - **Sixth Edition as amended 1996 and 1999**, 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.

6 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.

7 NOMINAL SIZES

Where a component is specified as a nominal size the onus is on the Contractor to establish from the manufacturers the exact size or the likely size variation.

ALTERATIONS

FORMING NEW OPENINGS OR ALTERING OPENINGS IN EXISTING WALLS

Prices for items of forming new or altering existing openings shall, unless otherwise stated, include the following:

- a) Formwork for concrete cills and thresholds where required.
- b) Inserting 375 micrometre embossed polyethylene sheeting as damp-proof course under external window cills, including breaking out and making good brickwork as necessary.

The supply, etc., of all windows, doors, frames, etc., to the newly formed openings and the removal of all existing windows, doors, frames, etc., from openings to be altered, have been included elsewhere in these Bills of

EARTHWORKS

Generally:

Working space to sides of concrete wall footings, column bases, etc. will be measured and paid for only if specifically instructed by the Engineer as being required, and if the Contractor over-excavated areas will be to his account and shall be compacted to the same degree and in the same manner as the backfilling to the remainder of

Site Clearance

"Clear Site" shall include for digging up and removing all rubbish, vegetable soil and substance from the area of the site to be built upon, removing all small trees, etc. having a circumference of less than 200mm measured at a height of 1m above ground level including grubbing up all roots and roughly levelling and carting away debris to a site to be found by the Contractor.

Classification of Materials

The Soil Investigation Report is appended to the Back of these Bills of Quantities. The contractor is encouraged to study this document and acquaint himself with the soil conditions.

Carting away of excavated material

Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site.

Computation of Quantities

Earthworks will be measured by volume once only in excavation. The volumes handled will be computed from the difference in elevation between the original ground levels and the specified earthwork levels.

Prices of excavation

Prices for all items of excavation shall include for digging out, any necessary staging required, forming to falls, slopes, curves, etc., trimming sides and stepping, levelling and ramming bottoms and for watering same to the satisfaction of the Eskom ERE (KZN) Official if so directed.

Prices shall include for any extra labour required in recommencing excavation to make it deeper or wider if the Eskom ERE (KZN) Official so directs.

Prices shall also include for bulking after excavation and consolidation or filling and for multiple handling of excavated materials as no allowance for bulking or consolidation will be made.

CONCRETE, FORMWORK AND REINFORCEMENT

Prices of Concrete, Formwork and Reinforcement

(i) In situ Concrete

Prices of all in situ concrete shall include for mixing, hoisting and lowering to all levels, placing, working around reinforcement, vibrating, compacting, pumping, etc.

(ii) Formwork

Descriptions of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use.

The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damages and shall remain in position until newly constructed work is able to support itself.

Formwork to sides of bases, strap beams, etc. will only be measured where it is prescribed by the Engineer for design reasons. Formwork necessitated by irregularity or collapse of excavated faces will not be measured and the cost thereof shall be deemed to be included in the allowance for taking the risk of collapse of the sides of the excavations, provision for which is made in "Earthworks".

The prices of all formwork shall include for use, waste, all straight, square and raking cutting, splayed edges, intersections, struts, hangers, etc. horsing up, wedging, maintaining, easing, striking and removing as and when directed, except where described as "Permanent". The formwork is measured to the actual nett surface of the

Prices for smooth formwork shall include 25 x 25mm timber to all external angles.

(iii) Power Floating

After the concrete has been properly placed, struck off or rolled, it shall not be worked until ready for floating. The lapse of time between tamping and power floating may vary from 2 to 8 hours or more depending on weather conditions, concrete temperature and concrete mixture. It should be noted that it may be necessary to power float outside normal working hours and prices shall include for this possibility.

Floating shall begin when the water sheen has disappeared or the mix has stiffened enough so that the weight of a man standing on its leaves on a slight imprint on the surface. If two power floating operations are necessary to bring the surface to the desired state, the concrete shall be allowed to stiffen or become harder before beginning the second floating operation.

Sprinkling dry cement or a mixture of dry cement and water on the surface of the fresh concrete to absorb water or to stiffen the mix shall not be permitted during any stage of floor construction.

Power floating shall continue until the surface attains an even fine matt texture.

The maximum variation in surface tolerance for powerfloated floors shall be 3mm in 3000mm. If variations greater than this exist, the Eskom ERE (KZN) Official may direct the Contractor to grind the floor, at his own cost, to bring the surface within the requirements. Patching of low spots shall not be permitted. Grinding shall be done as soon as possible, preferably within 3 days, but not until the concrete is sufficiently strong to prevent dislodging coarse aggregate particles.

(iv) Steel Reinforcement

The prices for steel reinforcement shall include for the supply, cutting to lengths, bending to the exact dimensions and shapes shown on the drawings and schedules, lowering or hoisting to the various floor levels, placing and wiring in position with and including 1.60 or 1.25mm diameter annealed wire or by the use of all necessary spacers, lifting blocks, etc. and maintaining in position while the concrete is being deposited. Prices of fabric reinforcement shall include for unrolling, cutting, bending and binding wire, and for 300mm (minimum) side and end laps, hoisting or lowering and fixing and maintaining in position complete.

COST OF TEST

The costs of making, storing and testing of concrete test cubes shall include the cost of providing cube moulds necessary for the purpose, for testing costs and for submitting reports of the tests to the Eskom ERE (KZN) Official. The testing shall be undertaken by an independent firm or institution nominated by the Contractor to the approval of the Eskom ERE (KZN) Official. (Test cubes are measured separately.)

BRICKWORK

Clay Bricks

Stock bricks generally shall be good, hard, sound, well burnt clay stock, even in size and shape and equal to samples to be submitted to and approved by the Eskom ERE (KZN) Official. No chipped or damaged face bricks

Wire Ties

Where brickwork is required to be in two skins prices shall include for 3.5mm (minimum) modified P.W.D. type galvanised steel wire ties, at a rate of not less than five per square metre.

Where brickwork is described as being in hollow walls prices shall include for 3.5mm (minimum) Butterfly type galvanised steel wire ties at a rate of not less than five per square metre.

Where brickwork is described as being in lining to concrete, prices shall include for 3.5mm (minimum) Butterfly type galvanised steel wire ties at a rate of not less than five per square meter, and for fixing inside formwork, embedding in concrete and for building into brickwork. Additional ties shall be provided within 230mm of any opening at every fourth course.

Builder's Work To Services

No separate items shall be measured for building in electrical boards, switchboards, pipes, etc. but the contractor shall allow in his price of brickwork for building in distribution boards, switchboxes, etc. or leaving recesses for same, cutting and fitting around pipes and flushing solid all chasses in cement mortar.

Prices

The prices for brickwork, etc. shall include for all cutting, plumbing angles, forming reveals weep holes in cavity walls, waste, and for wedging and pinning to underside of steel or concrete beams, concrete slabs, etc.

Prices shall also include for soaking bricks in water immediately before laying, hoisting bricks and mortar, etc. to various floor levels and for raking out joints of brickwork to be plastered or tiled.

CLEARING OFF

Great care shall be taken to keep face brickwork, brickwork, quarry tiles, etc., free from surplus mortar as the work proceeds and at completion they shall be cleaned off with spirits or salts and water or other approved cleaning materials. Rates shall include for this.

Bagged Finish

Bagged finish to brickwork is to be done whilst the mortar in joints is still soft and shall be formed by rubbing over the walls with wet rough sacking, until all joints and cervices are filled up and an even surface is obtained. Mortar, as used for building the brickwork, shall be added as may be necessary.

If bagged to walls is done after the mortar in joints is set. The wall surfaces shall be rubbed over with wet rough sacking as above, but cement grout shall be added as necessary to fill up the joints and crevices and to obtain an even surface. The final rub is to be done only vertically or horizontally and not circular.

ROOF COVERINGS, ETC

COLOURED METAL ROOF SHEETING

The sheeting and fittings shall be Global Roofing Solutions BR7 profiled steel sheets and fittings with standard colour finish. The roofing sheets shall be fixed to timber or steel purlins with the appropriate fixing clips,

All fittings, fixing clips, etc., shall be those supplied by the manufacturer of the sheeting.

Fittings, unless otherwise stated, shall be lapped a minimum of 150mm.

Descriptions of all roofing and fittings shall be deemed to include for: -

(a) Fixing as described and in accordance with the manufacturer's instructions with and including all necessary

(b) Fastening of fittings to the tops of the vertical ribs with approved pop rivets soldered over or with

20mm x No. 14 (sherardised or stainless) steel self-tapping screws each fitted with one bonded galvanised and bituminous felt washer

(c) Notching fittings over ribs of roofing or cladding sheets where described in the items

(d) Coating the heads of all fasteners and the cut edges of all sheets with matching touch-up compound supplied by the manufacturer of the sheeting and in accordance with their instructions.

Taking special care and precautions at all times to prevent the scratching of or other damage to the finished

CARPENTRY AND JOINERY

CONSTRUCTION IN GENERAL

All timbers shall be in as long lengths as possible and except where lapping is possible, timbers up to 76mm in depth shall be halved at junctions and angles and above 76mm shall be splay-scarved at junctions; in all cases the joints shall be arranged over the points of support and well spiked.

PLASTERING

PREPARATION OF SURFACES

Prior to the application of floor finishes, screeds, plaster finishes, etc., the surfaces of the new concrete, brickwork, etc. shall be thoroughly cleaned, chipped, hacked, sloshed, etc. as necessary to ensure a satisfactory bond. The Contractor will be held entirely responsible for the proper and adequate preparation of the surfaces and any work which results in failure in this regard shall be made good at the Contractor's expense to the satisfaction of the

PLUMBING AND DRAINAGE

FIXING OF PIPES

Where pipes or gutters are fixed to walls, soffits, roof timbers, etc., descriptions shall be deemed to include for all necessary brackets, holder bats, pipe clips, etc. and for plugging and screwing or cutting and pinning or building tails of holder bats, hangers, etc., to brickwork or concrete in (1:3) cement mortar and for making good. No distinction is made between pipes fixed to different elements, cut in, chased in ceiling, built in etc.

PAINTWORK

Materials

For any particular work the priming coat and subsequent coats of paint shall be executed with paints from the same manufacturer.

The Contractor will be held entirely responsible for the proper and adequate preparation of the surfaces and any work which fails to meet the manufacturer's recommendations must be made good at the Contractor's expense to the satisfaction of the Eskom ERE (KZN) Official.

Descriptions

Descriptions shall be deemed to include for cutting in of contrasting colours or paints and masking as required.

Item	Description	Unit
PG	<u>SECTION 1 : PRELIMINARIES AND GENERAL</u>	
	P&G's, will be applied as the percentage priced by the Contractor on all works executed.	
PG1	P&G WILL NOT BE APPLICABLE TO ANY SUB CONTRACT / SPECIALIST WORKS QUOTED BY THE CONTRACTOR UNDER SOR30.	Percentage Markup
	This P&G will not be applicable for items under Sections 6, 7, 8, 9, 10, 11 and 12.	
	<u>PART A : PRELIMINARIES</u>	
	<u>SUPPLEMENTARY DOCUMENTATION</u>	
	<u>Bills of Quantities</u>	
	The pages of the Bills of Quantities are numbered consecutively.	
	<p>The Contractor 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 Contractor shall notify the Eskom Property Management (KZN) Official 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 above mentioned causes.</p>	
	Items in these Bills of Quantities are to be read and priced in conjunction with and the descriptions regarded as amplified by the Service Information and no claim arising from brevity of description of items fully described in the Trade Preambles will be entertained.	
	Prime Cost and Provisional Amounts etc., contained herein may be omitted or reduced at the Eskom Property Management (KZN) Official'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.

Inspection of documents

There are certain as built drawings available, should the Contractor require to view these drawings, these are available at Eskom's office.

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.

Inspection of the Site

The Contractor 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 adjacent premises occupied

The Contractor to note that the site forms part of an existing working area. The adjacent 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 Eskom are described in clauses.

Services - 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 Eskom Property Management (KZN) Official forthwith and request a contract instruction in regard thereto.

Protection of trees on adjacent site

Trees and shrubs shall not be removed, cut back or disturbed in any way without the consent of the Eskom Property Management (KZN) Official. Specific requirements of Eskom are described in detail in the Works Information.

Inspection of adjoining properties, etc.

Before commencing the Works Eskom / Contractor may 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 Eskom Property Management (KZN) Official 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.

Where instructed by the Eskom Property Management (KZN) Official, levels and photographs shall be taken by the Contractor and the cost thereof shall be for Eskom's account. Certified copies shall be lodged with the Eskom Property Management (KZN) Official.

MANAGEMENT OF CONTRACT

Programme for the Works

The Contractor shall provide with his methodology a programme after contract award, subject to Eskom providing him with a maintenance plan for each year of the contract.

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 Eskom Property Management (KZN) Official 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 Eskom Property Management (KZN) Official and / or the Sub-Contractor where relevant.

Progress Meetings

The Eskom Property Management (KZN) Official, 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 Eskom Property Management (KZN) Official. The Service 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

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.

Monthly reports

The Contractor will be required to submit a monthly report to the Service Manager. Example of Items that need to be included in the report will be labour manhours, status of task orders, status of quotations, status of Early Warnings, list of employee names, list of Sub-Contractors etc.

The content and format of report to be agreed by Service Manager.

MATERIALS AND WORKMANSHIP

Samples of materials

The Contractor shall furnish samples of materials and specimens of finishes as may be called for by the Eskom Property Management (KZN) Official for his approval.

Workmanship samples

The Eskom Property Management (KZN) Official may instruct the Contractor to furnish samples of workmanship for his approval. Where the Eskom Property Management (KZN) Official 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 Eskom's expense and the contract value shall be adjusted accordingly.

The Eskom Property Management (KZN) Official 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

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

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. If this is required, the Contractor to provide quotation for Eskom acceptance.

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.

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 Service Manager. If this is required, the Contractor will provide a quotation for this works for Eskom's acceptance.

Advertising

All advertising rights on the site and the hoardings are reserved exclusively for Eskom, as agreed to by the Service Manager.

Plant, equipment, sheds and offices

The Contractor shall provide, maintain and remove on completion:

a) All plant, equipment, tools and the like required by the Contractor for the due and proper fulfilment of the Works, excluding scaffolding.

FINANCIAL ASPECTS

Taxes, etc.

Value added Tax (VAT) shall not be included in the prices and/ or rates of all measured items.

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 Eskom and any reduction in tax likewise resulting shall be for the benefit of the Eskom.

GENERAL

Protection of the Works

Specific protection measures required by Eskom are described in detail in the Works Information

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. If this is required, the Contractor to provide a quotation for Eskom's acceptance.

Disturbance

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

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

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

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.

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.

Eskom Property Management (KZN) Official and Supervisor

Where the Service Information is in a drawing, specification or other document referred to therein, refers to the words Architect or Engineer, these shall be interpreted as:

- a) Eskom Property Management (KZN) Official.

National Building regulations

The Contractor is to ensure he complies with all requirements in terms of National Building regulations when executing work on site.

PART B : SPECIFIC PRELIMINARIES

SUPPLEMENTARY DOCUMENTATION

As built drawings

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.

Unauthorised Persons/ Workmen on Premises

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.

MANAGEMENT OF CONTRACT

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.

Building inspections

The Contractor is required to do building inspections on a regular basis and report back to the Service Manager. Frequency to be determined by the Service Manager.

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 Eskom

The Contractor together with his Sub-Contractors shall not, without the written consent of Eskom, cause any statement or advertisement to be printed, screened or aired by the media.

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.

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 Project Manager must be notified timeously.

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.

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.

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 satisfaction of the Eskom Property Management (KZN) Official any damage resulting therefrom.

Cost of Claims

All costs incurred by the Contractor in the preparation of quotations supplied to the Eskom Property Management (KZN) Official and/ or Quantity Surveyor shall be borne by the Contractor.

Signage

All warning signage must be in English

Environmental requirements

All costs related to the compliance of the Environmental Requirements must be allowed for by the Contractor under the P&G markup

Proprietary branded products

The Contractor shall 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 authorized representative.

Contractor's Responsibility

The Eskom, the Eskom Property Management (KZN) Official 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 times be responsible for any such neglect, deviation or wrong act, whether the same discovered before or after the final certificate, or any other Certificate, has been is approved.

Overtime

Should overtime be required to be worked for any reason whatsoever, Eskom must be notified.

Guarantees and Maintenance Manuals

The Contractor shall obtain and hand over to the Eskom Property Management (KZN) Official, all relevant guarantees, warranties, any operating and maintenance instruction manuals, data or instructions required by the Eskom Property Management (KZN) Official or provided by manufacturer's, suppliers or Sub-Contractors.

The Contractor shall ensure that all warranties and guarantees received are fully ceded to Eskom on Final Completion, failing which the release of the last payment due to the Contractor will be withheld until this is received.

Overloading

The Contractor shall take all necessary steps to ensure that no damage occurs due to overloading of any portion of the Works. The Contractor shall submit details of his proposed loading, storage, plant, erection etc., to the Eskom Property Management (KZN) Official for their approval prior to proceeding with such loading, storing, erecting or executing work and shall comply with and pay for the Engineers requirements in connection with the provision of temporary support work etc. Any damage caused by the Works by overloading shall be made good by the Contractor at his sole expense.

Notwithstanding any approval given by the Eskom Property Management (KZN) Official, the Contractor shall be entirely responsible for damage caused to the Works by overloading which damage shall be made good by the Contractor at his sole expense

Location of Temporary Buildings and Temporary Services

The Contractor shall provide all necessary temporary works, including temporary roads, tracks, crossings, hardstanding and services, hoardings, dust screens, tunnelling etc. required for his own and Sub-Contractor's use during the construction and maintenance period. If this is required, the Contractor to provide quotation for this works for Eskom acceptance.

There is no guarantee given or implied that Site conditions will be such that the Contractor will be able to erect such temporary works, roads, hardhats, 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 all necessary permission and pay all costs in connection therewith.

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Mode of Procedure

Notwithstanding anything to the contrary contained herein the Eskom Property Management (KZN) Official at all times reserves the right to direct the order in which the various parts of the Contract are to be executed. The Contractor shall give priority to any individual section or portion of the Works that, in the opinion of the Eskom Property Management (KZN) Official, requires to be expedited.

Method Statement

The Contractor shall produce, when required to do so by the Eskom Property Management (KZN) Official, a Method Statement outlining the methods of construction and labour and plant resources that he proposes to use in the execution of the Works. Any approval given or observation made by the Eskom Property Management (KZN) Official shall not relieve the Contractor of his sole responsibility to adopt the methods of construction and to provide the labour and plant resources necessary for the due and proper timeous execution of the Works.

Encroachment

During the course of the building operations, the Contractor shall be held entirely responsible for any encroachment onto any adjoining properties, buildings etc. or servitudes and the cost of any remedial measures as required by the Eskom Property Management (KZN) Official shall be borne by the Contractor

SHEQ COMPLIANCE INCLUDING SAFETY OFFICER

The Contractor shall be accountable for the SHEQ Compliance, for all works for the duration of the contract.

The safety officer referred to under this section is for the Contractor to meet the safety compliance and safety management/administration throughout the duration of the contract. SHEQ compliance including safety officer will be covered under the P&G rate.

This does not cover safety officers appointed for specific works. When there is a legislative or risk based requirement for the appointment of a dedicated safety officer for specific works this should be quoted for, and submitted to the Service Manager for approval.

SUPERVISION OF WORKS

The Contractor shall be accountable for the Supervision, for all works for the duration of the contract. Supervision will be covered under the P&G rate.

This does not cover a supervisor appointed for specific works. When there is a legislative or risk based requirement for the appointment of a dedicated supervisor for specific works this should be quoted for, and submitted to the Service Manager for approval.

MANAGEMENT AND CONTRACT ADMINISTRATION

The Contractor shall be accountable for the management and administration, for all works for the duration of the contract. Management and Administration will be covered for under the P&G rate.

Item	Description	Unit
B	<p><u>SECTION 2 : BUILDING WORKS</u></p> <p><u>PRICING OF RATES</u></p> <p>All rates inserted in this section of the Bills of Quantities shall cover all costs ie. labour, material, equipment and profit (excluding P&G, scaffolding and transport) that may be considered necessary for the carrying out and observance for the provisions of these "Preambles to all Trades.", unless otherwise stated. Transport will be paid as per item SOR29 under Section 5 : Schedule of Rates Bill.</p> <p>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".</p> <p>The Contractor shall insert the amount required against each item which he intends 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.</p> <p>The Contractor must refer to the Schedule of Rates bill and ensure the required skill profile for this Bill is utilised when carrying out works on site. Contractors must make due allowance for this in their rates and no claims will be entertained in this regard after contract award.</p> <p><u>Overtime work and normal work:</u></p> <p>The Contractor is advised that the following works will be done during normal working hours. For works done after hours, weekends and public holidays, overtime percentage increase will apply.</p> <p><u>BILL NO.1 : EARTHWORKS</u></p> <p><u>PREAMBLES</u></p> <p>The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles.</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>Nature of ground:</u></p> <p>The Contractor must acquaint himself with the nature of the material to be excavated.</p>	

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 not been carried out on site by the Engineer and the report is not annexed to the back of 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.

Carting away of excavated material:

Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site.

Subterranean Water:

The Contractor must keep proper records for all dewatering and these records must be signed by the Eskom Property Management (KZN) Official on a weekly basis so that payments can be effected. If this process is not followed, this work will be provided free of charge.

BILL NO.2 : CONCRETE, FORMWORK AND REINFORCEMENT (PROVISIONAL)

PREAMBLES

The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles

SUPPLEMENTARY PREAMBLES

SAN Standards:

All concrete work is to be in accordance with the relevant sections of SANS 1200

Cost of tests:

Descriptions of concrete items shall be deemed to include for all necessary testing of concrete components and trial mixes

Testing of concrete strength test cubes is measured separately in an inclusive item. The Contractor shall make an assessment of all testing required and include the cost in the item rate

The costs of making, storing and testing of concrete test cubes as required under clause 7 "Tests" of SABS 1200 G shall include the cost of providing cube moulds necessary for the purpose, for testing costs and for submitting reports on the tests to the Eskom Property Management (KZN) Official. The testing shall be undertaken by an independent firm or institution nominated by the Contractor to the approval of the Eskom Property Management (KZN) Official. (Test cubes are measured separately)

Formwork:

Description of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use

The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself.

Formworks to soffits of solid etc shall be deemed to be slabs not exceeding 250mm thick unless otherwise described

Formwork to sides of bases, pile caps, ground beams, etc will only be measured where it is prescribed by the engineer for design reasons. Formwork necessitated by irregularity or collapse of excavated faces will not be measured and the cost thereof shall be deemed to be included in the allowance for taking the risk of collapse of the sides of the excavations, provision for which is made in "Earthworks"

Holding down bolts:

Holding down bolts are to be handed over from steel fabricator to the Contractor to be bedded into concrete.

BILL NO.3 : MASONRY

PREAMBLES

The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles

SUPPLEMENTARY PREAMBLES

Descriptions:

Where sizes in descriptions are given in brick units, "one brick" shall be the length and "half brick" the width of a brick.

Samples of all masonry building units, except those for walls described as "load bearing", shall consist of a minimum of 6 units. Samples of building units to be used in walls described as "load bearing" shall consist of 30 units from every 30 000 units delivered to site.

Descriptions of brickwork shall be deemed to include for steel reinforcing fabric as specified every fourth course in superstructure and every course in foundations. Additional reinforcement in lintels, etc are measured separately.

Bricks shall be ordered timeously to obtain uniformity in size and colour.

Descriptions of recessed pointing to fair face brickwork and face brickwork shall be deemed to include square recessed, hollow recessed, weathered pointing, etc.

Rates for brickwork, faced brickwork, etc shall include for all required samples.

Walls in two skins described as 'bagged and sealed' shall be deemed to include having the outer face of the inner skin bagged with 1:6 cement and sand mixture and sealed with two coats 'Brixéal' bitumen emulsion waterproofing coating

Tests:

The Contractor must provide all test results to the Eskom Property Management (KZN) Official for approval.

Sizes in descriptions:

Where sizes in descriptions are given in brick units, 'one brick' shall represent the length and 'half brick' the width of a brick.

Hollow walls etc:

Descriptions of hollow walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.

Bagged and sealed walls:

Walls in two skins described as 'bagged and sealed' shall be deemed to include having the outer face of the inner skin bagged with 1:6 cement and sand mixture and sealed with three coats 'Brixéal' bitumen emulsion waterproofing coating.

Wall ties in hollow walls:

Wall ties shall be polypropylene 'Permaties' complying with BS 76377. Ties for hollow walls shall be of sufficient length to allow not less than 75mm of each end to be built into the brickwork. Ties are to be spaced at intervals of not more than 1m in the horizontal direction and no more than 400mm staggered in the vertical direction except at openings, vertical joints or ends of walls where they are to be placed vertically above each other.

Face Bricks:

Bricks shall be ordered timeously to obtain uniformity in size and colour, no delay claims will be entertained for late delivery of face bricks.

Pointing:

Descriptions of "recessed" pointing to face brickwork shall be deemed to include polished, square recessed, weathered pointing, etc.

Samples:

Samples of all masonry building units, except those for walls described as 'load bearing', shall consist of a minimum of 6 units. Samples of building units to be used in walls described as 'load bearing' shall consist of 30 units from every 30 000 units delivered to site

Mock-up:

The Contractor must allow in his pricing for a mock-up of a 4m² panel of face brick work for the approval of the Eskom Property Management (KZN) Official. The mock-up is to remain for the duration of the project.

Selection of face bricks:

The Contractor must allow for in his pricing to select the face bricks so that there is no colour variance in the works.

General:

The Contractor must allow for in his pricing to thoroughly clean all brickwork with approved detergent and Jet sprayed on completion of the works.

Fibre-cement cills:

Before setting cills in mortar, Contractor to ensure the metal lugs are firmly attached to the sill. Cills are to be soaked in water prior to bedding. Where only a thin mortar bed is possible and the lug cannot be fully embedded, pockets in the masonry must be provided to ensure adequate fixing. Where cills are plastered into reveals, sill ends should be separated by means of a thin joint or plastic sheeting.

BILL NO.4 : WATERPROOFING

PREAMBLES

The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles

SUPPLEMENTARY PREAMBLES:

Guarantee:

The guarantee on the waterproofing must cover the waterproofing material plus removal and reinstatement of the ancillary work to the satisfaction of the Eskom ERE (KZN) Official.

Waterproofing to SANS 021:

Waterproofing of roofs, retaining walls, etc shall be laid under a ten year written guarantee for site workmanship and watertightness. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups, turn-downs and full bores. All waterproofing to be laid by an approved installation company.

General:

All waterproofing work must be thoroughly inspected by the Eskom ERE (KZN) Official prior to it being covered up.

WATER PROOFING OF WALLS ,FLOORS AND SLABS

BILL NO.5 : ROOF COVERINGS

ROOF INSULATION

BILL NO.6 : CARPENTRY AND JOINERY

**KITCHEN CUPBOARDS AND WORKTOPS, COUNTERS,
BENCHES, SHELVES ETC**

BILL NO.7 : CEILINGS, PARTITIONS AND ACCESS FLOORING

PREAMBLES

The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles

SUPPLEMENTARY PREAMBLES

Descriptions:

Items described as nailed shall be deemed to be fixed with hardened steel nails or pins or shot pinned to brickwork or concrete.

Items described as plugged shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 600mm centres, and where described as bolted the bolts have been given.

CEILINGS, ETC

9,5mm 'Rhino-board' square edged gypsum plasterboard screwed to 'Donn T37K' galvanised steel capped tee flush plastered ceiling suspension system with drywall screws spaced at 250mm centres, including galvanised 1200mm centres and cross tees at 300mm centres, all suspended with galvanised [19mm straps / 20 x 20mm angles] at not exceeding 1200mm centres, with 48mm wide strips of 'Fibatape' fixed over joints and the whole finished with minimum 3mm and maximum 6mm thick coat of 'Rhinolite or 'Crestone' gypsum skim plaster trowelled to smooth polished surface in strict accordance with the manufacturer's instructions:

B1 Ceilings suspended not exceeding 1m below horizontal steel trusses

m²

SUSPENDED CEILINGS

Masonite Armstrong' square/revealed edged edge 'Dune Supreme' ceiling tiles size 1200 x 600mm, in colour Global White, laid in 'Masonite Armstrong' 1 hour fire rated, stitched 'Trulock 24' exposed grid system with 24mm wide T-section flanges including galvanised main tees, cross tees, hold-down clips, wedges, reinforcement splines, etc., all suspended with galvanised hangers strictly in accordance with the manufacturer's instructions and SABISA's guidelines:

B2 Ceilings suspended not exceeding 1m below timber purlins at 1200mm centres with trusses at 1200mm centres.

m²

B3 Supply and fit acoustic ceiling tiles size 600x600

ea

B4 Supply and fit acoustic ceiling tiles size 600x1200

ea

B5 Supply and fit acoustic vinyl clad ceiling tiles size 600x600

ea

B6	Supply and fit acoustic vinyl clad ceiling tiles size 600x1200	ea
	<u>CORNICE</u>	
B7	20 x 20mm pre-painted shadowline cornices for suspended ceilings.	m
	<u>Nu-cornice' Fibre Cement Cornices:</u>	
B8	75mm Coved cornice fixed with adhesive	m
	<u>PARTITIONING, ETC</u>	
	Rhino GypRoc Drywall Classic GW-ST partitioning with cavity bat to give 48dB sound rating	
B9	Erect drywall partition not exceeding 3m high	m ²
	<u>BILL NO.8 : FLOOR COVERINGS</u>	
	<u>PREAMBLES:</u>	
	The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles	
	<u>SUPPLEMENTARY PREAMBLES</u>	
	<u>Floor and Wall Coverings:</u>	
	All floor coverings and wall linings are to be installed strictly in accordance with the manufacturer's detailed instructions by an approved installation company.	
	<u>Samples:</u>	
	The Contractor must allow in his prices to provide a 10m ² sample panel to the Eskom ERE (KZN) Official's approval for all different finishes. The sample is to remain until the end of the contract.	
	<u>TUFTED CARPET SHEETING AND TILES</u>	
	<u>"Berber Point 920" Bitumen backed carpet tiles (colour: Boron) including adhesive and preparation of screeded surfaces</u>	
B10	On floors, stairs, ramps,landings etc	m ²
	<u>"Berber Point 920" full back carpet tiles (colour: Boron) including adhesive and preparation of screeded surfaces</u>	
B11	On floors, stairs, ramps,landings etc	m ²

BILL NO.9 : IRONMONGERY

PREAMBLES

The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles

SUPPLEMENTARY PREAMBLES:

The Contractor is referred to the separate document C2.1 Supplementary Preambles which shall be read in conjunction with and shall apply to all items in these Bills of Quantities. Items, materials or methods to be used specified by trade names or catalogue numbers are only an indication of the quality required. Items, materials or methods of similar quality may be used with prior approval from the Eskom ERE (KZN) Official.

Fixing of ironmongery:

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 must be used.

B12 Union door lock 2 mortice

No

B13 Union door lock 3 mortice

No

BILL 10 : VERTICAL BLINDS

BILL NO.11 : METALWORK

PREAMBLES

The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles

SUPPLEMENTARY PREAMBLES:

Shop Drawings:

As a general rule all work related to this trade must have shop drawings prepared and approved by the Eskom ERE (KZN) Official prior to fabrication. Where there is reference to design and supply, it must be designed by a professionally registered engineer.

Descriptions

Descriptions of bolts shall be deemed to include nuts and washers

Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete

Metalwork described as "holed for bolt(s)" shall be deemed to exclude the bolts unless otherwise described.

Steelwork, where galvanised, is to be hot dipped galvanised to ISO 1461-1999

Contractor to supply product guarantee and slips to architect. All goods to comply with SANS.

Hot dipped galvanised and epoxy powder coated to approved colour by specialists mild steel gates.

ALUMINIUM WINDOWS, DOORS, ETC.

The following Preambles 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 L28 aluminium members of 6063-T6, 6261-T6 or 6082-T6 alloy and temper. All corners are to be mechanically cleated.

Windows, doors, etc shall be of an approved standard system, manufactured by an approved firm experienced in this type of work and registered with the Association of Architectural Aluminium Manufacturers of South Africa (AAAMSA), and shall meet with or exceed the minimum recommended performance requirements as set out by the AAAMSA in the latest edition of the Selection Guide. Doors shall comply with the AAAMSA PTHA1 performance standard.

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 Eskom ERE (KZN) Official for approval.

An (AAAMSA) performance certificate from the manufacturer of the windows and doors shall be provided prior to commencement of any work on site.

Top hung opening sashes shall be hung on two concealed heavy duty FS12-1543 grade 304 stainless steel friction stays and fitted with epoxy powder coated window fasteners.

All opening sashes are to be fitted with approved woodpile weatherseals.

Glazing beads:

Where so described, openings and sashes of windows and doors shall be fitted with approved clip on 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.

Finishes:

Windows, doors, etc., described as natural 'anodised' shall be treated with Grade 25 coating thickness.

The contractor shall provide a certificate of conformance with these standards.

Glazing:

Glazing is to be carried out in strict accordance with the SANS 0137/2000 code of Practice: "The Installation of Glazing in Buildings" and where required, safety glazing materials must conform to SANS 1263.

The contractor shall provide a certificate of conformance with these standards.

Laminated safety glazing shall be warranted, by the manufacturer, against delamination and colour degradation for not less than 5 years.

The contractor shall provide a certificate to this effect.

Gasket seals for glazing are to be approved Santoprene seals as recommended by the manufacturer and to suit the glazing thickness.

General:

Aluminium windows, doors, etc shall include glass as described, fixing in position, sealing around edges externally and internally with approved silicone sealant and protection against damage, deterioration or discolouration by taping the whole door/ window with removable PVC tape or covering with temporary casings and removing same on completion. The protection is to be removed only when authorised by the Eskom ERE (KZN) Official

Rivets:

All rivets to be stainless steel.

BILL NO.12 : PLASTERING

The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles

SCREEDS

Screeds on concrete:

1:4 Cement plaster screeds wood floated on concrete:

B14 25mm Thick on floors and landings.

m²

INTERNAL PLASTER

1:5 Cement plaster on masonry / concrete:

B15 On walls

m²

B16 On columns / beams

m²

B17 On ceilings.

m²

EXTERNAL PLASTER

1:4 Cement plaster on masonry/concrete:

B18 On columns / beams

m²

B19 On walls

m²

B20 On ceilings.

m²

BILL NO.15 : PAINTWORK

PREAMBLES

The Contractor is referred to the relevant clauses in the latest edition of the Model Preambles for Trades and to the Supplementary Preambles

SUPPLEMENTARY PREAMBLES:

Manufacturer's Details:

The following paints are to be manufactured/supplied by PLASCON PAINTS (PTY) LTD and applied in strict accordance with the manufacturer/supplier's specification.

Supplementary Preambles:

All work to be executed in strict accordance with the specifications of Plascon Paints (Pty) Ltd. The coating systems are as per Plascon's 'List of Decorative Paint Products' unless otherwise specified. Full specifications are available on request from Sophie Fourie Tel. (011) 301-4600 or from the various branch offices as listed above.

Primers and first coats may be thinned in accordance with the paint specifications of Plascon Paints (Pty) Ltd to aid the absorption of the paint.

All surfaces must be sound, clean and have a moisture content of less than 8% for walls generally and 3% for slabs/screeds etc.

Where surfaces of plaster etc are sandy / friable, the first coat must be replaced with 'Plascon Merit' plaster primer thinned 10% with turpentine.

Paint Colours:

The Contractor is to note the following colour specifications and their application:

1. Internal doors are to be Plascon E14-5 Sombrero
2. Internal and External door frames to be Plascon E14-4 Mayan Stone
3. Windows (steel) to be Plascon enamel/gloss (white)
4. All walls and ceilings to kitchen and ablutions to be Plascon Double Velvet (white)
5. Internal walls to office areas to be Plascon E14-2 Hudson
6. External walls to be Plascon A11-5 Gruyere

ON FLOATED PLASTER

Prepare surfaces and remove all loose material, apply one coat 'Plascon Merit Plaster Primer' and two coats 'Plascon Polvin Super Acrylic' paint:

B21 On interior walls.

m²

B22 On interior ceilings.

m²

ON SKIM PLASTER

Prepare surfaces and remove all loose material, apply one coat 'Plascon Merit Plaster Primer' and three coats 'Plascon Double Velvet Pure Acrylic' paint:

B23 On interior walls.

m²

B24 On ceilings and cornices.

m²

ON WOOD

	<u>Prepare and apply three coats 'Plascon Woodcare Woodcoat Polyurethane' X33/X44 suede clear varnish:</u>	
B25	On doors.	m ²
B26	On door frames.	m ²
B27	On skirtings, rails, etc not exceeding 300 mm girth	m
B28	On timber floors	m ²
	<u>Stop, fill, sand down and prepare wood surfaces and apply one coat 'Plascon Oil Wood Primer', one coat 'Plascon Merit Universal Undercoat' and two coats 'Plascon Velvaglo Polyurethane Enamel' paint:</u>	
B29	On interior doors.	m ²
B30	On door frames.	m ²
	<u>Plascon Professional Evolution Acrylic to interior new gypsum plaster board. Surface to be dry, sound and free of dirt and loose particles. Wipe down with a damp cloth and allow to dry completely. Prime with one coat Professional Plaster Primer (PP 700) with an over coating time of 16 hours and finish with three coats Professional Evolution Acrylic (PEV 900) with 2 hours drying time between coats, for a maintenance cycle of 7 years in a C1 - inland environment.</u>	
B31	Gypsum ceiling boards and cornices	m ²
	<u>ON METAL</u>	
	<u>Prepare surfaces and remove all loose material, dust, grease, salts and contamination with 'Plascon Aquasolve Degreaser GR1', rinse and apply one coat 'Plascon Galvogrip Metal Primer', apply one coat 'Plascon Merit Universal Undercoat' and two coats 'Plascon Super Universal Enamel' paint:</u>	
B32	On galvanised steel door frames.	m ²
B33	On galvanised steel windows (Both sides measured).	m ²
	<u>Painting specification (Hot Dipped Galvanised):</u>	
	Wash down all steelwork thoroughly with Plascon liquid galvanised iron cleaner, scotchbright and water to manufacturers specification and allow to dry.	
	All coats to be applied according to manufacturer's specifications.	

Spot priming defects in pre primed surfaces with "Plascon Namelcoat Synthetic Metal" apply one coat "Plascon Merit Universal Undercoat" and three coats "Plascon Super Universal Enamel" paint on primed steel surfaces:

B34 On strong room door and frame.

m²

PROTECTIVE ROOFING PAINT

Two coats approved silver reflective roof paint (dulux / plascon):

B35 On waterproofing to roofs and box gutters.

m²

BILL 16 : ALTERATIONS

SUPPLEMENTARY PREAMBLES:

The breaking down and demolition of existing block walls, hacking off existing plaster, etc. is to be executed with care so as to prevent damage to remaining floor and wall surface and finishes. The contractor must allow for any necessary protection of the existing surfaces as may be necessary.

Particular care is required to protect the existing timber doors, door frames, and windows. Repairing any existing work will be for the contractor's account.

The rates for breaking down and removal of brick walls is deemed to include for plaster finishes on walls.

All existing items taken out from the works unless otherwise stated are to be handed over to the Eskom ERE (KZN) Officials. Representative who shall direct where on the site such items are to be stored for the removal by others. Refer to the schedule at the end of these Bills of Quantities.

Rubble resulting from breaking down, demolishing, etc. is to be removed from the site by the Contractor on an on going basis to avoid accumulation of mounds of such rubble or earth.

Proprietary items or materials:

Proprietary items or materials are to be of the brand specific- or other approved- by the Eskom ERE (KZN) Officials prior to tender closing.

General

Unless otherwise described the Preambles and full descriptions of the other sections shall apply equally to this section.

All voids in ground consequent upon the pulling or cutting are to be filled in with clean earth well consolidated and rammed up to ground level and made good with the required finish to the satisfaction of the Eskom ERE (KZN) Officials.

Allow for watering the works by spraying to prevent any nuisance from dust etc., and supply, erect, maintain and remove on completion all temporary dust screens, etc required.

Allow for protecting all existing work liable to suffer damage (i.e. walls, finishes, floors, windows, etc.) from damage during the building operations, alterations, etc., and from make good all work damaged with new material to match existing to the approval of Eskom ERE (KZN) Officials

Provide, erect where directed, maintain for the duration of the contract and remove and make good at completion a hoarding formed of corrugated iron or timber boarding supported as necessary on framing with posts let into ground, complete with lockable pedestrian and vehicular gates.

Measurement:

The measurement that are referred to in this section is brief and the contractor is requested to take his own measurements prior to pricing these documents.

Contractor to visit the site

The contractor is advised that alterations work is to be done with utmost of care. The contractor is encouraged to visit the site and view all buildings to determine the extent of demolition and alteration works.

All items marked as (L.I) must be executed in labour intensive manner, no deviations will be accepted.

The contractor must take this method of construction into consideration when programming the work.

ASBESTOS CEMENT

Note:

All preparatory work, alterations, demolitions, etc. to existing asbestos cement roof sheeting, gutters, rainwater pipes, etc. is to be carried out strictly in accordance with statutory requirements (Occupational Health and Safety Act, 1993- Asbestos Regulations, 2001) and all necessary precautions must be taken when work with and disposing of asbestos cement products and the disposing of waste water resulting from cleaning operations, etc

	<u>Hacking up/off and removing granolithic screed, plaster, etc., from concrete or brickwork and prepare surfaces, for new screed, plaster etc.</u>	
B36	Hack up/off and remove existing screed from floors (new screed e.m)	m ²
B37	Hack up/off and remove existing plaster from walls (new plaster elsewhere measured)	m ²
	<u>REMOVAL OF EXISTING CEILINGS, PARTITIONING AND FLOORING</u>	
	<u>Taking down and removing ceiling, partitioning, and flooring etc.</u>	
B38	Gypsum plasterboard or fibre cement ceilings including cornices, cover strips, timber bandering, etc.	m ²
B39	Suspended ceiling including suspension grid, hangers, etc.	m ²
B40	Drywall boarding and studwork, including doors, ironmongery, windows, etc.	m ²
	<u>REMOVAL OF EXISTING FLOOR COVERINGS</u>	
	<u>Taking up and removing vinyl floor coverings, carpeting, suspended floor etc:</u>	
B41	Carpet tile floor covering including preparing screed for new floor finish	m ²
	<u>Hacking up/off and removing tiled floor and wall finishes including removing mortar bed or backing and preparing concrete or brick surfaces for new finishes (elsewhere measured)</u>	
	30mm thick Ceramic floor tiles	
	30mm thick Ceramic wall tiles	
	<u>RIPPING UP AND REMOVE OF EXISTING</u>	
	30mm Premix tarmac	
	<u>REMOVAL OF EXISTING BOND AND INTERLOCKING CONCRETE BLOCK PAVERS</u>	
	<u>Carefully remove precast concrete block road surfacing and set aside for re-use</u>	
	Carefully remove 60-80mm G-block paving to all areas	
	<u>BOND AND INTERLOCKING CONCRETE BLOCK PAVERS</u>	
	<u>Precast concrete block road surfacing:</u>	

Block paving to be manufactured in accordance with SANS 1058

Paving is to be laid in accordance with SANS 1200 MJ, SANS 1058 and the Concrete Manufacturer's Association Specifications.

Paving to be installed with a minimum longitudinal fall of 1% and a transverse fall of at least 2%

Paving is to be laid to herringbone pattern on 25mm (thickness after final compaction) clean river sand (preparation of ground or filling elsewhere)

Clean sand is to be swept into joints between roadstones

Paving must be resanded three months after laying.

80mm thick SANS 1058 type S-A (heavy duty G-block) as 'Infraset G-Blok' or other approved 35MPa Grey concrete interlocking paving blocks laid with butt joints on and including 25mm thick river sand bed with dry sand swept and vibrated into joints all laid on subgrade (elsewhere measured) conforming to SANS 1200D degree of accuracy I:

Paving to roads, yards, side walks and pathways

60mm thick SANS 1058 type S-A (heavy duty G-block) as 'Infraset G-Blok' 30MPa Grey concrete interlocking paving blocks laid with butt joints on and including 20mm thick river sand bed with dry sand swept and vibrated into joints all laid on subgrade (elsewhere measured) conforming to SANS 1200D degree of accuracy I.

Paving to roads, yards, side walks and pathways

SOIL POISONING:

Approved brand of anti-termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years:

Under concrete interlocking paving blocks including forming and poisoning shallow furrows against edges, etc., filling in furrows and ramming.

PRECAST CONCRETE KERBING

Descriptions:

Precast concrete kerbs finished smooth on exposed surfaces including 20mm cement mortar 1:3 bedding, cutting and pointing, with 25MPa/ 19mm unreinforced concrete foundation, haunching and channel:

Kerb (SANS 927) 125 x 230mm high with 300 x 100mm strip foundation and 150 x 150mm haunching at back, including excavation, backfilling, formwork, etc.:

Kerb fig 6.

HIGH PRESSURE CLEANING

B42 High Pressure clean brick paving pathways, roads, carparks

m²

B43 High Pressure clean tarmac pathways, roads, carparks

m²

ROADMARKING

Prepare surface and paint 2 coats of thermoplastic paint

B44 100mm white line

m

B45 100mm yellow line

m

B46 100mm redline

m

B47 200mm white line

m

B48 200mm yellow line

m

B49 200mm redline

m

B50 STOP sign

No

B51 YIELD sign

No

B52 PARAPLEGIC sign

No

B53 White Directional arrow sign 1m long

No

B54 Yellow directional arrow sign 1m long

No

PARKHOMES

Allow for hiring standard "Park home" as and when required. Contractor to provide quotations when required during the works

STORAGE CONTAINERS

Allow for hiring storage containers as and when required. Contractor to provide quotations when required during the works

WORK DONE AFTER HOURS, WEEKEND AND ON PUBLIC HOLIDAYS

B55

For works done after hours ,weekends and on public holidays, overtime percentage increase will only apply to certain aspects of these bill rates which will be evaluated based on break down of rates provided by the contractor at the time of instruction

Percentage Increase

FOR ANY ITEMS NOT COVERED IN THIS BILL , THE Contractor WILL BE REQUIRED TO REFER TO THE SCHEDULES OF RATES BILL .



Item	Description	Unit
P	<p><u>SECTION 3 : PLUMBING AND DRAINAGE</u></p> <p><u>PRICING OF RATES</u></p> <p>All rates inserted in this section of the Bills of Quantities shall cover all costs ie. labour, material, equipment and profit (excluding P&G, scaffolding and transport) that may be considered necessary for the carrying out and observance for the provisions of these "Preambles to all Trades.", unless otherwise stated. Transport will be paid as per item SOR29 under Section 5 : Schedule of Rates Bill.</p> <p>The Contractor 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.</p> <p>The Contractor must refer to the Schedule of Rates bill and ensure the required skill profile for this Bill is utilised when carrying out works on site. Contractors must make due allowance for this in their rates and no claims will be entertained in this regard after contract award.</p> <p><u>Overtime work and normal work:</u></p> <p>The Contractors is advised that the following works will be done during normal working hours. For works done after hours,weekends and public holidays, overtime percentage increase will apply.</p> <p><u>MAINTENANCE OF EXISTING RAINWATER GOODS</u></p> <p><u>Cleaning out rainwater goods:</u></p>	
P1	Clean out of all gutters/downpipes/valleys, up to 4m high from ground level	m
	<u>TANKS ETC:</u>	
P2	Replace (supply and fit) 2500 litre Heavy Duty Vertical 'JO-JO' or other approved water Tank	ea
P3	Replace (supply and fit) 5000 litre Heavy Duty Vertical 'JO-JO' or other approved water Tank	ea
P4	Replace (supply and fit) 10000 litre Heavy Duty Vertical 'JO-JO' or other approved water Tank	ea
	<u>PUMPS ETC:</u>	

P5	Replace (supply and fit) Pedrollo booster pump for water storage tank 0.75KW	ea
P6	Replace (supply and fit) Pedrollo booster pump for water storage tank 1.1KW	ea
<u>WORK DONE AFTER HOURS, WEEKEND AND ON PUBLIC HOLIDAYS</u>		
P7	For works done after hours ,weekends and on public holidays, overtime percentage increase will only apply to certain aspects of these bill rates which will be evaluated based on break down of rates provided by the contractor at the time of instruction	Percentage Increase
<u>FOR ANY ITEMS NOT COVERED IN THIS BILL , THE Contractor WILL BE REQUIRED TO REFER TO THE SCHEDULES OF RATES BILL</u>		

Item	Description	Unit
E	<p><u>SECTION 4 : ELECTRICAL</u></p> <p><u>PRICING OF RATES</u></p> <p>All rates inserted in this section of the Bills of Quantities shall cover all costs ie. labour, material, equipment and profit (excluding P&G, scaffolding and transport) that may be considered necessary for the carrying out and observance for the provisions of these "Preambles to all Trades.", unless otherwise stated. Transport will be paid as per item SOR29 under Section 5 : Schedule of Rates Bill.</p> <p>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".</p> <p>The Contractor shall insert the amount required against each item which he intends 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.</p> <p>The Contractor must refer to the Schedule of Rates bill and ensure the required skill profile for this Bill is utilised when carrying out works on site. Contractors must make due allowance for this in their rates and no claims will be entertained in this regard after contract award.</p> <p><u>Overtime work and normal work:</u></p> <p>The Contractors is advised that the following works will be done during normal working hours. For works done after hours, weekends and public holidays, overtime percentage increase will apply.</p> <p>NOTE. The complete electrical installation to comply with the relevant clauses of the SABS Code of Practise for the Wiring of Premises SANS10142 - 1:2003 (previously SABS 0142)</p> <p>All equipment, electrical materials or methods of installation shall comply fully with SABS 0142-1 as published December 2001</p> <p><u>COC Certificate:</u></p> <p>Contractors are advised that a COC must be supplied where any electrical changes are done to the existing electrical system by the Contractor eg. fitting of plugs, switches, light fittings etc.</p>	

Proprietary items or materials:

Proprietary items or materials where specified are to be of the brand specified - or other approved - by the Eskom ERE (KZN) Official

The Contractor to supply disposal certificates for all fluorescent tubes that are replaced

GUARANTEE & MAINTENANCE

Provision of a guarantee against defective parts and workmanship for a period of twelve months after the date of issue of the Completion Certificate

UPS

UPS's to be maintained on various sites. This will be done on an as and when required basis and a quote to be submitted by the Contractor when this is required.

HYDROBOILS

Supply and fit including wiring , isolator switch fixed to walls.

E1 2,5 Litre "Franke Zip Hydroboil"

ea

E2 5.0 Litre Franke Zip Hydroboil'

ea

E3 7,5 Litre "Franke Zip Hydroboil"

ea

EARTHING LEAKAGE TEST

E4 Earth leakage test per DB board including providing a report-2phase

ea

E5 Earth leakage test per DB board including providing a report -3phase

ea

SUPPLY ONLY OF LIGHT BULBS/ FLUORESCENT TUBES (SABS APPROVED ONLY)

E6 Light bulbs 220v (all watts)

ea

E7 Fluorescent tubes slim line 1200 mm (all watts)

ea

E8 Fluorescent tubes slim line 600 mm (all watts)

ea

E9 LED tubes slim line 1200 mm (all watts)

ea

E10 LED tubes slim line 600 mm (all watts)

ea

E11 Down light globes 220v (all watts)

ea

E12 Down light globes 12v (all watts)

ea

WORK DONE AFTER HOURS, WEEKEND AND ON PUBLIC HOLIDAYS

E13

For works done after hours ,weekends and on public holidays, overtime percentage increase will only apply to certain aspects of these bill rates which will be evaluated based on break down of rates provided by the contractor at the time of instruction

FOR ANY ITEMS NOT COVERED IN THIS BILL , THE Contractor WILL BE REQUIRED TO REFER TO THE SCHEDULES OF RATES BILL .

Percentage Increase

Item SOR	Description	Unit
	<p><u>SECTION 5 : SCHEDULE OF RATES</u></p> <p>These rates will be applicable to the relevant type of works, and will be used to compensate the Contractor, where there are no other Bill rates in the in any other section of the Bill of Quantities.</p> <p>The following are the required skills per trade that the Contractor / his Sub-Contractor will be required to possess to carry out the relevant type works on this contract.</p> <p><u>SKILLED - ELECTRICAL</u></p> <p>Qualification -Trade test</p> <p>Work Experience -Electrician's experience (min 3 years) -electrical maintenance on Commercial, Industrial and or Residential buildings, after been qualified as Electrician.</p> <p><u>SKILLED - PLUMBER</u></p> <p>Qualification - Plumbing Apprentice Qualification</p> <p>Work Experience - experience (min 3 years) in plumbing Construction/Maintenance on Commercial, Industrial and or Residential buildings</p> <p><u>SKILLED - ARTISAN - (Building/civil/general maintenance)</u></p> <p>Work Experience - Minimum 3 years experience</p> <p><u>ELECTRICAL ASSISTANT</u></p> <p>Electrical experience (2-3 years) on Commercial, Industrial and or Residential buildings.</p> <p><u>PLUMBER ASSISTANT</u></p> <p>Experience (2-3 years) in Commercial, Industrial and Residential buildings plumbing</p> <p><u>ARTISAN ASSISTANT(Building/civil/general maintenance)</u></p> <p>Experience (2-3 years) on Commercial, Industrial and/or Residential building works/maintenance.</p> <p><u>CLERK OF WORKS</u></p> <p>Qualification - N3 and Trade Test</p> <p>Experience (2-3 years) on Commercial, Industrial and/or Residential construction and/or maintenance.</p> <p><u>ON-SITE SUPERVISOR</u></p>	

Qualification - Relevant formal training certificate

Experience (4-5 years) on Commercial, Industrial and/or Residential construction and/or maintenance.

SAFETY OFFICER

Qualification - SACPCMP registered (excluding candidate CHSO)

Experience (2-3 years) on Commercial, Industrial and/or Residential construction and/or maintenance.

LABOUR RATES

Prior written approval must be received from the Eskom ERE (KZN) Official prior to commencement of any works.

Designs, drawings, building reports/inspections will be required to be done by specialists on an "as and when required basis". The Contractor will be required to quote for this specialist works when required.

Eskom may require the services of a Clerk of Works on an "as and when required basis". The Clerk of Works will be used by Eskom on whichever activities it may deem necessary. The Contractor will be required to quote for this provision when required.

Labour rates to be all inclusive of labour, profit, employee benefits, employer benefits. No additional claims per hourly rate will be paid to Contractor after contract award. Labour rates to comply to directives by Department of Labour, relevant sectorial determinations and bargaining councils.

Work to be done from Monday to Friday between 7:30am and 4pm:

SOR1	Skilled - Electrical	Hr
SOR2	Skilled Artisan- Building/civil/general maintenance	Hr
SOR3	Skilled - Plumbing	Hr
SOR4	Electrical Assistant	Hr
SOR5	Artisan Assistant- Building/civil/general	Hr
SOR6	Plumber Assistant	Hr
SOR7	On-site Supervisor (applicable only if approved by Service Manager)	Hr

SOR8	Safety Officer (SACPCMP registered) (applicable only if approved by Service Manager)	Hr
SOR9	Clerk of Work (applicable only if approved by Service Manager)	Hr
<u>Work to be done from after hours and Saturdays</u>		
SOR10	Skilled - Electrical	Hr
SOR11	Skilled Artisan- Building/civil/general maintenace	Hr
SOR12	Skilled - Plumbing	Hr
SOR13	Electrical Assistant	Hr
SOR14	Artisan Assistant- Building/civil/general	Hr
SOR15	Plumber Assistant	Hr
SOR16	On-site Supervisor (applicable only if approved by Service Manager)	Hr
SOR17	Safety Officer (SACPCMP registered) (applicable only if approved by Service Manager)	Hr
SOR18	Clerk of Work (applicable only if approved by Service Manager)	Hr
<u>Work to be done on Sundays and Public Holidays</u>		
SOR19	Skilled - Electrical	Hr
SOR20	Skilled Artisan- Building/civil/general maintenace	Hr
SOR21	Skilled - Plumbing	Hr
SOR22	Electrical Assistant	Hr
SOR23	Artisan Assistant- Building/civil/general	Hr
SOR24	Plumber Assistant	Hr
SOR25	On-site Supervisor (applicable only if approved by Service Manager)	Hr
SOR26	Safety Officer (SACPCMP registered) (applicable only if approved by Service Manager)	Hr
SOR27	Clerk of Work (applicable only if approved by Service Manager)	Hr
<u>Material & Equipment</u>		
Note : The Contractor must be able to produce material / equipment back-up (ie. invoices,receipts, quotes, etc) when requested by Eskom.		

	Not applicable to sub-contractor/specialist quotations	
SOR28	Percentage mark up on material & equipment	Percentage Markup
	<u>Transport</u>	
	Payment for transport/traveling (LDV type vehicle 4x2) will be paid from home centre (Mkondeni Complex),to other sites , calculated using google maps. Not applicable to sub-contractor/specialist quotations	
SOR29	Transport (including profit and toll Fees)	km
	<u>Subcontract / Specialist</u>	
	The Contractor will be required to provide quotations(including safety compliance requirements) when the need arises for non bill rates, for the approval of Eskom. Eskom has the right to reject quotations and do its own market research,should the Contractors quotations not be acceptable to Eskom. The Contractor will then be required to appoint the selected Specialist /Sub-Contractor based on Eskom's recommendations.	
SOR30	Percentage mark up on sub-contracted / specialist works	Percentage Markup

Item	Description	Unit
D	<p><u>SECTION 6 : DIESEL GENERATOR</u></p> <p><u>PRICING OF RATES</u></p> <p>This Bill is only used for Diesel Generator related works. For all works in this section, quotations must be submitted for approval by the Service Manager, or his delegates, prior to work starting.</p>	
D1	<p>Percentage markup will be applied on sub-contracted / specialist quotation and/or percentage markup will be applied for P&Gs on all works directly executed by the Contractor</p>	<p>Percentage Markup</p>

Item	Description	Unit
F	<p><u>SECTION 7 : FIRE PREVENTION & PROTECTION</u></p> <p><u>PRICING OF RATES</u></p> <p>This Bill is only used for fire prevention & protection related works. For all works in this section, quotations must be submitted for approval by the Service Manager, or his delegates, prior to work starting.</p>	
F1	<p>Percentage markup will be applied on sub-contracted / specialist quotation and/or percentage markup will be applied for P&Gs on all works directly executed by the Contractor</p>	<p>Percentage Markup</p>

Item	Description	Unit
WW	<p><u>SECTION 8 : WASTEWATER TREATMENT PLANT</u></p> <p><u>PRICING OF RATES</u></p> <p>This Bill is only used for wastewater treatment plant related works.</p> <p>For all works in this section, quotations must be submitted for approval by the Service Manager, or his delegates, prior to work starting.</p>	
WW1	<p>Percentage markup will be applied on sub-contracted / specialist quotation and/or percentage markup will be applied for P&Gs on all works directly executed by the Contractor</p>	Percentage Markup

Item	Description	Unit
WT	<p><u>SECTION 9 : WATER TREATMENT</u></p> <p><u>PRICING OF RATES</u></p> <p>This Bill is only used for water treatment related works. For all works in this section, quotations must be submitted for approval by the Service Manager, or his delegates, prior to work starting.</p>	
WT1	<p>Percentage markup will be applied on sub-contracted / specialist quotation and/or percentage markup will be applied for P&Gs on all works directly executed by the Contractor</p>	Percentage Markup

Item	Description	Unit
OW	<p><u>SECTION 10 : OTHER WORKS</u></p> <p><u>PRICING OF RATES</u> This Bill is only used should there be no items / rates in all other Bills in this contract.</p> <p>For all works in this section, quotations must be submitted for approval by the Service Manager, or his delegates, prior to work starting.</p>	
OW1	<p>Percentage markup will be applied on sub-contracted / specialist quotation and/or percentage markup will be applied for P&Gs on all works directly executed by the Contractor</p>	<p>Percentage Markup</p>

Item	Description	Unit
OSS	<p><u>SECTION 11 : ON-SITE SERVICES</u></p> <p><u>PRICING OF RATES</u></p> <p>This Bill is only used for on-site services related works. For all works in this section, quotations must be submitted for approval by the Service Manager, or his delegates, prior to work starting.</p>	
OSS1	<p>Percentage markup will be applied on sub-contracted / specialist quotation and/or percentage markup will be applied for P&Gs on all works directly executed by the Contractor</p>	Percentage Markup

Item	Description	Unit
SPA	<p><u>SECTION 12 : SPECIALISED PEST AND ANIMAL CONTROL SERVICES</u></p> <p><u>PRICING OF RATES</u></p> <p>This Bill is only used for specialised pest and animal control service. For all works in this section, quotations must be submitted for approval by the Service Manager, or his delegates, prior to work starting.</p>	
SPA1	<p>Percentage markup will be applied on sub-contracted / specialist quotation and/or percentage markup will be applied for P&Gs on all works directly executed by the Contractor</p>	Percentage Markup