



PRASA CRES - STATIONS UPGRADES

KWAMASHU CORRIDOR 1 - MOSES MABIDA TO KWAMASHU

PRIORITY STATION UPGRADES - PHASE 2

AVOCA STATION UPGRADES

PROVISIONAL BOQ: AVOCA STATION

Item No		Quantity	Rate	Amount
	<u>AVOCA STATION UPGRADES - PROVISIONAL BILLS OF QUANTITY</u> <u>SECTION 1 : PRELIMINARIES</u> <u>BILL NO. 1</u> Tenderers are referred to the relevant Clauses in the Model Preambles for Trades (2017 Edition) before pricing this bill.			
	<u>BUILDING AGREEMENT AND PRELIMINARIES</u> The JBCC Principal Building Agreement (Edition 6.2 - May 2018) prepared by the Joint Building Contracts Committee shall be the applicable building agreement, amended as hereinafter described The JBCC Principal Building Agreement contract data form an integral part of this agreement The JBCC General Preliminaries (May 2018) published by the Joint Building Contracts Committee for use with the JBCC Principal Building Agreement (Edition 6.2 - May 2018) shall be deemed to be incorporated in these bills of quantities, amended as hereinafter described The contractor is deemed to have referred to the above mentioned documents for the full intent and meaning of each clause The clauses in the above mentioned documents are hereinafter referred to by clause number and heading only Where any item is not relevant to this agreement such item is marked N/A signifying "not applicable"			
	Carried to Collection		R	
	Section No. 1 SECTION 1 - PRELIMINARIES Bill No. 1 Preliminaries AVOCA STATION			

Where standard clauses or alternatives are not entirely applicable to this **agreement** such amendments, modifications, corrections or supplements as will apply are given under each relevant clause heading and such amendments, modifications, corrections or supplements shall take precedence notwithstanding anything to the contrary contained in the above mentioned documents

PREAMBLES FOR TRADES

The General Preambles for Trades 2017 published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these **bills of quantities** and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

Supplementary preambles and/or specifications are incorporated in these **bills of quantities** to satisfy the requirements of this project. Such supplementary preambles and/or specifications shall take precedence over the provisions of the General Preambles

The **contractor's** prices for all items throughout these **bills of quantities** shall take account of and include where applicable for all of the obligations, requirements and specifications given in the General Preambles and in any supplementary preambles and/or specifications

STRUCTURE OF THIS PRELIMINARIES BILL

Section A : A recital of the headings of the individual clauses in the aforementioned **JBCC** Principal Building Agreement

Section B : A recital of the headings of the individual clauses in the aforementioned **JBCC** General Preliminaries

Section C : Any special clauses to meet the particular circumstances of the project

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

R

PRICING OF PRELIMINARIES

Should the **contractor** select Option A in the **contract data** for the adjustment of **preliminaries**, the amounts entered against the relevant items in these **preliminaries** are to be divided into one or more of the three categories provided namely fixed (F), value related (V) and time related (T)

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

R

SECTION A: PRINCIPAL BUILDING AGREEMENT

Interpretation (A1-A7)

1 Clause 1.0 Definitions and interpretation

Clause 1.1 is hereby amended by the substitution of the words in the definition for compensatory interest:

The words "practical completion" in the second line is substituted by the words "final completion".

Clause 1.1 is hereby amended by the addition of the following definitions:

Pricing of bills of quantities

The **contractor** is to allow opposite each item for all costs in connection therewith. All prices to include, unless otherwise stated, for all materials, fabrication, conveyance and delivery, unloading, storing, unpacking, hoisting, labour, setting, fitting and fixing in position, cutting and waste (except where to be measured in accordance with the standard system of measurement), patterns, models and templates, plant, temporary works, returning of packaging, duties, taxes (other than Value Added Tax), imposts, establishment charges, overheads, profit and all other obligations arising out of this **agreement**. Value Added Tax (VAT) is to be separately stated on the summary page of these **bills of quantities**

Items left unpriced will be deemed to be covered in prices against other items throughout these **bills of quantities** and no claim for any extras arising out of the **contractor's** omission to price any item will be entertained

Prices for all **construction equipment**, temporary works, services and other items shall include for the supply, maintenance, operating cost and subsequent removal and making good as necessary

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

R

Clause 1.2 is hereby amended by the addition of the following:

Clause 1.2.6 Abbreviated descriptions

The items in these **bills of quantities** utilise abbreviated descriptions. It is the intention that the abbreviated descriptions be fully described when read with the applicable measuring system and the relevant preambles and/or specifications. However, should the full intent and meaning of any description not be clear, the **contractor** shall, before submission of his tender, call for a written directive from the **principal agent**, failing which it shall be assumed that the **contractor** has allowed in his pricing for materials and workmanship in terms of international best practice

Clause 1.2.7 Legal status of contractor

If the **contractor** constitutes a joint venture, consortium or other unincorporated grouping of two or more persons then:

1. These persons are deemed to be jointly and severally liable to the **employer** for the performance of this **agreement**
2. These persons shall notify the **employer** of their leader who has assigned authority to bind the **contractor** and each of these persons
3. The **contractor** shall not alter its composition or legal status without the prior written consent of the **employer**

F:..... V:..... T:.....

Clause 2.0 Law, regulations and notices

Clause 2.0 is hereby amended by the addition of the following:

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause 2.5

Without limiting the generality of the provisions of clause 2.0 of the agreement, the contractor's attention is drawn to the provisions of the Construction Regulations, 2014 issued in terms of the Occupational Health and Safety Act, 1993. It is specifically stated that the employer shall prepare a documented health and safety specification for the works and that the employer shall ensure that the contractor has made provision for the cost of health and safety measures during the execution of the works. The contractor shall price opposite this item for compliance with the act and the regulations and the reasonable provisions of the aforementioned health and safety specifications.

The **contractor** shall price opposite this item for compliance with the act and the regulations and the reasonable provisions of the aforementioned health and safety specification

The **contractor** shall take all reasonable precautions to maintain the health and safety of persons in and about the execution of the **works**. Without limitation the **contractor** hereby:

Clause 2.5.1 accepts that the **employer** will appoint him as the principal contractor (as defined and provided for under the Construction Regulations 2014 (as amended), promulgated under the Occupational Health and Safety Act 85 of 1993 (as amended) (the Construction Regulations)) for the **site**;

Clause 2.5.2 acknowledges and confirms that the **contract sum** includes a sufficient amount for proper compliance with the **employer's** Health and Safety Specification, the Construction Regulations, all applicable health and safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this **agreement** and generally for the proper maintenance of health and safety in and about the execution of the **works**; and

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause 2.5.3 undertakes, in and about the execution of the works, to conform to and comply with the Construction Regulations and with all applicable health and safety laws and regulations and rules and guidelines and procedures otherwise provided for under the **agreement** and shall ensure that all **subcontractors**, employees and others under the **contractor's** direction and control, likewise observe and comply with the foregoing

Clause 2.5.4 Prepare and agree with the health and safety consultant the health and safety plan for the works

Clause 2.5.5 Co-operate with the health and safety consultant in all respects

F:..... V:..... T:.....

Item

2 Clause 3.0 Offer and acceptance

F:..... V:..... T:.....

Item

3 Clause 4.0 Cession and assignment

F:..... V:..... T:.....

Item

Clause 5.0 Documents

Clause 5.0 is hereby amended by the addition of the following:

Value Added Tax

Provision is made in the summary page of these **bills of quantities** for the inclusion of Value Added Tax (VAT)

Electronic issue of drawings

All drawings for this project will be issued electronically and the **contractor** shall be deemed to have received such drawings on the date that such drawings have been dispatched electronically [5.6]

F:..... V:..... T:.....

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause 6.0 **Employer's agents**

Clause 6.2 is hereby amended by the addition of the following:

Delegated authority

The authority of the **principal agent** to issue **contract instructions** [17.1] and perform duties for specific aspects of the **works** is delegated to **agents** as follows [6.2]. This does not preclude the **principal agent** from issuing such **contract instructions**:

1. Architect

1.1 Duties [6.2] :

The architect is responsible for the architectural design, functional design and quality inspection of the **works**

1.2 **Contract instructions** [6.2; 17.1] :

- 1.2.1 Rectification of discrepancies, errors in description or quantity or omission of items in the **agreement** other than in the **JBCC** Principal Building Agreement
- 1.2.2 Alteration to design, standards or quantity of the **works** provided that such **contract instructions** shall not substantially change the scope of the **works**
- 1.2.3 The **site** [13.0]
- 1.2.4 Compliance with the **law**, regulations and bylaws [2.1]
- 1.2.5 Provision and testing of samples of **materials and goods** and/or of finishes and assemblies of elements of the **works**
- 1.2.6 Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]
- 1.2.7 Removal or re-execution of work

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

- 1.2.8 Removal or substitution of any **materials and goods**
- 1.2.9 Protection of the **works**
- 1.2.10 Making good physical loss and repairing damage to the **works** [23.2.2]
- 1.2.11 Rectification of **defects** [21.2]
- 1.2.12 A **list for practical completion** specifying outstanding or defective work to be rectified to achieve **practical completion**, a **list for completion** and a **list for final completion** specifying outstanding or defective work to be rectified to achieve **final completion**
- 1.2.13 Expenditure of **budgetary allowances, prime cost amounts** and **provisional sums**
- 1.2.14 Appointment of a **subcontractor** [14.0; 15.0]
- 1.2.15 Work by **direct contractors** [16.0]
- 1.2.16 On suspension or termination, protection of the **works**, removal of **construction equipment** and surplus **materials and goods** [29.0]

2. Quantity surveyor

2.1 Duties [6.2] :

The quantity surveyor is responsible for all measurements, valuations, financial assessments and all other quantity surveying and cost control functions of the **works**

2.2 **Contract instructions** [6.2; 17.1] :

- 2.2.1 No **contract instructions** delegated to the quantity surveyor

3. Civil and structural engineer

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

3.1 Duties [6.2] :

The civil and structural engineer is responsible for all aspects of civil and structural engineering design and quality inspection of the **works**

3.2 **Contract instructions** [6.2; 17.1] :

- 3.2.1 Rectification of discrepancies, errors in description or quantity or omission of items in the **agreement** other than in the **JBCC** Principal Building Agreement
- 3.2.2 Alteration to design, standards or quantity of the **works** provided that such **contract instructions** shall not substantially change the scope of the **works**
- 3.2.3 The **site** [13.0]
- 3.2.4 Compliance with the **law**, regulations and bylaws [2.1]
- 3.2.5 Provision and testing of samples of **materials and goods** and/or of finishes and assemblies of elements of the **works**
- 3.2.6 Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]
- 3.2.7 Removal or re-execution of work
- 3.2.8 Removal or substitution of any **materials and goods**
- 3.2.9 Protection of the **works**
- 3.2.10 Making good physical loss and repairing damage to the **works** [23.2.2]
- 3.2.11 Rectification of **defects** [21.2]

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

3.2.12 A **list for practical completion** specifying outstanding or defective work to be rectified to achieve **practical completion**, a **list for completion** and a **list for final completion** specifying outstanding or defective work to be rectified to achieve **final completion**

3.2.13 Expenditure of **budgetary allowances**, **prime cost amounts** and **provisional sums**

4. Mechanical engineer

4.1 Duties [6.2] :

The mechanical engineer is responsible for all aspects of mechanical engineering design and quality inspection of the **works** ? and, where appointed by the **employer** for quantity surveying services in respect of the mechanical installations, for all measurements, valuations, financial assessments and all other quantity surveying and cost control functions

4.2 **Contract instructions** [6.2; 17.1] :

4.2.1 Rectification of discrepancies, errors in description or quantity or omission of items in the **agreement** other than in the **JBCC** Principal Building Agreement

4.2.2 Alteration to design, standards or quantity of the **works** provided that such **contract instructions** shall not substantially change the scope of the **works**

4.2.3 Compliance with the **law**, regulations and bylaws [2.1]

4.2.4 Provision and testing of samples of **materials and goods** and/or of finishes and assemblies of elements of the **works**

4.2.5 Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2]

4.2.6 Removal or re-execution of work

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

- 4.2.7 Removal or substitution of any **materials and goods**
- 4.2.8 Protection of the **works**
- 4.2.9 Making good physical loss and repairing damage to the **works** [23.2.2]
- 4.2.10 Rectification of **defects** [21.2]
- 4.2.11 A **list for practical completion** specifying outstanding or defective work to be rectified to achieve **practical completion**, a **list for completion** and a **list for final completion** specifying outstanding or defective work to be rectified to achieve **final completion**
- 4.2.12 Expenditure of **budgetary allowances, prime cost amounts** and **provisional sums**

5. Electrical engineer

5.1 Duties [6.2] :

The electrical engineer is responsible for all aspects of electrical engineering design and quality inspection of the **works** and, where appointed by the **employer** for quantity surveying services in respect of the electrical installations, for all measurements, valuations, financial assessments and all other quantity surveying and cost control functions

5.2 **Contract instructions** [6.2; 17.1] :

- 5.2.1 Rectification of discrepancies, errors in description or quantity or omission of items in the **agreement** other than in the **JBCC** Principal Building Agreement
- 5.2.2 Alteration to design, standards or quantity of the **works** provided that such **contract instructions** shall not substantially change the scope of the **works**

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

	5.2.3 Compliance with the law, regulations and bylaws [2.1] 5.2.4 Provision and testing of samples of materials and goods and/or of finishes and assemblies of elements of the works 5.2.5 Opening up of work for inspection, removal or re-execution [23.2.4; 26.4.2] 5.2.6 Removal or re-execution of work 5.2.7 Removal or substitution of any materials and goods 5.2.8 Protection of the works 5.2.9 Making good physical loss and repairing damage to the works [23.2.2] 5.2.10 Rectification of defects [21.2] 5.2.11 A list for practical completion specifying outstanding or defective work to be rectified to achieve practical completion, a list for completion and a list for final completion specifying outstanding or defective work to be rectified to achieve final completion 5.2.12 Expenditure of budgetary allowances, prime cost amounts and provisional sums F:..... V:..... T:.....			
4	Clause 7.0 Design responsibility F:..... V:..... T:.....	Item Item		
	Carried to Collection Section No. 1 SECTION 1 - PRELIMINARIES Bill No. 1 Preliminaries AVOCA STATION		R	

Clause 7.0 is hereby amended by the addition of the following:

Notwithstanding the provisions of 7.0, the contractor shall ensure that every such nominated or selected subcontractor shall simultaneously with the signing of the relevant nominated or selected subcontract sign and deliver to the employer a Design Materials and Workmanship Warranty and Undertaking in favour of the employer or a Materials and Workmanship Undertaking strictly in accordance with the instructions or provisions contained in the tender documents for the nominated or selected subcontract works.

Insurances and securities (A8-A11)

5 Clause 8.0 **Works** risk

F:..... V:..... T:.....

Item

6 Clause 9.0 Indemnities

F:..... V:..... T:.....

Item

7 Clause 10.0 Insurances

F:..... V:..... T:.....

Item

Clause 11.0 Securities

Clause 11.0 is hereby amended by the addition of the following:

Guarantee for payment

Clause 11.5, 11.6 and 11.7 is hereby deleted and no payment guarantee will thus be provided by the employer.

The **employer** shall not provide to the **contractor** a **guarantee for payment**. The **contractor** shall consequently waive his lien or right of continuing possession of the **works** [11.10]

Clause 11.10 is hereby amended by the addition of the following:

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Extension of waiver of lien

The **contractor** shall ensure that a waiver of lien or right of continuing possession of the **works** is included in all subcontracts and that the **works** executed on the **site** are kept free of all such liens and other encumbrances at all times [11.10]

Clause 11.11 is amended by the addition of the following:

The **contractor** shall ensure that the **guarantee for construction** is valid and enforceable until the **certificate of final completion** is issued to the **contractor** and all payments reflected as due to the **employer** in the final **payment certificate** have been paid in full (hereinafter collectively "the expiry events"). If the terms of the **guarantee for construction** specify its expiry date and the expiry events have not occurred twenty (20) **working days** prior to the said expiry date, the **contractor** shall promptly extend the validity of the **guarantee for construction** until the expiry events have occurred

If the **contractor** fails to so extend the validity of the **guarantee for construction**, the **employer** shall be entitled to payment from the **contractor** of the then guaranteed sum, which shall then be retained by the **employer** as cash security. The **principal agent** shall accordingly, and immediately, issue a **payment certificate** certifying the guaranteed sum as a payment due to the **employer**. If the **contractor** fails to make payment of the amount certified upon presentation of the **payment certificate**, the **employer** may claim the amount under the **guarantee for construction**

The amount so claimed against and paid under the **guarantee for construction** shall be reimbursed to the **contractor** if and when the **guarantee for construction** is reinstated, extended or substituted in compliance with the above (as the case may be) and the **principal agent** shall forthwith issue a **payment certificate** certifying the amount so due to the **contractor**

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause 11.12 is amended by the addition of the following:

In the event that the value of the works (inclusive of tax but excluding adjustments in terms of CPAP) were to increase during the course of the contract by an amount of fifteen percent (15%) or more of the contract sum, the contractor shall, upon written request from the principal agent, immediately arrange to have the construction guarantee (guaranteed sum) increased accordingly, the verified cost of which shall be added to the contract sum.

F:..... V:..... T:.....

Execution (A12 - A17)

Clause 12.0 Obligations of the **parties**

Clause 12.1.1 is hereby deleted and no payment guarantee will thus be provided by the employer.

Clause 12.1.4 is hereby deleted and replaced with the following:

The **employer** is not in a position to identify access to water, sewer, stormwater and/or electricity connections to the **site** as may be suitable for the execution of the **works**. The **contractor** is to allow what he considers to be required and is to qualify his tender in detail in this regard, failing which it shall be taken that the **contractor** has allowed what will be required for the execution of the **works**. In such case no claims for additional cost or loss shall be entertained

Clause 12.2.18 is hereby amended by the addition of the following:

Office accommodation

The **contractor** shall provide, maintain and remove on **practical completion** air conditioned office accommodation with suitable tables and chairs for meetings to be held on the **site**. Such offices shall be kept clean and fit for use at all times [12.2.18]

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Item

R

- 8 Wherever and whenever practicable secure parking bays on site shall be made available and reserved for the sole use of the employer and the professional consultants.

Notice board

The **contractor** shall erect in a position approved by the **principal agent**, maintain and remove on **practical completion** a notice board recommended by the South African Institute of Architects and as approved by the **principal agent** listing the names and logos of the **employer**, the **contractor** and the professional consultants. No subcontractor or supplier notice boards may be erected unless permission is granted by the **principal agent** for such notice boards to be erected [12.2.18]

- 9 Supply, deliver and install a Contract Name Board in accordance with the clients requirements

Item

SUM

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Statutory and other notices

The **contractor** shall submit and/or comply with all statutory and other notices that may be required by any local or other authority in order not to cause any delay to the commencement of the **works** by the **contractor**.
The **contractor** shall pay all deposits or fees in this regard

It is, however, specifically recorded that the **employer** shall be responsible for the timeous approval of building plans by any local or other authorities and the payment of any fees or charges related thereto

F:..... V:..... T:.....

Item

10 Clause 13.0 Setting out

F:..... V:..... T:.....

Item

11 Clause 14.0 Nominated **subcontractors**

F:..... V:..... T:.....

Item

12 Clause 15.0 Selected **subcontractors**

F:..... V:..... T:.....

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

- 13 **Clause 16.0 Direct contractors**
- Attendance on direct contractors**
In respect of **direct contractors** the **contractor** shall:
1. Designate an area for the **direct contractor** to establish a temporary office and workshop and storage of equipment and materials
 2. Allow the use of personnel welfare facilities, where provided
 3. Provide water, lighting and single phase electric power to a position within 50m of the place where the direct contract work is to be carried out, other than fuel or power for commissioning of any installation
 4. Permit the **direct contractor** to use erected scaffolding, hoisting facilities, etc provided by the **contractor**, in common with others having the like right, while it remains erected on the **site** [16.1]
- F:..... V:..... T:.....

Item

- 14 **Clause 17.0 Contract instructions**
- Clause 17.1.5 is hereby amended by the addition of the following:
- The principal agent may reject any materials or colours not corresponding with the approved samples. The approved samples shall be kept on site until completion of the works.
- Should any materials or items specified prove to be either unavailable, in poor supply or likely to cause delay to the works, the contractor shall notify the principal agent in sufficient time for suitable alternatives to be considered. Any claims for delays resulting from the contractor not conforming with the terms of this clause will not be entertained or allowed.

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause 17.6 is hereby amended by the addition of the following:

Site instructions

Instructions issued on **site** are to be recorded in a **site** instruction book which is to be supplied and maintained on **site** by the **contractor**

F:..... V:..... T:.....

Completion (A18 - A24)

15 Clause 18.0 Interim completion

Item

N/A

16 Clause 19.0 **Practical completion**

F:..... V:..... T:.....

Item

17 Clause 20.0 Completion in **sections**

F:..... V:..... T:.....

Item

18 Clause 21.0 **Defects** liability period and **final completion**

F:..... V:..... T:.....

Item

19 Clause 22.0 **Latent defects** liability period

F:..... V:..... T:.....

Item

20 Clause 23.0 Revision of the date for **practical completion**

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

21 Clause 23.1.1 is hereby deleted and replaced with the following:

Exceptionally inclement weather, which shall only relate to weather with a degree of inclemency which is materially greater than or is materially beyond the average inclemency experienced in the past five years and/or recorded, in terms of available records or otherwise, at or for the area in which the site is situated, for the period(s) in question. Any revision of date for practical completion which may, in terms of this clause be allowed for exceptionally inclement weather, shall be related only to those periods of exceptionally inclement weather by which the average periods of time, during which exceptionally inclement weather is experienced and/or recorded in the area in which the site is situated, is exceeded. The contractor is therefore to make allowance for normal vagaries of the weather.

22 Clause 23.9 is hereby amended by the addition of the following:

Substitution of materials and goods

The removal or substitution of any **materials and goods** which do not conform to the specification or the **contract drawings** shall not constitute grounds for the extension of the **construction period** nor for the adjustment of the **contract value** [17.1.8; 23.1 & 2]

F:..... V:..... T:.....

Item

23 Clause 24.0 **Penalty** for late or non-completion

F:..... V:..... T:.....

Item

Payment (A25 - A27)

24 Clause 25.0 -Payment

Clause 25.0 is hereby amended by the addition of the following:

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Prices submitted

Where prices are submitted by the **contractor** or **subcontractor** during the progress of the **works** in respect of **contract instructions** or in regard to a claim under the terms of this **agreement** and notwithstanding the fact that such prices may be used in an interim **payment certificate**, there is to be no presumption of acceptance. Should the **principal agent** wish to accept any such prices prior to the issue of the **certificate of final completion**, it shall be in writing

- 25 Notwithstanding this or any other clause, materials and goods stored off site shall not be included in the amount authorised for payment.

Clause 25.10 is hereby amended by the substitution of the words "fourteen (14) calendar days" in the first and second line by the words "thirty (30) calendar days".

F:..... V:..... T:.....

- 26 Clause 26.0 Adjustment of the **contract value** and **final account**

CONTRACT PRICE ADJUSTMENT PROVISION:

This Contract **is not subject to any form of Contract Price Adjustment Formulae such as the Haylett Formulae or similar.** In this regard, it is deemed that the contract amount includes for any potential increases (except any variation in the rate of Value Added Tax) in cost of labour, materials, transport, etc.

Fluctuations in costs

All fluctuations in costs, with the exception of fluctuations in the rate of Value Added Tax, shall be for the account of the **contractor** [26.9.5]

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Item

R

Tenant installation/user requirements delayed

There is a possibility that certain works related to tenant installation/user requirements may have to be delayed and may consequently not be executed prior to **practical completion**

Should the **contractor** be instructed to do so he shall execute this work under the conditions pertaining to this **agreement** on the basis that a separate amount for **preliminaries** appurtenant to this work (if applicable) is agreed to between the **contractor** and the **principal agent** and on condition that instruction to proceed with such work is given to him within a period of three (3) calendar months after the date of **practical completion** of the **works**

The **employer** reserves the right to omit such work without compensation to the **contractor** for loss of profit or any other loss which the **contractor** may suffer as a result of such omission

Cost of claims

All costs incurred by the **contractor** in the preparation of claims shall be borne by the **contractor**. This provision shall not preclude an adjudicator or an arbitrator appointed in terms of this **agreement** [30.6 & 7] from making a determination on costs

Claims from subcontractors

The **contractor** shall review, assess and adjudicate any claims received by him from any **subcontractor** and thereafter submit same to the **principal agent** with a recommendation in order to assist the **principal agent** in adjudicating the claim [26.6]

F:..... V:..... T:.....

27 Clause 27.0 Recovery of expense and/or loss

F:..... V:..... T:.....

Item

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Suspension and termination (A28 - A29)

28 Clause 28.0 Suspension by the **contractor**

F:..... V:..... T:.....

Item

29 Clause 29.0 Termination

F:..... V:..... T:.....

Item

Dispute resolution (A30)

30 Clause 30.0 Dispute resolution

F:..... V:..... T:.....

Item

AGREEMENT

The required information of the **parties** and the amount of the **contract sum** shall be inserted in the **agreement** for signature of the **agreement** by the **parties**

F:..... V:..... T:.....

Item

CONTRACT DATA

Given hereunder are all variables referred to in the Principal Building Agreement and which are set out in "Contract Data", prepared and published by the Joint Building Contracts Committee: Edition 6.2 Code May 2018

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

A: Project Information

Clause A1.0 [1.1] Works

Project name :

Refurbishment, Alterations, and additions to : Avoca Station.

Works description:

Station improvements:

- Ticket office upgrade
- Platforms made safe
- Toilets services or upgraded
- Fencing in certain areas
- New turnstiles or servicing of existing
- New electrical upgrade including new light fittings
- Fire detection and protection system
- Painting to certain areas

Clause A2.0 [1.1] Site

Site address:

Refer to the Locality Plan

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause A3.0 [1.1]

Employer : Passenger Rail Agency of South africa

Postal address : P.O Box 51324
Musgrave Road

Code : 4062

Telephone : 031 813 0480

Fax : TBA

E-mail : Sduduziwe.Dlamini@prasa.com

Tax/VAT Reg. No : 4900110612

Physical address : 65 Mashabalala Yengwa
Avenue,Durban

Station Kwa

KwaZulu Natal, South Africa.

Clause A4.0 [1.1]

Principal Agent : **RMA CONSULTANTS**

Postal address : P.O Box 130, Sarnia

Code : 3601

Telephone : (031) 701 2136

Fax : (031) 701 8779

E-mail : Rakesh@rmaconsulting.co.za

Domicilium : 72 Underwood Road, Pinetown

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause A5.0 [1.1; 6.2]

Agent (1) : **Sakhisizwe Architects**

Agent's service : **Architect**

Postal address : **33 Adelaide Tambo Drive
Durban North
KZN**

Code : **4001**

Telephone : **(031) 563 3424**

Fax : **n/a**

E-mail : **patrick@sakhisizwearchitects.co.za**

Clause A6.0 [1.1; 6.2]

Agent (2) : **Abakali (Pty) Ltd**

Agent's service : **Quantity Surveyor**

Postal address : **PO Box 1273
Westville**

Code : **3630**

Telephone : **(031) 279 3400**

Fax : **(031) 279 3416**

E-mail : **jkhan@abakali.co.za**

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause A7.0 [1.1; 6.2]

Agent (3) : **AKSHAN ENGINEERS**

Agent's service : **Civil / Structural Engineers**

Postal address : **P O BOX 65682
Reservoir Hills
Durban**

Code : **4090**

Telephone : **(031) 700 1848**

Fax : **n/a**

E-mail : **Akshan@mweb.co.za**

Clause A8.0 [1.1; 6.2]

Agent (4): **N Powered Cubed**

Agent's service : **Electrical Engineers**

Postal address : **32 Maharaj Road
Raisethorpe
Pietermaritzburg
KZN**

Code : **3201**

Telephone : **(033) 391 5601**

Fax : **086 689 6684**

E-mail : **yugonaidoo@npowercubed.co.za**

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Clause A9.0 [1.1; 6.2]

Agent (5) : **DGI Consulting**

Agent's service : **Mechanical Engineers**

Postal address : **54 Crescent Place, Verlum**

Code : **4339**

Telephone : **082 496 6383**

Fax : **086 552 3759**

E-mail : **dgovender@gmail.com,**
dgovender@dgiconsulting.co.za

Clause A10.0 [1.1; 6.2]

Agent (6) : **Perodi OH&S Services**

Agent's service : **Occupational Health and Safety
Services**

Postal address : **P.O Box 1299, Westville**

Code : **3630**

Telephone : **082 800 2790**

Fax : **n/a**

E-mail : **peterdixon521003@gmail.com**

Tenderer's selections

Before submission of his tender the **contractor** is to
complete the tenderer's selections in the **contract data**

F:..... V:..... T:.....

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

B: Contract Information

Clause B1.0 Definitions [1.1]

Bills of quantities: System/Method of measurement
Standard System of Measuring Building Work

Clause B2.0 **Law**, regulations and **notices** [2.0]

Law applicable to the works, state, country [2.1]
The Republic of South Africa

Clause B3.0 Offer and acceptance [3.0]

Currency applicable to this agreement [3.2]
South African Rands

Clause B4.0 Documents [5.0]

Construction document copies to be supplied to the
contractor free of charge [5.6]
Number of 3

The priced document may be used as a specification of
materials and goods and work methods.
No

On acceptance of the tender, the priced document is to
be submitted within the stated working days.
Priced Document to be submitted at Tender closing

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

R

Clause B5.0 **Employer's agents** [6.0]

Interest of the principal agent or other agents in the project [6.3]

No

Details where "yes"

.....
.....
.....

The principal agent named above is responsible for the preparation of the contract data schedule and must be contacted should the contractor be uncertain of the information provided or to be provided

Clause B6.0 Insurances [10.0]

Contract Works Insurances to be effected by [10.1.1, 10.2, 10.3]

Contractor

For the sum of: : **Contact Sum + 30%**

with a deductible of: : **R 50 000 per claim**

Supplementary / Special insurance to be effected by [10.1.2, 10.2]

N/A

For the sum of: : **N/A**

with a deductible of: : **N/A**

Public liability insurance to be effected by [10.1.3, 10.2]

Contractor

For the sum of: : **R 10 Million Rand**

with a deductible of: : **R 50 000 per claim**

Removal of lateral support insurance to be effected by [10.1.4, 10.2]

N/A

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

1/1/33

[illegible]

Existing premises will be occupied. Where "yes" the specific requirements are described below:

YES, Station is operational. Public will be using the station

Provision of temporary services is required. Where "yes" the specific requirements are detailed elsewhere

**YES,
Contractor to install temporary Electrical and Water meters for recording of usage**

Water

Option A (by contractor)
Yes

Option B (by employer - free of charge)
No

Option C (by employer - metered)
No

Electricity

Option A (by contractor)
Yes

Option B (by employer - free of charge) **No**

Option C (by employer - metered)
No

Ablution and welfare facilities

Option A (by contractor)
Yes

Option B (by employer)
No

Telecommunications

Telephone
Yes

Facsimile
No

E-mail
Yes

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

I, the principal agent named in above, declare that the information provided above is complete and accurate at the time of calling for tenders. Where necessary should any of the above information need to be varied, bidders will be forthwith informed thereof in writing.

Principal Agent:.....Date:.....

Note: To be formally signed as part of contract documents

SECTION B: GENERAL PRELIMINARIES

Definitions and interpretation (B1)

31 Clause 1.1 - Definitions

F:..... V:..... T:.....

Item

32 Clause 1.2 - Interpretation

F:..... V:..... T:.....

Item

Documents (B2)

33 Clause 2.1 - Checking of documents

F:..... V:..... T:.....

Item

34 Clause 2.2 - Provisional **bills of quantities**

F:..... V:..... T:.....

Item

35 Clause 2.3 - Availability of **construction information**

F:..... V:..... T:.....

Item

36 Clause 2.4 - Ordering of **materials and goods**

F:..... V:..... T:.....

Item

Previous work and adjoining properties (B3)

37 Clause 3.1 - Previous work - dimensional accuracy

F:..... V:..... T:.....

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

38	Clause 3.2 - Previous work - defects F:..... V:..... T:.....	Item
39	Clause 3.3 - Inspection of adjoining properties F:..... V:..... T:.....	Item
<u>The site (B4)</u>		
40	Clause 4.1 - Handover of site in stages F:..... V:..... T:.....	Item
41	Clause 4.2 - Enclosure of the works F:..... V:..... T:.....	Item
42	Clause 4.3 - Geotechnical and other investigations F:..... V:..... T:.....	Item
43	Clause 4.4 - Encroachments F:..... V:..... T:.....	Item
44	Clause 4.5 - Existing premises occupied F:..... V:..... T:.....	Item
45	Clause 4.6 - Services - known F:..... V:..... T:.....	Item
<u>Management of contract (B5)</u>		
46	Clause 5.1 - Management of the works F:..... V:..... T:.....	Item
47	Clause 5.2 - Progress meetings F:..... V:..... T:.....	Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

48	Clause 5.3 - Technical meetings F:..... V:..... T:..... <u>Samples, shop drawings and manufacturer's instructions (B6)</u>	Item		
49	Clause 6.1 - Samples of materials F:..... V:..... T:.....	Item		
50	Clause 6.2 - Workmanship samples F:..... V:..... T:.....	Item		
51	Clause 6.3 - Shop drawings F:..... V:..... T:.....	Item		
52	Clause 6.4 - Compliance with manufacturer's instructions F:..... V:..... T:..... <u>Deposits and fees (B7)</u>	Item		
53	Clause 7.1 - Deposits and fees F:..... V:..... T:..... <u>Temporary services (B8)</u>	Item		
54	Clause 8.1 - Water F:..... V:..... T:.....	Item		
55	Clause 8.2 - Electricity F:..... V:..... T:.....	Item		
56	Clause 8.3 - Ablution and welfare facilities F:..... V:..... T:.....	Item		
Carried to Collection			R	
Section No. 1 SECTION 1 - PRELIMINARIES Bill No. 1 Preliminaries AVOCA STATION				

57	Clause 8.4 - Communication facilities F:..... V:..... T:..... <u>Prime cost amounts (B9)</u>	Item		
58	Clause 9.1 - Responsibility for prime cost amounts F:..... V:..... T:..... <u>Attendance on subcontractors (B10)</u>	Item		
59	Clause 10.1 - General attendance F:..... V:..... T:..... The contractor shall allow within the contract sum for general attendance on subcontractors	Item		
60	Clause 10.2 - Special attendance F:..... V:..... T:..... <u>General (B11)</u>	Item		
61	Clause 11.1 - Protection of the works F:..... V:..... T:.....	Item		
62	Clause 11.2 - Protection/isolation of existing works and works occupied in sections F:..... V:..... T:.....	Item		
63	Clause 11.3 - Security of the works F:..... V:..... T:.....	Item		
64	Clause 11.4 - Notice before covering work F:..... V:..... T:.....	Item		
65	Clause 11.5 - Disturbance			

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Disturbance

All work is to be carried out in such a manner as to cause no unacceptable or unreasonable dust, noise, vibrations, nuisance, inconvenience, annoyance and the like to the public, others, other properties and traffic in so far as they exceed the permissible limitations set by government legislation or by the local authority. Any delays, stoppages and the like arising from or in order to comply with the above will not constitute grounds for an adjustment to the **construction period** or **contract value** whatsoever

F:..... V:..... T:.....

Item

66 Clause 11.6 - Environmental disturbance

Controlling all forms of pollution

The **contractor** shall be responsible for and take all precautions in controlling by whatever means necessary all forms of pollution emanating from the **site** during the **construction period** due inter alia to noise, artificial light, wind-blown sand, dust, deposits of mud, etc

The **contractor** is to ensure that all roads which border the **site** and are used by the **contractor** during the execution of the **works** are kept clean and free of any dirt or debris caused by the execution of the **works**

67 Clause 11.7 - **Works** cleaning and clearing

F:..... V:..... T:.....

Item

68 Clause 11.8 - Vermin

F:..... V:..... T:.....

Item

69 Clause 11.9 - Overhand work

F:..... V:..... T:.....

Item

70 Clause 11.10 - Tenant installations

F:..... V:..... T:.....

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

71	Clause 11.11 - Advertising F:..... V:..... T:.....	Item	

SECTION C: SPECIFIC PRELIMINARIES

72	Contract instructions F =.....V =.....T=.....	Item	

Contract instructions issued are to be recorded in triplicate in a contract instruction book which is to be supplied and maintained on **site** by the **contracto**

73	Warranties for materials and workmanship F =.....V =.....T=.....	Item	

Where warranties for materials and/or workmanship are called for, the **contractor** shall obtain a written warranty, addressed to the **employer**, from the entity supplying the materials and/or executing the work and shall deliver same to the **principal agent** on **final completion** of the contract

The warranty shall state that workmanship, materials and installation are warranted for a specific period from the date of **practical completion** and that any **defects** that may arise during the specified period shall be made good at the expense of the entity supplying the materials and/or doing the work, upon written **notice** to do so

The warranty will not be enforced if the work is damaged by **defects** in the execution of the **works**, in which case the responsibility for replacement shall rest entirely with the **contractor**

74	As built drawings F =.....V =.....T=.....	Item	

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 principal agent and the structural engineer for their records

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

R

75 **Overtime**

F =.....V =.....T=.....

Should overtime be required to be worked for any reason whatsoever, the cost of such overtime is to be borne by the **contractor** unless the **principal agent** has specifically authorised, prior to execution thereof, that costs for such overtime are to be borne by the **employer**

Item

76 **Co-operation of the contractor for cost management**

F =.....V =.....T=.....

It is specifically agreed that the **contractor** accepts the obligation of assisting the **principal agent** in implementing proper cost management. The **contractor** will be advised by the **principal agent** of all cost management procedures which will be implemented to ensure that the **contract value** does not exceed the budget

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

77	Overloading F =.....V =.....T=..... The contractor shall take all necessary steps to ensure that no damage occurs due to overloading of any portion of the works or temporary works eg scaffolding, etc. The contractor shall submit details of his proposed loading, storage, plant erection, etc to the principal agent for approval prior to proceeding with such loading, storing or erecting and shall comply with and pay for the principal agent's requirements in connection with the provision of temporary support work, etc. Any damage caused to the works by overloading shall be made good by the contractor at his sole expense	Item		
78	Propping of floors below F =.....V =.....T=..... The contractor is advised that propping of floors below may be required if he wishes to use any areas of completed suspended reinforced concrete slabs for vehicle access, storage of materials and goods and location of plant, scaffolding, etc. The location of these areas and any necessary propping shall be approved by the principal agent and the cost thereof shall be borne by the contractor	Item		
79	Testing of flat roof waterproofing for water tightness F =.....V =.....T=..... Flat roof waterproof areas shall be flooded and kept "ponded" for at least forty eight (48) hours as a test to ensure the watertightness of the waterproofing and before any further construction work is carried out above the waterproofing	Item		
80	Community Liaison Officer, etc F =.....V =.....T=.....	Item		
Carried to Collection			R	
Section No. 1 SECTION 1 - PRELIMINARIES Bill No. 1 Preliminaries AVOCA STATION				

The Contractor shall allow for and pay any and all costs necessary for the engagement of the services of a Community Liaison Officer (CLO) for the full duration of this contract

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

R

A CLO will be identified by the local structures of the ward areas and appointed following fair and transparent interviewing process, to be conducted in the presence of local structures and the contractor representative, in order to assist the Contractor in the procurement of any local labour, etc. required for this project. The Contractor is to liaise with the CLO and afford him any assistance needed in ensuring sound working relations with the local community.

Key Responsibilities of the CLO are envisaged to include and not necessary be limited to:

1. Assisting local leadership in conducting skills and resources audit which facilitates sourcing labour from within the ward or targeted areas for employment, as required by contractor.
2. Assisting in sourcing labour-only domestic sub-contractors and the procurement of materials from local resources, as required by the contractor.
3. Assisting the contractor by identifying areas of potential conflict and or threats to the project or to stakeholders in the project and recommend appropriate action to the contractor.
4. Assisting contractor and stakeholders in the project in the resolution of any conflict which may arise.
5. Establishing and ensuring that sufficient and open communication channels between the contractor and the work force are maintained
6. Establish and ensuring that efficient and open communication channels between the contractor and the community are maintained
7. Identifying and reporting to the Contractor regarding issues where communication between stakeholder is necessary, recommend courses of action and facilitate such communications
8. Assisting the Contractor and the work force in the establishment of grievance procedures and necessary recommendation to the Contractor regarding the grievances and solution thereto.
9. Attending to site meetings and project implementation meetings as required by the Contractor and prepare periodic reports as may be required by the Contractor from time to time.
10. Attending to such other duties which are consistent with the functions of a CLO, as may

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Carried to Collection

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

82 The Tenderer is to refer to T1.3 "Specification for Employment of SMME Subcontractors and price the following item accordingly.
Contractor to manage and supervise the SMME's during the execution of the portion of their works.

Item

83 **Health and Safety**

F =.....V =.....T=.....

Item

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Without limiting the generality of the provisions of clause 2.0, the contractor's attention is drawn to the provisions of the Construction Regulations issued in terms of the Occupational Health and Safety Act, 1993 as amended. It is specifically stated that the employer shall prepare a documented health and safety specification for the works (refer to the Annexures included at the back of the tender document for a copy of the **PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS and BILL OF QUANTITIES FOR OCCUPATIONAL HEALTH AND SAFETY**) and that the employer shall ensure that the contractor has made provision for the cost of health and safety measures during the execution of the works. The contractor shall allow in the contract sum for compliance with the act and the regulations and the provisions of the aforementioned health and safety specification [2.1]

The contractor shall:

1. Comply with the health and safety specification for the works
2. Prepare and agree with the health and safety consultant the health and safety plan for the works
3. Cooperate with the health and safety consultant in all respects
4. Manage the compliance of all subcontractors with the regulations and with the health and safety plan and specification
5. Conform to the conditions contained in the employer's health and safety specification
6. Include the **BILL OF QUANTITIES FOR OCCUPATIONAL HEALTH AND SAFETY** as part of the tender submission

The contractor shall price the items under this annexure and carry the total amount forward as a lump sum value, excluding VAT, to reflect it against this item for standard health and safety items

Carried to Collection

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

84	Health and Safety - Epidemics and Pandemic specific	Item		
	F =.....V =.....T=.....			
	Without limiting the generality of the provisions of clause 2.0 and the provisions of the Construction Regulations issued in terms of the Occupational Health and Safety Act, 1993 as amended, the contractor's attention is also drawn to the PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS and BILL OF QUANTITIES FOR OCCUPATIONAL HEALTH AND SAFETY document (refer to the Annexures included at the back of the tender document for a copy hereof) and specifically to the additional item related to epidemics and pandemic. (item B.15) The employer shall ensure that the contractor has made provision for the cost of health and safety specific to epidemics and pandemic measures during the execution of the works. The contractor shall allow in the contract sum for compliance with the act and the regulations and the provisions of the aforementioned health and safety specification [2.1]. The contractor shall include as part of his tender submission the cost break down of the specific items allowed for epidemics and pandemic. The contractor shall price the items under this annexure and carry the total amount forward as a lump sum value, excluding VAT, to reflect it against this item for health and safety specific to epidemics and pandemic only			
85	Personal Protective Equipment (PPE)	Item		
	F =.....V =.....T=.....			
	Allow for the supply, delivery, use and inspection of Personal Protective Clothing and equipment through out the project as directed by the client			
	Carried to Collection		R	
	Section No. 1 SECTION 1 - PRELIMINARIES Bill No. 1 Preliminaries AVOCA STATION			

86	Broad based black economic empowerment (BBBEE) F =.....V =.....T=..... Tenders submitted will be evaluated taking into account their empowerment rating The employer will be monitoring the broad based black economic empowerment (BBBEE) status of the contractor throughout the execution of the works The contractor is to submit to the principal agent on an annual basis a schedule of spend, split into vendors engaged as subcontractors and suppliers indicating their BBBEE rating including proof of the said rating	Item		
87	Advertising rights F =.....V =.....T=..... The employer may elect to contract with advertising agencies for the erection of advertising hoardings, banners, wraps or the like for the duration of the contract. The contractor shall not prevent such an arrangement and will assist in the facilitation of same. The position and type of advertising structure to be agreed with the principal agent so as not to hinder the contractor in meeting his obligations under this agreement	Item		
88	Confidentiality F =.....V =.....T=..... The contractor undertakes to maintain in confidence any and all information regarding this project and shall obtain appropriate similar undertakings from all subcontractors and suppliers. Such information shall not be used in any way except in connection with the execution of the works No information regarding this project shall be published or disclosed without the prior written consent of the employer	Item		
	Carried to Collection			R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

89	Media releases F =.....V =.....T=..... All rights of publication of articles in the media, together with any advertising relating thereto or in any way connected with this project, shall vest with the employer The contractor together with his subcontractors shall not, without the prior written consent of the employer, cause any statement or advertisement connected with this project to be printed, screened or aired by the media	Item		
90	Mock-ups F =.....V =.....T=.....			
91	Provide an amount of (Thirty thousand rands) to cover the cost of full scale mock-ups of various elements of the project to be used as directed by the principal agent and deducted in whole or in part if not required SUMMARY OF CATEGORIES Category : Fixed R..... Category : Value R..... Category : Time R.....	Item		30,000.00
			R	
Carried to Collection				
Section No. 1 SECTION 1 - PRELIMINARIES Bill No. 1 Preliminaries AVOCA STATION				

Section No. 1

Bill No. 1

Preliminaries

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

1/1/1

1/1/2

1/1/3

1/1/4

1/1/5

1/1/6

1/1/7

1/1/8

1/1/9

1/1/10

1/1/11

1/1/12

1/1/13

1/1/14

1/1/15

1/1/16

1/1/17

1/1/18

1/1/19

Carried Forward

R

Section No. 1
SECTION 1 - PRELIMINARIES
Bill No. 1
Preliminaries
AVOCA STATION

Section No. 1

Bill No. 1

Preliminaries

COLLECTION

Brought Forward

Total Brought Forward from Page No.

Page
No

Amount

R

1/1/20

1/1/21

1/1/22

1/1/23

1/1/24

1/1/25

1/1/26

1/1/27

1/1/28

1/1/29

1/1/30

1/1/31

1/1/32

1/1/33

1/1/34

1/1/35

1/1/36

1/1/37

Carried Forward

R

Section No. 1

SECTION 1 - PRELIMINARIES

Bill No. 1

Preliminaries

AVOCA STATION

Section No. 1

Bill No. 1

Preliminaries

COLLECTION

Brought Forward

Total Brought Forward from Page No.

Page
No

Amount

R

1/1/38

1/1/39

1/1/40

1/1/41

1/1/42

1/1/43

1/1/44

1/1/45

1/1/46

1/1/47

1/1/48

1/1/49

1/1/50

1/1/51

1/1/52

Carried to Final Summary

R

Section No. 1

SECTION 1 - PRELIMINARIES

Bill No. 1

Preliminaries

AVOCA STATION

Item No		Quantity	Rate	Amount
	<u>AVOCA STATION</u> <u>SECTION 2 : WAITING ROOM</u> <u>BILL NO. 1</u> <u>ALTERATIONS</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>GENERAL NOTES</u> <u>Method of demolition</u> The Contractor shall provide the Principal Agent with the methods he proposes to use for the demolition and a detailed construction programme and demolition schedule indicating all the various items to be demolished. <u>View Site</u> The tenderers shall visit the site to ascertain the exact nature and extent of the work to be done and shall carefully examine the existing structures before making any allowance for their purchase, demolition and removal as no claim for any extra work due to failure to comply with this requirement will be subsequently entertained.			
	Carried to Collection		R	
	Section No. 2 SECTION 2 - WAITING ROOM Bill No. 1 Alterations AVOCA STATION			

Descriptions

The descriptions and sizes of demolition work contained hereinafter are intended as a GUIDE ONLY to the Tenderer and no liability will be accepted for any discrepancies or inadequacies in these.

The whole of the work shall be carried out in accordance with and to the entire satisfaction of the Local Authorities and PRASA representatives

The Contractor, shall, before commencing work, obtain all necessary authorisations for carrying out the work, give all necessary notices and pay all fees and charges in connection therewith, including all Local Authority charges. He shall arrange for and pay all fees and charges, if any, for disconnecting of electrical and water supplies, drains, telephones, etc. and for disconnecting and removal of all municipal property such as electric transformers, high tension switch gear, meters, etc.

Clearance Certificate

Before commencing work on site the Contractor shall comply with all regulations in respect of rodent extermination and shall obtain the requisite Rodent Extermination Clearance Certificate and pay all fees and charges in connection therewith. This certificate shall be deposited with the Principal Agent.

Disturbance

The Contractor shall carry out the whole of the demolition works with as little mess and noise as possible and with a minimum disturbance to the adjoining premises and their occupants. He shall keep the site, structures and materials well watered during the operation to prevent dust and provide, erect and maintain all temporary tarpaulins, dust and weather-proof screens, barriers and temporary plumbing that may be necessary during the progress of the work, all to the satisfaction of the Architects, the Local Authorities and PRASA representatives, and remove when directed.

Carried to Collection

R

Section No. 2
SECTION 2 - WAITING ROOM
Bill No. 1
Alterations
AVOCA STATION

Safety

The Contractor shall supply and erect all props, struts, shoring, etc. which may be necessary in the demolition and for the safety of persons and property.

The Contractor shall comply with all regulations and by-laws in force in connection with the use of mechanical and other equipment. Blasting will only be permitted with the Principal Agent's approval.

Pumping and Bailing

The Contractor shall keep the works free from water and mud during the course of the contract.

Carried to Collection

R

Section No. 2
SECTION 2 - WAITING ROOM
Bill No. 1
Alterations
AVOCA STATION

Prices must include:

Prices for the demolition of any portion of the structure, shall include for its demolition complete, with all surface finishes such as plaster, tiles, screeds, etc. All attached items of joinery such as skirtings, etc, and all reinforcement, conduits, pipes, lintels, etc built into that portion of the structure.

Prices for the removal of partitioning, shopfronts, etc, shall include for the removal of door frames, fanlights, ironmongery, architraves and other associated trim.

Prices for the removal of doors and frames shall include for the removal of fanlights, ironmongery, architraves and other associated trim.

Prices for the removal of ceiling shall include for the removal of all electrical and mechanical services and fittings in the ceiling void including partitioning etc, within the ceiling void.

Prices for the removal of sanitary fittings shall include for the removal and blocking off of copper service pipes, taps, traps, brackets and cisterns.

Leave site clean and free of rubbish

At final completion of the demolition work the Contractor shall leave the works in a thoroughly safe and sanitary condition to the complete satisfaction of the Principal Agent, Local Authorities and PRASA representatives

The Contractor shall progressively during the Works and at completion collect and cart away all materials and debris resulting from the demolitions and also all earth, soil and rubbish.

DEMOLITIONS, BUILDING WORK, ETC.

Carried to Collection

R

Section No. 2
SECTION 2 - WAITING ROOM
Bill No. 1
Alterations
AVOCA STATION

Removal of roofs, etc.

The removal of roof coverings, rainwater goods and roof trusses, etc. occur above ceilings, floors, etc., which are to be retained and rates are, therefore, to include for covering and protecting the existing work, carrying out the work in suitable portions to minimize the risk of damage and taking any further precautions which are considered necessary and to the approval of the Principal Agent.

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, and shall, after completion of all renovations and alterations, thoroughly clean up, remove all rubble, etc.

Making good is not stated in every description, but shall be deemed to be included as such, and prices must make provision accordingly.

Forming new openings or altering openings in existing walls

Descriptions of forming new openings or altering openings in existing walls shall be deemed to include breaking out for and forming new brick, in situ concrete or prestressed concrete lintels, including all reinforcement, formwork, turning pieces, etc. building up jambs or portions of openings as described with brickwork or blockwork properly toothed and bonded to existing, building cavities of hollow walls solid where necessary and making good finishes all round on both sides and into reveals as described.

Building up Openings

Descriptions of building up existing openings where given in number, shall be deemed to include preparing existing surfaces all round, brickwork or blockwork properly toothed and bonded to existing, wedging up and making good finishes on both sides as described.

Carried to Collection

R

Section No. 2
SECTION 2 - WAITING ROOM
Bill No. 1
Alterations
AVOCA STATION

Paintwork

Where plasterwork on walls, ceilings, etc. are required to be patched or made good, prices are to include for the appropriate priming coat(s) and undercoat(s) to receive finishing coats which are measured elsewhere. Refer to the Paintwork Bill in this regard.

Existing Materials to be Removed by Contractor

All existing materials removed must be set aside for inspection by the Principal Agent. All items deemed to be in good order must be handed over to the client. Items that are deemed to be in a bad condition must be removed from site by the contractor, All in accordance with the Principal Agents approval

CLEANING OF EXISTING SURFACES TO RECEIVE NEW FINISH

Rub down, prepare and brush surface to remove all contaminants of existing plastered and painted walls to receive new plaster and or paint (plaster and or paint elsewhere measured)

1	On internal and external walls	m2	99

Carried to Collection

R

Section No. 2
SECTION 2 - WAITING ROOM
Bill No. 1
Alterations
AVOCA STATION

Section No. 2

Bill No. 1

Alterations

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

2/1/1

2/1/2

2/1/3

2/1/4

2/1/5

2/1/6

Carried Forward to Summary of Section No. 2

Section No. 2
SECTION 2 - WAITING ROOM
Bill No. 1
Alterations
AVOCA STATION

R

SECTION SUMMARY - SECTION 2 - WAITING ROOM		Page No	Amount	
1	Alterations	2/1/7		
2	Paintwork	2/2/1		
Carried to Final Summary			R	
Section No. 2				
SECTION 2 - WAITING ROOM				
AVOCA STATION				

Item No		Quantity	Rate	Amount
	<u>SECTION 3 : TELECOMMUNICATION ROOM</u>			
	<u>BILL NO. 1</u>			
	<u>ALTERATIONS</u>			
	<u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SUPPLEMENTARY PREAMBLES</u>			
	SUPPLEMENTARY PREAMBLES FOR ALTERATIONS AS PER PREVIOUS SECTION OF THE BOQ			
	<u>Existing Materials to be Removed by Contractor</u>			
	<u>All existing materials removed must be set aside for inspection by the Principal Agent. All items deemed to be in good order must be handed over to the client. Items that are deemed to be in a bad condition must be removed from site by the contractor, All in accordance with the Principal Agents approval</u>			
	<u>Taking out and removing doors, windows, etc. from brickwork to allow for replacement with new.</u>			
1	Timber single door and frame 900 x 2100mm high overall from one brick wall	No	1	
	<u>Existing screeded floor finish to be cleaned, all cracks to be raked out and repaired with an approved epoxy repair mortar as per Engineers Specification - Repair method B</u>			
2	Repair existing screeded / concrete floors	m2	17	
	Carried to Collection			R
	Section No. 3 SECTION 3 - TELECOMMUNICATION ROOM Bill No. 1 Alterations AVOCA STATION			

**CLEANING OF EXISTING SURFACES TO
RECEIVE NEW FINISH**

**Rub down, prepare and brush surface to remove all
contaminants of existing plastered and painted
walls to receive new plaster and or paint (plaster
and or paint elsewhere measured)**

3	On walls	m2	111

ROOF COMPONENTS

4	Clean roof slab and remove old waterproofing and prepare the surface to receive new waterproofing in patches	m2	32

Carried to Collection

Section No. 3
SECTION 3 - TELECOMMUNICATION ROOM
Bill No. 1
Alterations
AVOCA STATION

R

Section No. 3

Bill No. 1

Alterations

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

3/1/1

3/1/2

Carried Forward to Summary of Section No. 3

Section No. 3
SECTION 3 - TELECOMMUNICATION ROOM
Bill No. 1
Alterations
AVOCA STATION

R

Item No		Quantity	Rate	Amount
	<u>BILL NO.3</u>			
	<u>CARPENTRY AND JOINERY</u>			
	Tenderers are referred to the relevant Clauses in the Model Preambles for Trades (2008 Edition) before pricing this bill.			
	<u>DOORS, ETC.</u>			
	<u>Hardwood door.</u>			
1	2032 x 813 x 41mm harwood external solid timber door. Painted finish.	No	1	
	<u>DOOR FRAME.</u>			
2	Provide new heavy duty steel door frame 1.2mm material thickness or similar approved	No	1	
	<u>GALVANIZED MILD STEELWORK DOOR BURGLAR GUARDS.</u>			
3	1990mm x 795mm Heavy duty GMS security gate. 40mm x 40mm RHS frame with 100 x 40 lock cross bar at half height. 3 x heavy duty weld on hinges. 16mm solid round bar verticals. Grade 304 stainless steel security deadlock compliant with SANS 4:2008	No	1	
	Carried Forward to Summary of Section No. 3		R	
	Section No. 3			
	SECTION 3 - TELECOMMUNICATION ROOM			
	Bill No. 3			
	Carpentry and Joinery			
	AVOCA STATION			

ON FLOATED PLASTER

All external walls to be crack filled, sanded and prepared for painting. Existing plaster to be repaired in places due to existing damage - allow for 30% of existing plastered surfaces to be re-done. Paint with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Weatherguard Ultrasmooth adhesion promoted (D62) acrylic paint. Surface to be dry, sound and clean and cured for a minimum of 14 days, with a moisture content of BD 2 scale - 8% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux Trade Alkali Resistant Primer (T1004) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Weatherguard Ultrasmooth (D62) with 18 hours drying time between coats. Colours to be according to PRASA paint schedule or similar approved.

1	On external walls	m2	60	

All internal walls to be crack filled, sanded and prepared for painting. Existing plaster to be repaired in places due to existing damage - allow for 60% of existing plastered surfaces to be re-done. Paint with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Luxurious Silk (D22) acrylic paint. Surface to be dry, sound and clean and cured for a minimum of 14 days, with a moisture content of BD 2 scale - 8% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux Trade Alkali Resistant Primer (T1004) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Luxurious Silk (D22) with 18 hours drying time between coats. Colours to be according to PRASA paint schedule or similar approved.

2	On internal walls	m2	51	

Carried to Collection

Section No. 3
SECTION 3 - TELECOMMUNICATION ROOM
Bill No. 4
Paintwork
AVOCA STATION

R

PAINT ON ROOF SLAB SOFFITS.

- 3 Remove any mould release agent using clean water. Surface to be dry, sound and clean and cured for a minimum of 28 days, with a moisture content of 5% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux TRade Plaster Primer (T1011) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Pearl glo Water Clean-Up (D40) with 4 hours drying time between coats or any similar approved product or similar approved.

m2

5

DOOR PAINT

Door leaf to be undercoated and two top coats Plascon Professional Gloss Enamel (PBS 1000) or Dulux Trade Gloss Enamel paint or similar approved.

- 4 Doors

m2

4

FRAME PAINT.

Surface to be clean dry and rust free. Prime with one coat Plascon Metalcare Mild Steel Primer (UC 501) or Dulux Corrocote 1 (T1020) with an overcoating time of 16 hours and finish with two coats Plascon Professional Gloss Enamel (PSB 1000) or with one coat Dulux Trade Universal Undercoat (Code: T1001) with an overcoating time of 18 hours and finish with two coats Dulux Trade Gloss Enamel (Code: T3001) with an overcoating time of 18 hours or similar approved.

- 5 Steel door frame.

m

5

Carried to Collection

R

Section No. 3
SECTION 3 - TELECOMMUNICATION ROOM
Bill No. 4
Paintwork
AVOCA STATION

Section No. 3

Bill No. 4

Paintwork

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

3/4/1

3/4/2

3/4/3

Carried Forward to Summary of Section No. 3

Section No. 3
SECTION 3 - TELECOMMUNICATION ROOM
Bill No. 4
Paintwork
AVOCA STATION

R

Item No		Quantity	Rate	Amount
	<u>BILL NO. 5</u> <u>IRONMONGERY</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SUPPLEMENTARY PREAMBLES</u> <u>Finishes to ironmongery</u> Where applicable finishes to ironmongery are indicated by suffixes in accordance with the following list: BS - Satin bronze lacquered CH - Chromium plated SC - Satin chromium plated SE - Silver enamelled GE - Grey enamelled AS - Anodised silver AB - Anodised bronze AG - Anodised gold ABL - Anodised black PB - Polished brass PL - Polished and lacquered PT - Epoxy coated SD - Sanded <u>HINGES, BOLTS, ETC.</u> <u>"DCLSA" or similar approved</u>			
1	100 x 60 x 2mm Stainless Steel butt Hinges 090/63	No	2	
	<u>LOCKS</u> 2 Grade 304 Stainless steel Euro profile Mortice sash lock with reversible latch and deadbolt. Fore end to be stainless steel To comply with SANS 4:2008	No	1	
	Carried to Collection			R
	Section No. 3 SECTION 3 - TELECOMMUNICATION ROOM Bill No. 5 Ironmongery AVOCA STATION			

HANDLES

- 3 Grade 304 Stainless steel round D lever handle on a long backplate with a Euro profile cylinder opening. Fixing to door to be stainless steel male and female screws. To comply with SANS 4:2008 or similar approved.

No

2

Carried to Collection

R

Section No. 3
SECTION 3 - TELECOMMUNICATION ROOM
Bill No. 5
Ironmongery
AVOCA STATION

Section No. 3

Bill No. 5

Ironmongery

COLLECTION

Total Brought Forward from Page No.

**Page
No**

3/5/1

3/5/2

Amount

Carried Forward to Summary of Section No. 3

Section No. 3
SECTION 3 - TELECOMMUNICATION ROOM
Bill No. 5
Ironmongery
AVOCA STATION

R

Bill No	SECTION SUMMARY - SECTION 3 - TELECOMMUNICATION ROOM	Page No	Amount
1	Alterations	3/1/3	
2	Waterproofing	3/2/1	
3	Carpentry and Joinery	3/3/1	
4	Paintwork	3/4/4	
5	Ironmongery	3/5/3	

Item No		Quantity	Rate	Amount
	<u>SECTION 4 : STORE ROOM</u>			
	<u>BILL NO. 1</u>			
	<u>ALTERATIONS</u>			
	<u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SUPPLEMENTARY PREAMBLES</u>			
	SUPPLEMENTARY PREAMBLES FOR ALTERATIONS AS PER PREVIOUS SECTION OF THE BOQ			
	<u>Existing Materials to be Removed by Contractor</u>			
	<u>All existing materials removed must be set aside for inspection by the Principal Agent. All items deemed to be in good order must be handed over to the client. Items that are deemed to be in a bad condition must be removed from site by the contractor, All in accordance with the Principal Agents approval</u>			
	<u>Taking out and removing doors, windows, etc. from brickwork to allow for replacement with new</u>			
1	Timber single door and frame 900 x 2100mm high overall from one brick wall	No	1	
	<u>Existing screeded floor finish to be cleaned, all cracks to be racked out and repaired with an approved epoxy repair mortar as per Engineers Specification - Repair method B</u>			
2	Repair of existing screeds / concrete	m2	29	
	Carried to Collection			R
	Section No. 4 SECTION 4 - STORE ROOM Bill No. 1 Alterations AVOCA STATION			

**CLEANING OF EXISTING SURFACES TO
RECEIVE NEW FINISH (PROVISIONAL)**

**Rub down, prepare and brush surface to remove all
contaminants of existing plastered and painted
walls to receive new plaster and or paint (plaster
and or paint elsewhere measured)**

3	On walls	m2	147

ROOF COMPONENTS

4	Clean roof slab and remove old waterproofing and prepare the surface to receive new waterproofing.	m2	41

Carried to Collection

R

Section No. 4
SECTION 4 - STORE ROOM
Bill No. 1
Alterations
AVOCA STATION

Section No. 4

Bill No. 1

Alterations

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

4/1/1

4/1/2

Carried Forward to Summary of Section No. 4

Section No. 4
SECTION 4 - STORE ROOM
Bill No. 1
Alterations
AVOCA STATION

R

Item No		Quantity	Rate	Amount
	<u>BILL NO.3</u>			
	<u>CARPENTRY AND JOINERY</u>			
	Tenderers are referred to the relevant Clauses in the Model Preambles for Trades (2008 Edition) before pricing this bill.			
	<u>DOORS, ETC.</u>			
	<u>Hardwood door.</u>			
1	2032 x 813 x 41mm harwood external solid timber door. Painted finish.	No	1	
	<u>DOOR FRAME.</u>			
2	Provide new heavy duty steel door frame 1.2mm material thickness or similar approved	No	1	
	<u>GALVANIZED MILD STEELWORK DOOR BURGLAR GUARDS.</u>			
3	1990mm x 795mm Heavy duty GMS security gate. 40mm x 40mm RHS frame with 100 x 40 lock cross bar at half height. 3 x heavy duty weld on hinges. 16mm solid round bar verticals. Grade 304 stainless steel security deadlock compliant with SANS 4:2008	No	1	
	Carried Forward to Summary of Section No. 4		R	
	Section No. 4 SECTION 4 - STORE ROOM Bill No. 3 Carpentry and Joinery AVOCA STATION			

ON FLOATED PLASTER

All external walls to be crack filled, sanded and prepared for painting. Existing plaster to be repaired in places due to existing damage - allow for 30% of existing plastered surfaces to be re-done. Paint with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Weatherguard Ultrasmooth adhesion promoted (D62) acrylic paint. Surface to be dry, sound and clean and cured for a minimum of 14 days, with a moisture content of BD 2 scale - 8% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux Trade Alkali Resistant Primer (T1004) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Weatherguard Ultrasmooth (D62) with 18 hours drying time between coats. Colours to be according to PRASA paint schedule or similar approved.

1	On external walls	m2	75

All internal walls to be crack filled, sanded and prepared for painting. Existing plaster to be repaired in places due to existing damage - allow for 60% of existing plastered surfaces to be re-done. Paint with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Luxurious Silk (D22) acrylic paint. Surface to be dry, sound and clean and cured for a minimum of 14 days, with a moisture content of BD 2 scale - 8% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux Trade Alkali Resistant Primer (T1004) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Luxurious Silk (D22) with 18 hours drying time between coats. Colours to be according to PRASA paint schedule or similar approved.

2	On internal walls	m2	72

Carried to Collection

R

Section No. 4
SECTION 4 - STORE ROOM
Bill No. 4
Paintwork
AVOCA STATION

PAINT ON ROOF SLAB SOFFITS.

3	Remove any mould release agent using clean water. Surface to be dry, sound and clean and cured for a minimum of 28 days, with a moisture content of 5% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux TRade Plaster Primer (T1011) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Pearl glo Water Clean-Up (D40) with 4 hours drying time between coats or any similar approved product or similar approved.	m2	6	

DOOR PAINT

Door leaf to be undercoated and two top coats Plascon Professional Gloss Enamel (PBS 1000) or Dulux Trade Gloss Enamel paint or similar approved.

4	Doors	m2	4	

FRAME PAINT.

Surface to be clean dry and rust free. Prime with one coat Plascon Metalcare Mild Steel Primer (UC 501) or Dulux Corrocote 1 (T1020) with an overcoating time of 16 hours and finish with two coats Plascon Professional Gloss Enamel (PSB 1000) or with one coat Dulux Trade Universal Undercoat (Code: T1001) with an overcoating time of 18 hours and finish with two coats Dulux Trade Gloss Enamel (Code: T3001) with an overcoating time of 18 hours or similar approved.

5	Steel door frame.	m	5	

Carried to Collection

R

Section No. 4
SECTION 4 - STORE ROOM
Bill No. 4
Paintwork
AVOCA STATION

Section No. 4

Bill No. 4

Paintwork

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

4/4/1

4/4/2

4/4/3

Carried Forward to Summary of Section No. 4

Section No. 4
SECTION 4 - STORE ROOM
Bill No. 4
Paintwork
AVOCA STATION

R

Item No		Quantity	Rate	Amount
	<u>BILL NO. 5</u> <u>IRONMONGERY</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SUPPLEMENTARY PREAMBLES</u> <u>Finishes to ironmongery</u> Where applicable finishes to ironmongery are indicated by suffixes in accordance with the following list: BS - Satin bronze lacquered CH - Chromium plated SC - Satin chromium plated SE - Silver enamelled GE - Grey enamelled AS - Anodised silver AB - Anodised bronze AG - Anodised gold ABL - Anodised black PB - Polished brass PL - Polished and lacquered PT - Epoxy coated SD - Sanded <u>HINGES, BOLTS, ETC.</u> 1 Heavy duty aluminium continuous hinge or similar approved. No 2 <u>LOCKS</u> 2 Door supplied with 5-lever CISA mortise deadlock or similar approved. No 1			
	Carried to Collection			R
	Section No. 4 SECTION 4 - STORE ROOM Bill No. 5 Ironmongery AVOCA STATION			

HANDLES

3	D-style pull handles or similar approved.

No

2

Carried to Collection

R

Section No. 4
SECTION 4 - STORE ROOM
Bill No. 5
Ironmongery
AVOCA STATION

Section No. 4

Bill No. 5

Ironmongery

COLLECTION

Total Brought Forward from Page No.

**Page
No**

4/5/1

4/5/2

Amount

Carried Forward to Summary of Section No. 4

Section No. 4

SECTION 4 - STORE ROOM

Bill No. 5

Ironmongery

AVOCA STATION

R

SECTION SUMMARY - SECTION 4 - STORE ROOM		Page No	Amount	
Bill No				
1	Alterations	4/1/3		
2	Waterproofing	4/2/1		
3	Carpentry and Joinery	4/3/1		
4	Paintwork	4/4/4		
5	Ironmongery	4/5/3		
Carried to Final Summary			R	
Section No. 4 SECTION 4 - STORE ROOM AVOCA STATION				

Item No		Quantity	Rate	Amount
	<u>SECTION 5 : ABLUTIONS</u>			
	<u>BILL NO. 1</u>			
	<u>ALTERATIONS</u>			
	<u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SUPPLEMENTARY PREAMBLES</u>			
	SUPPLEMENTARY PREAMBLES FOR ALTERATIONS AS PER PREVIOUS SECTION OF THE BOQ			
	<u>Existing Materials to be Removed by Contractor</u>			
	<u>All existing materials removed must be set aside for inspection by the Principal Agent. All items deemed to be in good order must be handed over to the client. Items that are deemed to be in a bad condition must be removed from site by the contractor, All in accordance with the Principal Agents approval</u>			
	<u>REMOVE EXISTING CEILINGS.</u>			
1	Remove ceilings complete	m2	24	
	<u>Hacking up/off and removing ceramic tile floor and wall finishes including removing mortar bed or backing and preparing concrete or brick surfaces for new screed, plaster or tile finishes. (Provisional)</u>			
2	Floor tiles	m2	24	
3	Wall tiles	m2	54	
	Carried to Collection			R
	Section No. 5 SECTION 5 - ABLUTIONS Bill No. 1 Alterations AVOCA STATION			

Taking out and removing doors, windows, etc. from brickwork to allow for replacement with new

4	Timber doors 900 x 2100mm high overall.	No	8

5	Remove all door frames 900 x 2100 high.	No	8

CLEANING OF EXISTING SURFACES TO RECEIVE NEW FINISH - (PROVISIONAL)

Rub down, prepare and brush surface to remove all contaminants of existing plastered and painted walls to receive new plaster and or paint (plaster and or paint elsewhere measured)

6	On walls	m2	105

Taking out and removing piping, sanitary fittings, etc including disconnecting piping from fittings and making good floor and wall finishes (making good tiling and paintwork elsewhere)

7	Wash hand basin	No	6

8	WC pan with cistern	No	6

9	Stainless steel urinal including breaking up and removing concrete urinal slab	No	3

ROOF COMPONENTS

10	Remove roof sheeting.	m2	72

11	Remove fascia boards	m	56

12	Remove down pipes	m	12

13	Remove gutters	m	11

Carried to Collection

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 1
Alterations
AVOCA STATION

Section No. 5

Bill No. 1

Alterations

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

5/1/1

5/1/2

Carried Forward to Summary of Section No. 5

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 1
Alterations
AVOCA STATION

R

BILL NO. 2

CARPENTRY AND JOINERY

Tenderers are referred to the relevant Clauses in the Model Preambles for Trades (2008 Edition) before pricing this bill.

DOORS, ETC.

Semi-solid doors.

1	2032 x 813 x41mm hardwood external solid timber door or similar approved.	No	2
2	2032 x 813 x41mm semi solid timber flush panel door leaf or similar approved.	No	5
3	2032 x 813 x41mm hardwood external solid timber door or similar approved.	No	1
<u>STEEL FRAMES ETC</u>			
4	Galvanised mild steel door frame 1.2mm material thickness.	m	41

2	2032 x 813 x41mm semi solid timber flush panel door leaf or similar approved.	No	5

3	2032 x 813 x 41mm hardwood external solid timber door or similar approved.	No	1

STEEL FRAMES ETC

4	Galvanised mild steel door frame 1.2mm material thickness.	m	41

Carried Forward to Summary of Section No. 5

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 2
Carpentry and Joinery
AVOCA STATION

SECTION 5 - ABLUTIONS

Bill No. 2

Carpentry and Joinery

AVOCA STATION

Item No		Quantity	Rate	Amount
	<u>BILL NO. 3</u> <u>TILING</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>WALL TILING</u> <u>200 x 200mm Full Bodied polished Porcelain tiles to match existing with 3mm grouting lines from Tile Space or Union Tiles. Wall edge / corners to be finished with Stainless Steel Square Edge Trims. From Union Tiles, Tilespace, JNB Ceramica or Tiletoria or similar approved</u>			
1	On walls 1. Materials (nett area) -.....PC amount of R 300.00/m ² 2. Proportion of rate adjustable related to PC amount (e.g: waste, etc.) -..... 3. Proportion of rate not adjustable (e.g:labour,etc.)-..... TOTAL (to rate column)-.....	m2	54	
	Carried to Collection			
	Section No. 5 SECTION 5 - ABLUTIONS Bill No. 3 Tiling AVOCA STATION			

R

FLOOR TILING

600 x 600mm min R9 preferably R10 slip rated Full Bodied Porcelain tiles, mineralised with 3mm grouting lines from Union Tiles, Tilespace, JNB Ceramica or Tiletoria . Natural finish. Damage,Cracked and loose floor tiles lifted, surface to be prepared to receive new floor tiles. Full bodied porcelain tiles 10mm thick fixed to internal floor screed with TAL tile adhesive (elsewhere specified) mixed with TAL bonding liquid in lieu of water with diagonal joints continuous in both directions and grouted with TAL tile grout, excess grout on the surface to be cleaned with water as work proceeds. Tile Codes: UT= SEZZ6879N TS= TS2040AD, JNB= 96ES, TT=LG01, SMJDS or similar approved.

2 On floors and landings

1. Materials (nett area) -.....PC amount of R 300.00/m²

2. Proportion of rate adjustable related to PC amount (e.g: waste, etc.) -.....

3. Proportion of rate not adjustable (e.g:labour,etc.)-

TOTAL (to rate column)-.....

m2

24

Carried to Collection

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 3
Tiling
AVOCA STATION

Section No. 5

Bill No. 3

Tiling

COLLECTION

Total Brought Forward from Page No.

**Page
No**

Amount

5/3/1

5/3/2

Carried Forward to Summary of Section No. 5

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 3
Tiling
AVOCA STATION

R

RAINWATER DISPOSAL

4	0,9mm thick coated internally and externally with ColourTech G4 in colour Marble White including cut and mitred angles covered with a mitre strip externally, stop ends riveted and all sealed on the inside with Dow Corning 813 silicone sealer, secured to fibre cement fascia with 20 x 3mm dual-purpose brackets at 600mm centres using aluminium peeled rivets, including a 50 x 20mm high overflow spigot	m	11
5	Extra over gutter for stopped end	No	2
6	Extra over gutter for outlet for pipe	No	4

Aluminium

7	78 x 78 x 2mm thick aluminium downpipes in colour Marble White fixed to wall with straps at 1500mm centres using nail plugs, with downpipes riveted and silicone sealed to gutter outlets, including all necessary bends, elbows, shoes etc.	m	12
8	Extra over for bend	No	4
9	Extra over for shoe	No	4

Carried to Collection

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 4
Roof Coverings
AVOCA STATION

Section No. 5

Bill No. 4

Roof Coverings

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

5/4/1

5/4/2

Carried Forward to Summary of Section No. 5

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 4
Roof Coverings
AVOCA STATION

R

Item No		Quantity	Rate	Amount
	<u>BILL NO. 5</u> <u>IRONMONGERY</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SUPPLEMENTARY PREAMBLES</u> <u>Finishes to ironmongery</u> Where applicable finishes to ironmongery are indicated by suffixes in accordance with the following list: BS - Satin bronze lacquered CH - Chromium plated SC - Satin chromium plated SE - Silver enamelled GE - Grey enamelled AS - Anodised silver AB - Anodised bronze AG - Anodised gold ABL - Anodised black PB - Polished brass PL - Polished and lacquered PT - Epoxy coated SD - Sanded All Ironmongery to be priced in accordance with Prasa Specification document - Part Q			
	Carried to Collection			
	Section No. 5 SECTION 5 - ABLUTIONS Bill No. 5 Ironmongery AVOCA STATION			
			R	

HINGES, BOLTS, ETC.

"DCLSA" or similar approved

1	100 x 60 x 2mm Stainless Steel butt Hinges 090/63	No	16	

LOCKS

2	Grade 304 Stainless steel Euro profile Mortice sash lock with reversible latch and deadbolt. Fore end to be stainless steel To comply with SANS 4:2008 or similar approved.	No	3	

3	Stainless Steel Toilet Cubicle Indicator bolt & lock set by Geze, Assaabloy, Dorma. Union or Hopp or similar approved. Grade 304 Stainless Steel indicator bolt (code: fixed to surface with matching stainless steel screws. To comply with SANS 4:2008.	No	5	

HANDLES

4	Grade 304 Stainless steel round D lever handle on a long backplate with a Euro profile cylinder opening. Fixing to door to be stainless steel male and female screws. To comply with SANS 4:2008	Pairs	8	

BATHROOM FITTINGS (PROVISIONAL)

"Chairman Industries" or similar approved

5	32mm "Chairman Industries Code DL2" or other approved stainless steel grab rail plugged	No	1	

6	32mm "Chairman Industries Code SR1" or other approved stainless steel back grab rail plugged	No	1	

7	Grade 304 Stainless Steel door mounted door stop, plugged and screwed to wall with matching stainless steel screws. To comply with SANS 4:2008	No	8	

"Kimberley-Clark" or similar approved

8	'Kimberley Clark code 427518' or other approved soap dispenser plugged	No	5	

Carried to Collection

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 5
Ironmongery
AVOCA STATION

- 9 'Kimberley Clark code 426916' or other approved folded towel dispenser plugged
- 10 'Kimberley Clark code SE2 405597' or other approved toilet roll holder for two rolls plugged

No

3

No

6

Carried to Collection

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 5
Ironmongery
AVOCA STATION

Section No. 5

Bill No. 5

Ironmongery

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

5/5/1

5/5/2

5/5/3

Carried Forward to Summary of Section No. 5

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 5
Ironmongery
AVOCA STATION

R

Generally

All sub-contractors executing the aluminium work must be "AAAMSA" registered members.

Extruded aluminium section caselite or similar approved to comply with "AAAMSA" specification.

All windows, doors and shopfronts to be designed and supplied by manufacturer to sustain windloads as per SABS 0160/1989 (5.5). AAAMSA Performance Test Certificates for A2 products must be provided prior to commencement on site. To avoid the possibility of thermal stress fracture in the glass it is always advisable that a thermal stress evaluation be conducted by the glass manufacturer. All glass edges of panes to be polished

Glass thickness to comply with N.B.R Part N-Glazing and S.A.B.S 0137.

The Architect has designed the windows, doors and shopfronts layout aesthetics. The sub-contractors are to design and cater for water tightness and rain resistance for the location of the site. Epoxy powder coating is to have 15 years coastal guarantee against peeling and discolouration.

The Sub-Contractor shall also provide a warranty for all safety glazing against delamination and colour degradation for a period not less than 5 years.

The drawings issued with this document need not necessarily contain all the information which may be relevant to this contract and the tenderer is advised to visit the offices of the Architect and study all drawings related to this contract. No claim whatsoever will be entertained should the tenderer fail to heed this advice.

Carried to Collection

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 6
Metalwork
AVOCA STATION

R

Specifically

Rates for aluminium windows,shopfronts,doors and curtain wall shall include for the following:

- (a) All design (where required) including proof of conformance/ compliance with specifications and the furnishings of required tests/ guarantees.
- (b) Provision of all fixed / opening lights/sashes, fittings,hinges,seals and glazing beads
- (c) All ironmongery as implied and specification
- (d) Glazing complete
- (e) Provision of a waterproofing guarantee
- (f) Completion of a design indemnity letter provided by the Architect
- (g) Provision of shop drawings for Architect's approval
- (h) Approval by the Architect of the aluminium profile and colour sample prior to manufacturing
- (i) Framework and structural support to shopfronts to be sized by specialist and inclusion in drawings including provision for compliance with windload requirements
- (j) Allowance in design for tolerances to cater for expansion and contraction of aluminium
- (k) Fixing complete into proformed openings
- (l) Suitably protecting all exposed surfaces by an approved method such protection is to be removed at completion of the contract and all work is to be cleaned down and left perfect
- (m) Pointing all round external windows,doors,curtain walls and shopfronts adjoining the structure with approved 'Secomastic' non hardening waterproofing compound
- (n) Sub-contractor to provide Architect with guarantee for workmanship provided

Bills of Quantities

The Bills of Quantities section of this document, fully priced and extended, must be submitted with the tender

Carried to Collection

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 6
Metalwork
AVOCA STATION

Quantities and Measurement

The quantities have been measured on an overall basis taking into account that the drawings will be issued to the tenderers and tenderers will be producing their own designs.

Accordingly the measurements are not in accordance with the Standard System of measurement.

The simplified overall basis of measurement applied herein is intended to provide a basis for tenders to be based upon the same basic quantities and for final measurement and valuation of the works as executed.

It is, furthermore, the only basis of measurement upon which final remeasurement and valuation will be made.

If tenderers require any additional items to be measured or taken into account in remeasurement they are to set these out at the end of this Bill in the space provided and include the cost in their tender. Tenders and rate will be assumed to include all sundry items and everything necessary for the completion of the work in accordance with the intent of the design.

Sub-Contractor

The sub-contractor shall supply all scaffolding, hoisting and crainage necessary

ALUMINIUM WINDOWS, DOORS, ETC

1	1500mm x 300mm Approved aluminium windows with mullions & transoms including 6mm laminated safety glass as per Architect specifications.	No	5

Carried to Collection

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 6
Metalwork
AVOCA STATION

R

**GALVANIZED MILD STEELWORK DOOR
BURGLAR GUARDS.**

- 2 1990mm x 795mm Heavy duty GMS security gate. 40x40 RHS frame with 100x40 lock cross bar at half height. 3 x heavy duty weld on hinges. 16mm solid round bar verticals. Grade 304 stainless steel security deadlock compliant with SANS 4:2008

No

3

**GALVANISED MILD STEELWORK WINDOW
BURGLAR GUARDS.**

- 3 Galvanised mild steel burglar bars fixed to external face of wall 150mm larger than window on all sides (1800mm x 600mm) burglar bar cage feet epoxy grouted into wall. Finish - 25 micron natural anodised or similar approved

No

5

Carried to Collection

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 6
Metalwork
AVOCA STATION

Section No. 5

Bill No. 6

Metalwork

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

5/6/1

5/6/2

5/6/3

5/6/4

5/6/5

Carried Forward to Summary of Section No. 5

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 6
Metalwork
AVOCA STATION

R

Item No	Quantity	Rate	Amount
<u>BILL NO. 7</u> <u>CEILINGS, PARTITIONS AND ACCESS FLOORING</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
<u>SUPPLEMENTARY PREAMBLES</u> <u>Descriptions</u> 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 elsewhere.			
<u>CEILINGS</u> <u>Flush plaster gypsum or Magma Board ceiling fixed to 38 x 38 branderling fixed to rafters. Skimmed joints and prepared to receive 2 coats quality PVA paint. Fit Rhino cove cornice or similar approved.</u>			
1	Ceilings. m2	24	
<u>Cornices to ceilings</u>			
2	'Shadowline' pre-painted cornices plugged m	53	
Carried Forward to Summary of Section No. 5 Section No. 5 SECTION 5 - ABLUTIONS Bill No. 7 Ceilings, Partitions and Access Flooring AVOCA STATION			R

All internal walls to be crack filled, sanded and prepared for painting. Existing plaster to be repaired in places due to existing damage - allow for 60% of existing plastered surfaces to be re-done. Paint with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Luxurious Silk (D22) acrylic paint. Surface to be dry, sound and clean and cured for a minimum of 14 days, with a moisture content of BD 2 scale - 8% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux Trade Alkali Resistant Primer (T1004) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Luxurious Silk (D22) with 18 hours drying time between coats. Colours to be according to PRASA paint schedule or similar approved.

2	On internal walls	m2	81	

ON CEILINGS

3	Skim and prepare to receive 2 coats quality PVA paint to ceilings	m2	24	

ON WOOD

PAINT TO INTERNAL SEMI-SOLID DOORS.

4	Door leaf and frame to be undercoated and two top coats Plascon Professional Gloss Enamel (PBS 1000) or Dulux Trade Gloss Enamel paint Or similar approved.	m2	19	

PAINT TO EXTERNAL DOORS.

External door : Door leaf to be under coated and two top coats Plascon Professional Gloss Enamel (PBS 1000) or Dulux Trade Gloss Enamel paint or similar approved.

		m2	11	

PAINT TO DOOR FRAMES.

5	Frame to be undercoated and two top coats Plascon Professional Gloss Enamel (PBS 1000) or Dulux Trade Gloss Enamel paint or similar approved.	m	41	

Carried to Collection

R

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 8
Paintwork
AVOCA STATION

Section No. 5

Bill No. 8

Paintwork

COLLECTION

Total Brought Forward from Page No.

Page
No

5/8/1

5/8/2

Amount

Carried Forward to Summary of Section No. 5

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 8
Paintwork
AVOCA STATION

R

Item No		Quantity	Rate	Amount
	<u>BILL NO. 9</u>			
	<u>PLUMBING AND DRAINAGE</u> <u>(PROVISIONAL)</u>			
	<u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SANITARY FITTINGS</u>			
	<u>Supply, fix, clean, wash and leave in a satisfactory condition the following items of sanitary ware including silicone pointing between fitting and tiled wall or vanity topAll rails, brackets, etc where not bolted are to be fixed with long heavy gauge brass screws into approved expanding plugs</u>			
1	Gypsy Waterborne Wash Hand Basin or similar approved.	No	6	
2	Gypsy GYP/VA.R 1/06Standard Universal Vandal Resistant WC, 390mm (w) x 480mm (d) x 410mm (h). Installation as per manufacturer's specification or similar approved.	No	6	
3	"Gypsy" or similar approved Vandal Resistant urinal fixed in accordance with the manufacturer's instructions	No	3	
	<u>TAPS, VALVES, ETC</u>			
4	Wall mounted push on demand tap - Vandal resistant (option 3) Installation as per manufacturer's specification. To be used in conjunction with wall mounted push on demand tap COBRA KM2.200 - Metering bib tap non-hold open feature and flow controller.Chrome finish. Flow time 1 - 20 seconds. SANS 1808-9 or similar approved	No	6	
	Carried to Collection		R	
	Section No. 5 SECTION 5 - ABLUTIONS Bill No. 9 Plumbing and drainage AVOCA STATION			

Section No. 5

Bill No. 9

Plumbing and drainage

COLLECTION

Total Brought Forward from Page No.

**Page
No**

Amount

5/9/1

5/9/2

Carried Forward to Summary of Section No. 5

Section No. 5
SECTION 5 - ABLUTIONS
Bill No. 9
Plumbing and drainage
AVOCA STATION

R

SECTION SUMMARY - SECTION 5 - ABLUTIONS		Page No	Amount
1	Alterations	5/1/3	
2	Carpentry and Joinery	5/2/1	
3	Tiling	5/3/3	
4	Roof Coverings	5/4/3	
5	Ironmongery	5/5/4	
6	Metalwork	5/6/6	
7	Ceilings, Partitions and Access Flooring	5/7/1	
8	Paintwork	5/8/3	
9	Plumbing and drainage	5/9/3	
Carried to Final Summary			R
Section No. 5 SECTION 5 - ABLUTIONS AVOCA STATION			

Item No		Quantity	Rate	Amount
	<u>SECTION 6 : TICKET OFFICE</u>			
	<u>BILL NO. 1</u>			
	<u>ALTERATIONS</u>			
	<u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SUPPLEMENTARY PREAMBLES</u>			
	SUPPLEMENTARY PREAMBLES FOR ALTERATIONS AS PER PREVIOUS SECTION OF THE BOQ			
	<u>Existing Materials to be Removed by Contractor</u>			
	<u>All existing materials removed must be set aside for inspection by the Principal Agent. All items deemed to be in good order must be handed over to the client. Items that are deemed to be in a bad condition must be removed from site by the contractor, All in accordance with the Principal Agents approval</u>			
	<u>Hacking up/off and removing ceramic tile floor and wall finishes including removing mortar bed or backing and preparing concrete or brick surfaces for new screed, plaster or tile finishes (Provisional)</u>			
1	Tiles to floors	m2	51	
2	Tiles to walls	m2	69	
	<u>Taking out and removing piping, sanitary fittings, etc including disconnecting piping from fittings and making good floor and wall finishes (making good tiling and paintwork elsewhere)</u>			
3	Vitreous china wash hand basin	No	2	
	Carried to Collection			R
	Section No. 6 SECTION 6 - TICKET OFFICE Bill No. 1 Alterations AVOCA STATION			

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 1
Alterations
AVOCA STATION

Section No. 6

Bill No. 1

Alterations

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

6/1/1

6/1/2

Carried Forward to Summary of Section No. 6

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 1
Alterations
AVOCA STATION

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 2
Waterproofing
AVOCA STATION

DOORS, ETC.

1	2032 x 813 x41mm semi solid timber flush panel door leaf or similar approved.	No	3
2	2032 x 813 x41mm semi solid timber flush panel door leaf with BRG viewing panel glazed in 38mm thick bullet resistant glass with one way vision film or similar approved.	No	1
3	2032 x 813 x 41mm hardwood external solid timber door.	No	3

SKIRTINGS

4	20 x 120mm solid meranti skirting, profile to detail image. Varnished with Plascon Woodcare Interior Coloured Varnish or Dulux Woodguard Interior Double Life 'Timbavarnish' polyurethane varnish. Eggshell finish or similar approved.	m	83

Carried to Collection

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 3
Carpentry and Joinery
AVOCA STATION

Section No. 6

Bill No. 3

Carpentry and Joinery

COLLECTION

Total Brought Forward from Page No.

**Page
No**

6/3/1

6/3/2

Amount

Carried Forward to Summary of Section No. 6

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 3
Carpentry and Joinery
AVOCA STATION

R

Item No		Quantity	Rate	Amount
	<u>BILL NO. 4</u> <u>CEILING, PARTITIONS AND ACCESS FLOORING</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SUPPLEMENTARY PREAMBLES</u> <u>Descriptions</u> 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 elsewhere.			
	<u>SUSPENDED CEILINGS</u> <u>Proprietary suspended ceilings</u> <u>NOTE:</u> Electrical light fittings, diffusers, panels, etc. generally are "lay in" units of the same dimensions as the suspension grid described and allowance must be made accordingly for their support inclusive of any flexibility in setting out that may be required (ceiling panels have not been deducted and pricing is to take cognisance thereof).			
	Carried to Collection			
	Section No. 6 SECTION 6 - TICKET OFFICE Bill No. 4 Ceilings AVOCA STATION			
			R	

Section No. 6

Bill No. 4

Ceilings

COLLECTION

Total Brought Forward from Page No.

Page
No

6/4/1

6/4/2

Amount

Carried Forward to Summary of Section No. 6

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 4
Ceilings
AVOCA STATION

R

LOCKS

2	Grade 304 Stainless steel Euro profile Mortice sash lock with reversible latch and deadbolt. Fore end to be stainless steel To comply with SANS 4:2008	No	7
3	Stainless Steel Toilet Cubicle Indicator bolt & lock set by Geze, Assaabloy, Dorma. Union or Hopp or similar approved. Grade 304 Stainless Steel indicator bolt (code: fixed to surface with matching stainless steel screws. To comply with SANS 4:2008.	No	2

HANDLES

4	Grade 304 Stainless steel round D lever handle on a long backplate with a Euro profile cylinder opening. Fixing to door to be stainless steel male and female screws. To comply with SANS 4:2008 or similar approved.	Pairs	7

BATHROOM FITTINGS (PROVISIONAL)

"Chairman Industries" or similar approved

5	Grade 304 Stainless Steel door mounted door stop, plugged and screwed to wall with matching stainless steel screws. To comply with SANS 4:2008	No	8

"Kimberley-Clark" or similar approved

6	'Kimberley Clark code 427518' or other approved soap dispenser plugged	No	2
7	'Kimberley Clark code 426916' or other approved folded towel dispenser plugged	No	2
8	'Kimberley Clark code SE2 405597' or other approved toilet roll holder for two rolls plugged	No	2

Carried to Collection

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 6
Ironmongery
AVOCA STATION

Section No. 6

Bill No. 6

Ironmongery

COLLECTION

Total Brought Forward from Page No.

**Page
No**

6/6/1

6/6/2

Amount

Carried Forward to Summary of Section No. 6

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 6
Ironmongery
AVOCA STATION

R

SUPPLEMENTARY PREAMBLES

Generally

All sub-contractors executing the aluminium work must be "AAAMSA" registered members.

Extruded aluminium section caselite or similar approved to comply with "AAAMSA" specification.

All windows, doors and shopfronts to be designed and supplied by manufacturer to sustain windloads as per SABS 0160/1989 (5.5). AAAMSA Performance Test Certificates for A2 products must be provided prior to commencement on site. To avoid the possibility of thermal stress fracture in the glass it is always advisable that a thermal stress evaluation be conducted by the glass manufacturer. All glass edges of panes to be polished

Glass thickness to comply with N.B.R Part N-Glazing and S.A.B.S 0137.

The Architect has designed the windows, doors and shopfronts layout aesthetics. The sub-contractors are to design and cater for water tightness and rain resistance for the location of the site. Epoxy powder coating is to have 15 years coastal guarantee against peeling and discolouration.

The Sub-Contractor shall also provide a warranty for all safety glazing against delamination and colour degradation for a period not less than 5 years.

The drawings issued with this document need not necessarily contain all the information which may be relevant to this contract and the tenderer is advised to visit the offices of the Architect and study all drawings related to this contract. No claim whatsoever will be entertained should the tenderer fail to heed this advice.

Carried to Collection

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 7
Metalwork
AVOCA STATION

R

Specifically

Rates for aluminium windows,shopfronts,doors and curtain wall shall include for the following:

- (a) All design (where required) including proof of conformance/ compliance with specifications and the furnishings of required tests/ guarantees.
- (b) Provision of all fixed / opening lights/sashes, fittings,hinges,seals and glazing beads
- (c) All ironmongery as implied and specification
- (d) Glazing complete
- (e) Provision of a waterproofing guarantee
- (f) Completion of a design indemnity letter provided by the Architect
- (g) Provision of shop drawings for Architect's approval
- (h) Approval by the Architect of the aluminium profile and colour sample prior to manufacturing
- (i) Framework and structural support to shopfronts to be sized by specialist and inclusion in drawings including provision for compliance with windload requirements
- (j) Allowance in design for tolerances to cater for expansion and contraction of aluminium
- (k) Fixing complete into proformed openings
- (l) Suitably protecting all exposed surfaces by an approved method such protection is to be removed at completion of the contract and all work is to be cleaned down and left perfect
- (m) Pointing all round external windows,doors,curtain walls and shopfronts adjoining the structure with approved 'Secomastic' non hardening waterproofing compound
- (n) Sub-contractor to provide Architect with guarantee for workmanship provided

Bills of Quantities

The Bills of Quantities section of this document, fully priced and extended, must be submitted with the tender

Carried to Collection

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 7
Metalwork
AVOCA STATION

<u>Quantities and Measurement</u> The quantities have been measured on an overall basis taking into account that the drawings will be issued to the tenderers and tenderers will be producing their own designs. Accordingly the measurements are not in accordance with the Standard System of measurement. The simplified overall basis of measurement applied herein is intended to provide a basis for tenders to be based upon the same basic quantities and for final measurement and valuation of the works as executed. It is, furthermore, the only basis of measurement upon which final remeasurement and valuation will be made. If tenderers require any additional items to be measured or taken into account in remeasurement they are to set these out at the end of this Bill in the space provided and include the cost in their tender. Tenders and rate will be assumed to include all sundry items and everything necessary for the completion of the work in accordance with the intent of the design. <u>Sub-Contractor</u> The sub-contractor shall supply all scaffolding, hoisting and crainage necessary				
<u>ALUMINIUM WINDOWS, DOORS, ETC</u>				
1	600mm x 600mm Approved aluminium windows with mullions & transoms including 6mm laminated safety glass as per Architect specifications.	No	2	
2	1200mm x 1500mm Approved aluminium windows with mullions & transoms including 6mm laminated safety glass as per Architect specifications.	No	1	
Carried to Collection				
Section No. 6 SECTION 6 - TICKET OFFICE Bill No. 7 Metalwork AVOCA STATION				

3	1200mm x 2000mm Approved aluminium windows with mullions & transoms including 6mm laminated safety glass as per Architect specifications.	No	1		
	1200mm x 3000mm Approved aluminium windows with mullions & transoms including 6mm laminated safety glass as per Architect specifications. Window installed on curve wall/opening and to be made up in 3 separate window panels - screw fixed to each other.	No	1		
	<u>SECURITY PAYROLL WINDOWS</u>				
4	Level G3 bullet resistant glazed and natural anodised aluminium transaction window with 30mm deep stainless steel dish tray and speech transfer posts (interior application only) overall size to details, glazed in 38mm thick clear bullet resistant glass with 32mm post formed granite counter top.	No	2		
	<u>GALVANIZED MILD STEELWORK DOOR BURGLAR GUARDS.</u>				
5	1990mm x 795mm Heavy duty GMS security gate. 40mm x 40mm RHS frame with 100 x 40 lock cross bar at half height. 3 x heavy duty weld on hinges. 16mm solid round bar verticals. Grade 304 stainless steel security deadlock compliant with SANS 4:2008	No	1		
	<u>DOOR FRAMES.</u>				
6	Galvanised mild steel door frame 1.2mm material.	No	6		
	<u>GALVANISED MILD STEELWORK WINDOW BURGLAR GUARDS.</u>				
7	Galvanised mild steel burglar bars fixed to external face of wall 150mm larger than window on all sides (900 x 900mm) burglar bar cage feet epoxy grouted into wall. Finish - 25 micron natural anodised or similar approved	No	1		
8	Galvanised mild steel burglar bars fixed to external face of wall 150mm larger than window on all sides (1800 x 1500mm) burglar bar cage feet epoxy grouted into wall. Finish - 25 micron natural anodised or similar approved	No	1		
Carried to Collection				R	
Section No. 6 SECTION 6 - TICKET OFFICE Bill No. 7 Metalwork AVOCA STATION					

[illegible]

Preamble:

All Provisional Sums are nett amounts as provided in terms of the contract

Allowances shall be made for equipment and services provided by the nominated suppliers and sub-contractors, profit, general attendance and administration, supervision of the works, general use of facilities on site, free power from available power outlets on site and making payment where applicable

Nominated Sub-Contractors shall be permitted to utilise the Contractor's scaffolding where it exists in position, failing which they shall provide their own scaffolding

Provisional Sums contained herein may be omitted or reduced at the Employers sole discretion and the Contractor shall NOT be entitled to any loss by way of reductions or omissions of any discount or percentage relating to Provisional Amounts or PC amounts or any profit or loss related thereto.

Provisional Sums contained herein may be omitted or reduced at the Employers sole discretion and the Contractor shall NOT be entitled to any loss by way of reductions or omissions of any discount or percentage relating to Provisional Amounts or PC amounts or any profit or loss related thereto.

ACCESS CONTROL

12	Provide the amount of R 360 000.00 (Three hundred thousand rands) for supply and installation of Access Control System to Architect / Engineers Specifications	Item	360,000.00
13	Allow for profit & attendance on the above	%	

Carried to Collection

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 7
Metalwork
AVOCA STATION

Section No. 6

Bill No. 7

Metalwork

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

6/7/1

6/7/2

6/7/3

6/7/4

6/7/5

6/7/6

6/7/7

Carried Forward to Summary of Section No. 6

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 7
Metalwork
AVOCA STATION

Item No		Quantity	Rate	Amount
	<u>BILL NO. 9</u> <u>TILING</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>WALL TILING (PROVISIONAL)</u> <u>200 x 200mm Full Bodied polished Porcelain tiles to match existing with 3mm grouting lines from Tile Space or Union Tiles. Wall edge / corners to be finished with Stainless Steel Square Edge Trims. From Union Tiles, Tilespace, JNB Ceramica or Tiletoria. Allow for 50 % of previously tiled walls to be re-tile or similar approved.</u>			
1	On walls 1. Materials (nett area) -.....PC amount of R300.00/m ² 2. Proportion of rate adjustable related to PC amount (e.g: waste, etc.) -..... 3. Proportion of rate not adjustable (e.g:labour,etc.)-..... TOTAL (to rate column)-.....	m2	69	
	<u>FLOOR TILING (PROVISIONAL)</u>			
	Carried to Collection Section No. 6 SECTION 6 - TICKET OFFICE Bill No. 9 Tiling AVOCA STATION			
			R	

600 x 600mm min R9 preferably R10 slip rated Full Bodied Porcelain tiles, mineralised with 3mm grouting lines from Union Tiles, Tilespace, JNB Ceramica or Tiletoria . Natural finish.
Damage,Cracked and loose floor tiles lifted, surface to be prepared to receive new floor tiles. Full bodied porcelain tiles 10mm thick fixed to internal floor screed with TAL tile adhesive (elsewhere specified) mixed with TAL bonding liquid in lieu of water
with diagonal joints continuous in both directions and grouted with TAL tile grout, excess grout on the surface to be cleaned with water as work proceeds. Tile Codes: UT= SEZZ6879N TS= TS2040AD, JNB= 96ES, TT=LG01, SMJDS or similar approved.

2 On floors and landings

1. Materials (nett area) -.....PC amount of R 300.00/m²

2. Proportion of rate adjustable related to PC amount (e.g: waste, etc.) -.....

3. Proportion of rate not adjustable (e.g:labour,etc.)-

TOTAL (to rate column)-.....

m2

51

Carried to Collection

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 9
Tiling
AVOCA STATION

Section No. 6

Bill No. 9

Tiling

COLLECTION

Total Brought Forward from Page No.

Page
No

6/9/1

6/9/2

Amount

Carried Forward to Summary of Section No. 6

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 9
Tiling
AVOCA STATION

R

Item No		Quantity	Rate	Amount
	BILL NO. 10 <u>PLUMBING AND DRAINAGE</u> <u>(PROVISIONAL)</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
	<u>SANITARY FITTINGS</u> <u>Supply, fix, clean, wash and leave in a satisfactory condition the following items of sanitaryware including silicone pointing between fitting and tiled wall or vanity topAll rails, brackets, etc where not bolted are to be fixed with long heavy gauge brass screws into approved expanding plugs</u>			
1	Vaal Sanitaryware Hibiscus vitreous china lavatory basin colour White (Code: 7023), size 510 x 405mm with one taphole including integrated overflow and chainstay hole bolted to wall with two x 10mm bolts (Code: 8448Z0) and including Universal half pedestal with hanger springs (Code: 715221) and sealed with silicone sealant where basin meets wall or similar approved.	No	2	
2	Betta Coral top flush suite with floor mounted open rim pan, Top flush Cistern, pan fixations, normal close seat and top flush mechanism, Pan and cistern made from vitreous china, Installation as per manufacturers specification or similar approved Certified plumber recommended. DO NOT CEMENT PAN TO THE FLOOR USE THE PAN FIXATIONS, SABS and ISO certified. 10 year warranty on the ceramic.	No	2	
	Carried to Collection			R
	Section No. 6 SECTION 6 - TICKET OFFICE Bill No. 10 Plumbing and Drainage AVOCA STATION			

3 Franke Projectline Model PLN611 Grade 304 18/10 polished stainless steel single end bowl inset sink (Code: 821047), overall size 800 x 460mm wide with one 340 x 370 x 150mm deep bowl, fitted onto cupboard (elsewhere specified) including 38mm waste fitting and PVC trap (trap elsewhere specified). or similar approved.

No

2

TAPS, VALVES, ETC

4 COBRA Noka - Single lever basin mixer. Chrome finish. SANS 226 Water taps. Connect hot and cold water supply. Two Cobra Watertech or equal approved 15mm ball type angle valves (Code: 832- 10) or similar approved.

No

2

5 WALCRO or equal approved 25mm Ø BSP concealed DZR brass toilet flush valve with VR push-button and concealed flush pipes (code: 106C) or similar approved.

No

2

6 15mm Chromium plated basin self metering pillar tap

No

2

7 15mm Cobra Ball-O-Flo (Ref 1090-15) or similar approved fullway isolating ball valves with plastic coated plated steel lever handle (connectors elsewhere measured)

No

2

Carried to Collection

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 10
Plumbing and Drainage
AVOCA STATION

Section No. 6

Bill No. 10

Plumbing and Drainage

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

6/10/1

6/10/2

Carried Forward to Summary of Section No. 6

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 10
Plumbing and Drainage
AVOCA STATION

R

Item No	Quantity	Rate	Amount
<u>BILL NO. 11</u> <u>PAINTWORK</u> <u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades and Supplementary Preambles which are incorporated in these Bills of Quantities before pricing this bill			
<u>PAINTWORK, ETC. TO EXISTING WORK</u> <u>ON FLOATED PLASTER</u> <u>All external walls to be crack filled, sanded and prepared for painting. Paint with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Weatherguard Ultrasmooth adhesion promoted (D62) acrylic paint.</u> <u>Surface to be dry, sound and clean and cured for a minimum of 14 days, with a moisture content of BD 2 scale - 8% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux Trade Alkali Resistant Primer (T1004) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Weatherguard Ultrasmooth (D62) with 18 hours drying time between coats. Colours to be according to PRASA paint schedule.</u>			
1	On external walls	m2	186
Carried to Collection			R
Section No. 6 SECTION 6 - TICKET OFFICE Bill No. 11 Paintwork AVOCA STATION			

All internal walls to be crack filled, sanded and prepared for painting. Paint with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Luxurious Silk (D22) acrylic paint. Surface to be dry, sound and clean and cured for a minimum of 14 days, with a moisture content of BD 2 scale - 8% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux Trade Alkali Resistant Primer (T1004) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Luxurious Silk (D22) with 18 hours drying time between coats. Colours to be according to PRASA paint schedule.

2	On internal walls	m2	168
3	On ceilings	m2	51

PAINT ON ROOF SLAB SOFFITS.

4	Remove any mould release agent using clean water. Surface to be dry, sound and clean and cured for a minimum of 28 days, with a moisture content of 5% or less. Prime with one coat Plascon Professional Plaster Primer (PP 700) or Dulux Trade Plaster Primer (T1011) with an overcoating time of 18 hours and finish with two coats Plascon Professional Superior Low Sheen (PEM 1000) or Dulux Pearlgl Water Clean-Up (D40) with 4 hours drying time between coats or similar approved.	m2	14

Carried to Collection

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 11
Paintwork
AVOCA STATION

R

ON WOOD

**Door leaf to be undercoated and two top coats
Plascon Professional Gloss Enamel (PBS 1000) or
Dulux Trade Gloss Enamel paint or similar
approved.**

5	On doors (both sides measured flat)	m2	26

6	On door frames	m	36

On timber skirting

7	Varnished with plascon woodcare Interior Coloured Vanish or Dulux Woodguard Interior Double Life 'Timbavarnish' polyurethane varnish.Eggshell finish.	m	83

Carried to Collection

R

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 11
Paintwork
AVOCA STATION

Section No. 6

Bill No. 11

Paintwork

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

6/11/1

6/11/2

6/11/3

Carried Forward to Summary of Section No. 6

Section No. 6
SECTION 6 - TICKET OFFICE
Bill No. 11
Paintwork
AVOCA STATION

R

SECTION SUMMARY - SECTION 6 - TICKET OFFICE		Page No	Amount
1	Alterations	6/1/3	
2	Waterproofing	6/2/1	
3	Carpentry and Joinery	6/3/3	
4	Ceilings	6/4/3	
5	Roof coverings	6/5/1	
6	Ironmongery	6/6/3	
7	Metalwork	6/7/8	
8	Plastering	6/8/1	
9	Tiling	6/9/3	
10	Plumbing and Drainage	6/10/3	
11	Paintwork	6/11/4	
Carried to Final Summary			R
Section No. 6 SECTION 6 - TICKET OFFICE AVOCA STATION			

Item No		Quantity	Rate	Amount
<u>SECTION 7 : PLATFORMS AND EXTERNAL WORKS.</u>				
<u>BILL NO. 1</u>				
<u>EXTERNAL WORK</u>				
<u>PLATFORM SURFACING</u>				
<u>Site clearance</u>				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	980	
<u>Repairs to existing asphalt areas</u>				
<u>Supply and install Bituminous premix road surfacing to damaged areas</u>				
2	Chip out and remove damage asphalt areas.	m2	186	
3	Asphalt in patching to damaged areas on platform including layer works complete.	m2	186	
<u>Painting of yellow lines to platform areas as per Engineers specifications</u>				
4	Painting of yellow lines to specification	m	310	
<u>BUDGETARY ALLOWANCE</u>				
<u>SIGNAGE</u>				
5	Provide the amount of R 100,000.00 (One Hundred Thousand Rand) for Signage,complete	Item		100,000.00
Carried Forward to Summary of Section No. 7				R
Section No. 7				
SECTION 7 - PLATFORMS AND EXTERNAL WORKS				
Bill No. 1				
Platform Works				
AVOCA STATION				

Item No		Quantity	Rate	Amount
	<u>BILL NO. 2</u>			
	<u>PARKING AREA</u>			
	<u>PARKING SURFACING</u>			
	<u>Site clearance</u>			
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	156	
	<u>REPAIR OF PARKING AREA</u>			
2	Rip and spoil 40 mm thick asphalt wearing course to be used as fill elsewhere as directed by the engineer	m3	4	
3	Rip and spoil existing 150 mm thick G5 layer to be used as fill elsewhere as directed by the engineer	m3	15	
4	Supply and lay 150 mm thick layer of G5 from commercial sources, compacted to minimum 98% Mod AASHTO	m3	15	
5	Supply, lay and compact 40 mm thick Asphalt wearing course to 93% void less density	m2	100	
	<u>Painting of white lines to parking areas as per Engineers specifications</u>			
6	Prime coat at a rate of 0.6 l/m2	l	199	
7	Painting of white lines to specification	m	25	
	Carried Forward to Summary of Section No. 7			
	Section No. 7			
	SECTION 7 - PLATFORMS AND EXTERNAL WORKS			
	Bill No. 2			
	Parking Area			
	AVOCA STATION			

R

Item No		Quantity	Rate	Amount
	<u>BILL NO. 3</u>			
	<u>REPAIRS TO EXISTING WALKWAY, DRY STACK WALL AND RETAINING WALL</u>			
	<u>REPAIR TO EXISTING WALKWAY</u>			
1	Rip and spoil existing 35 mm thick asphalt wearing course to be used as fill elsewhere as directed by the engineer	m3	16	
2	Rip and spoil existing 150 mm thick G5 layer to be used as fill elsewhere as directed by the engineer	m3	66	
3	Supply and lay 150 mm thick layer of G5 from commercial sources, compacted to minimum 98% Mod AASHTO	m3	44	
4	Prime coat at a rate of 0.6 l/m2	l	266	
5	Supply, lay and compact 35 mm thick Asphalt wearing course to 93% void less density	m2	443	
	<u>REPAIR TO EXISTING DRY STACK WALL</u>			
6	Remove damaged and loose dry stack wall blocks and cart away off site	m2	45	
7	Supply and lay U14 Geofabric to Engineers specifications	m2	50	
8	Supply and lay Geoblock 400 dry stack wall blocks to Engineers detail	m2	45	
9	Concrete V Drain to top of wall 100 mm thick and 500 mm wide to Engineers detail	m	67	
	Carried to Collection			
	Section No. 7			
	SECTION 7 - PLATFORMS AND EXTERNAL WORKS			
	Bill No. 3			
	Walkway, Dry stack wall and Retaining wall			
	AVOCA STATION			

REPAIR OF BRICK RETAINING WALL

10	Demolish single brick wall in damaged sections and cart away off site
11	Reconstruct outer skin of retaining wall as per Engineers detail

m2	70
m2	70

Carried to Collection

R

Section No. 7
SECTION 7 - PLATFORMS AND EXTERNAL WORKS
Bill No. 3
Walkway, Dry stack wall and Retaining wall
AVOCA STATION

Section No. 7

Bill No. 3

Walkway, Dry stack wall and Retaining wall

COLLECTION

Total Brought Forward from Page No.

Page
No

7/3/1

7/3/2

Amount

Carried Forward to Summary of Section No. 7

Section No. 7

SECTION 7 - PLATFORMS AND EXTERNAL WORKS

Bill No. 3

Walkway, Dry stack wall and Retaining wall

AVOCA STATION

R

Item No		Quantity	Rate	Amount
	<u>BILL NO.4</u>			
	<u>REPAIRS TO STORMWATER,SEWER AND WATER INFRASTRUCTURE.</u>			
	<u>STORMWATER</u>			
1	Clean stormwater manholes	No	2	
2	Flush clean stormwater pipes with hydro-jet	m	10	
3	(Provisional) Remove, supply and lay new 400 mm diameter uPVC stormwater pipe with Class 1 selected aggregate bedding	m	10	
4	(Provisional) Supply, lay and compact Class II backfill coarse grained granular	m3	4	
5	Reshape earth bank to manage stormwater flow away from buildings	m3	50	
	<u>SEWER INFRASTRUCTURE</u>			
6	Clean sewer manholes	No	2	
7	Flush clean sewer pipes with hydro-jet	m	30	
8	(Provisional) Remove, supply and lay new 160 mm diameter uPVC sewer pipe with Class I selected aggregate bedding	m	137	
9	(Provisional) Supply, lay and compact Class II backfill coarse grained granular	m3	34	
10	Rodin eye to sewer pipe	No	5	
11	Supply and install Anti theft manhole covers for 1m diameter manhole to specification	No	3	
	Carried to Collection			
	Section No. 7			
	SECTION 7 - PLATFORMS AND EXTERNAL WORKS			
	Bill No. 4			
	Stormwater, Sewer and Water infrastructure			
	AVOCA STATION			

WATER INFRASTRUCTURE

12	Excavate, Supply and lay new 63 mm diameter Class 9 HDPE water pipe complete with granular bedding and selected backfill to a depth of 700mm below ground	m	280
13	Apply to eThekweni Water Services for the supply and installation of a new 50mm diameter water meter, complete with dirt box and valves	No	1
	<u>63 mm diameter Class 9 HDPE bends</u>		
14	63 mm diameter Class 9 HDPE 90 degrees bends	No	1
15	63 mm diameter Class 9 HDPE 90 degrees bends	No	4

Carried to Collection

Section No. 7
SECTION 7 - PLATFORMS AND EXTERNAL WORKS
Bill No. 4
Stormwater, Sewer and Water infrastructure
AVOCA STATION

R

Section No. 7

Bill No. 4

Stormwater, Sewer and Water infrastructure

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

7/4/1

7/4/2

Carried Forward to Summary of Section No. 7

Section No. 7

SECTION 7 - PLATFORMS AND EXTERNAL WORKS

Bill No. 4

Stormwater, Sewer and Water infrastructure

AVOCA STATION

R

SECTION SUMMARY - SECTION 7 - PLATFORMS AND EXTERNAL WORKS				
Bill No		Page No		Amount
1	Platform Works	7/1/1		
2	Parking Area	7/2/1		
3	Walkway, Dry stack wall and Retaining wall	7/3/3		
4	Stormwater, Sewer and Water infrastructure	7/4/3		
</				

Item No		Quantity	Rate	Amount
	<u>SECTION 8 - PEDESTRIAN BRIDGE</u> <u>BILL NO. 1</u> <u>STRUCTURAL STEEL WORKS.</u> Tenderers are referred to the relevant Clauses in the Model Preambles for Trades (2008 Edition) before pricing this bill.			
	<u>SUPPLEMENTARY PREAMBLES</u> Descriptions Descriptions of bolts shall be deemed to include nuts and washers Descriptions of L-shaped and U-shaped anchor bolts shall be deemed to include bending, threading, nuts and washers and embedding in concrete Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete Where anchor bolts are described as embedded in sides or soffits of concrete it shall be deemed to include holes through formwork Descriptions of base plates and chemical anchors shall be deemed to include grouting in position			
	Carried to Collection		R	
	Section No. 8 SECTION 8 - PEDESTRIAN BRIDGE Bill No. 1 Structural steel AVOCA STATION			

Structural steelwork All structural steelwork shall be fabricated and erected in accordance with SANS 1200H and corrosion protected in accordance with SANS 1200H All steelwork measurements to be checked and confirmed on site before fabrication and rates are deemed to include for same All steelwork to be used in the works to be Grade S355JR All steelwork to be hot dipped galvanized to ISO 1461 or EN 10240 All bolts shall be grade 8.8 All connections and welds to be full strength. All welds to be 6mm continuous fillet welds All cold rolled sections to have a yield of 225Mpa Prices to include for all cutting, welding, holes, connections, site welding and power for on site welding All items deem to include shop drawings, supply and fabrication of steelwork, delivery to site and erection on site, erection bolts, base plates, fixing plates, cleats, etc. The Contractor The contractor shall include for shop drawings, including preparation, submission for approval, liaising with agents, updating shop drawings as necessary, obtaining approvals, and final as built drawings to the satisfaction of the Engineer The contractor shall supply all hoisting and crainage necessary, as well as provide adequate temporary bracing, support, scaffolding, etc., during the erection of structural steelwork and rates are deemed to include for same Carried to Collection Section No. 8 SECTION 8 - PEDESTRIAN BRIDGE Bill No. 1 Structural steel AVOCA STATION			R

HOT DIPPED GALVANISED STEEL WORK.

SUPPLY, FABRICATE & INSTALL

1	75 x 3mm CHS refer to engineers specification.	t	2.33

Connection plates

2	75 x 75 x 170mm long cleat	t	0.38

Bolts

3	M6 bolts - refer to engineers specification.	kg	30

Carried to Collection

Section No. 8
SECTION 8 - PEDESTRIAN BRIDGE
Bill No. 1
Structural steel
AVOCA STATION

R

Section No. 8

Bill No. 1

Structural steel

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

8/1/1

8/1/2

8/1/3

Carried Forward to Summary of Section No. 8

Section No. 8
SECTION 8 - PEDESTRIAN BRIDGE
Bill No. 1
Structural steel
AVOCA STATION

R

[illegible]

SECTION SUMMARY - SECTION 8 - PEDESTRIAN BRIDGE		Page No	Amount	
Bill No				
1	Structural steel	8/1/4		
2	Metalworks	8/2/1		
Carried to Final Summary			R	
Section No. 8				
SECTION 8 - PEDESTRIAN BRIDGE				
AVOCA STATION				

Item No		Quantity	Rate	Amount
	<u>SECTION 9 : ELECTRICAL INSTALLATIONS</u>			
	<u>BILL NO. 1</u>			
	<u>PROVISIONAL SUMS : ELECTRICAL AND ELECTRONIC WORKS</u>			
	<u>Preamble:</u> All Provisional Sums are nett amounts as provided in terms of the contract Allowances shall be made for equipment and services provided by the nominated suppliers and sub-contractors, profit, general attendance and administration, supervision of the works, general use of facilities on site, free power from available power outlets on site and making payment where applicable Nominated Sub-Contractors shall be permitted to utilise the Contractor's scaffolding where it exists in position, failing which they shall provide their own scaffolding Provisional Sums contained herein may be omitted or reduced at the Employers sole discretion and the Contractor shall NOT be entitled to any loss by way of reductions or omissions of any discount or percentage relating to Provisional Amounts or PC amounts or any profit or loss related thereto. Provisional Sums contained herein may be omitted or reduced at the Employers sole discretion and the Contractor shall NOT be entitled to any loss by way of reductions or omissions of any discount or percentage relating to Provisional Amounts or PC amounts or any profit or loss related thereto.			
	Carried to Collection			
	Section No. 9 SECTION 9 - ELECTRICAL INSTALLATION Bill No. 1 Electrical Installations AVOCA STATION		R	

Electrical and Electronic Installation

- 1 Provide the amount of R 850 000.00 (Eight Hundred and Fifty Thousand Rand) for Electrical and Electronic refurbishments and new works installations as per Electrical Engineers Scope of Works
- 2 Allow for profit & attendance on the above

Item

850,000.00

%

Carried to Collection

R

Section No. 9
SECTION 9 - ELECTRICAL INSTALLATION
Bill No. 1
Electrical Installations
AVOCA STATION

Section No. 9

Bill No. 1

Electrical Installations

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

9/1/1

9/1/2

Carried to Final Summary

R

Section No. 9
SECTION 9 - ELECTRICAL INSTALLATION
Bill No. 1
Electrical Installations
AVOCA STATION

Item No		Quantity	Rate	Amount
	<u>SECTION 10 : MECHANICAL INSTALLATIONS</u> <u>BILL NO. 1</u> <u>PROVISIONAL SUMS : MECHANICAL WORKS</u>			
	<u>Preamble:</u> All Provisional Sums are nett amounts as provided in terms of the contract Allowances shall be made for equipment and services provided by the nominated suppliers and sub-contractors, profit, general attendance and administration, supervision of the works, general use of facilities on site, free power from available power outlets on site and making payment where applicable Nominated Sub-Contractors shall be permitted to utilise the Contractor's scaffolding where it exists in position, failing which they shall provide their own scaffolding Provisional Sums contained herein may be omitted or reduced at the Employers sole discretion and the Contractor shall NOT be entitled to any loss by way of reductions or omissions of any discount or percentage relating to Provisional Amounts or PC amounts or any profit or loss related thereto. Provisional Sums contained herein may be omitted or reduced at the Employers sole discretion and the Contractor shall NOT be entitled to any loss by way of reductions or omissions of any discount or percentage relating to Provisional Amounts or PC amounts or any profit or loss related thereto.			
	Carried to Collection			
	Section No. 10 SECTION 10 - MECHANICAL INSTALLATION Bill No. 1 Mechanical Installations AVOCA STATION		R	

Fire Protection, HVAC and Equipment

- 1 Provide the amount of R 236 000.00 (Two hundred and thirty six thousand rands) for Fire, HVAC and Equipment refurbishment and new works installations as per Mechanical Engineers Scope of Works
- 2 Allow for profit & attendance on the above

Item

236,000.00

%

Carried to Collection

R

Section No. 10
SECTION 10 - MECHANICAL INSTALLATION
Bill No. 1
Mechanical Installations
AVOCA STATION

Section No. 10

Bill No. 1

Mechanical Installations

COLLECTION

Total Brought Forward from Page No.

Page
No

Amount

10/1/1

10/1/2

Carried to Final Summary

R

Section No. 10
SECTION 10 - MECHANICAL INSTALLATION
Bill No. 1
Mechanical Installations
AVOCA STATION

Section No		Page No	Amount
<u>FINAL SUMMARY</u>			
1	SECTION 1 - PRELIMINARIES	1/1/55	
2	SECTION 2 - WAITING ROOM	2/4/1	
3	SECTION 3 - TELECOMMUNICATION ROOM	3/7/1	
4	SECTION 4 - STORE ROOM	4/7/1	
5	SECTION 5 - ABLUTIONS	5/11/1	
6	SECTION 6 - TICKET OFFICE	6/13/1	
7	SECTION 7 - PLATFORMS AND EXTERNAL WORKS	7/6/1	
8	SECTION 8 - PEDESTRIAN BRIDGE	8/4/1	
9	SECTION 9 - ELECTRICAL INSTALLATION	9/1/3	
10	SECTION 10 - MECHANICAL INSTALLATION	10/1/3	
11	SECTION 11 - OCCUPATIONAL COSTS	11/1/1	
AVOCA STATION : SUB-TOTAL (Carried to Final Summary Page)			R
Carried to Form of Tender			R
AVOCA STATION			

PROVISIONAL BOQ: FINAL SUMMARY

PRASA CRES

KWAMASHU CORRIDOR STATIONS UPGRADES

AVOCA STATION UPGRADE

FINAL SUMMARY

<u>SECTION</u>	<u>TOTAL TENDERED SUM</u>
1 PRELIMINARIES	R
2 AVOCA STATION UPGRADE	R
SUB-TOTAL	R
Add : Contingency :	
Allow 5% for Contingencies to be expended as directed by the Principal Agent and deducted in whole or in part if not required	R
SUB-TOTAL	R
ADD : VAT @ 15%	
TOTAL TENDER SUM (INCLUDING VAT) CARRIED TO FORM OF OFFER	R

STRUCTURAL SPECIFICATIONS



PROJECT STRUCTURAL GENERAL NOTES AND SPECIFICATIONS FOR NEW CONSTRUCTION

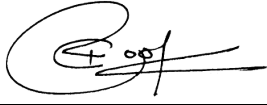
PRASA:

KWA MASHU SUB-CORRIDOR 1 STATION UPGRADE

SEPTEMBER 2022

Prepared for:

DOCUMENT CONTROL

Issue/revision	Revision 0	Revision 1	Revision 2
Remarks	Project General Notes and Specifications		
Date	2022-09-10		
Prepared by	Zharne' Nadasen		
Contact	031 266 2600		
Signature			
Checked by	Melusi Ndlovu		
Signature			
Authorised by	Clint Koopman		
Signature			
Project number	2200065		
File reference	G:\ACTIVE\2 - Active Projects\2200065 PRASA STATION UPGRADE\2- Correspondence Out\25-Proposals & Reports\Structural\Project General Specifications		

CONTENTS

1.	GENERAL	4
2.	FOUNDATIONS AND EARTHWORKS	6
3.	CONCRETE.....	7
4.	REINFORCEMENT	10
5.	STRUCTURAL STEELWORK	11
6.	DESIGN LOADS	13

1. GENERAL

- 1.1 These notes to be read in conjunction with the drawings and project specifications.
- 1.2 All building work must comply to the Local and National Building Regulations.
- 1.3 All work shall be executed in strict accordance with the latest SANS 10400, SANS 1200, SANS 2001, SANS 10100 Part 2 or their latest SANS codes replacements, OH&S Act and the project specifications in the contract documentation.
- 1.4 All structural concrete and steel drawings to be read in conjunction with the relevant architectural, civil, mechanical & electrical engineers' drawings and the specifications in the Bill of Quantities. Any errors, omissions & discrepancies to be brought to the attention of the engineer immediately.
- 1.5 Where conflicting specifications between the drawings & Bill of Quantities occur, the drawing specifications will take preference over the specifications in the Bill of Quantities.
- 1.6 It remains the main contractor's responsibility to compare drawings and notify the relevant parties of any discrepancies within a reasonable time frame.
- 1.7 The contractor is to keep a full set of drawings on site
- 1.8 The contractor shall check all project dimensions on site beforehand. All dimensions are also to be checked against the architect's drawings. Any discrepancies shall immediately be reported to the engineer.
- 1.9 The contractor is responsible for correct setting out of building on site with particular reference to boundary and building lines. Contractor is to provide the as-built co-ordinates of all bases at each top of base. Deviations in all direction (X,Y & Z) from the design dimensions to be indicated as well.
The information is to be superimposed on the engineer's drawings in CAD. The survey is to be performed by an independent registered surveyor.
- 1.10 Scaling off drawings is not allowed.
- 1.11 All notes are general unless otherwise shown on the drawing.
- 1.12 All SANS specifications mentioned in the notes, on the drawings and in the project specifications should be available on site at all times.
- 1.13 Unless otherwise indicated on drawings, all waterproofing is according to architect's details and specifications
- 1.14 The contractor shall ensure that waterproofing materials are not damaged during backfilling operations, fixing of steel etc. Any repair work for the contractor's account.

- 1.15 Products different to those specified may only be used with written approval from the engineer. Such approval is to be requested in writing.
- 1.16 All brickwork to be set out according to the architect's drawings.
- 1.17 All instructions from the engineer shall be written in the site instruction book.
- 1.18 The contractor is responsible for controlling storm water and dewatering on the site to prevent damage to the structure, banks, excavations, or any other works for the duration of the contract period.
- 1.19 No structural alterations may be done without the written approval of the engineer.

2. FOUNDATIONS AND EARTHWORKS

- 2.1 All earthworks shall be in accordance with the latest SANS 1200 D specifications.
- 2.2 All excavations must be inspected and approved by the engineer before placing of any concrete foundation, blinding, and waterproofing or geo-fabric membrane.
- 2.3 Where excavation levels have to be lowered, the top level of the base should be kept as shown and the blinding layer thickened, size and reinforcing may be altered by the engineer if required.
- 2.4 Founding levels determined on site is to be forwarded to the engineer.
- 2.5 The contractor is to refer to the geotechnical investigation report for geotechnical information/profiles.
- 2.6 Construction of foundations to be in accordance to SANS 2001-CM2.
- 2.7 All foundation excavations shall be thoroughly prepared to the approval of the engineer prior to placing of steel and casting of concrete.
- 2.8 The contractor is to allow for equipment to keep excavations dry.
- 2.9 No foundation shall be cast on either non-engineered fill or backfill material. Portions that are over-excavated beyond the depth required by the geotechnical engineer, to be filled with mass concrete (10 MPa / 19mm) at contractor's expense.
- 2.10 All foundations are placed symmetrically below columns and brickwork unless otherwise shown.
- 2.11 All bases to be reinforced concrete.
- 2.12 The minimum required soil bearing capacity underneath foundations is 150 KPa. DCP tests at the bottom of the excavation must be taken and presented to the Engineer to confirm the soil bearing capacities.
- 2.13 Imported gravel to comply with SANS 1200 DM clause 3.2.4. It is to be approved. Backfill with no cohesion compacted to minimum 93% mod AASHTO or a minimum of four passes with a 10 ton vibratory roller, unless indicated otherwise.
- 2.14 The contractor shall allow in his price for the removal of spoil and / or breaking up of boulders.

3. CONCRETE

- 3.1 All concrete work shall be carried out strictly in accordance with SANS 1200 G.
- 3.2 Curing of concrete shall be carried out strictly in accordance with SANS 1200 G and SANS 10100 Part 2. Contractor to provide a method statement, to be approved by engineer, for the curing of the various elements concerned.
- Exposed concrete surfaces to be continually cured for a minimum of 10 days.
 - 'High temperature Accelerated Curing' shall not be permitted.
 - Specified Method: Within a maximum of 2 hours after the formwork has been removed the concrete element shall be wet cured by covering with an inner hessian membrane and an outer puncture-free plastic membrane. The hessian membrane be kept continuously damp by an independent automatic sprinkler system. The hessian and plastic membranes are to be firmly secured and kept flush to the concrete surface for a minimum period of 10 days.
 - The Contractor must ensure that all materials required for the curing process are on hand before stripping any formwork, and that these measures are implemented immediately after the formwork has been removed.
 - Surfaces that have not been formed against formwork (e.g. top surface of columns, beams, slabs etc.) shall be protected as soon as it is possible to do so without causing damage to that surface.
 - Should the Contractor wish to submit any alternative proposal it shall contain full details of methods and procedures, the Specified Method must however be priced in the Schedule of Quantities.
 - Chemical-curing compounds shall not be allowed unless expressly authorised by the Engineer
- 3.3 Stripping times of shuttering and propping shall be in accordance with SANS 1200 G clauses 5.2.4 and table 1.
- 3.4 The main contractor is to appoint a competent person to design all formwork.
- 3.5 Formwork layout drawings prepared by the competent person are to be kept on site for inspection at any time.
- 3.6 Typical back-propping information provided by the engineer does not supersede formwork design.
- 3.7 Minimum concrete strength at 28 days shall be as follows:
- Blinding - 15MPa / 19 mm
 - Mass Concrete brick wall strip footings - 15MPa / 19 mm
 - RC Foundations - 30MPa / 19 mm
 - Beams - 30MPa / 19 mm
 - Slabs - 30MPa / 19 mm

- 3.8 No sandstone aggregate will be allowed in slabs or surface beds, minimum OPC content 70% - mix designs to be submitted to engineer for acceptance.
- 3.9 All concrete shall be manufactured on mix designs approved by the engineer. Slagment or admixtures shall not be used without approval.
- 3.10 Concrete to be adequately compacted by means of a vibrator.
- 3.11 Concrete cube tests to be done in accordance with SANS 1200 G clause 7: Tests.
All concrete testing to be done by an accredited laboratory. The laboratory should provide valid calibration certificates for concrete testing equipment every six months. Test results sheets to quote serial number of equipment used for all tests. CV's of key personnel responsible for concrete testing to be submitted to the engineer.
- 3.12 At least one set of six cubes shall be taken for each casting and from at least every 50 m³ of concrete for each grade placed (or part thereof should the total cast be less than 50 m³). 3 No. of the cubes shall be crushed at 7 day strength. 3 No. of the cubes shall be crushed at 28 day strength. The results submitted to the engineer must also contain the date on which the samples were taken and identification by which the results may be correlated with the section of work to which they pertain. Cubes shall be tested in a SANAS accredited testing laboratory.
Results shall be reported with statistical analyses to demonstrate their compliance with the acceptance criteria stated in SANS 1200 G (clause 7.3).

As instructed by the Engineer, additional samples shall be randomly tested at an approved laboratory for correlation purposes.
- 3.13 All casting procedures, construction methods and positions of construction joints shall be submitted to the engineer prior to the commencement of the project.
- 3.14 The contractor must co-ordinate all services drawings for details and positions of openings and sleeves required for stormwater, sewerage, drainage, electrical, mechanical and other services. Discrepancies to be brought to the attention of engineer and other relevant parties.
- 3.15 The contractor must obtain permission from the engineer before any openings or services, which are not indicated on the drawings, may be introduced through any structural element or close to any column.
- 3.16 No chasing of services into concrete elements is allowed.
- 3.17 Defective concrete work shall be reported to the engineer without delay. The contractor may not proceed with any remedial work or patching unless approved by the engineer in writing.
- 3.18 See architect's drawings for detail and positions of V-joints and drip joints in concrete.
- 3.19 For details of waterproofing of roof slabs see architect's drawings.
- 3.20 See Civil Engineering and Architect's drawings for detail and positions of rwp's in concrete and other cast-in items.

3.21 Concrete tolerance to be as follows:

- Internal concrete - not exposed: Degree of accuracy No. II (SANS 1200 G)
- External concrete - exposed: Degree of accuracy No. II (SANS 1200 G)
- Fairface / Architectural concrete: Tolerance specified by architect.

3.22 All exposed concrete work to be off shutter unless otherwise stated.

3.23 All special concrete finishes including screeds, toppings, etching, coloring, hardening and inlays by others.

3.24 All concrete drawings to be read in conjunction with the relevant architectural, civil, electrical, mechanical and structural steel drawings and any discrepancy to be brought to the attention of the engineer.

3.25 Areas with congested cast-in items, such as electrical conduits, are to be approved by the engineer prior to casting of concrete.

3.26 All grouts and epoxies to be used strictly in accordance with the manufacturer's specification.

.

4. REINFORCEMENT

- 4.1 Reinforcement shall be manufactured and fixed to comply with the tolerances as specified in SANS 1200G and / or the project specification. All steel bars shall comply with the requirements of SANS 920 and welded steel fabric with the requirements of SANS 1024.
- 4.2 Bending of reinforcement shall be in accordance with SANS 282.
- 4.3 No reinforcement may be cut without written approval from the Engineer.
- 4.4 No tie-wire shall encroach on the specified minimum cover by more than a strand thickness.
- 4.5 The contractor shall inspect and approve the fixed reinforcement before the engineer is notified of a required inspection. The engineer is to be notified at least 24 hours in advance.
- 4.6 All reinforcement shall be inspected and approved in writing by the engineer before casting of concrete may commence. Reasonable attempts shall be made in the storage of rebar to avoid contamination. Soiled/contaminated rebar shall be cleaned prior to fixing to position
- 4.7 No slab will be inspected unless the reinforcing and cables (if present) have been fully fixed; all other services have been installed and the deck has been cleaned properly.
- 4.8 No heat treatment or cutting of steel without the written approval of the engineer shall be allowed.
- 4.9 Unless noted otherwise, minimum concrete cover to reinforcing to be allowed for as indicated on drawings.
- 4.10 The permissible deviation for cover to reinforcement in the above mentioned elements shall be - 0 +5mm irrespective of any Degree of Accuracy classification.
- 4.11 Concrete cover blocks shall be manufactured in accordance with the requirements of SANS 10100 Part 2 (8.4.1.2). The blocks shall be the same in strength as the specified strength of the element being cast. Fixing wire shall be fully galvanised Class A in accordance with SANS 675. Blocks shall be fully cured in water for 14 days before use.

5. STRUCTURAL STEELWORK

- 5.1 All structural steelwork shall be fabricated and erected in accordance with SANS 1200 H.
- 5.2 Welds shall conform to SANS 10167-1984 and 10044 specifications.
- 5.3 Where no weld sizes are shown, the minimum weld size shall be that of the thickest plate of the connecting plates / elements or 6mm (whichever is higher). Unless otherwise shown the intention of connections are to transfer the full force that can be developed in connecting members through the connection.
- 5.4 All gussets and cleats to be a minimum of 8 mm plate unless shown otherwise.
- 5.5 When using electric arc welding, all electrodes shall be E7018. For any other welding process to be used, the contractor shall apply, in writing, for the approval from the engineer for the electrodes to be used.
- 5.6 All butt welds shall develop the full strength of the elements joined.
- 5.7 All splices shall develop the full strength of the elements joined.
- 5.8 Welding shall only be performed by coded welders.
- 5.9 Suitably qualified and experienced welders using proper equipment in a good condition shall do all site welding. Welders to be certified and certificates with photos to be submitted to the engineer.
- 5.10 The contractor shall design all welds and, where necessary, gussets of sufficient strength shall be provided to obtain the required weld length to ensure the full strength of the connection.
- 5.11 All dimensions and levels shall be checked on site before shop drawings commence. Any discrepancies shall be brought to the attention of the engineer.
- 5.12 A complete set of shop drawings shall be submitted to the engineer for approval one month before fabrication commences. Shop drawings will only be checked for compliance with design intent. No dimensional checks, or checks on cleats, bolts, welds and gussets will be done.
- 5.13 All shop splices are to be indicated on drawings.
- 5.14 An erection method statement is to be submitted to the engineer prior to commencement of construction.
- 5.15 Steel grades shall be as follows:
 - Plates - GR 300WA
 - Hot rolled sections - GR 350WA
 - Hollow sections - Structatube 300WA
 - Cold formed sections Commercial grade (Minimum yield stress of 240 MPa)
- 5.16 Tensile strength testing results must be provided for each batch of steel from which cold-formed sections are sourced.
- 5.17 A certificate from the steel manufacturer in which the grade of the structural steel is verified shall be handed to the engineer for approval.

- 5.18 All structural bolts shall be grade 8.8 hot-dipped-galvanized unless otherwise noted.
- 5.19 Where temporary bracing or propping is required, the contractor shall be responsible for the design, erection, maintenance and removal (where necessary) of such supports. If splices in trusses are required due to transport, proposals of this shall be submitted to the engineer at an early stage for written approval.
- 5.20 Fabricator to ensure that centres of gravity/centroidal axes of members intersect at node points, except where eccentricities are specified on engineer's drawings.
- 5.21 All structural steel drawings to be read in conjunction with the relevant architectural, concrete drawings as well as the Bill of Quantities and any discrepancy to be brought to the attention of the engineer.
- 5.22 Quality control on welding shall be as follows:
 - 5.22.1 All welds shall be inspected using visual aids
 - 5.22.2 All butt welds : 100% ultrasonic NDT
 - 5.22.3 All fillet welds : 20% MPI
 - 5.22.4 Crane / crawl beams : 100% ultrasonic NT
- 5.23 Where applicable, cementitious non-shrink grout shall be provided under base plates before any primary loads are applied to the structure. Laminated finger shaped hot-dip galvanized packing to be provided under base plates.
- 5.24 The contractor shall, at the commencement of the project, acquaint himself with the availability and delivery time of the products and steel profiles specified on the drawings so that such material can be ordered ahead of time.
- 5.25 Where slotted holes for bolts occur, the nut shall be hand tightened and a lock-nut be provided unless noted otherwise.
- 5.26 Gutters are to be water tested to ensure all joints are watertight.
- 5.27 Contractor to arrange with engineer for inspection of structural steel work during fabrication.

Surface protection for structural steelwork:

- 5.27.1 All structural steelwork to be cleaned and de-rusted in accordance with SANS 10064.
- 5.27.2 Paint with intumescent paint to achieve 1 hour fire rating.
- 5.27.3 Final finish to Architect's detail
- 5.27.4 Epoxy sealant to cover all bolt ends, nuts and washers to prevent rust incursion
- 5.28 Paint Specification for the bolts: 3 days before the erection of the structural steelwork, all bolts are to be cleaned and degreased. Within 2 days of erection, all bolts are to be coated with 1 coat of 'Sigmadur' Gloss or equivalent.
- 5.29 Contractor to submit method statement for paint repairs.

6. DESIGN LOADS

- 6.1 Design loads given below are for concrete once 28 day strength has been achieved.
- 6.2 All loads during execution/construction that exceeds these specified loads or are applied prior to 28 day strength, will require back propping.
- 6.3 Design loads are:

Floor Slabs

• Self-Weight reinforced concrete	-	24 kN/m ²
• ABT DL (with partitions)	-	2.5 kN/m ²
• Brickwork	-	As shown on Architects layouts
• Plasters	-	As shown on Architects layouts

Roofs

• Imposed loads	-	0.3 kN/m ²
• Roof sheets	-	0.06 kN/m ²
• Ceiling	-	0.15 kN/m ²

STRUCTURAL REPAIR PROCEDURES

A) Underpinning on wall repairs:

- Cut through existing surface-bed.
- This involves an initial excavation of a narrow pit alongside the existing foundation in limited lengths (preferably 1000mm long). This pit must be excavated down to the anticipated new founding level and should be just large enough to allow reasonable working space.
- A narrow trench is then excavated from the pit extending under the foundation and down to the founding stratum. The base of the excavation is then cleaned up and a reinforced concrete footing cast.
- Excavation should start at corners and then work inwards.
- The final operation is the backfilling of the pit and reinstating the surface-bed.
- Extent of the repairs to be verified on site.

B) Grouting:

- The horizontal concrete substrate shall be thoroughly clean, in a good sound condition and free from dust, loose material, surface contamination and material which reduces bond.
- Concrete surface shall be rough and chipped to make good bonding with grout.
- Concrete surface shall be saturated with clean low pressure water a minimum 2 hours before application ensuring that all pores and pits are adequately wet.
- The surface shall not allow drying before application of the grout.
- Formwork shall be clean and fixed in place as soon as possible after the substrate has been prepared.
- Formwork shall be watertight and free from obstructions to allow the free flow of grout.
- Mix and apply according to manufacturer's specification (Sika Grout 212 or similar approved).
- Protect the fresh material from premature drying using an appropriate curing method e.g. curing compound, moist geotextile membrane etc.

C) Rust repairs:

- For the lightest levels of rust built up on a steel surface, a simple scouring with a wire brush is often enough to remove the top layer .
- A rough scrub brush is also effective.
- If the layer is slightly built up, more than can be removed with a brush or pad, light sanding usually using a metal-rated high-grit sandpaper can be used.
- If that doesn't work, remove the rust mechanically with a palm sander or a rotary tool with a sanding disc or bit attached.
- Use light, quick passes and don't allow the sander to spend too much time in one area or it can potentially sand a dip into the metal.
- Subsequent to the removal of the rust, a rust preventative primer should be applied.
- Paint according to Architect's specification.

D) Joint repairs:

- Clean existing joints of any debris and vegetation.
- Seal joint with an approved polysulphide sealant to manufactures specification

AVOCA STATION



Photo 8: No as-builts were provided to identify the structural steel members that were removed.

Rating:

- D – 4
- E – 4
- R – 1
- U – 4

Repair method: N/A



Photo 9: Existing Telecom building foundation exposed due to layerworks being washed away. Layerworks to be reinstated.

Rating:

- D – 4
- E – 3
- R – 4
- U – 4

Repair method: A



Photo 10: Existing Telecom building foundation exposed due to layerworks being washed away. Layerworks to be reinstated.

Rating:

- D – 4
- E – 3
- R – 4
- U – 4

Repair method: A



Photo 11: Balustrades to be installed on the pedestrian bridge.

Rating:

- D – 4
- E – 3
- R – 4
- U – 4

Repair method: Reinstate



Photo 12: Balustrades to be installed on the pedestrian bridge.

Rating:

- D – 4
- E – 3
- R – 4
- U – 4

Repair method: Reinstate



Photo 13: Missing CFLC purlin to be replaced.

Rating:

- D – 1
- E – 2
- R – 3
- U – 4

Repair method: N/A



Photo 14: Integrity of the entire bridge requires to be inspected.

Rating:

- D – 4
- E – 3
- R – 4
- U – 4

Repair method: Further investigation is required to determine the extent of damage and the method of repairs.

MECHANICAL SPECIFICATIONS

CONTRACT NO.

PRASA

PRASA STATION UPGRADE : KWAMASHU SUB-CORRIDOR 1 : MOSES MABIDA TO KWAMASHU CLUSTER 6

FIRE PROTECTION INSTALLATION

PROJECT DETAILED SPECIFICATION

1.0 GENERAL

1.1 THE COMPLETE INSTALLATION

The meaning and intent of this specification is that at the completion of this contract or Sub-Contract, the Employer shall be provided with a finished, FIRE PROTECTION AND DETECTION & ALARM SYSTEM installation, complete in all respects, tested and passed as ready for use.

The Tenderer shall at the time of tendering, draw the Engineers attention to any omissions or discrepancies between the specifications and drawings and request clarification with the Engineer.

2.0 REGULATIONS & STANDARD SPECIFICATIONS

a. GENERAL

All plant and equipment, installed and tested under this contract shall comply with the requirements of the regulations as described under the relevant Clauses of the General Specifications or Project Specifications.

b. STANDARD PRASA SPECIFICATIONS

The tenderer and fire installer shall refer to the available standard PRASA Specifications and all requirements therein shall be included in the tender pricing. Where no standards are available, the detailed specifications shall take precedence.

All installations materials, equipment and installation methods shall match existing systems on site as far as possible. All materials and equipment used shall be as per PRASA's preference.

Copies of any available standard or general specification documents shall be obtained directly from the Employer.

c. STANDARDS AND REGULATORY REQUIREMENTS

The installation shall be manufactured, designed, erected, built, constructed, commissioned, tested and maintained in compliance with the following regulations, where applicable:

- (a) SANS 10400 -"A" The application of the national building regulations" as amended.
- (b) SANS 10400 -"T" Fire Protection
- (c) SANS 10400 -"W" Fire Installation
- (d) The Occupational Health and Safety Act (85/1993) as amended and contingent regulations.
- (e) ASIB – Rules of the Automatic Inspection Bureau
- (f) SANS 10139 & EN54 - Fire Detection and alarm system of buildings - system design, installation and servicing
- (g) The by-laws of the Local Municipality.
- (h) The Local Fire Department Regulations
- (i) The following SANS Standards shall apply :
 - SANS 10400 T 4.37 - Hand held / potable fire extinguishers.
 - SANS 10400 T 4.32 - Fire fighting equipment

CONTRACT NO.

- SANS 10400 T 4.33 and W 4.6 - Water reticulation and pipe sizing.
 - SANS 10400 T 4.34 and T 4.35 - Fire hose reel and hydrants.
 - SANS 10400 T 4.29 - Markings and fire signage.
 - SANS 10400 Testing and commissioning of fire protection systems.
- (j) The requirements of National Fire Protection Association of USA where applicable
- (k) SANS 10142 - "Code of practice for the wiring of premises" as amended.
- (l) Any other applicable Statutes and Regulations.

3.0 SPECIAL REQUIREMENT

3.1 The complete fire protection installations shall be carried out and tested in accordance with the latest edition of NFPA and ASIB rules, SANS10400, PRASA Engineering standards where applicable and in accordance with relevant clauses of the General Specifications. The PRASA standards shall take preference.

3.2 The tenderer shall submit with his tender the following :-

- a) A Quality Control Plan
- b) Safety Plan
- c) Health Plan and Programme
- d) Environmental Plan

Failure to provide the above may disqualify the tender submitted. The tenderer shall contact the Engineer if he is uncertain of what is required or if additional information is required.

Strict quality control measures must be in place and all work must comply with these requirements including the site regulations applicable to contractors. The requirements of the OSH Act and contingent regulations as well as the Clients requirements relating to quality, safety, health and environment must be strictly adhered to. Contractors will be required to attend safety induction courses in accordance with the Client's requirements.

4.0 THE SITE

The details of the various sites can be found elsewhere in this document.

4.1 SITE VISIT

The Tenderer is advised to visit the various sites to ascertain any additional information he may require to present his tender. Arrangements must be made by the Tenderer to gain access to the various sites for the assessments prior to the tenders closing.

5.0 PROGRAMME

5.1 The Contractor shall undertake to complete the supply, delivery and fixing where applicable of the various sections of the work in strict accordance with the Client's or main Contractor's construction programme.

5.2 Commencement and completion dates for installation of the various portions of the work on site shall be determined with the Client, Main Contractor or Engineer.

5.3 A construction programme shall be obtained from the Client or Main Contractor or in accordance with the tender requirements.

6.0 MATERIALS AND CONSTRUCTION

6.1 GENERAL

All materials and workmanship shall be the best quality available of the type specified and shall be neatly, securely and properly worked and fixed in a workmanlike manner to the satisfaction of the Engineer and strictly in accordance with the suppliers printed instructions where this is applicable.

CONTRACT NO.

Cognizance shall be taken of the corrosive and marine atmosphere prevailing at the site when supplying all materials and performing work and with due regard to the long term durability and maintenance-free performance required.

The Tenderer shall determine the type and make of the existing installations on site and the new installation shall be similar or equal to the existing.

The tenderer shall include in the tender price for all scaffolding and lifting gear, lifts etc. for the execution and complete erection of the fire protection installation. All tendered prices shall include for lifting gear and scaffolding as required. The tenderer can make arrangements or negotiate with the main contractor to use any lifting gear or scaffolding he may be using on site.

The Tenderer shall furnish information on the attached Equipment Schedule or returnable schedule in the annexures showing the type of installation and equipment that is being offered.

Strict quality assurance controls will be in place and the work must comply with these requirements.

7.0 GUARANTEE PERIOD

During the guarantee period the Contractor shall be required to immediately upon request, rectify any defects and evidence and causes of any deformation of the fire protection systems and installation. The system shall be guaranteed for a period of twelve months from date of acceptance and handover of the installation.

All materials and workmanship shall be repaired and serviced free of charge during the guarantee period.

8.0 LIST OF DRAWINGS

The drawings enclosed with this tender form part of the contract documents and shall at all times be read in conjunction with this specification.

The architectural drawings are listed elsewhere in the tender documents. Mechanical drawings will be issued to the contractor during the construction stages. The mechanical fire contractor shall produce vendor fire drawings for the entire installation and this shall form part of the fire contractor's scope.

9.0 SCOPE OF SUB-CONTRACT

The total design, supply, fabrication, delivery to site, installation, testing, approval and inspection, commissioning and maintenance for 12 months of all installation and equipment for the Fire Protection and the Fire Detection of the following areas, all in accordance with the relevant NFPA , ASIB and SANS codes as indicated elsewhere in this document or as shown on the drawings.

The requirements for the fire protection to the various buildings and process plant areas shown below is provisional and shall be confirmed after conducting a risk and site assessment to be carried out by an approved fire designer / engineer who is in the employ of the tenderer or fire installing company.

This contract is for the following areas, buildings or structures and specifies the fire protection installation requirements as described there-in.:

9.1 KWAMASHU TRAIN STATION - NOT APPLICABLE

- Strip and remove any existing vandalized fire protection systems comprising of the fire detection system in the ticket office area and the station and staff offices
- Supply and install missing or vandalized fire detection and alarm system in the existing revamped ticket office areas and the station staff offices comprising the smoke detectors, sirens and manual break glass units with conduit and wiring.

CONTRACT NO.

- Repair, service and re-commission the existing fire alarm panels in the ticket offices and station offices (2 off)
- The supply and installation of new 30m fire hose reels in the ticket office areas and staff offices connected to the potable water line
- The supply and installation of new 4,5kg DCP fire extinguishers in the ticket office areas and staff offices and on the station platforms waiting area.
- All fire signage
- Testing and commissioning of the complete fire protection and detection and alarm system installation

9.2.

AVOCA TRAIN STATION

- Strip and remove any existing vandalized fire protection systems comprising of the fire detection system in the ticket office area and the station and staff offices
- Supply and install new fire detection and alarm system in the revamped ticket office areas and the station staff offices comprising the fire alarm panel, smoke detectors , sirens and manual break glass units with conduit and wiring.
- The supply and installation of new 30m fire hose reels in the ticket office areas and staff offices stalls connected to the potable water line
- The supply and installation of new 4,5kg DCP fire extinguishers in the ticket office areas and staff offices and on the station platforms or waiting areas.
- Testing and commissioning of the complete fire protection and detection and alarm system installation
- Testing and commissioning of the complete mechanical fire protection system comprising of fire hose reels etc
- All fire signage to comply with local regulations

9.3

REDHILL TRAIN STATION - NOT APPLICABLE

- Install missing fire signage to extinguisher outside ticket office
- Install one missing fire detector in board room or other rooms that are not there
- Test and commission the new detector and re-commission the fire detection system

9.4

GREENWOOD PARK TRAIN STATION - NOT APPLICABLE

- Strip and remove any existing vandalized fire protection systems comprising of the fire detection system in the ticket office area and the station and staff offices
- Supply and install new fire detection and alarm system in the revamped ticket office areas and the station staff offices comprising the fire alarm panel, smoke detectors , sirens and manual break glass units with conduit and wiring.
- The supply and installation of new 30m fire hose reels in the ticket office areas and staff offices stalls connected to the potable water line
- The supply and installation of new 4,5kg DCP fire extinguishers in the ticket office areas and staff offices and on the station platforms or waiting areas.
- Testing and commissioning of the complete fire protection and detection and alarm system installation
- Testing and commissioning of the complete mechanical fire protection system comprising of fire hose reels etc
- All fire signage to comply with local regulations

9.5

BRIARDENE TRAIN STATION - NOT APPLICABLE

- Strip and remove any existing vandalized fire protection systems comprising of the fire detection system in the ticket office area and the station and staff offices
- Supply and install new fire detection and alarm system in the revamped ticket office areas and the station staff offices comprising the fire alarm panel, smoke detectors , sirens and manual break glass units with conduit and wiring.
- The supply and installation of new 30m fire hose reels in the ticket office areas and staff offices stalls connected to the potable water line
- The supply and installation of new 4,5kg DCP fire extinguishers in the ticket office areas and staff offices and on the station platforms or waiting areas.
- Testing and commissioning of the complete fire protection and detection and alarm

CONTRACT NO.

system installation

- Testing and commissioning of the complete mechanical fire protection system comprising of fire hose reels etc
- All fire signage to comply with local regulations\

9.6 UMGENI ROAD TRAIN STATION - NOT APPLICABLE

- Install new detector where missing
- The supply and installation of new 30m fire hose reels in the ticket office areas and staff offices stalls connected to the potable water line
- The supply and installation of new 4,5kg DCP fire extinguishers in the ticket office areas and staff offices and on the station platforms or waiting areas.
- Supply and installation of new fire signage to comply with local regulations
- Test and commission the complete new detector and re-commission the existing fire alarm panel

9.7 MOSES MABIDA TRAIN STATION - NOT APPLICABLE

- No work is required for the existing fire protection and detection systems for this station as the Client has advised that the systems are fully functional and compliant

10.0 BUILDING CONSTRUCTION

All buildings are existing with some having been damaged, vandalized and stripped.

The construction methods and materials used for the buildings can be found on the accompanying architectural tender drawings, however the tenderer is free to visit site and acquaint himself with the existing structures which are being upgraded.

11.0 PIPE FITTINGS AND JOINTS

- (a) Welded joints shall be beveled, set up and welded in the workshop and any non-standard fittings shall be similarly pre-fabricated. Welded sections of pipe shall have Victaulic coupling joints at suitable intervals to facilitate removal of pipework if and when modifications to the system become necessary.
- (b) All fittings shall be galvanized. Welding of pipes and fittings on site will be not accepted and this will be taken as a non-conformance issue.
- (c) Hose reel pipes shall be screwed type hot dipped galvanized and supported at a maximum of every 2m.
- (e) All low points in any sprinkler or deluge system must be provided with a test and drain outlet.
- (f) It will be responsibility for the fire contractor to determine all required pipe fittings, hangers, supports, couplers, tees, flanges, unions, reducers, nipples, sockets, elbows, bends etc and price accordingly in the schedules. This will apply for sprinklers, hydrant, hose reels, deluge systems and gas systems.
- (g) All pipes, brackets and other support material shall be painted to the approval of the Engineer or Client as follows :-

Paint on Galvanized or Ungalvanized Surfaces (Black Pipe)

COAT	PAINT	TOTAL DRY FILM THICKNESS MM
Degrease Prime	Calcium Plumbate etch primer (2 coats)	0,060 each
2 nd	Universal Undercoat	}

3 rd	Alkyd Enamel Signal Red (2 coats)	0,160 each

- (h) Any existing paint work damaged shall be repaired to the approval of the Engineer or Client.
- (i) Painting shall be left to dry for at least 12 hours between coats. The initial primer coat must be left to dry for at least 24 hours. Galvanized pipes and fittings shall be cleaned with galvo-clean or other suitable approved agent before any coat of primer or paint is applied.

Note : The final paint preparation, paint details and coating specifications shall comply with the PRASA standard paint specifications where applicable. The contractor shall obtain this standard document directly from PRASA where available.

12.0

FIRE HOSE REELS

Fire hose reels to SANS10252-1 are required in the following train station buildings and areas only:

- Kwamashu Train Station
- Avoca Train Station
- Greenwood Park Train Station
- Briardene Train Station
- Umgeni Road Train Station

Hose reels for other stations are existing and no work is required on them. It may be necessary at a later stage that they be serviced.

The hose reels shall be connected to the potable water lines on site where fire water is unavailable.

The hose reel shall be installed on the outside or inside of the existing buildings or in positions shown on the drawings or as directed on site by the Engineer.

Where required these shall be installed in accordance with the General Specification (where provided and applicable) and in positions shown on the drawings. Hose reel fire mains shall be brought to the outside of all buildings. The hose reel shall be connected to the nearest hydrant fire water mains on site. The SANS flow and pressure requirements are to be met with a flow rate of 30l/min at 350 kPA. The fire contractor shall terminate internal hose reel pipework onto an isolating gate valve for connection to the external hose reel mains. All isolating fire valves shall be locked in the open position with stainless steel chain/s and locks. The position of the connection point on site shall be determined by the fire contractor. All pipework shall be 50mm diameter or 25mm diameter as shown, to be sized for the required flow rates and pressures required.

All pipes and fittings up to and including 50 diameter above ground shall be medium grade carbon black steel pipe to SABS509 malleable, threaded and hot dipped galvanized. All fittings to be hot dipped galvanized with welded bends except for flanged connections at valves, special fittings, etc. All pipes above ground shall be primed and painted signal red as specified and per the Sappi standard paint specifications. Pipe supports shall be at 2m centres (maximum of 2,5m apart) and must be supported at all bends , termination and connections points , ends points etc.

The hose reels shall be of the Chubb pattern type or similar approved of standard steel manufacture in corrosive and chemical laden areas all to match the existing systems on site.

The layouts and sizes of the fire pipework shown on the drawings are diagrammatic and are for tender purposes only. It will be the responsibility of the fire contractor to determine the correct sizes of the pipes after hydraulically calculating the system to suit the required flows, pressures etc.

CONTRACT NO.

The successful fire contractor must produce and submit detailed construction drawings of all plant and pipework layout for the fire reticulation systems.

All external underground fire pipework where required shall be Denso wrapped.

Special Note : The tenderer shall indicate positions and sizes of connection points, pressures and quantity of water required for each installation.

13.0

FIRE HYDRANTS

Hydrants to SANS10252-1 are required in the following train stations that were vandalized and damaged or are non- existent:

- Note : Due to budget constraints and non availability of municipal fire water , non of the stations will be installed with hydrants except for Moses Mabida station which has existing hydrants.

The hydrant shall be single or two-way double headed steel underground type 90NB right hand pattern type valve as specified and shown on the drawings and to the requirements of the Local Fire Department. The flow at the most remote hydrant shall meet the minimum requirements of the SANS1044 codes and the Fire Department Standards. The SANS flow and pressure requirements are to be met with a flow rate of 1200l/min at 350 kPA. Each hydrant connection pipe from the fire water ring main or feed main shall be 80NB, 100NB or 150NB as shown on the drawings or as directed by the Engineer on site.

The pipes shall be seamless butt welded or as specified and be of any size as specified and indicated on the drawings or schedules. All steel pipe and fittings shall be ASTM A106 GRD B and WPB. All underground steel pipes fittings and flanges shall be corrosion protected with Denso priming solution with Denso petrolatum tape PSA184 with 55% overlap.

Each hydrant shall be supplied complete with cabinets and hose and installed in positions to be agreed on site by the Engineer or as shown on the drawings.

The fire booster connection and pipework when required, shall be as for the hydrants described above. The booster connection shall be double type with isolation valve and with 80-150Ø pipework as shown on the drawings. A 0-2000kPA pressure gauge shall be fitted on the system all to the local fire department standards and regulations.

Each hydrant and booster prone to damage shall be protected by a hydrant protection steel barrier as required and specified.

Hydrants on the station platforms shall be protected by a concrete protection barrier to be provided by the civil contractor.

14.0

GENERAL STANDARDS FOR FIRE PROTECTION AND PIPE INSTALLATION

14.1

STEEL PIPES - GENERAL

14.1.1

WORK INCLUDED

Supply all materials and labour, and performing all operations required for the underground fire protection piping system as shown on the drawings, as specified herein and as evidently necessary to complete the work.

14.2

EXCAVATION AND BACKFILL

Excavation and backfill shall be in accordance with the applicable portions of the excavation and backfilling section of the civil specification and such additional requirements as are specified in this section or on the drawings.

14.3

MATERIALS - GENERAL

CONTRACT NO.

All materials used in the work shall be new, unless stated otherwise, and as specified for the service under the project specification and systems schedule paragraphs hereinafter or as quantified in the bill of quantities. No damaged or defective materials shall be installed or defective materials shall be installed or allowed to remain in the completed system.

14.4 INSTALLATION - GENERAL

14.4.1 Codes and Regulations – All installation shall comply with any additional requirements imposed by codes and regulations applicable to the work. In case of conflict of requirements, the more stringent shall apply. The latest revision of any codes or standards shall apply. Underground pipe installation procedure shall be in accordance with SANS10400.

14.4.2 Cleanliness – All piping shall be inspected before installing, and cleaned of all dirt, scale, trash and other foreign matter; shall be laid in dry trenches with open ends plugged or bulk headed as required to prevent intrusion of foreign matter into the systems.

14.4.3 Where rock excavation is necessary, an extra 150mm depth of material shall be removed and pipe shall be laid in Class B bedding as detailed on the drawings.

14.4.4 Fire Protection Piping – All materials and installation shall conform to the requirements of the unless otherwise noted.

14.4.5 Protection Under Roadways and Traffic Areas – All backfill under road-ways and traffic areas shall be selected granular material acceptable to the Engineer and compacted to not less than 95% of the maximum density at optimum moisture content, as determined by ASTM D-1557 (AASHTO T-180), Method D. Where specifically shown on the drawings, concrete or other encasement shall be provided as part of the work.

14.4.6 Thrust blocks and rodding shall be installed in accordance with FM Global DS3-10 or FM Global approved restraints and shall be provided on all changes in direction for underground piping.

CLEANING AND TESTING OF PIPING SYSTEMS

14.4.7 The Contractor shall provide all necessary equipment and materials for testing and shall arrange for observation by the Engineer or his Representative and the proper approving authorities. He shall perform the tests as indicated by the system schedule to be agreed by all. Testing shall be continued until all deficiencies have been corrected and approval obtained.

All necessary test equipment, pressure gauges etc. shall be provided by the Contractor.

14.4.8 Fire Protection Piping – Testing shall be in accordance with industry standards and as required by the Owner's insurance agency and all applicable codes and regulations. The Contractor shall obtain and provide to the owner certificates of approval for the complete systems from all authorities concerned.

All tests shall be witnessed and accepted by the Employer's Representative and the Engineer.

14.5 MATERIAL SPECIFICATIONS

14.5.1 The following materials shall be used for services as indicated on the piping systems schedule hereinafter and/or as indicated on the drawings.

14.5.2 STEEL PIPING AND FITTINGS - GENERAL

14.5.2.1 CARBON STEEL PIPE – 20 KPA @ 120°C max. temp.

- a) Pipe (NB) : To comply to BS 3601/320/360/410 or ASTM A 53, ASTM A106 GRD.B, GT A or B, ERW or seamless carbon steel, standard weight or BS 3600 or equivalent. The outside of all pipe shall be supplied from the factory with a Type CT4 coal tar protective

CONTRACT NO.

coating with glass Fibre reinforcement applied in accordance with SABS 1178-1979. Pipes shall have the protective coating removed approximately 100mm from each end of the pipe and the coating beveled approximately 45° to facilitate a good bond between shop-applied and field applied coatings. A reflective finish of water resistant whitewash or a single wrap of kraft paper shall be applied to all coated pipe. All holidays and other defects shall be marked by chalk or crayon and properly repaired. The reinforcement wrapping shall be cut from around the affected portion of the pipe and the bared area repaired with the same system as the original coating.

- b) Fittings : Carbon steel, butt welding type as BS 1640 Part I, Grade WPA or B, ASTM A 234, Grade WPB; thickness to match pipe. Fittings, pipe joints and special sections shall be coated in the field with a coal-tar primer and hot-applied coal-tar tape applied in accordance with Section 3 of AWWA C 203.
- c) Flanges : 20 bar, carbon steel, slip-on boss or welding neck in accordance with BS EN1092 (Table 16 or 20 as specified), bored to suit pipe. Material shall be BS 1503-221-410 or equivalent.
- d) Bolting : Hexagon headed bolts and hexagon nuts, carbon steel in accordance with BS 1506-111, dimensions in accordance with BS 3692. Threads coarse pitch series in accordance with BS 3643 Pt. 2 – medium fit.
- e) Gaskets : 1.6mm thick, full face, asbestos composition.
- f) Joints : Shall be as shown or noted on the drawings and as follows :
 - (i) Pipe and fittings shall be butt welded in accordance with ASME B31.1.
 - (ii) Connections to valves and hydrants shall be flanged, slip-on boss or welding neck drilled in accordance with BS EN1092 (Table 16 or 20 as specified) and bored to suit pipe.

14.5.3 Valves – General : In accordance with Piping System Schedule

All valve types and arrangements to be similar and to match existing systems on site, however the preferred valves shall be VOSA , Premier or similar and equal approved.

- 14.5.3.1 Extension Valve (Roadway) Boxes – Shall be three-piece screw-type valve boxes supplied with wrench and suitable for use with fire protection valves, Kennedy Figure 121 or Engineer accepted equal.
- 14.5.3.2 Underwriter Approved Valves (Fire Protection) - Underwriter's approved iron body, double disc gate valves, bronze mounted, non-rising stem and parallel seats, Kennedy figure 701X or Engineer acceptable equal with flanged ends drilled to BS EN1092. The pressure or table rating of the valves shall suit the design pressure of the system.
- 14.5.3.3 Hydrant (Fire Protection) – Shall be as detailed on the drawings or specified elsewhere.
- 14.5.3.4 Post Indicators – Underwriter's approved indicator posts suitable for use with underground fire protection valves, Kennedy Figure 541 or Engineer accepted equal.
- 14.5.3.5 Valves shall be installed in manholes to be constructed by the civil or building contractor. Isolation valves for the hydrant line tie in to the potable or fire water mains shall be 1m x 1m x 750mm deep with access cover and frame.

15.0 FIRE EXTINGUISHERS

All fire extinguishers shall be supplied and installed in positions shown on the drawings or as directed on site by the Engineer.

The extinguishers shall be dry chemical powder or carbon dioxide of sizes 4,5kg, 5kg or 9kg as shown on the drawings or as determined by the Engineer.

Extinguishers must include mounting on timber backboards. Fire extinguishers shall be installed under the supervision of the Client's Fire Prevention Officer. The tenderer shall make contact with the officer before the extinguisher positions are established and installed.

Fire extinguishers on the station platforms shall be installed in cabinets fixed to existing or new buildings

Fire extinguishers shall be installed in cabinets to match existing and the cabinets shall be priced with the extinguishers.

16.0

SIGNS

The location of the Fire Hydrants, Fire Hose Reels, Extinguishers, Fire Escapes and Exits shall be indicated by symbolic signs.

Signs type FB2 shall be installed in a conspicuous way adjacent to the fire extinguishers.

Signs type FB1 shall be installed similarly where the fire extinguisher is not clearly visible from all directions.

Signs type FB3 shall be installed in a conspicuous way adjacent to the Fire Hose reels.

Signs type GA3 and GA4 shall be installed in a conspicuous way adjacent to the Fire Escapes.

The signs shall be mounted on backing sheets not less than 290 ± 3 mm x 290 ± 3 mm.

The material of the backing sheets shall be vinyl.

Note : Signs in Offices and Control Rooms type areas shall be photo - luminescent type fixed in meranti frames. The frames shall be vanished and neat in appearance. Signs for substations and other general area shall be standard signs. All fire signage shall match existing systems on site as a minimum.

All signs shall be rigidly and securely fixed. No glue or double sided tape will be permitted.

17.0

FIRE DETECTION, ALARM AND MONITORING SYSTEM

The fire detection installation shall be installed in accordance with the standard specifications (where available and provided) and as shown on the drawings provided or as directed by the Engineer.

The detectors and ancillary devices shall be addressable type Ziton optical / ionization type with programmable base or similar approved to match the existing systems on site or to comply with the PRASA standard specifications and requirements.

The PRASA standards and requirements shall take precedence. The contractor shall determine these requirements , however as a minimum the systems installed shall match existing as far as possible.

17.1

DETECTORS SHALL BE INSTALLED AS FOLLOWS :

PRASA TRAIN STATION DETECTION SYSTEMS :

Combination Optical / Ionisation smoke detectors shall be installed as shown on the drawings or as directed by the Engineer in all the buildings or areas on the underside of the main roof and in the ceiling void or space.

Detection shall be surface type in substations and other industrial type buildings.

Detectors in office and ceiling areas shall be wired with sprag conduit and connected to the outlet boxes on the underside of the slabs.

Conduit or trunking for the detection wiring shall be provided by the fire contractor.

Sirens, alarm bells and break glass units shall be installed in the train station concourses, station platforms , ticketing offices, and in Office and Control Room areas all as indicated on the drawings or will be directed on site by the Engineer.

Wiring to surface detectors, break glass etc. shall be installed in galvanized conduit by the fire contractor. Flush type installations shall be installed in PVC conduit.

CONTRACT NO.

- 17.1.1 Detectors shall be provided between beams that are over 600mm deep. Detectors shall be provided inside all recessed ceiling voids where applicable.
- 17.1.2 Detectors shall be type Ziton or similar approved to match the existing systems on site or to suit the Client's preference or standards. PRASA requirements shall take precedence.

18.0 FIRE CONTROL AND ALARM PANEL , DETECTION AND ALARM SYSTEM

- 18.1 New addressable fire control panels are required to be installed in the Control Rooms, IT Rooms, Ticket Office, Staff Offices, Security or Managers Office or as directed by the Engineer.

The following systems shall be connected, linked to and integrated into the fire panel :

- New detectors, sirens and break glass unit in all rooms or areas as shown on the drawings. A layout of all equipment positions will be issued during the construction stages. New detectors, break glass units and sirens are required for Avoca train station, Greenwood Park train station and Briardene train stations only.
- New fire alarm panels are required for Avoca train station , Greenwood Park train station and Briardene train stations only.
- The existing fire panels for KwaMashu Train station is to be repaired and re-commissioned.

All other train stations have existing fire alarm panels.

The control panel shall be a Ziton addressable type or similar approved type to match the existing systems on site or to suit PRASA requirements.

All the control panels and signals shall transmitted via fibre optic or ethernet cables to the main mimic/monitoring panel control panel which shall act as the main monitoring panel. All interfacing and wiring shall be carried out by the fire protection contractor.

The control panels shall have facilities for link up to the gate house local main mimic/monitoring fire panel. This can be hardwired using multicore signal cables. Facilities for future radio link up system shall be provided.

- 18.2 Alarm with flashing beacon lights shall be provided in the protected areas as shown on the drawings. Bells where required, shall be provided in all office type areas.
- 18.3 Break glass manual alarm or call point units shall be provided as required type Ziton to match the existing systems on site.
- 18.4 Alarms and sirens shall be Ziton type to match the existing on systems on site. Weatherproof units shall be Ziton type all to match the existing systems on site. Sirens shall have integral flashing beacon lights
- 18.5 In addition to the above the following shall be provided :-

All the fire signals shall be relayed to the future main security gate house monitoring panel.

All wiring shall be fire retardant 1PR 0.8m² red screened cable. Where required conduits, outlet boxes and sleeves for fire wiring and cabling cast or built into in slabs/walls shall be provided by the Fire contractor and shall be PVC type. Surface fire conduits shall be 20 diameter galvanized type provided by the Fire contractor.

19.0 SITE WIDE CABLING AND NETWORKING

New alarm panel, detectors, break glass units and siren in shall be linked to and integrated to the future network and monitoring system in the Security Gate House. Where required ,each fire panel shall have its individual RDC transmitter for transmission of signals to the main office fire monitoring system on the site or remote control rooms due its long distances where cabling is not practical.

CONTRACT NO.

When required, the cable must be a fibre optic cable with minimum of 6 cores Type CST HOD (50/125) Fibre cable with SWA or Ethernet twisted pair shielded cables to match the existing systems on site. The tenderer shall determine the signal and communication specification as currently used on site.

20.0 INTERFACING

The tenderer shall be responsible to interface the detection system to the existing fire panels and remote monitoring station including for all connections, splicing, programming of new devices, etc. complete.

Where applicable only, remote monitoring devices such as pressure or flow switches shall be connected / incorporated into the system including addressing, programming etc. by the fire contractor.

20.1 Provision shall be made for alarm signals to be connected to the Client's future computerized or DSC system and for shutdown of the airconditioning system in case of fire detection signals.

20.2 Details, specifications and literature on detectors, sirens, break glass units, alarm panels and controls shall be provided with this tender.

20.3 All external cabling shall be 0.8m² SWA armoured cable.

20.4 Surface wiring to surface devices (detectors, call points, break glass, sirens etc.) shall be in galvanized conduit to be provided by the fire contractor. Where required, flush conduit to office areas shall be chased in brickwork and inside ceiling space.

21.0 STAND-BY POWER

The fire alarm panels shall be provided with stand-by power as required.

As a general, the fire detection system shall have a battery and automatic float charger with back-up facility capable of maintaining the entire system and operating to maintain the system in its quiescent condition for a period for at least 48 hours in case of mains failure.

Power supply (220V) to each new fire alarm panel shall be provided by the electrical contractor where required.

22.0 A/C SHUTDOWN

Facilities for future use shall be provided with interface boxes at positions indicated on the drawings to isolate the air-conditioning plant in the event of a fire. A 100* 100mm box shall be installed complete with a 24 vdc relay with a sets of NO/NC contacts.

23.0 ALARMS / BREAK GLASS UNITS

Sirens and break glass units are required for all areas as shown on the drawings or as directed by the Engineer.

Electronic sirens or break glass units shall be installed to provide an evacuation alarm in each area. This may be energized automatically in the event of a fire emergency or manually from the control panel.

Manual break glass units shall be installed to activate the alarm in the event of an emergency.

Sirens and break glass units shall be Ziton or similar approved to match existing systems on site.

24.0 WIRING

The system will be wired in Fire Retardant cables enclosed in galvanized conduit or PVC conduit. The installation must comply with the requirements of the wiring regulations.

CONTRACT NO.

Conduits shall be flush installed in brickwork and inside ceiling spaces. Conduits from the fire alarm panel and break glass units and sirens shall be chased into the existing brickwork.

25.0 TESTING AND COMMISSIONING

On completion of the installation cold commissioning shall be undertaken by the contractor to ensure correct effective operation. The system shall be tested and handed over to the Engineer or Client including providing test and commissioning data and reports.

All as built drawings shall be included with the hand over data packs together with all the necessary test and compliance certificates.

26.0 MANUALS

Two weeks prior to handover, 4 complete sets of operating and maintenance manuals in both hard and soft copies shall be submitted to the Engineer or Client. The manuals shall be supplied in both hard and electronic copies. Final acceptance of the system will not be given until acceptable manuals are provided.

27.0 WARNING NOTICE SIGNS AND OPERATING INSTRUCTIONS

These shall be supplied and installed in accordance with the General Specification (where applicable) or to standard industry specifications and standards.

28.0 SCHEDULE OF INFORMATION TO BE SUBMITTED WITH THE TENDER

(Failure to submit the information required may disqualify the tender)

28.1 FIRE DETECTION AND ALARM SYSTEM

Item	KwaMashu Station	Avoca Station	Greenwood Park Station	Briardene Station
a) Quantity of Detectors				
b) Type of Smoke Detectors and Make				
c) Type of Heat Detectors and Make				
d) Type of Alarm Control Panel and Make				
e) Number of Zones				
f) Type of main mimic / monitoring panel				
g) Type of break glass units				
h) Type of sirens / beacon lights				
i) Type of bells				
j) Type of infra red heat detectors				
k) Other details of mimic panel				
l) Type and make of fibre optic network cable				
m) No of pairs in fibre optic cable				
n) Type and make of ethernet cables and no of pairs				
n) Other				

CONTRACT NO.

28.2

HOSE REEL INSTALLATION

- a) Type and make of Hose reels : _____
- b) Type and length of hoses : _____
- c) Water flow, pressure and connection main required : _____
- d) Size and type of reticulation pipework Size and type of reticulation pipework : _____

28.3

FIRE EXTINGUISHERS

- a) Type, make and capacity of CO₂ extinguishers :

- b) Type, make and capacity of DCP extinguishers : _____

- a) Type, make and capacity O₂ extinguishers : _____

- a) Other details : _____

26.5

OTHER INFORMATION

Submitted by Tenderer :- _____

NAME OF TENDERER :- _____

SIGNATURE : _____

DATE : _____

CONTRACT NO.

PRASA

**PRASA STATION UPGRADE : KWAMASHU SUB-CORRIDOR 1 : MOSES MABIDA TO KWAMASHU
CLUSTER 6**

FIRE PROTECTION INSTALLATION

**STANDARD GENERAL SPECIFICATION FOR GENERAL FIRE
PROTECTION AND DETECTION INSTALLATIONS**

STANDARD SPECIFICATIONS

CONTRACT NO.

PRASA

PRASA STATION UPGRADE : KWAMASHU SUB-CORRIDOR 1 : MOSES MABIDA TO KWAMASHU CLUSTER 6

FIRE PROTECTION INSTALLATION

STANDARD GENERAL SPECIFICATION FOR SPRINKLERS, GENERAL FIRE PROTECTION AND DETECTION INSTALLATIONS

1.0 GENERAL SPECIFICATION

1.1 GENERAL

1.1.1 This general specification shall be read as the minimum requirements to which the fire protection and fire detection installations as specified in the project specification shall be manufactured, supplied, erected, built, commissioned, tested and maintained.

1.1.2 Clauses of this standard technical general specification which are applicable to the contract shall apply whether specifically referred to in the supplementary specification or not.

1.2 RELATED DOCUMENTS

1.2.1 This specification forms part of the supplementary specification and drawings issued by the consultants for each service. In so far as the conditions herein contained are at variance with anything contained in the supplementary specifications, the contract shall be interpreted in terms of the supplementary specification for each particular service.

1.3 REFERENCE SPECIFICATIONS AND STANDARDS

1.3.1 The latest revision of any specification, code of practice or standard referred to in this specification, shall apply.

1.3.2 Equipment, materials and operational methods shall, in order of preference, comply with the relevant FM Global, NFPA, ASIB, ISO, BSS, DIN, SANS or equivalent American Standard, whether prescribed or not. Where none of the above codes exist then the SABS codes shall apply.

1.4 STATUTORY AND REGULATORY REQUIREMENTS

1.4.1 The installation shall be manufactured, erected, built, constructed, commissioned, tested and maintained in compliance with the following regulations, where applicable in order of preference :

- (m) FM Global Approval Guide
- (n) The requirements of National Fire Protection Association of USA. (NFPA)
- (o) Automatic Sprinkler Inspection Bureau (ASIB) 11th Edition
- (p) Applicable regulation of SANS 10400 "T" & "W" The application of the national building regulations" as amended.
 - SANS 10400 Hand held / potable fire extinguishers.
 - SANS 10400 Gas suppression systems (CO₂).
 - SANS 10400 Sprinkler systems.
 - SANS 10400 Water extinguishing / suppression systems.
 - SANS 10400 Fixed water spray and sprinkler systems.
 - SANS 10400 Fire fighting and underground mains.
 - SANS 10400 Hose reel and hydrants.
 - SANS 10400 Fire detection and alarm systems.
 - SANS 10400 Markings and fire signage.

CONTRACT NO.

- SANS 10400 Testing and commissioning of fire protection systems.
- (q) SANS 10142 - "Code of practice for the wiring of premises" as amended.
- (r) The Occupational Health and Safety Act (85/1993) as amended and contingent regulations.
- (s) SANS 10139 – Fire Detection and alarm system of buildings – system design, installation and servicing.
- (t) The requirements of the Sappi Tugela Fire Department and Security Department
- (u) The by-laws of the Local Municipality.
- (v) The Local Fire Department Regulations.
- (w) Any other applicable Statutes and Regulations.

2.0 **FIRE FIGHTING GUIDELINES**

2.1 **HAND HELD EXTINGUISHERS WITHIN THE MILL**

- (a) In lower risk areas at least 1 extinguisher per 200 m² (9 kg DCP or 2 x 4,5 kg DCP) or as shown on the drawings.
- (b) In higher risk areas (such as burners) at least 1 extinguisher per 100 m² (9 kg DCP or 2 x 4,5 kg DCP) or as shown on the drawings.
- (c) In lower risk non industrial areas (such as office blocks) at least one extinguisher per 200 m² (9 kg DCP or 2 x 4,5 kg DCP) or as shown on the drawings.
- (d) Electrical rooms, MCC rooms, cable rack rooms and transformer bays shall have 5kg carbon dioxide extinguisher installed as indicated on the plans.

Extinguishers shall be supplied complete with brackets, chevrons and covers which shall be rigidly mounted on a surface at same heights within a room. Extinguishers shall be mounted not more than 1500 mm and not less than 1000 mm above floor level.

The above is the minimum requirements that should be adhered to. Refer to the project detailed specification for the final requirements which shall take precedence.

2.2 **FIRE HOSE REELS**

2.2.1 To be fitted only where floor space exceeds 1000 m² or as shown on the drawings.

2.2.2 The fire hose reels shall be as "Fyre-Fyter" Model 250, Chubb, or similar approved, steel water way and brass jacket all to match the existing systems on site. The reel shall be zinc plated and epoxy stove enameled.

2.2.3 The Fire Hose shall be 30 m long red reinforced plastic, not less than 20 mm inside diameter.

2.2.4 The Hose reels shall comply be complete with wall mounted bracket, cone seat pipe union, stop valve, hose pipe nozzle, nozzle cock, hose pipe run out guide and nozzle bracket. The hose reels shall be complete with chevrons to match the existing systems on site.

2.3 H.T. and L.T. Switchrooms to be protected by gas CO₂ extinguishing system.

2.4 Yard areas to be protected along the perimeter by one hydrant with 3 lengths of 65 mm dia. x 25 m long hoses. These hoses are to be placed in a demarcated protected area inside a weather proof box. A nozzle of compatible diameter is also to be stored in abovementioned box. The hydrant spacing shall be as determined by the risk assessment or as shown on the drawings.

CONTRACT NO.

- 2.5 Alleyways and Roadways adjacent to machine rooms are to be protected every 30 m along the perimeter, by one hydrant with 3 lengths of 65 mm dia. x 25 mm long hoses. If in open air, hoses are to be protected in steel box as described in (2.4). The hydrant spacing shall be as determined by the risk assessment or as shown on the drawings.
- 2.6 Oil cooled transformers are to be protected by a water emulsifier system capable of adequately saturating the transformer and surrounding area in the event of fire. The system shall be a high velocity water spray system. A bund wall needs to be constructed to contain the possible spillage of the entire contents of oil of the transformer.
- 2.7 M.C.C., computer and control rooms are to have at least one 9 kg or two 4,5 kg CO₂ fire extinguishers per 100 m² or part thereof. In areas where electrical equipment occupies more than 50% of the room, at least two 9 kg CO₂ extinguishers are required, not withstanding the floor area.
- 2.8 All air cooled transformers shall be protected as 2.7 above.
- 2.9 In workshop areas where cutting torches or welding machines are being used, at least one 9 kg DCP extinguisher per 200 m² are to be available.
- 2.10 **WARNING DEVICE**
- An audible warning device must be incorporated in the system capable of being heard in all sections of the protected space under working conditions with doors closed. It is to be located in a central corridor or lobby outside the largest hazard.
- This warning device is to be operated by any approved uninterruptible means, e.g. electric battery, etc., full particulars of which must be given in the tender. Triggering of the alarm must be inseparable from the cylinder release mechanism so that a warning will be raised simultaneously with the tripping of the cylinder valve releases, thus affording instant warning that manually, gas has been released into one of the hazards. There must be a warning notice in English and Afrikaans located beneath the warning device stating that the premises must be vacated immediately. The exact wording, which must be in RED lettering 25 mm high on a white ground, will be advised to the successful tenderer in due course.
- 2.11 **PAINTING**
- Painting of all pipework and other metal work shall consist of one undercoat chromate primer as a protective ground coat followed when thoroughly dry by one coat of flat paint and finished off with a final coat of high gloss first quality enamel, in a colour to be decided on site by the Engineer.
- 2.12 **WARNING BOARD**
- A metal framed plate with minimum dimensions of 150 mm x 300 mm shall be fixed to the outside of the protected areas.
- 2.13 **MAINTENANCE**
- Inspection and maintenance procedures shall generally be as discussed in NFPA 12.
- 3.0 **FIRE DETECTION**
- 3.1 **STANDARDS**

The code of practice for installation and servicing of fire detection and alarm systems shall generally be in accordance with SABS 0139 (SANS10139) , BS 5839 and European Standard EN54 or to NFPA 72 and 101 in accordance with the detailed specification.

The system offered shall be designed to comply with:

CONTRACT NO.

The Rules of the Fire Offices' Committee and the Insurance Council of South Africa governing the installation of Automatic Fire Alarm Systems.

The requirements of the Fire Officers' Committee's recommendations for the protection of Computer Suites against fire.

3.2

APPROVALS

All equipment shall carry the full approvals of either the Fire Offices' Committee, the Insurance Council of South Africa, the Underwriters' Laboratory of the United States and the Canadian Underwriters' Association, unless otherwise stated or other regulations governing their use.

3.3

GENERAL

The proposed system shall be designed to provide Early Warning Automatic Fire Detection of all areas detailed in the attached location schedule. To achieve the desired level of protection, a number of Early Warning Automatic Fire Detectors are to be positioned throughout the areas to be protected in accordance with one of the aforementioned governing bodies.

To provide immediate zonal location of the Fire incident, the areas are sub-divided into separate zones determined by the geographical layout of the premises. The detectors in each zone shall be grouped together and each group wired back separately to its own Zone Indicator in the Control Unit.

The Control Unit shall provide visual indications of alarm and fault conditions and also provide various test and monitor control facilities, later described in detail.

The detection system in areas where a Manual/Automatic Gaseous Fire Extinguishing System is installed shall be arranged on a cross zone array. No two adjacent detectors shall be on the same detection circuit.

Break Glass Manual Alarm Units are to be included in the system and will be wired into the appropriate detector zone wiring.

3.4

OPERATION OF THE SYSTEM

On the detection of the products of combustion or Visible Smoke, the following alarms will be given automatically and simultaneously:

Audible throughout the affected zone by Bells or Sirens. Visually and audibly at the Control Unit giving zonal location of the area affected. By a L.E.D. mounted on or adjacent to the affected detector. All floor void detector units should be indicated by means of an extended L.E.D. displayed within a floor void mimic diagram.

In an area where a Manual/Automatic Gaseous Extinguishing System is designed to be actuated by the detector system, the operation of any one detector shall trigger the various alarms described in the preceding paragraph.

A different and distinctive audible alarm will sound to alert personnel that the release of gas into the protected area is imminent, (after the operation of two detectors wired into separate electrical circuits or zones in the same area.)

Allow the lapse of a preset time delay of 20 - 30 seconds duration to allow personnel to evacuate the protected area into which the gas will be released.

The audible alarm will continue to sound until the system is manually reset.

3.5

ANCILLARY FUNCTIONS

The system shall be designed to activate the following functions on activation of the second circuit detectors.

CONTRACT NO.

- (a) Shut down the Air Conditioning System, fresh air ventilation and close the fire dampers.
- (b) Shut down the Computer System/Sub Station.

3.6

DETECTORS

All detectors offered must be fully approved by the F.O.C. National Board of Underwriters of New York or other recognized similar authority and shall comply with BS 5839 or NFPA 72 and 101 in accordance with the detailed specification.

Detectors are to be installed in a position where they will have maximum effect and will not be affected by draughts.

Detectors with different levels of sensitivity are to be available and interchangeable at no additional cost with the type offered.

Full details of the detectors offered are to be included with the Tender submission.

Detectors are to have a light to give an indication which detector has given a signal. Where detectors are concealed, a remote indicator is to be installed. The remote indicator shall be positioned as near as possible to the detector except in the case of floor void detectors as mentioned earlier.

The equipment shall give an alarm when the concentration of smoke in a protected space reaches 3% of the air volume.

The detector shall have a voltage rating of 24 Volts d.c. and shall be capable of withstanding 110 percent of the rated voltage continuously without damage. The normal signaling activity shall operate successfully at this increased voltage as well as at 85% of normal voltage.

The sensitivity of the detector shall be stable over a temperature range of -0°C to 50°C.

A 50% - 50% mix of ionization and photo optical smoke detectors shall be used.

When the protected risk areas give rise to smoke or fumes (such as kitchens, welding shops and loading bays) a heat detector is to be installed instead of the smoke detector. This detector is to operate on a sudden rise in temperature and if the temperature should exceed 55°C.

Detectors are to be mounted such that the sensing element is no more than 200 mm or not less than 25 mm below the ceiling or roof.

3.7

LEVEL OF DETECTION

The following minimum levels of detection are to be maintained:

1 Detector per 25 m² with a minimum of two detectors in any single room, the area is to be divided into overlapping zones.

In ceiling and floors:

Minimum coverage by detectors for each of these areas will be 50 m² per detector.

3.8

CONTROL UNIT

One Control panel shall be provided containing the following and shall comply with the requirements of BS 5839 or . NFPA 72 and 101 in accordance with the detailed specification.

The Power Unit
Alarm and Fault Indicators

CONTRACT NO.

Audible Alarm Relay
Alarm Silencing Switch
Test and Reset Switch
Zone Isolation Switches
Fire Brigade Signaling Relay
Automatic Zone Monitoring
Facilities to link up to central monitoring system.

A standby power unit incorporating sealed lead acid or NiCad batteries should be capable of providing standby power for the monitoring of the complete system for a period not less than 72 hours plus 1 hour full alarm load.

3.9 WIRING

The signaling circuits must be wired in approved galvanized conduit by means of 0,8 mm² 660V grade PVC insulated flexible conductors complying with the relevant codes and requirements or with fire resistant cables.

The audible alarms must be wired in 600V grade PVC Insulated flexible conductors calculated to ensure that there is not more than 2 volts drop at full alarm load.

3.10 FIRE BRIGADE SIGNALING FACILITIES

The control unit must incorporate the necessary features to signal a fire or fault to the Fire Brigade via Telkom lines. The contractor must supply the signaling equipment at both the transmitting and receiving ends. It will therefore be necessary to consult the local Fire Brigade to ascertain what type of equipment is required.

3.11 BLOCK PLAN

An approved block plan indicating the various zones according to the appropriate reference numbers of the zone indication lights on the control unit must be mounted next to the control unit. This block plan must be discussed with the Engineer before it is produced.

3.12 OPERATING INSTRUCTIONS

Instruction cards, indicating clearly in English and Afrikaans the procedure to be followed in the event of a "Fire" alarm, are to be framed in non-ferrous material frames and neatly mounted on the walls alongside the control and external indicator panels respectively, where they can be clearly read.

In the case of the control panel, the instruction card must also state clearly the procedure to be followed in the event of a "Fault" alarm.

3.13 TESTING OF SYSTEM PRIOR TO HANDING OVER

In outlining the Engineer's requirements, small items which may be of a proprietary nature will, for obvious reasons, have been omitted but, notwithstanding this, it is the full responsibility of tenderers to include all equipment necessary to present, on completion an installation conforming to the latest techniques of highly sophisticated fire engineering practice.

Testing of the system after completion shall be carried out in the presence of, and to the satisfaction of the Engineer and the Client. The results of the tests shall comply with the requirements laid down by the Fire Protection authorities referred to above.

The tests must include simulated fire tests in each area of the installation and tests to prove the efficient operation of all aspects of the system, to the satisfaction of the Engineer. The contractor must arrange for the necessary equipment to be available to conduct the test, ie. asbestos tray with lid, a "bee-smoker" and the burning material, etc

The system shall be pressure tested and a test certificate issued before the system is installed and commissioned for service.

CONTRACT NO :

PRASA

PRASA STATION UPGRADE : KWAMASHU SUB-CORRIDOR 1 : MOSES MABIDA TO KWAMASHU CLUSTER 6

FIRE PROTECTION , DETECTION AND ALARM SYSTEM INSTALLATION

ANNEXURE "A"

SCHEDULE OF SOURCES OF SUPPLY OF MATERIALS

Bidders shall state hereunder the proposed manufacture and source of supply of materials for use in the execution of the Works: (ONLY COMPLETE WHAT IS RELEVANT TO THE PROJECT)

MATERIAL	TYPE OR TRADE NAME	SOURCE	SPECIFICATION S/ REF NO.
a) Deluge and sprinkler piping			
b) Deluge control valve			
c) Deluge or hydrant butterfly isolating valves			
d) Pipe hangers / supports			
e) Pipe and fitting galvanising			
f) Pipe and fitting painting			
g) Flow switch			
h) Pressure switch			
i) Detectors			
j) Break glass units			
k) Siren			
l) Extinguishers			
m) Hose reels			
n) Hydrants			
o) Fire wiring			
p) Conduiting			
q) Fibre optic cabling			
r) Ethernet cabling			
s) Monitoring panel programming			
t) Electric equipment			
u) Control panel and other controls			
v) Electrical equipment			
w) Cables			
x) Control / instrumentation			
y) Infra red heat detectors			
z) Other i)			
ii)			

COMPANY NAME :

SIGNATURE :

NAME :

ADDRESS :

.....

DATE :

CONTRACT No.

PRASA

PRASA TRAIN STATION UPGRADES – KWAMASHU CORRIDOR 1 : MOSES MABIDA TO KWAMASHU CLUSTER 6

AIRCONDITIONING AND VENTILATION INSTALLATION

DETAILED PROJECT SPECIFICATION

1.0 GENERAL

1.1 THE COMPLETE INSTALLATION

The meaning and intent of this specification is that at the completion of this Contract or Sub-Contract, the Employer shall be provided with a finished installation with all equipment whether shown or not, complete in all respects, tested and passed as ready for use.

The Tenderer shall at the time of tendering, draw the Engineers attention to any omissions or discrepancies between the specifications and drawings and request clarification with the Engineer. The tenderer shall ensure that all equipment offered shall fit in the positions shown.

1.2 REGULATIONS

1.2.1 All plant and equipment installed and tested under this sub-contract shall comply with the requirements of the regulations as described under the relevant clauses of the Engineering Standards document in this enquiry.

1.2.2 This sub-contract shall also comply with the requirements of the following regulations :-

1.2.2.1 SANS 10142 : “Codes of practice for the wiring of premises “as amended.

1.2.2.2 SANS 10400 : “The application of the National Building Regulations” as amended.

1.2.2.3 The Occupational Health and Safety Act (85 of 1993) as amended and contingent regulations.

1.2.2.4 SANS 10147 : Code of Practice for Refrigeration and Air-conditioning Systems as amended.

1.2.2.5 SANS 1125 : Standard Specification for Room Air conditioners.

1.2.2.6 The by-laws of the local Municipality, or any other department responsible for such laws.

1.2.2.7 The local Fire Department Regulations.

1.2.2.8 PRASA Engineering Standards, Manuals and Specifications

1.2.2.9 Any other applicable statutes and regulations.

1.2.3 REFERENCE SPECIFICATIONS AND STANDARDS

1.2.3.1 The latest revision of any specification, code of practice or standard referred to in this specification or PRASA Engineering Standards or Specifications shall apply whether stated or not in this specification.

1.2.3.2 Equipment, SANS materials and operational methods shall, in order of preference, comply with the relevant SABS, ISO, BS, DIN or equivalent American Standard, whether prescribed or not.

CONTRACT No.

1.3 SPECIAL REQUIREMENT

1.3.1 The tenderer shall submit with his tender the following :-

- a) A Quality Control Plan
- b) Safety Plan
- c) Health Plan and Programme
- d) Environmental Plan

Failure to provide the above may disqualify the tender submitted. The tenderer shall contact the Engineer if he is uncertain of what is required or if additional information is required.

Strict quality control measures must be in place and all work must comply with these requirements including the site regulations applicable to contractors. The requirements of the OHS Act and contingent regulations as well as the Clients requirements relating to quality, safety, health and environment must be strictly adhered to. Contractors will be required to attend safety induction courses at the Client's premises where required.

1.4 THE SITE

The details and locations of the various sites are found elsewhere in the tender documents. Tenderers are advised to visit all the sites before submitting the tender as claims will not be entertained for lack of knowledge of site conditions or existing equipment.

1.4.1 Site Visit

The Tenderer is advised to visit the site to ascertain any additional information he may require to present his tender. Arrangements can be made with the Client or Engineer to meet on site if required.

1.5 PROGRAMME

1.5.1 The Contractor or Sub-Contractor shall undertake to complete the supply, delivery and fixing where applicable of the various sections of the work in strict accordance with the main Contractor's construction programme.

1.5.2 Commencement and completion dates for installation of the various portions of the work on site shall be determined with the Main Contractor.

1.5.3 The construction programme shall be obtained from the Client or Main Contractor.

1.6 MATERIALS AND CONSTRUCTION

1.6.1 General

All materials and workmanship shall be the best quality available of the type specified and shall be neatly, securely and properly worked and fixed in a workmanlike manner to the satisfaction of the Engineer and strictly in accordance with the suppliers printed instructions where this is applicable.

Cognizance shall be taken of the corrosive and marine atmosphere prevailing at the site when supplying all materials and performing work and with due regard to the long-term durability and maintenance-free performance required.

The tenderer shall determine the type and make of the existing installations on site and the new equipment and installation shall be similar to or closely match the existing where applicable.

The Tenderer shall furnish information on the attached Equipment Schedule showing the type of equipment and installation that is being offered.

CONTRACT No.

Strict quality assurance controls will be in place and the work must comply with these requirements.

- 1.6.2 All equipment used shall be corrosion-resistant or suitably protected against possible corrosion by means of approved long-lasting corrosion-resistant coatings such as epoxy or urethane-based or equal approved materials.

1.7 GUARANTEE PERIOD, SERVICING & MAINTENANCE

During the guarantee period the Contractor shall be required to immediately upon request, rectify any defects and evidence and causes of any deformation of the air-conditioning and ventilation systems. The entire HVAC system shall be guaranteed for a period of twelve months from date of acceptance and handover of the installation. During the guarantee period, the HVAC system shall be maintained and serviced free of charge.

All defective equipment and plant shall be replaced free of charge by the contractor during this period.

1.8 CHASING AND SLEEVES

Chasing, forming sleeves or holes through any part of the structure or finishes will not be permitted without the prior written consent of the Engineer.

The Contractor shall at his own expense replace or make good any damage caused as a result of his own or his workmen's negligence or otherwise, to the complete satisfaction of the Engineer.

1.9 SERVICE CONNECTIONS

Electrical and water connections will be provided by others. The contractor shall within one week of being notified that he has been awarded the contract, submit drawings indicating connections required, drainage points and electrical power requirements. The Contractor shall make off all final connections to the various service and drain points.

1.10 LIFTING EQUIPMENT

The contractor shall make his own arrangements for all lifting equipment, scaffolding etc in the execution of his work. All rates shall include for all lifting equipment and scaffolding etc.

1.11. DRAWINGS AND MANUALS

Prior to manufacture or supply of materials and within one week of being awarded the contract, the Contractor shall submit three (3 No.) complete sets of all working drawings including plant, ductwork layouts, electrical plant DB and wiring diagrams including builder's work and civil requirements for equipment, plinths, ductwork, pipe runs, drains, etc. to the Engineer for approval. One (1 No.) drawing will be returned to the Contractor approved or marked up showing required amendments.

On completion of the works three (4 No.) complete sets of the "as-built: drawings, wiring diagrams, plant manuals and operating instructions shall be submitted to the Engineer. The manuals and operating instructions shall be comprehensive and to the Engineer's approval. The manuals shall be provided in both hard and soft copies.

1.12 FINAL INSPECTION

A final inspection will be conducted jointly by the Client and or Engineer and with the Contractor on satisfactory completion of all official tests. This inspection may be phased where a sub-contract is to be taken over in sections by arrangement with all parties concerned.

CONTRACT No.

A list of defects, remedial or incomplete works requiring attention will be drawn up following this inspection and issued to the Contractor for his immediate attention.

Once the items listed have been attended to, a completion certificate will be issued by the Engineer or Client.

1.13 TESTING AND COMMISSIONING

Final testing and commissioning of the system may be necessary when the building is occupied. The time required for this would depend on the complexity of the services although the minimum inconvenience shall be caused.

Testing and commissioning data shall be recorded and submitted to the Engineer for comment and approval. These records shall also be included in the operating and maintenance manuals.

1.14 ELECTRICITY SUPPLY AND OTHER ELECTRICAL/CONTROL REQUIREMENTS

The electrical supply is a 400/230 V 3 phase 4 wire system to be provided by PRASA or their duly appointed electrical contractor.

The electrical supply terminating in the control panel or aircon and ventilation equipment or units will be made available by others at a point centrally adjacent to the unit(s) requiring electrical power.

The interconnecting power and control wiring forms part of this sub-contract as well as the power cabling between the abovementioned control panel and the airconditioning and ventilation equipment including connecting up.

Tenderers shall submit with their offer, the power requirements of the systems as well as the points where required. Provision shall be made for the shutdown of air-conditioning and ventilation on input of a signal from the fire detection installation.

Fire dampers shall be provided on all ductwork between external units and the conditioned spaces, at branch ducting or as shown on the drawings.

1.15 OPERATING AND MAINTENANCE MANUALS AND TRAINING

The contractor shall supply and deliver to the Clients Representative or Engineer four (4) hard copies and 4 soft copies of the operating and maintenance manuals (O & M manuals) and data packs on successful testing and commissioning of the complete HVAC, mechanical and instrumentation installations for the project made up as follows as a minimum:

- Electrical COC's
- As built control panel and MCC layouts , component lists and wiring diagrams
- As built motor control panel layouts and wiring diagrams including component lists
- MCC quality control and test reports
- FAT & SAT inspection and test reports
- Instrumentation equipment and details
- Instrument and electrical device settings and set-points
- Cable specifications and cable schedule
- All equipment specifications and literature with brochures
- Cable block diagrams
- Specifications and details of all electrical and instrumentation equipment used on the project including literature and brochures.
- Details of all aircon and ventilating plant, vent fans, valves, pumps, motors , grilles , louvres etc
- Details of and other mechanical equipment used on the project

CONTRACT No.

- All maintenance and servicing schedules of all electrical, instrumentation and mechanical equipment including airconditioning and ventilation equipment
- The operating and maintenance instructions for all electrical, instrumentation and mechanical equipment, valves, pumps, fans, motors, airconditioning equipment, ventilation equipment etc
- OEM manuals of all mechanical, electrical and instrumentation equipment
- Fault finding procedures and instructions
- Supplier details of all major equipment
- QCPs of all equipment
- Calibration certificates of instruments and other equipment
- Guarantee certificates
- Pipework and plant drawings
- Refrigerant piping and equipment layouts
- Ducting layouts
- As built drawings
- Training schedule provided to the Client's operational and maintenance staff

The details of the contract and details of the contractor and sub-contractors and supplier details of all major equipment must be included in the manuals. The files must comprise an index with fly sheets.

The contractor shall submit draft copies of the manuals to the Engineer for comment and Approval prior to compiling and submitting the final manuals. The manuals and documents must be available before the final commissioning and hand-over of the project to the Client.

The above are minimum requirements and the contractor shall submit all other documents deemed necessary for the operation and maintenance of the plant.

Training :

Full training shall be provided by the contractor to the Client's operating and maintenance staff on the operating and maintenance of the entire airconditioning and ventilation installation. The training shall be in a well documented format and must accompany a register of attendees and signed by all attendees and the training facilitator

1.16 SCOPE OF HVAC CONTRACT/SUB-CONTRACT

This sub-contract is for the following :-

The total design, supply all materials, fabrication, delivery to site, storage, lifting, hoisting, installation, testing and commissioning and maintenance or servicing for 12 months of the complete air-conditioning and ventilation of the buildings as depicted on the drawings and scheduled below :-

Scope :-

a) KWAMASHU TRAIN STATION : - NOT APPLICABLE

- Strip and remove the existing midwall split aircon units to the station ticket offices and parts of the external condensing units that have been vandalised, stripped and removed
- Supply and installation of new aircooled split midwall aircon units in the Ticket Offices and Station Staff Offices including indoor air handling units and outdoor condensing units with refrigeration piping, condensate drain piping and remote controls
- Supply and installation of wall mounted extract fans in the Ticket Office Toilet and Station Staff Office Toilets
- Disconnect and remove existing console type wall aircon units in the existing staff and station offices

- Service and re-commission some midwall split aircon units that do not work properly in the existing station and staff offices
- Testing and commissioning of the new HVAC system or aircon units

b) AVOCA TRAIN STATION :

- Strip and remove the existing midwall split aircon units to the station ticket offices that were damaged, vandalised or stripped and removed
- Supply and installation of new aircooled split midwall aircon units in the Ticket Offices and Station Staff Offices including indoor air handling units and outdoor condensing units with refrigeration piping , condensate drain piping and remote controls
- Supply and installation of wall mounted extract fans in the Ticket Office Toilet and Station Staff Office Toilets
- Testing and commissioning of the new HVAC system or units

c) REDHILL TRAIN STATION : - NOT APPLICABLE

- The Client has advised that no work is required to the aircon and ventilation installation for the Redhill Train station as the midwall split aircon units, ducted in-ceiling aircon systems and ventilation systems are functional and compliant.

d) GREENWOOD PARK : - NOT APPLICABLE

- Strip and remove the existing midwall split aircon units to the station ticket offices that were damaged , vandalised or stripped and removed
- Supply and installation of new aircooled split midwall aircon units in the Ticket Offices and Station Staff Offices including indoor air handling units and outdoor condensing units with refrigeration piping , condensate drain piping and remote controls
- Supply and installation of wall mounted extract fans in the Ticket Office Toilet and Station Staff Office Toilets
- Testing and commissioning of the new HVAC system or units

e) BRIARDENE TRAIN STATION : - NOT APPLICABLE

- Strip and remove the existing midwall split aircon units to the station ticket offices that were damaged , vandalised or stripped and removed
- Supply and installation of new aircooled split midwall aircon units in the Ticket Offices and Station Staff Offices including indoor air handling units and outdoor condensing units with refrigeration piping , condensate drain piping and remote controls
- Supply and installation of wall mounted extract fans in the Ticket Office Toilet and Station Staff Office Toilets
- Testing and commissioning of the new HVAC system or units

f) UMGANI ROAD TRAIN STATION - NOT APPLICABLE

- Strip and remove the existing console wall aircon unit in the ticket office that does not work or is not required as the room has a midwall split unit.
Patching up of the opening is to be done by the civil or building contractor.

g) MOSES MABIDA - NOT APPLICABLE

- The Client has advised that no work is required to the aircon and ventilation installation for the Moses Mabida Train station as the midwall split aircon units,

CONTRACT No.

ducted in-ceiling aircon systems and in-ceiling cassette aircon units including ventilation systems are functional and compliant.

Type of aircon systems (new and existing) :

The air-conditioning systems shall consist of a combination of midwall split aircooled , ducted in-ceiling split aircooled units and in-ceiling cassette air conditioning units including remote controls , fixed controls, control thermostats, electrics, power and control cabling, refrigeration piping , insulation, condensate drains etc. complete.

h) Fresh air or extract air :

The fresh air to the buildings shall consist of wall mounted supply or extract air fans.

The ventilation systems for some of the train stations are existing and needs to be assessed and repaired and serviced as required. These consist of wall mounted extract fans and duct mounted fans and flexible ducted systems with air valves and supply or extract air grilles and louvres.

1.17 LIST OF DRAWINGS

The drawings scheduled below and for tender purposes only and form part of the contract documents and shall at all times be read in conjunction with this specification :-

SCHEDULE

DRAWING NO.	DESCRIPTION

Note :	Refer to the drawing schedule or list found elsewhere in the tender documents. The architectural drawings will be provided. The mechanical HVAC drawings will be provided at construction stages and some work will be directed by the Engineer on site.

2.0 PROJECT SPECIFICATION

NOTE : The layouts as shown on the drawings is a conceptual design and layout only. Tenderers are free to offer designs and layouts to suit standard plant etc. but should generally observe the requirements of the conceptual design and layouts.

2.1 DESIGN INFORMATION AND LAYOUTS and REFERENCE DOCUMENTS

The design, heat gain, cooling requirements, air quantities and other information presented below and on the tender drawings is for tender purposes only. Tenderers shall re-check these designs and calculations and satisfy himself that the information given is sufficient and in accordance with the necessary requirements for the effective operation of the plant. Claims for equipment not quoted for or under-sized will not be entertained later.

The final cooling loads and equipment design and selection shall be the responsibility of the tenderer.

Claims for lack of knowledge of site conditions and of existing equipment installed on site will not be entertained. All equipment to be repaired , serviced, removed, replaced etc shall be assessed on site by the tenderer before submitting the tender.

Tenderers are free to offer equipment and plant of different capacities and quantities. He shall qualify this together with his offer in the equipment schedule and return this with the tender.

Tenderers shall refer to the PRASA Standards and Specification Documents for the standard specifications and requirements for HVAC systems:

CONTRACT No.

Tenderers shall obtain copies of the above standard documents directly from PRASA where available.

2.2 BUILDING CONSTRUCTION

The train station buildings are existing with some having been vandalized and damaged. The details of the buildings are included on the architectural drawings included with the tender.

However the contractors are advised to visit site to acquaint themselves with the buildings before presenting their tender.

2.3 DESIGN CRITERIA FOR DUCTED AIRCONDITIONING – CONTROL ROOM BUILDING

It is essential that the design criteria be strictly adhered to, especially with regard to the relative humidity limits :-

2.3.1 Relative Humidity: Maximum 50% $\pm$ 5% rh

Inside Temperature: 21-23° Celsius
 $\pm$ 2° Celsius

Anticipated summer temperatures of ambient air 36° C DB and 27° C WB
Altitude: Sea level

Noise level in occupied zones: not to exceed NC level of 35.
Air Velocities in occupied zones: not to exceed 0,5m/s.

2.3.2 Chemically Active Substances

The concentration limits of chemical substances in the air or environment are mild.

The above shall be taken into account in the design and installation of the air-conditioning system. The internal air quality shall be G1 (mild).

2.3.3 Pressurization, Ventilation and Filtration

General

The buildings are not to be pressurized to prevent ingress of dust or air born contaminants. Only filters are provided on the aircon units return air system.

A sufficient quantity of filtered make-up air is to be supplied to these areas to maintain a fresh air supply. The fresh air requirements and quantities shall be introduced to all airconditioned areas to comply with regulation SANS 10400 latest amendment with a minimum of 7,5 l/sec per person..

2.3.4 Design Conditions for the Aircon Units for the Ticket Offices, Station Managers Office and Security Office

Some of the information is presented below or used for the calculation of the cooling loads. The contractor shall determine other data that is not provided for calculation of the final cooling loads.

2.3.4.1 Heat Gains and Other Design Data Midwall Units for Ticket Offices, Staff Offices, Station Managers Office and Security Office (Data to be supplied by Tenderer)

	Description	Data Submitted	Data to be supplied by

			tenderer at tender stage
a)	Design temperature and humidity	23° ± 2°C 50% RH	
b)	Building Fabric Heat Gain (window, walls, floor and roof)	To be calculated from layouts	Watts
c)	Lighting	900 Watts	Watts
d)	Main DB & Sub boards	100 Watts	Watts
e)	UPS	2 KVA	Watts
f)	TV or computer screens	2000 Watts	Watts
g)	People (occupancy)	2 (average)	400 Watts
h)	Other electrical loads	1000 Watts	Watts

2.3.5 **SPECIFICATION OF SPLIT AIRCOOLED AIR-CONDITIONING UNITS**

2.3.5.1 **DESIGN SPECIFICATIONS :**

2.3.5.1.1 **Midwall split aircon units**

The split aircooled midwall aircon unit shall be supplied and installed and shall comply to the PRASA standards and specifications (where available) and to match existing systems as far as possible as follows :

- Cooling capacity of each unit – 2,63 kW cooling (9000Btu/hr min) for the smaller offices or 4,4 KW cooling (15 000Btu/hr) for the larger offices
- Midwall split aircooled type with remote or fixed controls
- In attractive finish
- Refrigerant ; R407C or similar approved
- Compressor : Scroll type or similar approved
- Evaporator fan and air flow : to suit manufacturer's recommendations (direct or belt driven)
- Condenser : to suit manufacturer's recommendations
- Filter : 70% efficiency min
- All brackets to be hot dipped galvanized
- Corrosion treatment on unit, coils and fins to be provided : Bluechem or similar approved
- Power : 400V/230V, 50 Hz

2.3.5.1.2 **SPECIFICATIONS OF EXISTING AND NEW UNITS**

The model number and cooling capacities of the in-ceiling ducted, midwall split and ceiling cassette units shall be determined by the aircon contractor.

The new midwall split aircon units shall match the existing and be inverter type as supplied by Daikin or similar and equal approved.

Full technical details, specifications and brochures of the aircon units and fans shall be submitted with the tender.

2.3.5.2 **STANDARD SPECIFICATICATIONS AND REQUIREMENTS FOR SPLIT AIRCOOLED AIRCONDITIONING UNITS**

The outdoor condensing units of the split A/C system shall be mounted on galvanized supports. Some units are to be wall mounted and others installed on concrete plinths to be provided by the builder as specified or shown on the drawings. Workshop drawings will have to be supplied by the AC subcontractor for adequate support of the units with suitable feet for roof mounted units so as to not damage the waterproofing membrane.

CONTRACT No.

Each air handling unit shall be complete with multi-vane centrifugal air-recirculation fan, cooling coil condensate tray, air filter, adjustable front swinging discharge grill. Air filters shall comply with ASHRAE Test Standard 52-76 and they shall be the renewable or serviceable type and shall be fitted to all types of evaporator indoor units.

Each condensing unit shall be equipped with sealed compressor, air cooled condenser and shall be mounted on a heavy gauge steel base pan. Provision shall be made to prevent liquid refrigerant feed back to the compressor. Oil traps shall be provided where condenser units are mounted at high level above air handlers.

Ducting :

All airconditioning ducting where required and specified shall be insulated to SMACNA specifications. Ducting to be installed complete with wall or slab mounted hangers and supports with bolts, nuts, washers etc complete. Ducting to include of jointers and ends of ducting to be blanked off. Airconditioning ducting shall be minimum 1.2mm thick galvanized sheetmetal and be externally insulated with external insulated 25mm FRK insulation. Velocities in duct not to exceed 7m/s.

Ducting to be supported off the roof slab with hot dipped galvanized hangers or other brackets. Ducting to be supported at least every 800mm

All rigid and flexible ducting shall be free from vibration, stress etc. Vibration dampers shall be installed where required.

All units shall be supplied in an attractive finish. The indoor and outdoor units including coils and fins shall be treated for corrosion using "Bluechem" or similar treatment.

Copper tubing and electrical cables, between the air handling units and condensing units shall be installed in accordance with the supplier's recommendations. Provision shall be made for wall sleeves or cores for the piping.

Each unit shall further be provided with a minimum 25mm copper or PVC drain pipe. These drain pipes shall terminate in the nearest gully, drain, waste or sump which will be determined later during construction. The drain shall be trapped and fitted with 13mm closed cell insulation.

All refrigeration piping and control cables against the outside or internal walls shall be covered with or installed in adequately sized PVC trunking. Colour of the trunking shall be confirmed with the engineer prior to ordering and installation.

All refrigerant suction lines shall be insulated with 10mm Armaflex or Thermaflex type 33 SE periodically improved (crossed linked) polyethylene foam tube insulation with quick zip fastener or any other similar approved method. Refrigeration piping shall have a insulation of minimum wall thickness of 1" (1 inch)

All units shall be supplied complete with remote or hard-wired temperature controller as indicated in the drawings or bills of quantities. Each room or zone shall have its own wall mounted controller wired into the units.

2.3.6 Ventilation to Toilets

Luft or similar and equal approved extract fans shall be supplied and installed type Luft Vitro 6/150-300m³/hr 45W 230V automatic for the smaller areas and Luft Vitro 9/230-400m³/hr 46W 230V automatic for the larger areas.

Full technical specifications, details and brochures of the fans to be used shall be submitted with the tender.

Door grilles where required shall be fitted to the doors for the supply or extract air. The system proposed is shown on the tender drawings to be submitted during the construction stages

CONTRACT No.

Openings for the fans and flashings or waterproofing shall be undertaken by the airconditioning contractor. Suitable steel frames that are hot dipped galvanized shall be provided for fans installed in side cladding and be included in the price of the fan installation.

The fans shall be supplied from a switched electrical isolator mounted adjacent the fan provided by others. Stop/start push buttons shall be provided in the DBs for the control of the fans by the electrical contractor.

2.3.7 NOTE

The refrigerant piping and control cabling shall be run in ceiling spaces and in trunking. Exposed pipes shall be installed in PVC trunking. The air-conditioning unit casings, coils and fins shall be treated for corrosion. The aircon unit/s and fans shall be connected to the power point to be provided by others or electrical contractor. The units shall be guaranteed and maintained / serviced for a period of 12 months from the beneficial occupation date.

2.3.8 ITEMS OR EQUIPMENT TO BE PROVIDED BY THE CLIENT (OR THEIR OTHER SUB-CONTRACTORS)

The following shall be provided by the Main Contractor or their other specialist sub-contractors:

- Plinth for the aircon unit where required
- Openings in brickwork, doors etc for grilles , louvres , ducting , pipework etc
- Make up cooling water and return water to the aircon unit including valves etc
- Electrical power supply to the main aircon plant , aircon units and extract or supply air fans

2.4 SCHEDULE OF EQUIPMENT OFFERED

(To be completed by all tenderers – compulsory)

Details of all air-conditioning and ventilation systems offered shall be provided by all tenderers as requested below. Failure by tenderers to complete the schedule may result in his tender not being considered.

2.4.1.1 Split Midwall or Ducted In-Ceiling Air- Cooled Air-conditioning Unit (Print and submit one each for each type or size of unit)

a) Manufacturer		
i) Air handler	:	.....
ii) Condensers	:	.....
iii) Mounting type	:	.....
b) Model No. - Air handler	:	.....
- Condensers	:	.....
c) Capacity		
i) Cooling (kW)	:	.....
ii) Heating (kW)	:	.....
iii) Air Flow (m ³ /s) - Air handler	:	.....
iv) Air Flow (m ³ /s) - Condenser	:	.....
d) Compressor		
i) No of units	:	.....
ii) Make	:	.....
iii) Type	:	.....
iv) Size/Model No.	:	.....
v) Operating voltage & current	:	.....
e) Evaporator Coils		

CONTRACT No.

- i) Face Area (m²) :
- ii) No. of rows :
- iii) Fin spacing :
- iv) Face Velocity. :
- v) Materials used :
- Tubes :
- Fins :
- Drip Tray :
- On Coil Temp : DB
- Off Coil Temp : WB
- : DB
- : WB
- f) Evaporator Fan
 - i) No. per unit :
 - ii) Fan speed :
 - iii) Type of drive :
 - iv) Material of manufacture. :
 - v) Static pressure :
- g) Evaporator Fan Motor
 - i) No of units :
 - ii) Make :
 - iii) Model and size :
 - iv) Type. :
 - v) Voltage & current :
- h) Condenser Tubes
 - i) Face Area :
 - ii) No. of tubes :
 - iii) Materials used :
 - iv) Fins :
- i) Heating
 - i) Type :
 - ii) Rating Capacity (kw) :
 - iii) No. of elements fitted :
 - iv) No. of stages. :
 - v) Voltage :
- j) Air Filters
 - i) No of units :
 - ii) Size :
 - iii) Face Velocity :
 - iv) Rate Efficiency (Ashrae). :
- k) Refrigerant pipe sizes :
- l) Refrigerant Type
 - i) Chemical composition :
 - ii) Charge mass :

CONTRACT No.

- m) Insulation type
- i) Ducts :
 - ii) Refrigerant piping :
- n) Noise level (DB) :
- o) Weight of air-conditioning plant
- Air handler :
 - Condensers :
- p) Physical size of air-conditioning plant
- Air handler :
 - Condensers :
- q) Corrosion treatment on A/C unit :
- r) Horizontal or vertical pattern? :
- s) Make up Air/Ventilation air duct size :
- t) Make up air weather louver size, air quantity and pressure drop
- u) Electrical power requirements (Volt/Amps):

2.4.2 Main aircon plant or aircon units electrical panel or electrical requirements

- Voltage :
- Starting current :
- Running current :
- Controls offered and ; :
- Indication :
- Manufacturer of panel :
- Size of panel :
- Wall/Floor mounted :
- :
- :
- Type of sheetmetal :
- Paint spec. :
- Gas sniffer units :
- Humidity transmitter :
- Other details :
- :
- :

2.4.3 Supply Air Diffusers/Grilles

- a) Quantity
- b) Type and Make
- c) Sizes
- d) Air Flow/ Pressure Drop / throw (m)
- e) Velocity
- f) Throw
- g) Type of Fabrication

CONTRACT No.

- h) Finish
- i) Corrosion Treatment

2.4.4 Supply Air Disc Valves

- j) Quantity
- k) Type and Make
- l) Sizes
- m) Air Flow/ Pressure Drop / throw (m).....
- n) Velocity
- o) Throw
- p) Type of Fabrication
- q) Finish
- r) Corrosion Treatment

2.4.5 Return Air Grilles

- a) Quantity
- b) Type and Make
- c) Sizes
- d) Air Flow/ Pressure Drip
- e) Type of Fabrication
- f) Finish
- g) Corrosion Treatment

2.4.6 Weather Louvres

- h) Quantity
- i) Type and Make
- j) Sizes
- k) Air Flow/ Pressure Drip
- l) Type of Fabrication
- m) Finish
- n) Corrosion Treatment.....,

2.4.7 Ducting – General

- a) Manufacturer of ducting
- b) Supply air sheet metal duct sizes
- c) Supply air flexible duct sizes where required
- d) Insulation
- e) Velocity of supply/return air ducts
- f) Supply air ducts sizes :
 - i)
 - ii)
 - i)
 - ii)
- g) Return air ducts sizes :
 - i)
 - ii)

CONTRACT No.

- i)
- ii)

2.4.8 Ventilation fans

- a) Manufacturer of fans
- b) Make and model no
- c) Power requirements
- d) Other information provided

2.4.9 Any additional items which have been omitted but which the tenderer deems necessary for the effective operation of complete plant briefly described below :-

- a)
.....
- b)
.....
.....

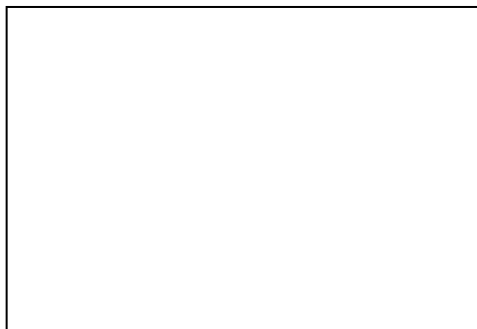
SIGNATURE OF CONTRACTOR :

NAME OF SIGNATORY :

NAME OF COMPANY:

DATE :

COMPANY STAMP :



PRASA

AIRCONDITIONING AND VENTILATION INSTALLATION

ANNEXURE "A"

SCHEDULE OF SOURCES OF SUPPLY OF MATERIALS

[illegible]

SIGNATURE :

NAME :

ADDRESS :

DATE :

CONTRACT No.

PRASA PRASA TRAIN UPGRADES KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU CLUSTER 6

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

A. PASSENGER LIFTS

1.0 SCOPE OF WORK

1.1 KWAMASHU TRAIN STATION - NOT APPLICABLE

- KwaMashu Train station has two (2) off existing lifts supplied by Schindler Lifts that have has not been used in a while, does not work and required major rebuilds and modernization
- The existing lifts has single doors with two stops (concourse level and station platform level)
- Access the existing 2 off lifts supplied and installed and provide a detailed report on its condition and what needs to be done for them to be operational again
- Repair, re-build, modernize and service the existing 2 off new lifts
- Test and re-commission the existing 2 off lifts
- Provide the O & M manuals and compliance and data sheets.
- Provide the hand-over data packs

1.2 MOSES MABIDA TRAIN STATION - NOT APPLICABLE

- Moses Mabida train station has two (2) existing passenger lifts each with single doors and two stops (concourse level and station platform level) . The Client has advised that no work is required on these lifts as they are fully operational and compliant.

2.0 NEW LIFT SPECIFICATIONS

All new lifts shall comply with the following specifications and requirements and shall be designed, manufactured, installed, and commissioned for new installations and where required to replace the existing lifts that have been damaged and vandalized. The lift contractor shall assess the existing lifts on site before submitting their tenders. All lifts where required is to match existing and be modern in design and installation methods :

2.1 Standard and Technical Specification (NEW LIFTS)

Main data :

Solution	Schindler or Kone Lifts (OEM) or similar and equal approved to match existing FOR NEW LIFTS.
Design	Electrically-operated passenger lift for the transport of people and other loads.
Rated load	1000 kg / 13 persons - to match existing (to be verified by the lift supplier)
Rated speed	1 m/s
Travel height	6.3 – 6,5 m (to be verified by the lift supplier)
Stops	The lift has 2 stops and 2 entrances arranged on the main access side. (on platform and concourse levels)

CONTRACT No.

**PRASA
PRASA TRAIN UPGRADES
KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU
CLUSTER 6**

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

Underlying standards Design, manufacture and installation shall be in accordance with the following standards :
-EN81-20
-SABS1543, SABS1545

Shaft :

Shaft size 2400 mm wide x 3000 mm deep (to be verified by the lift supplier)

Shaft pit depth 1150 mm (to be verified by the lift supplier)

Shaft headroom 3980 mm (to be verified by the lift supplier)

Shaft Concrete (existing)

Visual kit for shaft Not required

Mechanical components

Counterweight Counterweight sling with sliding guide shoes for balancing out the cage weight and half the useful load.
Accessible spaces under the counterweight's passageway shall not be permitted without additional safety measures.

Solid counterweight guide rails Not required

Guides and attachment Guide rails shall be provided for the cabin and the counterweight made from cold-drawn special profiles with the required guide supports. The guide rail brackets shall be attached to concrete wall or anchor rails provided by the lift supplier and installed on site.
Guide rail fixing type: Expander bolts (wall)
SLG21

Ropes Steel hoisting ropes for the cabin and the counterweight in the required quantity and dimension in accordance with official safety standards shall be provided.

Cabin :

Cabin measurements mm wide x mm deep x 2200 mm high minimum (size to be determined by lift supplier)

Construction TS – Cabin Construction

Fittings The Architect shall have possible structural freedom to adapt the visual appearance of the lift in according to his needs. The fitting out of the cabin can be freely chosen from available materials and finishes, either from a standard or premium material offering ranges. Changes to the finishes offered in this tender document shall be confirmed at time of construction.

CONTRACT No.

**PRASA
PRASA TRAIN UPGRADES
KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU
CLUSTER 6**

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

Cabin ceiling and lighting	Ceiling type: CL88 Lighting: LED energy efficient spot lights Finishing: ST43 Silver brushed stainless steel
Cabin walls	Panel orientation: Vertical All walls: ST43 silver brushed stainless steel
Cabin front wall	ST43 Silver brushed stainless steel
Cabin floor	PVC covering D26 - Lava stone, PVC
Mirror	Mirror type: MR1 Mirror size: FW/PH - Full width / partial height Mirror location: Full width on rear wall
Handrail	Handrail shall be on rear wall Handrail type: HR61 - Round Handrail material: ST4 - Silver brushed stainless steel
Skirting	ST43 Silver
Operating and signal elements, cabin	KSC276 full height flush COP FH Full height Faceplate material: Silver brushed stainless steel COP button shape: Square Tactile marking with braille Door close button included Additional Options: COP key switch type: Thin key switch

Doors :

Door measurements	900 mm wide x 2100 mm internal height (to be verified by lift supplier)
Door type	Landing door product type: AUG
Door design	1C, To-panel centre opening
Cabin door	AMD Z door Car door finish: Stainless steel. ST43 Silver steel To prevent injury to people by the self-closing doors, the cabin door shall be fitted with a closing force limiter. The risk of damage to the door system or objects in the door area shall be limited. CDO safety device interface: Curtain of light, fix to sill (CF)
Car door sill type (A-side)	N: Sill without carpet profile
Car door sill material	A: Extruded aluminium

CONTRACT No.

PRASA
PRASA TRAIN UPGRADES
KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU
CLUSTER 6

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

Landing door Landing door frame type: Narrow frame (50mm wide)
 Landing door finish - A:side: ST43 Silver brushed stainless steel
 Fire class: 2 hour fire-rated. (With labyrinth, without insulation)
 Landing door fixing type: E: Expander bolt
 Landing numbering, markings and fire ratings shall be as follows:

Landing number	Floor marking	Finish	Fire class
2	2	ST43 Silver brushed stainless steel	Fire class: 2 hour fire-rated. (With labyrinth, without insulation)
1	1	ST43 Silver brushed stainless steel	Fire class: 2 hour fire-rated. (With labyrinth, without insulation)

Landing door sill type N2 - Sill w/o carpet trim, in the well

Landing door sill material A - Extruded aluminium profile (standard w/o surface treatment)

Operating and signal elements, stops Landing buttons:
 KSS280 series signalization
 Simplex LCI
 A button for activating an external call shall be fitted at each stop.
 LCS button illumination colour: White
 LCS placement: In the wall
 Hall indicators / lanterns:
 Signalization at landing: Simplex LCI

Control system accessories :

ABE M: Alarm bell at main floor
 ACU F: Elevator announcer, not programmable
 FID BO: Fire detection, whole building, doors open and stop at landing
 Power failure , doors open and stop at landing
 FRD AE: Fireman's drive
 Type of intercom : ISE-F
 LOA MO: Locking of automatic door, mechanical lock, emergency opening device
 SHL C: Shaft light, switch and fuse in controller, switch in the shaft pit.
 Pit ladder shall be included with the lift installation.

Machinery :

Machinery specification The machinery shall be designed as a gearless, three-phase synchronous motor with integrated traction sheave made from abrasion-proof special casting. The electromagnetic dual circuit brake shall be quietly activated by brake solenoids. The brake linings shall be made from asbestos-free material. A manual brake release device shall be provided for emergency operation.

CONTRACT No.

**PRASA
PRASA TRAIN UPGRADES
KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU
CLUSTER 6**

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

Machine output	kW of motor or to suit the motor and equipment offered (to be provided by lift supplier)
Nominal supply current	Current (A) or to suit the motor and equipment offered (to be provided by lift supplier)
Starting supply current	Current (A) or to suit the motor and equipment offered (to be provided by lift supplier)
Main fuses	Current (A) or to suit the motor and equipment offered (to be provided by lift supplier)
Power supply, machinery	3 phase 400 V, 50 Hz
Power supply, cabin light	230 V, 50 Hz
Arrangement	The sound-insulated drive mechanism shall be fitted in the shaft headroom behind the guide rails on the counterweight side. Therefore there is no need for a separate machine room.

Note : Full details of all the power requirements and motor details shall be supplied with the returnable tender. The above details are provisional only.

Control system :

Control system principle	Control system: Full collective Group control: Simplex
Maintenance access panel	MAP placement: Topmost floor [MAP_PLACEMENT_FLOOR(4)] The operating elements for maintenance of the lift and for possible emergency release shall be fitted in the maintenance access panel at the top stop. As the operating elements are locked away, they shall only be activated by authorized personnel. Access to the operating elements shall be guaranteed at all times during the lift's operating periods. The maintenance access panel shall be fitted directly to the shaft door floor frame. The surface of the maintenance and emergency release panel shall be specified as zinc-coated sheet steel, prepared for final painting on site MAP type: WMAPR, landing wall with recess MAP finish: ST4 Silver brushed stainless steel

2.2 Delivery Program Proposal :

Proper project planning and scheduled on time delivery, installation and completion shall be undertaken as follows .

Preparation of drawings	Project drawings shall be prepared within a two period from the date of award of contract. All builders work details and opening etc shall be submitted within this time. Power requirements, wiring and control diagrams etc shall also be provided for comments by the Engineer.

CONTRACT No.

PRASA PRASA TRAIN UPGRADES KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU CLUSTER 6

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

Manufacturing and delivery	Dates for manufacture and delivery to site of equipment, from receipt of drawing and finishes approval shall be provided.
Notice to commence on site and site check	Prior to starting the installation, the lift supplier shall give 4 weeks notice to inspect the elevator shaft to ensure that it fulfils the requirements set by the lift supplier for commencing installation. Site checks shall be carried out within 4 weeks of installation commencing.
Installation	The installation shall only start after the site has passed the inspections.
Testing and commissioning	Sufficient 3-phase power provided shall others will be provided for testing and commissioning.

2.3 Installation :

2.3.1 On time and safe installation

- The lift supplier shall provide their own scaffold and other supports etc for the installation
- There shall be minimum disruption to the other trades due to in-shaft elevator installation.
- Standard beams, doors, electrical interfaces and elevator entrance protection (full gate system) for elevator installation supplied shall be provided.
- Strict quality criteria for each phase of the installation shall be undertaken
- Maximum site safety with continuous training of site personnel, site audits, installation safety passports, and proven methods shall be employed.
- Eco-efficient installation processes to maximize waste recycling and to minimize the use of solvents shall be adhered to
- An experienced and qualified project supervisor shall be used for coordinating the entire installation process from beginning to end. An ECSA registered lift inspector shall be employed on the project. Full details of the registered person shall be submitted with the tender.
- In-depth ride quality testing of each lift or elevator before handover shall be undertaken by the lift supplier.

2.3.2 Warranty , Maintenance & O & M Manuals

As part of the lift supplier's contract, they shall offer several forms of maintenance and servicing of the lift designed to suit the needs of solutions offered for equipment high availability and long-term reliability as well as to ensure the continuation of efficient economic performance of the lift , it is recommend that a maintenance agreement be provided by the lift supplier. The lift supplier shall include this with their tender.

Maintenance terms and conditions shall form part of the maintenance agreement and should be provided by the lift supplier.

The lift shall be inspected, tested and commissioned by a registered ECSA lift inspector. The registration of such persons shall be submitted with the tender.

Three hard copies and three soft copies of the operating and maintenance instructions in accordance with the industry standards shall be supplied on successful commissioning of the lift. The manuals shall include the control panel and all switchgear, wiring diagrams, control/automation systems, settings, testing and commissioning data etc.

On mains failure and on receiving a signal from the fire detection and alarm system , the lift shall come

CONTRACT No.

PRASA

PRASA TRAIN UPGRADES

KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU CLUSTER 6

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

to a stop and the doors shall automatically open as described under the control system. The integration and interface to the fire controls etc shall be included in the pricing of the lift.

The complete lift installation shall be guaranteed for a period as stated in the civil contract but should be a minimum of 12 months after the issue of the practical completion certificate. The complete lift installation shall be serviced and maintained for a period of 12 months after the issue of the practical completion certificate. This shall be free and included in the tendered price. The lift company shall offer a servicing and maintenance contract to the Client after the end of the contractual guarantee period.

2.3.3 REPAIRS TO KWAMASHU STATION PASSENGER LIFTS - NOT APPLICABLE

The 2 Schindler lifts for KwaMashu Train Station are to be assessed and a detailed report provided.

The repair work to be undertaken shall comprise the following as a minimum, however the OEM shall determine the final requirements as part of his scope :

KwaMashu Train Station Lift : - NOT APPLICABLE

- Replace fuses
- Replace or refurbish car doors
- Replace sensors (car door and position sensors)
- Replace breaker for lights
- Replace car and counterweights and replace buffers
- Replace counterweight screen covers
- Replace governor rope and sheeve
- Replace governor slack switch
- Repair or replace shaft lights
- Remove water in lift pit and clean pit
- De-rust and paint pit and shaft
- Replace pit components
- Replace ABB or similar approved emergency battery and devices. Replace top of car battery (all to match existing)
- Replace extractor fan at top of lift shaft
- Replace intercom
- Replace registration plates and labels , notices etc
- Deep clean the entire lift . Clean floor and side panels , lights etc
- Test and re-commission the lift
- Hand-over lift for operational use
- Provide the O & M manuals , test and compliance certificates , COC, hand-over data packs and as-built lift layout and control panel layouts and wiring diagrams.

The entire lift installation is to be tested and re-commissioned. Full O & M manuals are to be provided together with as-built drawings of the lift installation together with the test and commissioning and data sheets. Lift compliance and electrical COC certificates are to be provided.

3.0 SPEEDSTILES (SPEED GATES)

The speedgates at the KwaMashu Train Station has been has not been used in a while and does not work currently but appears in good physical condition..

The speedgates for KwaMashu appears to be in good condition, however they need to be assessed , repaired serviced and put back into operation. The OEM for the existing speedstiles is to assess the condition of the existing speedstiles and submit a detailed report together with the priced tenders. The

CONTRACT No.

PRASA PRASA TRAIN UPGRADES KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU CLUSTER 6

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

report shall indicate what repairs or servicing is required to get the turnstiles fully operational again.

The following speedgates are existing that needs to be repaired and serviced to be operational again :

KwaMashu Train Station : - NOT APPLICABLE

4 x 4 lane with 5 cabinets (approx 5-6m wide – to be determined by OEM)

The following speedstiles are existing and are operational and compliant per the Client and no work is required on them.

Redhill Train Station : - NOT APPLICABLE

1 x 2 lane with 3 cabinets (approx 3m wide – to be determined by OEM)

Effingham Train Station : - NOT APPLICABLE

2 x 1 lane with 2 cabinets (approx 1,5m wide – to be determined by OEM)

Moses Mabida Train Station : - NOT APPLICABLE

2 x 5 lane with 6 cabinets (approx 6-7m wide – to be determined by OEM)

Note : All the other stations (Avoca, Greenwood Park, Briardene and Umgeni Road) have existing or will have new manual turnstiles. (no speedstiles will be installed)

3.1 Specification for Speedstiles

The speedstiles shall be as manufactured and supplied by IMAT or similar and equal approved. They shall match the existing or be similar and equal approved. The pedestrian barriers shall be for the control of pedestrians for entrance and exit to the facility. Their lane configuration shall match the existing with unlimited number of lane configuration. The barrier cabinets shall be floor mounted waist height bi-directional type made of stainless steel with a brushed finish with hygienic option. The typical sizes of the barrier cabinets are approximately 300mm wide x 1700mm long. They shall be double centre units for 600mm lanes doorkeeper type with V-glass safety panels with wings retractable into the cabinet . The speedstiles shall have safety configuration on emergency actuators with optical safety sensor array and LED array status indicators. The units shall be complete with 24V BLDC motors (brushless DC motors) .They shall have facilities for random search with 12V 7Ah lithium batteries for back-up power.

They shall have a smooth, quite and fast mechanical operation with tamper proof design.

The speedstiles shall be complete with logic controller and power supply and be operated by biometric / card reader system and controlled by the access control system and software installed in the control room computerised system installed by others. They shall be network ready for integrating into the control and automation system.

The supplier of speedstiles shall connect the equipment to the power supply provided by the electrical contractor.

Three hard copies and three soft copies of the operating and maintenance instructions in accordance with the industry standards shall be supplied on successful commissioning of the speedstiles. The manuals shall include the control panel and all drawings, switchgear, wiring diagrams, control/automation systems, settings, testing and commissioning data etc.

CONTRACT No.

PRASA

PRASA TRAIN UPGRADES

KWAMASHU CORRIDOR 1 – MOSES MABIDA TO KWAMASHU

CLUSTER 6

LIFTS, ESCALATORS, PARAPLEGIC LIFTS AND SPEEDSTILES/TURNSTILE INSTALLATION

The complete speedstiles (speed gates) installation shall be guaranteed for a period as stated in the civil contract but should be a minimum of 12 months after the issue of the practical completion certificate. The complete speedstiles installation shall be serviced and maintained for a period of 12 months after the issue of the practical completion certificate. This shall be free and included in the tendered price.

4.0 ESCALATORS

Non of the train stations for Cluster 6 has escalators

5.0 PARAPLEGIC STAIR LIFTS

Non of the train stations for Cluster 6 has stair lifts

ELECTRICAL SPECIFICATIONS

PRASA
KWAMASHU CORRIDOR 1
AVOCA TRAIN STATION
ELECTRICAL INSTALLATIONS

PROJECT SPECIFICATION

<u>Item</u>	<u>Description</u>	<u>Page</u>
1.	General	3
2.	Supply	3
3.	Scope of Work.....	6
4.	Nature of Contract	7
5.	Cables	7
6.	Cable Lengths	10
7.	Nature of Contract	10
8.	Cable Sleeves	10
9.	Distribution Boards	10
10.	Surface Installation	12
11.	Wiring	12
12.	Socket Outlets	12
13.	Switches	12
14.	Cover Plates.....	12
15.	Light Luminaires	12
16.	Special Purpose Points	13
17.	Flexible Conduit.....	13

<u>Item</u>	<u>Description</u>	<u>Page</u>
18.	Earth Leakage Relays	13
19.	Photocell Switch	13
20.	Earthing	11
21.	Conduit	12
22.	Inspection on Site	12
23.	Testing of the Installation	12
24.	Area Lighting	13
25.	Lightning Protection	13
26.	Cable Ladder	13
27.	Existing Material	13
28.	Excavations	13
29.	Two-compartment Powerskirting.....	13
30.	Computer Data, Conduit and Outlet Points	14
31.	Power Supply to New Distribution Boards.....	14
32.	Schematic Drawing for DB-board Requirements.....	14

PRASA
KWAMASHU CORRIDOOR 1
AVOCA TRAIN STATION
ELECTRICAL INSTALLATIONS

PROJECT SPECIFICATION

1. GENERAL

The installation shall be suitable for operation in Durban at an altitude of approximately 0m above sea level with a maximum atmospheric temperature of 40°C and a minimum temperature of 5°C.

General Information on the Electrical Installations

The complete installation shall conform to:

- The consumer code for the wiring of premises, South African National Standards, SANS 10142-1.
- The Occupational Health and Safety Act regulations, as amended.
- Any special requirements of the electricity supply authorities of the particular area/district.
- The Local Authority fire regulations.
- ICASA Regulations.
- National Building Regulations and SANS 10400, Code of Practice for the Application of National Building Regulations.
- R158, where applicable.

2. SUPPLY

- 2.1 A new electrical supply will have to be reinstated by the contractor.
- 2.2 All equipment is to comply with the National Electricity Regulator (NER) voltage specification: $-10\% < 230/400V > 10\%$. All major equipment will be protected by means of voltage window comparators that will include single phase protection, phase rotation protection and under/over voltage protection, i.e.
- Air-conditioning plant.
 - Hot water generating plant.
- 2.3 All plant rooms are to be fitted with standard locks: "VIRO" HA1 padlock.
- 2.4 The electrical installation will carry a 12-month guarantee and maintenance period from the date of **WORKS COMPLETION**

2.5 OPERATION AND MAINTENANCE MANUALS

The Contractor will hand over, at the completion of the works, one original and two copies of the necessary Operating and Maintenance requirements for all plant and equipment supplied and installed by him as part of the works. Each copy of the Operating and Maintenance Manual will be separately bound in an acceptable manner and will contain the following data where applicable (these documents are to be handed to the Electrical Consultant/Site Engineer advised accordingly in writing):

- Scope of Work.
- Operating Instructions.
- Normal Operation.
- Compliance Certificates
- Safety Measures.
- Fault Finding Guide.
- Equipment Information.
- Schedule of Information.
- List of Spares and Agents.
- Design Data.
- As Commissioned Data.
- Maintenance Requirements.
- Manufacturers' Service Recommendations.
- Manufacturers' Literature.
- Equipment Brochures.
- Proprietary Drawings, Exploded Views and Wiring Diagrams.
- As-built Drawings.
- Electrical Drawings.
- System Layouts and Schematics.
- Training Certificates.

2.6 AS-BUILT DRAWINGS

A complete set of drawings of the entire installation shall be included in the manual. 3-off set hard copy and 3-off set of electronic copy. The contractor shall be responsible in creating Autocad as-built drawings.

The set shall include:

- Electrical wiring diagrams indicating all cable sizes, current ratings, fuses, control units, site cable reticulation and schematic wiring diagrams applicable to the work.
- Electronic records (on CD) are to be handed to the the Electrical Consultant/Site Engineer advised accordingly in writing.

2.7 OPERATING INSTRUCTIONS AND TRAINING

A complete description of all operating procedures and safety measures shall be included in the manual. A basic "fault finding guide" shall also be included.

Training shall be given to staff, as applicable to the Public Address system and standby generator installation.

Training certificates/records must be signed by staff members who have received training.

2.8 PROTECTION AGAINST LIGHTNING

This installation shall be carried out by a specialist contractor who is conversant with this type of installation and not included in this document specification.

3. SCOPE OF WORK

The works detailed in this section of the specification and the drawings entail the electrical installation for this project.

3.1 New cable feeders to new distribution boards in all building.

3.2 Electrical installation in buildings as specified complete with:

- Distribution board.
- Feeder cables.
- Light points, switches, socket outlets and special power points.
- Luminaires.
- IT data, CCTV, TV, Fire and security not included in this installation
- Power skirting where required

4. NATURE OF CONTRACT

This contract shall form part of the main contract, and the Electrical Contractor shall enter into a contract with the main contractor.

5. CABLES

This clause covers the supply, delivery, installation and connection of all low tension cables as specified in the schedules and as indicated on the drawings.

5.1 GENERAL

The storage, transport, handling and laying of underground cables shall be done according to approved and accepted methods. The contractor shall ensure that he has sufficient and suitable equipment as well as adequate labour at his disposal, thereby preventing damage to the cables at all times.

Provisional lengths of cables only are indicated in the Bill of Quantities for the purpose of tendering. The onus is however, on the contractor to measure the

actual lengths of cable required before ordering. All measurements are only to be done after any possible alterations to cable routes or positions of substations etc. have been made by the Engineer. Reasonable allowances have been made to the provisional lengths in the Bill of Quantities for joints, cable ends, circuits etc. but payments shall only be made for actual lengths of cable installed. Excess cable shall not be considered for take-over.

5.2 INSTALLATION OF CABLES

Cables must be laid in servitude positions as indicated on drawings and cable trenches within the electricity servitude shall be 600mm deep for low tension cables and 1100mm deep for high tension cables. Trenches shall be 300mm wide for single or double cables.

In the event more than two cables are laid in one trench, the trench shall be proportionately increases in width over the whole length of the trench so that the cables are spaced 150mm apart for L.T. cables and 500mm apart for H.T. cables. The bottom and sides of the trenches shall be even and free from any object that may damage the cable.

The contractor shall provide and supply all materials necessary to cover trenches so that no injury to the public is caused. Further, all precautions are to be made to prevent damage and subsidence to buildings, roads, sewerage or any other property on the site.

All cable trenches are to be inspected and approved before any cables are laid. Cable drums are to be adequately supported on adequate jacks or on drum trailers when cables are being rolled off, thereby reducing any possible twisting, tension or other damage being inflicted upon the cable.

Cable trenched in hard or soft rock are to be laid on a 150mm thick layer of soil and then covered with another 150mm thick layer of soil before the trench is completely filled. (The above-mentioned soil is to be approved sand or soft soil).

Each cable end must be connected by way of the earth continuity conductor and/or cable armouring, (where applicable), local earth bar, other wires, switch gear etc.

The cables must be laid following the routes indicated on the drawings and the servitude dimensions are to be strictly adhered to. Where necessary, revised routes will be determined on site in conjunction with the Engineer/ Representative.

At each indicated position where cables pass below buildings, streets, pitch fibre pipes or rigid PVC pipe sleeves will be supplied through which the cable can be installed. The sleeves will be unbroken and will extend from sidewalk to sidewalk and will also extend past each curb.

Where cable routes and other services cross over (eg. Telkom) the cable is to be protected and laid to the satisfaction of the other service. A 50mm thick concrete block shall however extend 300mm on either side of the cables.

The contractor shall give special attention to cables being pulled through pipes and channels to prevent such cables from being stretched, twisted or scoured. All such pipes and channels shall be properly sealed in an approved manner after all cables have been installed.

Approved cast iron recessed in concrete cable markers are to be installed above ground level at suitable points on the nearest building line to indicate to positions of the joints. Where excavations are done in the vicinity of existing cables or where existing cables are to be exposed only labourers may be used who are competent and familiar with this type of work.

Such excavations may only be done with the use of hand tools and only shovels may be used within 300mm of the existing cables.

Backfilling of the trenches shall be done in layers of 150mm and each layer shall be thoroughly compacted before the following layer is filled in.

In order to protect the cable the contractor shall install a 300mm wide standard plastic warning tape. The marker tape shall be approximately 300mm above the cable and shall run the full length of the cable. An additional 50mm layer of ground shall be placed over the tape before the final backfilling is thrown in.

5.3 CABLE JOINTS AND CABLE ENDS

The number of joints must be kept to a minimum and these shall only be permitted if the length of the cable is longer than that provided on a new drum. All joints and the termination of the ends of underground cables shall be done by competent cable jointers in terms of approved and accepted practice. Joints and ends must be done in strict accordance with the manufacturer's requirements and specification. In all instances where joints are carried out, a hole of sufficient size must be made in order that the joints can be properly made.

The ground beneath the cable joints must be firmly compacted to prevent sagging of the joints.

If cut cables cannot immediately be terminated, the cable ends must immediately be sealed off.

In all cases ends of PVC low tension cables must be finished off with approved cable glands specifically designed for this purpose.

5.4 TESTING OF CABLES

Following completion of the installation of the cables for each section, the insulation resistance shall be tested with an approved "meggar" type instrument. This test shall be performed at a terminal voltage of 625V for LT cables. The results of the test shall be witnessed by, and be to the satisfaction of the Engineer/Representative representation of the local supply authority.

The tenderer shall also test and ensure that, at all points where cables are connected, the phase colours and phase rotations are correct. This test shall be

done with an approved phase rotation meter and shall be done by means of an approved meggar type instrument.

5.5 DRAWINGS

The contractor shall complete "as build" drawing after the installation to indicate the exact positions of the cable routes, joints etc. These details are to be indicated on a site plan.

All important and necessary dimensions shall also be clearly indicated on the drawing so that the drawing may, in future, be used to locate the positions of the cables, joints etc. The drawing must be handed over to the Engineer/ Representative for approval as soon as the cables have been installed.

5.6 LT CABLES

The tenderer shall install the LT cable systems as indicated on the drawings and schedules.

All LT cables shall be of the multi-core PVC SWA EC type with stranded copper conductors in accordance with SANS 1507/ 2003 as amended.

6. CABLE LENGTHS

For tender purposes the cable lengths shall be as indicated in the schedule of cables and as given in the Bills of Quantities. The contractor must measure the cable lengths on site after all routes have been approved by the Engineer/ Representative before the cables are ordered, and the contract price shall be adjusted to the actual cable lengths to be installed.

7. FIXING OF CABLES

Where cables run along walls, ceilings, etc. they shall be used for fixing the equipment to the walls and on no account will wood plugs, etc. be accepted. Whilst setting out the positions of the cable supports the contractor shall bear in mind the importance attached to the minimum bending radius of the cables.

Cable ladders shall be various widths wide and shall be hot dipped galvanized with a minimum thickness of 1.6mm

The ladders shall have a side height of least 76mm side and shall be hot dip galvanized to SABS 787. Ladders shall be installed with all the required bends, T-junctions etc. Please note no cable ties shall be allowed. Contractor to utilize proper approved cable clamps

8. CABLE SLEEVES

The main building contractor shall be responsible for the supply, delivery and installation of all the sleeves as indicated on the drawings.

90° bends will not be permitted this shall be overcome by the use of two 45° bends.

9. **DISTRIBUTION BOARDS**

The distribution board will be of the totally enclosed metal clad, metal frame type (surface type/free standing) with all cable connections, MCBs, external wiring, busbars, etc. that might be required as manufactured by Switchboard Manufacturers or other approved.

The board will be constructed from 3Cr12 stainless steel sheet with a minimum thickness of 1.6mm and shall receive an undercoat and two final coats of high grade enamel paint.

The board will be of an approved surface mounted type as specified, with hinged doors, complete with press lock catches. The board will be installed in the position as indicated on the drawings. The distribution boards will consist of one sections namely Essential Power (Standby Generator)

The Essential power (Standby Generator) sections must have a RED front panel and must be clearly labelled ESSENTIAL/EMERGENCY POWER (STANDBY GENERATOR).

The Non-essential section must also be labelled with white front panels.

All circuits shall be labelled with engraved brass or ivorine labels to indicate circuits, lights or plugs. The board shall be labelled on the outside as follows:

- (a) Number of the distribution board.
- (b) Source from which this particular board is fed.
- (c) The cable size, eg:
 - (i) Distribution board: LT Supply.
 - (ii) Fed from LT existing DB or Female Ward.
 - (iii) Cable size.

In general the free standing distribution board will consist of MCCBs, MCBs and earth leakage.

All distribution boards shall be surface and flush mounted.

Panels of flat mild steel with machine punched slots to allow for flush mounting of circuit breakers and isolator.

Doors

Doors shall be of smooth flat finish steel sheet suitable braced to ensure stiffness. Provision for locking will be made.

All steelwork is to be classified, smooth finished and covered with hard baked enamel paint. Final finish of boards shall be orange and red, white and blue as specified in the schedules and on the drawings.

Busbars

Copper busbars, provided for each phase and neutral shall be mounted on isolator of fixed directly to the terminals of single pole miniature circuit breakers only. Boards shall be suitably sized to accommodate without undue cramping, the equipment specified.

A substantial brass earth bar, solidly bonded to the metal work of the board, is to be provided with connectors for the incoming earth conductors and the earth wires of outgoing circuits.

10. **SURFACE INSTALLATION**

Surface conduit installations will only be permitted in the ceiling spaces, plant room and cold room and in all cases conduits are to be suitably fixed to the structure.

11. **WIRING**

All wiring to outlet points shall be by means of PVC insulated conductors in PVC conduit or galvanized wiring channels. Only one circuit per conduit will be permitted. In all cases insulated earth wire shall be installed with all circuits and connected to metal boxes to ensure earth continuity. Where wiring is installed in wiring channels circuits are to be taped not more than 1m apart in the channel. Emergency circuits should be taped in red tape.

12. **SOCKET OUTLETS**

All socket outlets shall be of the 3-pin 16A outlets of “Crabtree/Clipsal” or other approved type.

All the circuits for socket outlets shall be installed with 4mm² PVC insulated stranded copper wire and 2.5mm² PVC copper earth wire.

13. **SWITCHES**

All switches shall be of the 16A rating “Crabtree/Clipsal” or other approved type.

14. **COVER PLATES**

All cover plates shall be manufactured from PVC to match switches and sockets outlets.

15. **LIGHT LUMINAIRES**

The contractor shall allow for the supply, delivery and installation of all light luminaires as specified and indicated on the drawings and in the schedules.

N.B. All fluorescent luminaires shall bear the mark of the SANS and be fitted with telescopic lamp holders. No “No Name Brand” Luminaires shall be accepted for this installation.

N.B. Approval for alternate light fitting than those specified can only be done during tender. Alternatives offered after closing will not be considered.

All Luminaires in the building shall be fed from emergency power (standby generator unless otherwise indicated)

All light luminaires installed on lowered ceilings or recessed in ceilings will be connected with 5A. 3-Pin socket outlets and a 5A. 3-pin plug with a 2m 5A 3-core PVC insulated cable.

16. SPECIAL PURPOSE POINTS

All special purpose points shall be wired according to the schedules. Solid conduit shall be used and where necessary, ended off with “Kopex” flexible tubing. Special precautions shall be taken to ensure good earth continuity throughout the whole installation and connection of electrical equipment.

17. FLEXIBLE CONDUIT

“Kopex” or other approved flexible tubing will be used to connect moveable appliances complete with approved connectors, etc. Eath conductors as specified shall be installed together with PVC conductors in flexible tubing to ensure earth continuity.

18. EARTH LEAKAGE RELAYS

On all the boards, earth leakage circuit breaker relays must be fitted for control of plug circuits. The sensitivity and response of the relays must be such that instantaneous tripping will occur at total earth leakage of 30 milli-amperes.

19. PHOTOCELL SWITCH

The contractor shall allow for the supply, delivery and installation of 13A photocell switches suitable for 230Volt 50 Hertz alternating current complete with 15 second time delay. The switches shall be installed in a water resistant box on the outside as indicated to control all outside luminaires from DB.

20. EARTHING

The contractor shall be responsible for the effective earthing of the LT system as well as for the earthing of all non-current carrying metal parts of equipment. This shall be done to the satisfaction of the Engineer/Representative.

20.1 EARTHING OF BOARDS AND DISTRIBUTION KIOSK’S

The main earthing for the boards and kiosks must be obtained by installing the necessary number of approved vertical earth electrodes and 70mm² earth wire.

The electrodes as well as any other earth conductors must be connected in parallel with the 70mm² copper conductor as main earth so that the earth resistance of the common earth is less than 2 ohms.

All readings must be submitted to the Engineer for approval and the earth electrodes and connections must not be covered before they have been inspected and approved.

20.2 EARTHING OF DISTRIBUTION BOARDS

Lightning arrestors are to be installed in all distribution boards.

20.3 EARTHING OF DISTRIBUTION BOARDS

Board by way of suitable cable clamps or glands and where clamps are used, the armoring strands must be ferruled and bolted to the earth bar.

20.4 EARTH CONDUCTORS

As is evident from the schedules, copper earth conductor shall be part of cable ECC length of LT cable. This conductor is to be connected to the distribution boards at the earth bar as started in Clause above.

NB: Only PVC/SWA/PVC cables are to be used.

21. CONDUIT

The general requirements regarding the conduit installation shall be as set out in the Standard Specification. It should be noted that it is a specific requirement of this contract that all conduits used be **of the PVC type**, in ceiling space, walls and floors.

22. INSPECTION ON SITE

As much information as possible has been given, but in view of the nature of this service, tenderers are advised to visit the site and thoroughly acquaint themselves with the nature and extent of the work to be done. Tenderers shall make allowance for items obviously intended and necessary for the proper completion of the work, although not specifically mentioned.

23. TESTING OF THE INSTALLATION

After completion of the installation, the contractor shall perform such acceptance tests as may be prescribed by the Engineer/Representative at the time and as required by the supply authority.

The necessary test equipment must be made available by the contractor for this purpose.

24. AREA LIGHTING

This item covers the supply, delivery and installation of wall mounted luminaires and post top luminaires as shown on the drawings and schedules.

25. LIGHTNING PROTECTION

This shall be done by a specialist contractor and does not form part of this contract.

26. CABLE LADDER

The Contractor must supply and install a cable ladder as shown on the drawings and as indicated on schedules. The root and position of the cable ladder will be as per drawings and determined on site. All cable ladder to be as type "Cabstrut" or other approved.

27. EXISTING MATERIAL

Does not apply to this contract.

28. EXCAVATIONS

The contractor must indicate in the price schedule the prices for variations for cable trenches in ground, soft rock, and hard rock, based on the following.

Ground:

Means ground that can be removed by means of a pick and shovel and includes loose ground, clay, filled-in soil, loose or soft scale, loose oukclip, and rocks smaller than 75mm in dia.

Soft rock:

Means stone that can be hand picked and includes hard scale, solid oukclip, and rocks from 75mm in diameter to 0.03m³ in volume.

Hard rock:

Means granite, quarzitic sandstone, slate, and stone of equal or greater hardness, solid shale and rocks more than 0.03m³ in volume.

29. TWO-COMPARTMENT POWERSKIRTING

A two-compartment power skirting shall be supplied and installed. The powerskirting shall be as supplied by "O-line/Cabstrut" series and type "Rapid 45/Platinum" Fixed partition. Power skirting to be manufactured from virgin PVC.

1. Socket outlets – Main power
2. Socket outlets – Emergency power
3. Computer data cables and outlet points (done by others)

4. Telephone cables and outlet points. (done by others)

The power skirting must be installed complete with standard clip-in type PVC covers, T-offs, internal corners, external corners and end pieces.

30. **COMPUTER DATA, CONDUIT AND OUTLET POINTS**

This contract only allows for the supply and installation of all wireways for the Data installation. Contractor is to liaise with client specialist to confirm all routing of wire ways. Routing on drawings are for measurement purposes and will be confirmed during construction.

31. **POWER SUPPLY TO NEW DISTRIBUTION BOARDS**

See Bills of Quantities, which provides the cable sizes. All these PVC/SWA/PVC cables are to be run in trenches, PVC sleeves or on cable ladders in ducts and ceiling voids as indicated on drawings. Final positioning to be determined on site.

32. **SCHEMATIC DRAWING FOR DB-BOARD REQUIREMENTS**

See schedule of distribution board equipment. Contractor to obtain shop drawings from manufacturer prior to manufacturing.

33. **CERTIFICATE OF COMPLIANCE OF THE ELECTRICAL INSTALLATION**

Before any inspection or hand over of the electrical installation or part thereof takes place, the Electrical Contractor will present a Certificate of Compliance of the electrical installation or part of the installation to be handed over as defined in the regulations of the Occupational Health and Safety Act of 1993 as amended.

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS



CONSTRUCTION HEALTH AND SAFETY SPECIFICATION FOR THE REFURBISHMENT OF VANDALISED RAILWAY STATIONS ALONG KWAMASHU SUB-CORRIDOR 1 (Cluster 6 - Kwamashu, Redhill, Umgeni, Moses Mabida, Briardene, Avoca and Greenwood Stations)

KwaMashu to Durban.

TABLE OF CONTENTS

Page

1. Introduction and background.

1.1	Background to the Health and Safety Specification	3
1.2	Purpose of the Health and Safety Specification.	3
1.3	Implementation of the Health and Safety Specification.	3

2. Pre-Construction Safety, Health and Environmental Specification.

2.1	Scope	4
2.2	Contractual Issues	4
2.3	SHE Standards and Procedures	4
2.4	Interpretation	4
2.4.1	Applications	
2.4.2	Definitions	
2.5	Minimum Administrative Requirements	5
2.5.1	Notification of commencement of construction	
2.5.2	Assignment of Contractor's Responsible Persons to supervise Health and Safety Management and COVID-19 Management on Site.	
2.5.3	Competency assessment of Principal Contractor/Contractor.	
2.5.4	Competency of Contractor's responsible persons.	
2.5.5	Compensation for Occupational Injuries and Diseases Act (COIDA), Act 130 of 1993	
2.5.6	Occupational Safety, Health & Environmental Policy.	
2.5.7	Health and Safety Management Organogram.	
2.5.8	Preliminary Hazard Identification and Risk Analysis and Progress Hazard Identification and Risk Analysis.	
2.5.9	Health and Safety Representative(s).	
2.5.10	Health and Safety Committee(s)	
2.5.11	Health and Safety Training	
2.5.11.1	Induction	
2.5.11.2	Site specific training	
2.5.11.3	Awareness	
2.5.11.4	Competency	
2.5.11.5	Other training	
2.5.12	General Record keeping	
2.5.13	Health and Safety Audits, Monitoring and Reporting.	
2.5.14	Emergency Procedures/Plans.	
2.5.15	First Aid Box and First Aid Equipment	
2.5.16	Accident / Incident Reporting and Investigation.	
2.5.17	Hazards and Potential Situations.	
2.5.18	Personal Protective Equipment and Clothing.	
2.5.19	Health and Safety signage.	
2.5.20	Permits	

TABLE OF CONTENTS

Page

2.6 Operational Requirements.

13

- 2.6.1 Emergency Preparedness, Contingency Planning and Response.
- 2.6.2 First Aid (General Safety Reg. 3)
- 2.6.3 Security.
- 2.6.4 Fall protection (Working in elevated positions) (Construction Reg. 10).
- 2.6.5 Structures (Construction Reg. 11)
- 2.6.6 Temporary Works - Formwork and Support work. (Construction Reg. 12.)
- 2.6.7 Excavations, Shoring, Dewatering or drainage (Construction Reg. 13)
- 2.6.8 Access scaffolding (Construction Reg. 16)
- 2.6.9 Explosive Activated Fastening Device (Construction Reg. 21)
- 2.6.10 Tower cranes, cranes & lifting equipment (Con. Reg. 22) (DMR 18)
- 2.6.11 Construction Vehicles and Mobile Plant (Construction Reg. 23)
- 2.6.12 Electrical Installations (Con. Reg. 24; Electrical Installation Regs.)
- 2.6.13 Use and storage of flammables (Construction Reg. 25)
- 2.6.14 Housekeeping (Construction Reg. 27)
- 2.6.15 Stacking and Storage (Construction Reg. 28)
- 2.6.16 Fire prevention and protection (Construction Reg. 29)
- 2.6.17 Construction employee's facilities (Construction Reg. 30)
- 2.6.18 Hazardous chemical substances. (HCS Regulations)
- 2.6.19 Personal & other protective equipment (Section 8 of the OH&S Act)
- 2.6.20 Portable electric tools & equipment (Electrical machinery Reg. 9)
- 2.6.21 Public health & safety (Section 9 of the OH&S Act)
- 2.6.22 Edge protection and barricading.
- 2.6.23 Ladders.
- 2.6.24 Hot work.
- 2.6.25 Pressure equipment.
- 2.6.26 Night working.
- 2.6.27 Environmental management.
- 2.6.28 Alcohol and drugs.

3. ANNEXURE A

Task Completion Form

4. ANNEXURE B.

Principal Contractor's Responsible Persons.

5. ANNEXURE C.

Other requirements.

INTRODUCTION AND BACKGROUND.

1.1 **Background to the Health and Safety Specification.**

- 1) In terms of Regulation 5(1)(b) of the Occupational Health and Safety Act, Act 85 of 1993, the Client is required to compile a Health & Safety Specification for the intended project and provide such specification to any prospective contractor who, on appointment, shall submit a Health & Safety Plan which shall address the requirements of the specification.
- 2) The objective of the specification is to ensure that the contractor entering into a contract with the Client achieves an acceptable level of OH&S performance.
- 3) This documentation will give the Client, or its duly appointed representative, the required information to be able to evaluate the Contractor's competency and resources, as is required by Regulation 5(1) of the Construction Regulations 2014, and to determine his/her suitability to perform such work in a safe and healthy manner.
- 4) The Contractor must supply the Client with the following:
 - A detailed Site Safety Plan indicating how the Contractor will manage all Health and Safety aspects whilst working on the Client's premises, or on premises under his/her control, which must be based on the contents of this document as required by Regulation 7(1) of the Construction Regulations 2014.
 - A cost breakdown of funds being allocated to make adequate provisions for Health and Safety requirements as is required by Regulation 5(1)(g) of the Construction Regulations 2014.
- 5) No approval or acceptance of any document required by this specification shall be construed by the Contractor as absolving the Contractor from achieving the required level of performance and compliance with legal requirements whatsoever.
- 6) The Contractor is an employer in his/her own right and therefore must assume all the responsibilities as required from any legal obligation imposed on him or her.

1.2 **Purpose of the Health and Safety Specification.**

The purpose of the specification is to assist the contractor in achieving compliance with the Occupational Health and Safety Act 85/1993 and the Construction Regulations 2014, in order to reduce incidents and injuries on site. The Health and Safety Specification sets out the requirements to be followed by the Principal Contractor and Sub-Contractors so that the health and safety of all persons potentially at risk, may receive the same priority as other facets of the project.

1.3 **Implementation of the Health and Safety Specification.**

This specification forms an integral part of the contract, and the Principal Contractor is required to use it when drawing up his/her project-specific Health and Safety Plan, as indicated above. The Principal Contractor shall forward a copy of this specification to all Sub-contractors at their bidding stage so that they can in turn prepare Health and Safety Plans relating to their operations.

2.

HEALTH AND SAFETY SPECIFICATIONS.

2.1 **Scope.**

This Specification covers the requirements for eliminating and mitigating incidents and injuries during the upgrading of the railway stations between Kwamashu and Durban, namely: (Cluster 6 - Kwamashu, Redhill, Umgeni, Moses Mabida, Briardene, Avoca and Greenwood Stations)

The scope also addresses legal compliance, hazard identification, risk assessment, risk control, and promoting a Health and Safety culture amongst those working on the project. The specification also makes provision for the protection of those persons other than employees.

2.2 **Contractual Issues.**

- a. Due to the fact that this document is based on legislative requirements, the Client requires that all Contractors comply with the requirements of this document and all other relevant legislative requirements not covered by this document.
- b. The Client, or its duly appointed representative, reserves the right to stop any contractor from working whenever safety, health, or environmental requirements are being violated. Any resultant costs of such work stoppages will be for the contractor's account.
- c. The requirements, as specified by the Client in this document, must not be deemed to be exhaustive and the Client reserves the right to make changes as and if the Client deems fit.
- d. The Client will not entertain any claim of any nature whatsoever which has come about as a result of costs incurred or delays being experienced due to the Contractor not complying with the requirements of this document, or any other applicable legislative requirements imposed on the Contractor.

2.3 **Health and Safety Standards and Procedures.**

- 1) The Principal Contractor (Contractor) and Contractors (Sub-contractors) must ensure that all work performed by him/her is executed in accordance with work procedures that comply with accepted safety practices and applicable Health and Safety legislation.
- 2) Procedures indicated above may be the Contractor's own procedures on the condition that they comply with the conditions as stipulated above.

2.4 **Interpretations.**

2.4.1 **Application.**

This specification is a compliance document drawn up in terms of South African legislation and is therefore binding. It must be read in conjunction with relevant legislation, as noted previously.

2.4.2 Definitions.

- 1) The definitions, as listed in the Occupational Health and Safety Act 85/1993 and Construction Regulations 2014, shall apply unless otherwise stipulated.
- 2) Any reference to the "Contractor" includes – the Principal and Sub-contractor unless otherwise stipulated.

2.5 Minimum Administrative Requirements.

2.5.1 Notification of Intention to Commence Construction Work.

The Principal Contractor shall, before commencing any work on site, notify the Provincial Director of the Department of Employment and Labour in writing of their intention to carry out construction work. Refer to Annexure A in the Construction Regulation for this purpose. A copy of such notification must be forwarded to the Client prior to the commencement of construction work.

2.5.2 Assignment of Contractor's Responsible Persons to Supervise Health and Safety Management on Site.

- 1) The Principal Contractor shall submit in the format of the attached Annexure B, proof of all supervisory, as well as any other relevant appointments, as are required by the OH&S Act and the Construction Regulations.
- 2) It is acknowledged that the Contractor may need to allocate more than one appointment to certain staff members. This practice may only take place if Health and Safety standards would not be negatively affected.
- 3) Should the Client or its representative deem such practice as having a negative effect on Health and Safety standards, then alternative arrangements will have to be made.
- 4) A Health and Safety Officer must be appointed by the Principal Contractor subject to the following conditions:
 - Must be suitably qualified and experienced to meet the requirements for registration as a Health & Safety Officer with the SACPCMP.
 - Must be permanently on site for the duration of the contract.
- 5) Where the Contractor employs more than 20 persons (including the employees of other Contractors (sub-contractors), he shall appoint one OH&S Representative for every 50 employees, or part thereof. General Administrative Regulation 6 requires that the appointment OR election and subsequent designation of the OH&S Representatives are executed in consultation with Employee Representatives or Employees. (Section 17 of the Act and General Administrative Regulation 6 & 7)

2.5.3 Competency Assessment of Principal Contractor / Contractor.

The Client must be reasonably satisfied that the Principal Contractor it intends to appoint has the necessary competency and resources to safely conduct the work they will be appointed for.

The Principal Contractor must be reasonably satisfied that the sub-contractors he/she intends to appoint also have the necessary competencies and resources to safely conduct the work they will be appointed for. This must be established at the tender stage and before appointments are made.

In order to ensure this, the Principal Contractor must demonstrate to the Client that it has a suitable and sufficiently documented Health & Safety Plan and that its Contractors have the necessary competencies and resources to perform the construction work safely.

The Principal Contractor and Contractors must therefore submit the documentation, referred to in the attached Annexure A, for perusal and verification by the Client and Principal Contractor respectively:

2.5.4 Competency of Contractor's Appointed Responsible Persons.

- 1) Contractor's competent persons for the various risk management portfolios shall fulfill the criteria as stipulated under the definition of "Competent Person" in accordance with the Construction Regulations dated 07 February 2014 and the Occupational Health and Safety Act, Act 85/1993.
- 2) The Client reserves the right to require levels of Competency, which exceed the requirements as stipulated by the Act or the Construction regulations.
- 3) In the event of the Client requiring additional levels of competency, alternative arrangements will have to be made.

2.5.5 Compensation for Occupational Injuries and Diseases Act, Act 130 of 1993 (COID Act)

- 1) The Principal Contractor warrants that his and all his workmen are fully covered in terms of the COID Act, Act 130 of 1993, and that such cover shall remain in force for the duration of his contractual relationship with the Client, or whilst working on the Client's premises or premises under the Client's control.
- 2) The Principal Contractor must supply proof of such insurance cover to the Client with his/her tender submission.
- 3) The Principal Contractor undertakes to ensure that all Sub-contractors appointed by him/her will be fully covered in terms of the COID Act 130/1993 and that such cover will remain in force for the duration of their contractual relationship with the Contractor.
- 4) The Principal Contractor must also ensure that he has additional insurance cover that will adequately make provision for any losses caused by his employee's acts and/or omissions whilst working on the Client's premises or on premises under the Client's control.

2.5.6 Occupational Safety, Health, and Environmental Policy.

- 1) The Principal Contractor shall submit a Safety, Health, and Environmental Policy signed by the Chief Executive Officer.
- 2) The Policy must outline objectives and how they will be achieved and implemented by the Company / Principal Contractor.
- 3) A copy of such policy must be included in the Site Safety Plan and the Site Safety File.

2.5.7 Health and Safety Management Organogram.

- 1) The Contractor shall submit an organogram, outlining the Site Health and Safety Management structure, including the relevant appointments / competent persons.
- 2) In cases where appointments have not been made, the organogram shall reflect the intended persons to be appointed to such positions.
- 3) The Site Health and Safety organogram shall be updated when there are any changes in the site management structure.

2.5.8 Preliminary Hazard Identification and Risk Analysis and Progress Hazard Identification and Risk Analysis.

- 1) A preliminary Baseline Hazard Identification and Risk Analysis has been prepared to make the contractor aware of potential hazards which could be present. This is not a comprehensive document and does not replace the site-specific Hazard Identification and Risk Assessment that the Contractor is required to prepare.
- 2) Every Contractor performing Construction work shall, before the commencement of any Construction work, or work associated with the aforesaid Construction work and during such work, cause a Risk Assessment to be performed by a competent person, appointed in writing, and the Risk Assessment shall form part of the OH&S Plan and be implemented and maintained as contemplated in the Construction regulations 5(1).

Each activity must define individual tasks associated with that identified activity. These and all associated hazards must be identified and listed in the risk assessment. This ensures that critical tasks and associated hazards are not missed.

The Risk Assessment shall include, at least:

- The identification of the hazards and risks to which persons may be exposed.
- A documented risk assessment based on the list of hazards and tasks.
- A set of safe working procedures to eliminate, reduce and/or control the risks assessed;
- A monitoring and review procedure of the risks assessment as the risks change.

Based on the Risk Assessments, the Contractor must develop a set of site-specific OH&S rules that will be applied to regulate the OH&S aspects of the construction.

The Risk Assessments, together with the site-specific OH&S rules must be submitted to the Client before site establishment commencement.

N.B. A risk assessment will be performed for all unplanned work and submitted to The Client for approval prior to work commencing.

- 3) Review of Risk Assessments

The Principal Contractor / Sub-Contractor is to review the Hazard Identification, Risk Assessments, and safe work procedures (SWPs) each time changes are made to the designs, plans and construction methods and processes.

- 4) The Principal Contractor shall ensure that his, as well as all sub-contractors, are informed, instructed, and trained by a competent person/s regarding

hazards, risks, and related safe work procedures before any work commences and thereafter at regular intervals as the risks change and as new risks develop.

- 5) The Principal Contractor shall be responsible for ensuring that all persons who could be negatively affected by its operations are informed and trained according to the hazards and risks and are conversant with the Safe Work Procedures, control measures and other related rules (tool box talk strategy to be implemented and so on.)
- 6) Should the Client, or its duly appointed representative, identify alternative hazardous activities performed by the Principal Contractor, or its sub-contractors, on site for which a risk assessment was not performed, then the contractor will be required to perform such an exercise before continuing such work.

2.5.9 Health and Safety representative(s).

- 1) The Principal Contractor and sub-contractors shall ensure that Health & Safety Representatives are appointed under consultation and trained to carry out their functions.
- 2) The appointments must be in writing and the Health & Safety Representatives shall carry out regular inspections, keep records and report all findings to the Responsible Person forthwith and at Health & Safety meetings.

2.5.10 Health & Safety Representatives Committees.

The Principal Contractor shall ensure that project Health & Safety meetings are held monthly, or as deemed necessary by the project requirements.

- 1) Minutes must be kept on record and filed in the Site Health and Safety file.
- 2) Meetings must be organized and chaired by the Principal Contractor's Responsible Person.
- 3) The OH&S Committee meeting Agenda shall comprise, as a minimum, the following topics:
 - Opening & Welcome
 - Present/ Apologies/ Absent
 - Minutes of the previous meeting
 - Matters arising from the previous meeting minutes
 - OH&S Reps Reports
 - Incident Reports & Investigations
 - Incident /Injury Statistics
 - Other Matters
 - Endorsement of Registers and other statutory documents by a representative of the Principal Contractor
 - Close/Next Meeting

2.5.11 Health and Safety Training.

2.5.11.1 Induction.

The Principal Contractor shall ensure that all site personnel undergo a site-specific Health and Safety Induction Training Session before starting work. Record of attendance shall be kept in the Health and Safety file. A suitable venue must be supplied to provide this training.

All Contractor employees, professional team members and their visitors, sub-contractors, client staff and all visitors who wish to gain entry onto site are to be in possession of proof of General Induction training.

2.5.11.2 Site-Specific Induction Training

The Contractor will be required to develop contract work project-specific induction training, which shall be based on the Risk Assessments for the Contract work, and to provide such training for all employees and other Contractors and their employees in this regard. As work progresses and risks accumulate induction training must be changed to make it site-specific.

2.5.11.3 Awareness.

The Principal Contractor shall ensure that on-site periodic "Toolbox Talks" take place at least weekly. These talks should deal with risks relevant to the construction work at hand. A record of attendance shall be kept in the Health and Safety File. All contractors have to comply with this minimum requirement.

2.5.11.4 Competency.

1. All competent persons shall have the knowledge, experience, training and qualifications specific to the work they have been appointed to supervise, control and carry out.
2. The abovementioned competency requirements will be assessed on a regular basis by the client, by means of Audits, Progress Meetings, and any other means deemed fit by the Client.
3. The Principal Contractor is responsible to ensure that competent sub-contractors are appointed to carry out construction work and records should be kept of criteria used to determine competency.
4. The Client reserves the right to require competencies that may exceed the principal Contractor's standards, in which case alternative arrangements will have to be made to meet the Client's requirements.

2.5.11.5 Other Training.

All operators, drivers and users of construction vehicles, mobile plant and other equipment to be in possession of valid medical certification and proof of training and be certified competent by an Approved Inspection Authority (AIA) to operate such equipment.

2.5.12 General Record Keeping.

- 1) The Principal Contractor shall keep and maintain Health & Safety records to demonstrate compliance with this Specification, with the OH&S Act 85/1993, and with the Construction Regulations dated 07 February 2014.
- 2) The Principal Contractor shall ensure that all records of incidents/accidents, training, inspections, audits, and so on, are kept in the Health and Safety File held in the site office. The Health & Safety file is to be available on site at all times and under no circumstances must be removed from the site during the course of the contract.
- 3) The Principal Contractor must ensure that every sub-contractor opens his/her own Health and Safety file, maintains the file and makes it available on request by any duly authorized person.

- 4) The Principal Contractor must ensure that every worker, sub-contractor, supplier and visitor to site signs a register confirming that they have been screened for the corona virus upon entering site and that their contact details are recorded should it be necessary to contact them.

2.5.13 Health and Safety Audits, Monitoring and Reporting.

- 1) The Client shall conduct monthly Health and Safety audits of the work operations, including a full audit of physical site activities, as well as an audit of the administration of Health and Safety.
- 2) The Principal Contractor is obligated to conduct similar audits on all Sub-Contractors appointed by him/her.
- 3) Detailed reports of the audit findings and resultant corrective measures shall be reported on at all levels of project management meetings / forums.
- 4) Copies of the Client's audit reports will be forwarded to the Contractor and must be kept in the Site Health and Safety file.
- 5) The Principal Contractor must audit the activities and administration of all appointed Sub-Contractors, forward a copy to the Client or its representative within seven working days of completion of the audit and file a copy on the Site Safety file.

2.5.14 Emergency Procedures / Plans.

- 1) The Principal Contractor shall submit a detailed Emergency Procedure / Plan for approval by the Client prior to commencement of work on site. The procedure shall detail the response plan/s, including the following key elements:
 - List of competent key personnel;
 - Details of emergency services;
 - Actions or steps to be taken in the event of the specific types of emergencies;
 - Information on hazardous materials / situations.
- 2) Emergency Procedures / Plans shall include, but shall not be limited to, fire, spills, use of hazardous substances, civil unrest, bomb threats, major and minor incidents / accidents and any other anticipated emergencies.
- 3) The Principal Contractor shall advise the Client in writing forthwith, of any emergencies, together with a record of action taken. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc.) must be maintained and be displayed in a prominent position on site.
- 4) Emergency Procedures / Plans must be developed by a competent person such as a Safety, Health and Environmental Officer or, in the absence of a Safety, Health and Environmental Officer, by the Construction Work Supervisor.
- 5) Emergency Procedures / Plans must form part of the agenda of monthly safety meetings as the Procedures / Plans would have to be revisited on a continuous basis due to the changing environment on construction sites.

2.5.15 First Aid Boxes and First Aid Equipment.

- 1) The Principal Contractor and Sub-Contractors shall appoint First Aider(s) in writing in terms of the legislative requirements.
- 2) The appointed First Aider(s) must be sent for accredited first aid training, should they not have received such training prior to commencement of work on site.
- 3) Valid First Aid certificates for all First Aider(s) are to be kept on site in the Site Health and Safety File.
- 4) The Principal Contractor shall provide an on-site First Aid Station with first aid facilities, where required, including first aid boxes adequately stocked at all times.
- 5) All Sub-Contractors with more than 5 employees on site shall supply their own first aid box.

2.5.16 Accident / Incident Reporting and Investigations.

- 1) Injuries are to be categorized into the following categories:
 - First aid incidents,
 - Medical assistance incidents.
 - Disabling incidents,
 - Fatal injuries and
 - Near misses.
- 2) All Sub-Contractors have to report on the 5 categories of injuries to the Principal Contractor as soon as is reasonably practicable.
- 3) The Principal Contractor must stipulate in his / her construction phase Health and Safety plan how he / she will handle each of these categories.
- 4) When reporting injuries to the Client, these categories shall be used.
- 5) All injuries will be investigated by the Principal Contractor or his / her Competent person, with a report being forwarded to the Client forthwith.
- 6) The Principal Contractor must report all injuries to the Client in the form of a detailed injury report at least monthly.
- 7) All incidents that have occurred on site must be reported in the prescribed period and manner in terms of Section 24 of the Act to the Department of Labour.
- 8) Copies of Section 24 reports, including WCL 1 & 2 forms, must be forwarded to the Client immediately after completion.

2.5.17 Hazards and Potential Situations.

- 1) The Principal Contractor shall immediately notify other Contractors as well as the Client of any hazardous or potentially hazardous situations that may arise during the performance of construction activities.
- 2) Should a hazardous situation require work stoppages, the work must be stopped and corrective steps taken such as written Safe Work Procedures and issuing of Personal Protective Equipment.

2.5.18 Personal Protective Equipment (PPE) and Clothing.

- 1) The Principal Contractor and Sub-Contractors shall ensure that all their workers are issued with and wear hard hats, safety boots/shoes, and overalls as the minimum required PPE.
- 2) The Principal Contractor and Sub-Contractor shall make provision and keep adequate quantities of SABS-approved PPE on site at all times.
- 3) The Principal Contractor and Sub-Contractor shall clearly outline procedures to be taken when PPE or clothing is:
 - Lost or stolen;
 - Worn out or damaged.
- 4) The Principal Contractor must at all times ensure that no person enters the site without the required Personal Protective Equipment.
- 5) Visitors to the site must be provided with the required PPE such as hard hats, earmuffs, and eye protection.
- 6) Visitors to the site must wear appropriate footwear for a construction site.
- 7) Records of all PPE issued to staff must be kept on site in the Site Safety File.
- 8) Employees are to be made conversant with the purpose of PPE and where and when it is required to be used by the employee.
- 9) Safety belts are not to be allowed on site due to their associated potential of injury to the user; only double lanyard safety harnesses are permitted.
- 10) Suitable eye protection must at all times be worn by the worker when performing grinding, chipping, chasing, and other associated activities.
- 11) In the event that onlookers may be struck by flying objects as a result of work being performed, suitable screens must be erected.
- 12) Any person performing welding or brazing work must wear suitable eye protection, gloves, aprons, and spats. Suitable screens are to be provided to protect onlookers from the harmful rays associated with such activities.
- 13) Where employees are required to work with corrosive liquids, suitable eye protection, gloves, and acid-resistant overalls must be provided.
- 14) Ear protection must be worn in designated noise zones (in excess of 85 dB)
- 15) Suitable respirators must be provided to all employees and visitors required to be working in or entering areas where toxic vapors could be present.
- 16) All staff working in an elevated position (2m or higher), or where the potential exists that such persons may fall, must be provided with a suitably secured safety harness.
- 17) Any person refusing to wear Personal Protective Equipment must be instructed to wear such equipment and, in the event of such person refusing to wear such equipment, he/she must be removed from the premises.
- 18) All employees on site must be issued free of charge with approved face

2.5.19 Health and Safety Signage.

- 1) The Principal Contractor shall provide adequate on-site H&S signage including, but not limited to: "no unauthorized entry" "report to site office" "site office", "beware of overhead work" and "hard hat area".
- 2) Signage shall be posted up at all entrances to the site as well as on site in strategic locations e.g., access routes, stairways, entrances to structures and buildings, scaffolding and other potential risk areas / operations.

2.5.20 Permits.

- 1) The Principal Contractor shall draft and implement where required, permits which may include the following:
 - Work for which a fall prevention plan is required,
 - Electrical work.
- 2) The Principal Contractor will ensure that where permits are required that they are sustained and adhered to.

2.6 Operational Requirements.

2.6.1 Emergency Preparedness, Contingency Planning and Response

- 2.6.1.1 The Principal Contractor must develop a site Evacuation Plan detailing specifications for the appropriate appointments of a firefighting team, first aid, and emergency coordinating team. In addition to this, mustering points must be identified and depicted by the use of appropriate symbolic signage (SANS approved). The Emergency Evacuation Plan must be approved by the Principal Contractor in consultation with the Client, or Clients' Agents.
- 2.6.1.2 The Site Manager must conduct an **emergency identification exercise** and establish what emergencies could possibly develop. He/she must then develop a detailed contingency plan and emergency procedure. Emergency Procedures / Plans shall include, but shall not be limited to, fire, spills, use of hazardous substances, bomb threats, major and minor incidents/accidents, and any other anticipated emergencies.
- 2.6.1.3 Emergency Procedures / Plans must form part of the agenda of monthly safety meetings as the Procedures / Plans would have to be revisited on a continuous basis due to the changing environment on construction sites.
- 2.6.1.4 Principal Contractor / Sub- Contractor must appoint a competent person to act as Emergency Controller / Coordinator.
- 2.6.1.5 A contact list of all **emergency service providers** (Fire Department, Ambulance, Police, Medical and Hospital, etc.) must be maintained and available for site personnel. An emergency situation, which is likely to require outside emergency assistance, may attract mass circulation, written media or electronic media attention and be harmful to the Client's reputation. No person may comment on the incident on site without prior approval from the Client.
- 2.6.1.6 Lighting (Environmental Regulation 3)
The contractor is to ensure that wherever work is performed where the lighting conditions are less than the minimum requirement as defined in Environmental Regulation 3, and relative schedules, that this is supplemented with additional lighting capacity to ensure that all works contemplated can be conducted safely.
- 2.6.1.8 The Principal Contractor shall not undertake any night work without written permission from the Client or its Agent. The principal contractor shall ensure that adequate lighting is provided for all night work and failure to do so shall result in the work being stopped.

2.6.2 First Aid (General Safety Regulation 3)

- 2.6.2.1 The Contractor must provide First Aid equipment and, if necessary, a stretcher and have qualified First Aider/s as required by General Safety Regulation 3 of the OHS Act.
- 2.6.2.2 The Contractor's Contingency Plan must include the arrangements for the speedy and prompt transporting of injured or ill person/s to a medical facility, or of arranging emergency medical aid to the person/s that may require it.
- 2.6.2.3 All contractors on site shall wherever possible assist other contractors' injured employees as the need arises.

2.6.3 Security

2.6.3.1 Principal Contractor or Site Manager will establish site **Access rules** and implement and maintain these throughout the construction period. The Principal Contractor is to comply with the local Metropolitan Council's Traffic Department rules for access to the site. Access control must include the rule that non-employees will not be allowed on site unaccompanied and without good reason.

2.6.3.2 The Principal Contractor or Site Manager will develop a set of **Security rules and procedures** and maintain these throughout the construction period.

2.6.4 Fall Protection (Working in Elevated Positions) (Construction regulation 10.)

2.6.4.1 A pre-emptive Risk Assessment will be required for any work to be carried out above two meters from the ground or any floor level and will be classified as "Work in Elevated Positions".

2.6.4.2 As far as is practicable, any person working in an elevated position will work from a platform, ladder, or other devices that are safe, and whilst working in this position, be wearing and using a **double lanyard, full body harness** that will be worn to prevent the person falling from the platform, ladder or other device utilized.

This safety harness will be, as far as is possible, secured to a point away from the edge over which the person might fall and the double lanyard must be of such a length that the person will not be able to move over the edge.

In addition, any platform, slab, deck or surface forming an edge over which a person may fall must be fitted with guard rails at two different heights as prescribed in SANS 10085 Code of Practice for the Design, Erection, Use and Inspection of Access Scaffolding

2.6.4.3 Workers working in elevated positions must be trained to do this safely and without risk. It will be required that all employees will undergo a "Working at heights" training programme before they will be allowed to commence work. Proof of training must be maintained on the contractor's site safety file.

2.6.4.4 The Risk Assessments shall place specific emphasis on the placing and handling of roofing materials such as IBR sheeting, or similar materials, which, when exposed to windy conditions, represents a serious safety hazard.

2.6.4.5 All life line secure / anchor points must be designed and signed off by a Design Engineer. Life lines must have a SWL displayed and the SWL certificate must be kept on site.

2.6.4.6 **Medical certificates of fitness for all employees must be available on site. This must be issued by a registered Occupational Health Practitioner.**

2.6.5 Structures (Construction Regulation 11)

The Contractor will ensure that in terms of the Construction Regulations 11:

- That the structure on/in which work is to be performed has been inspected by a certified structural engineer declaring the structure to be safe for construction work processes.

- Steps are taken to ensure that no structure becomes unstable or poses a threat of collapse due to construction work being performed on it, or in the vicinity of it.
- No structure is overloaded to the extent where it becomes unsafe; if uncertainty arises then the structural engineer is to be consulted.
- He/she has received from the designer the following information:
 - Information on known or anticipated hazards relating to the construction work and the relevant information required for the safe execution of the construction work.
 - A geo-scientific report (where applicable)
 - The loading that the structure is designed to bear.
 - The methods and sequence of the construction process.
 - All drawings pertaining to the design are on site and available for inspection.
- The structural engineer shall carry out inspections at appropriate and sufficient intervals of the construction work involving the design of the relevant structure to ensure compliance with the design and record the results of these inspections in writing. These records shall be maintained on the relevant site safety files as per Construction regulation 11(2)(d).

2.6.6 Temporary Works - Formwork & Support Work (Construction Regulation 12.)

- Temporary works i.e., Formwork & Support work (F&SW) must be carried out under the supervision of a competent person designated in writing.
- F&SW structures must be so designed, erected, supported, braced and maintained such that it will be able to support any vertical or lateral loads that may be applied.
- No load is to be imposed onto the structure that the structure is not designed to carry.
- F&SW must be erected in accordance with the structural design drawings for that F&SW and, if there is any uncertainty, the designer must be consulted before proceeding with the erection / use of the F&SW.
- All design drawings pertaining to the F&SW must be kept available on site.
- All equipment used in the erection of F&SW must be checked by a competent person before use.
- The foundation or base upon which F&SW is erected must be able to bear the weight and keep the structure stable.
- Employees erecting F&SW must be trained in the safe work procedures for the erection, moving and dismantling of F&SW.
- Safe access / egress (and emergency escape) must be provided for workers.
- A competent person must inspect F&SW structures that have been erected before, during and after pouring of concrete, or the placing of any other load, and thereafter daily until the F&SW is stripped.
- The results of all inspections must be recorded in a register kept on site.
- The F&SW must be left in place until the concrete has reached sufficient strength to bear its own weight plus any additional weight that may be imposed upon it and not until the designated competent person has authorised its stripping in writing.
- Any damaged F&SW must be repaired / rectified immediately. Deck panels must be secured against displacement.
- The Contractor must ensure that no employee is exposed, or required to work on slippery and dangerous surfaces.

2.6.7 Excavations, Shoring, Dewatering or Drainage. (Construction Regulation 13.)

- All excavation work must be performed under the supervision of a Competent Person as specified in Annexure B of this document and the

- Construction Regulations dated 07 February 2014.
- Before excavation work begins the stability of the ground must be evaluated.
 - Whilst excavation work is being performed, the contractor must take suitable and sufficient steps to prevent any person from being buried or trapped by a fall or dislodgement of material.
 - No person may be required or permitted to work in an excavation that has not been adequately shored or braced or where:
 - the excavation is in unstable material or,
 - the sides of the excavation are not sloped back to at least the maximum angle of repose measured relative to the horizontal plane
 - The shoring or bracing may not be left out unless written permission has been obtained from the appointed competent person and shoring and bracing must be designed and constructed to safely support the sides of the excavation
 - Where uncertainty exists regarding the stability of the soil, the opinion of a competent professional engineer or professional technologist must be obtained, whose opinion will be decisive. The opinion must be recorded in writing and signed by the engineer or technologist as well as the appointed excavation supervisor.
 - No load or material may be placed near the edge of an excavation if it is likely to cause a collapse of the trench unless suitable shoring has been installed to be able to carry the additional load.
 - Any neighbouring building, structure or road that may be affected or endangered by the excavation must be protected from damage or collapse.
 - Every excavation must be provided with a safe means of access and egress that must be within 6 metres of any worker within the excavation.
 - The location and nature of any existing services such as water, electricity, etc. must be established before any excavation is commenced with and any service that may be affected by the excavation must be protected and made safe before workers enter the excavation.
 - Every excavation, including the shoring and bracing, or any other method to prevent collapse, must be inspected by the appointed competent person as follows:
 - daily before work commences, and before every shift.
 - after every blasting operation, where applicable.
 - after an unexpected collapse of the excavation.
 - after substantial damage to any supports, or
 - after rain, high winds or any other adverse weather condition.
 - Adequate provision must be made to ensure that water is drained from excavations where water may enter such excavations as a result of seepage or rain.
 - All excavations made by the Contractor must be clearly demarcated and protected to prevent accidental access. **Barricading tape may only be used to make solid barricading more visible and may not be used as a means of barricading.**
 - All piling augers must be equipped with piling gates when clearing soil from the augers.
 - A clearing where no persons will be allowed to work will be maintained around the piling rig. This clearing radius will be equivalent to the height of the piling rig.

2.6.8 Access Scaffolding (Construction Regulation 16)

Access Scaffolding must be erected, used and maintained safely in accordance with Construction Regulation 16 and SA Bureau of Standards Code of Practice, SANS 10085/1 entitled, "The Design, Erection, and Use & Inspection of Access Scaffolding.

Detailed consideration must be given to all scaffolding to ensure that it is properly planned to meet the working requirements, designed to carry the necessary loadings and maintained in a sound condition. It must also be ensured that there is sufficient material available to erect the scaffolding properly.

Scaffolding may only be erected, altered or dismantled by a person who has the appropriate training and experience in this type of work, or under the supervision of such a person

Specific attention must be given to the appointment of Scaffolding Inspectors and Scaffolding Erectors who shall not be the same person. The continuous inspection of scaffolding structures must be recorded on the applicable Scaffold register.

Tagging / Signs reflecting the status of the scaffold must be used and fixed to the structure at all times. (Safe to use / Unsafe to use)

2.6.9 Explosive Actuated Fastening Device. (Construction Regulation 21)

Every Explosive Actuated Fastening Device (Explosive Powered Tool) must be:

- Provided with a guard around the muzzle to confine flying fragments or particles.
- Fitted with a firing mechanism that will prevent the EPT from firing unless it is pushed against the surface and at a right angle (where the EPT is fitted with an intermediate piston between the charge and the nail, this requirement is waived)
- The Contractor or user must ensure that:
 - Only the correct type of cartridge is used. (product specific)
 - The EPT is cleaned and inspected daily before use by an appointed competent person who maintains a register with the findings of his inspection and the details of cleaning, service and repairs
 - The safety devices are in good working order before the EPT is used.
 - When the EPT is not being used it is stored in an unloaded condition together with the cartridges in a safe/secure place inaccessible to unauthorized persons.
 - A warning notice is displayed at the point where the EPT is in use.
 - The issue and return of cartridges must be controlled by maintaining the issue/returns register signed by both issuer and user and empty cartridge cases must be returned with unspent cartridges.
 - Users/operators of the EPT have received the necessary training and have been authorized as being competent to use/operate the EPT.
 - Users / operators must wear the prescribed PPE whilst using/operating the tool.

2.6.10 Tower cranes, Cranes & Lifting Equipment (CR 22) (DMR 18)

Cranes and Lifting equipment must be designed and constructed in accordance with generally accepted technical standards and operated, used, inspected and maintained in accordance with the requirements of the Driven Machinery Regulation of the OHS Act:

- It is to be clearly and conspicuously marked with the maximum mass load (MML) that it is designed to carry safely. Provided that when this mass load varies with the conditions of use, a table showing the maximum mass load with respect to every variable condition shall be posted by the user in a conspicuous place easily visible to the operator.
- Each winch on a lifting machine must at all times have at least three full turns of rope on the drum when the winch has been run to its lowest limit.
- It must be fitted with a brake or other device capable of holding the MML. This brake or device must automatically prevent the downward movement of the load when the lifting power is interrupted.

- It must be fitted with a load limiting device that automatically arrests the lift when:
 - the load reaches its highest safe position or,
 - when the mass of the load is greater than the MML
- Every chain or rope on a lifting machine that forms an integral part of the machine must have a factor of safety as prescribed by the manufacturer of the machine and where no standard is available, the factor of safety must be"
 - Chains- 4 (four)
 - Steel wire ropes -5 (five)
 - Fibre ropes- 10 (ten)
- Every hook or any other load-attaching device which forms an integral part of the lifting machine must be so designed or proportioned that accidental disconnection of the load under working conditions cannot take place.
- Every lifting machine must be inspected and load tested by a competent person every time it has been dismantled and re-erected and every 12 months after that. The load test must be in accordance with the manufacturer's prescription or to 110% of the MML
- In addition, all ropes, chains, hooks or other attaching devices, sheaves, brakes and safety devices forming an integral part of a lifting machine, must be inspected every 6 months by a competent person
- All maintenance, repairs, alterations and inspection results must be recorded in a logbook and each lifting machine must have its own logbook.
- No person may be lifted by a lifting machine not designed for lifting persons, unless in a cradle approved by the inspector of the Department of Labour
- Every jib crane with an MML of 5 000 kg or more at minimum jib radius must be provided with a load indicator or a load lifting limiting device.

Lifting Tackle:

- To be manufactured of sound material, well-constructed and free from blatant defects.
- To be clearly and conspicuously marked with ID tag and MML
- Worn and damaged steel wire ropes must be discarded (not used any further for lifting purposes) when excessive wear and corrosion is evident. Furthermore, under normal operating conditions the ropes must be examined by a competent person every three months for this purpose and the results recorded.
- At least two banksmen will be allocated to each tower crane (One where the load is picked up and one where the load is dropped off). There will be constant radio communication between the banksman and the crane operator. The banksman will warn employees of the overhead load by means of a whistle. This will be done for the whole time the load is suspended, and until this load has been lowered and unhooked.

Operator:

- Every lifting machine operator must be trained, in possession of a valid medical certificate and certified competent (AIA approved) for the type of lifting machine that he / she is operating. This shall be machine specific.
- Operators of Jib cranes with an MML of 5,000 kg or more must be in possession of a certificate of training issued by an accredited (Chief Inspector approved) training provider.

2.6.11 Construction Vehicles & Mobile Plant (Construction Regulation 23)

Construction Vehicles and Mobile Plant must be inspected by the Principal Contractor prior to being allowed on a project site and suppliers of hired vehicles,

plant and equipment will be required to comply with this specification as well as the OHS Act and Regulations.

Construction Vehicles and Mobile Plant to be:

- of acceptable design and construction.
- maintained in good working order.
- used in accordance with the design and intention for which they were designed.
- Operated/driven by medically fit, trained, licensed, competent and authorized operators/drivers. No unauthorized persons are to be allowed to drive or operate vehicles or plant.
- operators and drivers must be in possession of a valid medical certificate declaring the operator/driver physically and psychologically fit to operate or drive vehicles or plant.
- fitted with adequate signalling devices to make movement safe, including reversing.
- provided with roll-over protection, and fitted with an appropriate seat which shall be used during vehicles or plant operations.
- inspected daily before start-up by the driver / operator / user and the findings recorded in a register / log book.
- fitted with two head and two taillights whilst operating under poor visibility conditions, and in addition they shall be equipped with 'hazard warning' rotating orange light, which must be used whenever the vehicles or plant is in use on site.
- No loose tools, material, etc. is allowed in the driver/operator's compartment/cabin nor in the compartment in which any other persons are transported.
- CV&MP used for transporting persons must have seats firmly secured and sufficient for the number of persons being transported.
- Operators are to be issued with Personal Protective Equipment as required and identified by the Risk Assessments.
- Only licensed and road-worthy vehicles will be allowed on public roads.
- No person may ride on a CV&MP except in a safe place provided by the manufacturer for this purpose.

The construction site must be organized to facilitate the movement of CV&MP so that pedestrians and other vehicles are not endangered. Traffic routes are to be suitable, sufficient in number, and adequately demarcated.

CV&MP left unattended after hours adjacent to roads and areas where there is traffic movement must be fitted with lights, reflectors or barricades to prevent moving traffic coming into contact with the parked CV&MP.

In addition, CV&MP left unattended after hours must be parked with all buckets, booms etc. fully lowered, the emergency brakes engaged and, where necessary, the wheels chocked, the transmission in neutral and the motor switched off and the ignition key removed and stored safely.

Workers employed adjacent to, or on public roads must wear reflective safety vests. All CV&MP inspection records must be kept in the OH&S File.

2.6.12 Electrical Installations (Construction Regulation 24, Electrical Installation Regulations)

The installation of temporary electricity for Construction shall be in accordance with the Construction regulation 24 and the Electrical Installation Regulations.

The Contractor must ensure that:

- Temporary electrical installations must be inspected at least fortnightly by a competent person and a record of the inspections kept on the OH&S File. In addition, a Certificate of Compliance (CoC) must accompany all

temporary installations specific to that installation, or where necessary, for the complete facility, whichever is required.

- Electrical machinery used on a construction site must be inspected daily before start-up by the competent driver / operator or any other competent person and a record of the inspections kept on the OH&S File.
- All temporary electrical installations must be controlled by a competent person appointed in writing and who should be registered with the Electrical Contracting Association or other statutory body.
- All switches on distribution boards are labelled and numbered.
- All distribution boards are locked and the main switch is to be accessible through cut out in the door.

2.6.13 Use & Storage of Flammables (Construction Regulation 25)

The Contractor to ensure that:

- No person is required or permitted to work in a place where there is the danger of fire or an explosion due to flammable vapours being present.
- The workplace is effectively ventilated. Where this cannot be achieved:
 - Employees must wear suitable respiratory equipment
 - No smoking or other sources of ignition is allowed into the area
 - The area is conspicuously demarcated as "flammable materials"
- Flammables stored on a construction site are stored in a well-ventilated, reasonably fire-resistant container approved by the local Fire Marshall, cage or room that is kept locked with access control measures in place and sufficient firefighting equipment installed and fire prevention methods practised e.g., proper housekeeping.
- Containers (including empty containers) to be kept closed to prevent fumes/vapours from escaping and accumulating in low lying areas.
- Metal containers to be bonded to earth whilst decanting to prevent build-up of static electricity.
- Welding and other flammable gases to be stored and segregated as to type of gas and empty and full cylinders.

2.6.14 Housekeeping (Construction Regulation 27)

The Contractor to ensure that:

- Housekeeping is continuously implemented.
- Materials & equipment are properly stored.
- Scrap, waste & debris are removed regularly.
- Materials placed for use are placed safely and not allowed to accumulate or cause obstruction to free movement of pedestrian and vehicle traffic.
- Waste & debris not to be removed by disposing from heights, but by chute, crane or hoist.
- An unimpeded work space is maintained for every employee.
- Every workplace is kept clean, orderly and free of tools etc. that are not required for the work being done.
- As far as is practicable, every floor, walkway, stair, passage and gangway are kept in good state of repair, slip and trip free and free of obstruction, waste and materials
- A sufficient amount of waste bins and dustbins must be placed in strategic positions on site.
- Openings in floors, hatchways, stairways and open sides of floors or buildings are barricaded, fenced, boarded over or provided with protection to prevent persons from falling.
- All public roads must be kept clean and free from any mud.

- Vehicle access must be controlled in such a way that passing traffic is not at risk of colliding with construction vehicles.

2.6.15 Stacking & Storage (Construction Regulation 28)

The Contractor/Employer must ensure that:

- A competent person is appointed in writing to supervise all stacking and storage of materials on the construction site.
- Adequate storage and lay-down areas are provided and demarcated.
- The storage areas are kept neat and under control.
- The base of any stack is level and capable of sustaining the weight exerted on it by the stack.
- The items in the lower layers can support the weight exerted by the top layers.
- Pipes stacked on top of one another are chocked to prevent the pipes from rolling.
- Pallets and containers are in good condition and no material is allowed to spill out.
- The articles that make up a single tier are consistently of the same size, shape and mass.
- Structures for supporting stacks are structurally sound and able to support the mass of the stack.
- No articles are removed from the bottom of the stack, but from the top tier first.
- Anybody climbing onto a stack can and does so safely and that the stack is sufficiently stable to support him / her. Stacking supervisor is to determine if the stack is sufficiently stable to support the person.
- Stacks that are in danger of collapsing are broken down and restacked.
- Stability of stacks are not threatened by vehicles or other moving plant and machinery.

2.6.16 Fire Prevention and Protection (Construction Regulation 29)

The Contractor must ensure that:

- The risk of fire is avoided.
- Sufficient & suitable storage of flammables is provided.
- Sources of ignition is obviated wherever flammable or highly combustible material is present in the workplace e.g.:
 - Notices prohibiting smoking are displayed and enforced.
 - Welding and flame cutting are only allowed under controlled conditions that includes written hot work permits.
 - Only spark-free hand and power tools are used.
 - No grinding, cutting and shaping of ferrous metals are allowed using electrically driven Power tools that produces sparks
 - Flameproof switches & fittings are to be used in the flammable atmosphere.
 - Good housekeeping is maintained to prevent the accumulation of unnecessary combustibles.
 - Adequate ventilation is maintained.
 - Adequate and suitable portable fire-fighting appliances are provided and maintained in good working order.
- Maintenance must include:
 - Regular inspection by a competent person appointed in writing and keeping a register.
 - Annual inspection and service by an accredited service provider.

- Employees are instructed in the use of the Fire Fighting equipment and know how to attempt to extinguish a fire. (Proof of training must be kept on record.)
- A sufficient number of employees are appointed and trained to act as the Emergency Team to deal with fires and other emergencies.
- Employees are informed with regards to emergency evacuation procedures and escape routes.
- Emergency escape routes are kept clear at all times.
- Evacuation assembly points are demarcated.
- Evacuation is practised to ensure that all personnel have been promptly evacuated.
- Roll call is held after evacuation to account for all personnel and ensure that no one person has been left behind.
- No smoking on site. Smoking areas and facilities must be made available with smoking times.
- No open fires will be allowed on site.

2.6.17 Construction Employee's Facilities (Construction Regulation 30)

The following will be the minimum requirements:

Toilets

The provision of Toilets is required in terms of the National Building Regulations and Construction Regulation 30.

Chemical toilets are allowed instead of the water borne sewerage type.

- These toilets must be screened off to provide privacy.
- Separate gender toilets must be made available.
- Toilets have to be provided at a ratio of 1 toilet per 30 workers.
- Toilets must be cleaned and disinfected at regular intervals during the course of the day.

Showers - Contractor Responsibility.

At least cold-water showers of some sort have to be provided to a ratio of 1 shower per 15 workers.

- Some form of suitable screening of the showers must be provided.
- Separate gender shower facilities must be provided.
- Showers must be cleaned and disinfected at regular intervals during the course of the day.

Change Rooms - Contractor Responsibility

- Some form of suitably screened off changing facility, must be provided and separated for each sex.
- Change rooms must be cleaned and disinfected at regular intervals during the course of the day.

Eating Facility - Contractor Responsibility

- Some form of shelter from the sun, wind and rain must be provided.
- No sleeping on site will be allowed (this is to be communicated in the Toolbox talks)
- Eating areas must be cleaned and disinfected before and after use each day.

2.6.18 Hazardous Chemical Substances (Hazardous Chemical Substances Regulations)

The Contractor / Employer must ensure that:

- Employees receive the necessary information & training to be able to use and store HCS safely.
- Employees obey lawful instructions regarding:
 - The wearing and use of protective equipment.
 - The use and storage of HCS.
 - The prevention of the uncontrolled release of HCS.
 - The wearing of exposure monitoring and measuring equipment.

- The cleaning up and disposal of materials containing HCS.
- Housekeeping, personal hygiene and the protection of the environment.
- The Risk Assessments required in terms of Construction Regulation 7 include employee exposure to HCS and that the necessary steps to protect persons from being adversely affected by HCS present or used in the workplace, are addressed.
- Suppliers provide the necessary information in the form of a Material Safety Data Sheet (MSDS) regarding a HCS required to ensure the safe use and storage of that HCS (All MSDS's must be kept on site)
- An up-to-date Master list is kept on site of HCS's stored and used together with the MSDS's of the said HCS's.
- HCS containers are clearly marked as to the contents and main hazardous category e.g., "Flammable" or "Corrosive" and the reference number of the HCS on the list indicated above HCS.
- HCS waste is disposed of safely in terms of hazardous waste disposal requirements.

2.6.19 Personal & Other Protective Equipment (Sections 8 of the OHS Act)

The Contractor is required to identify the hazards in the workplace and deal with them appropriately. He must either eliminate them or, where impracticable, take steps to protect workers and make it possible for them to work safely and without risk to health and safety under hazardous conditions.

Personal Protective Equipment (PPE) should, however, be the last resort and there should always first be an attempt to apply engineering and other solutions to mitigate hazardous situations before the issuing of PPE is considered.

Where it is not possible to create an absolutely safe and healthy workplace the Contractor is required to inform employees regarding this matter and to issue, free of charge, suitable equipment to protect them from any hazards.

It is a further requirement that the Contractor maintain this equipment, that he instructs and trains the employees in the use of the equipment and ensures that the prescribed equipment is used by the employee/s.

Employees do not have the right to refuse to use/wear the equipment prescribed by the employer and, if it is impossible for an employee to use or wear prescribed protective equipment through health or any other reason, the employee cannot be allowed to continue working under the hazardous condition/s for which the equipment was prescribed.

The Contractor may not charge any fee for protective equipment prescribed by him/her but may charge for equipment under the following conditions:

- Where the employee requests additional issue in excess of what is prescribed.
- Where the employee has blatantly abused or neglected the equipment leading to early failure.
- Where the employee has lost the equipment.

All employees shall, as a minimum, be required to wear the following PPE on site.

- Protective overalls displaying their company name.
- Protective footwear.
- Protective headwear.
- High visibility jackets displaying their company name.
- Chin straps on protective headwear when working in elevated positions.
- Ear plugs or ear muffs where required.
- Goggles where required.

2.6.20 Portable Electrical Tools & Equipment (Electrical Machinery Regulation 9)

Portable electrical tools and equipment include every unit that draws electrical power and is moved around for use in the workplace i.e., drills, saws, grindstones, portable lights, etc. In addition, electrical appliances such as fridges, hotplates, heaters, etc. must be inspected and maintained to the same standards as portable electrical tools and appliances.

The use, inspection and maintenance of portable electrical tools and equipment must be governed by the following:

- Regular inspections by a competent person appointed in writing (Daily inspections before use)
- Inspection must be performed by a competent person and the results recorded in a register.
- Only competent authorised persons are allowed to use portable electrical tools and equipment.
- The correct protective equipment is worn / used whilst operating portable electrical tools and equipment
- Must be maintained in good condition at all times to prevent an electrical shock to the user.
- All equipment must be fitted with a switch to allow for safe & easy starting and stopping.

Portable Lights:

- Must be fitted with a robust non-hygroscopic non-conducting handle.
- The lamp must be protected by a robust and weather proof guard.
- The cable lead-in must withstand rough handling.
- Registers be maintained for each piece of equipment and findings of regular inspections must be entered.
- Inspections must concentrate on plug, cord, switch and any obvious faults.
- When used in wet/damp conditions, it must be protected, as for portable electrical tools above.

2.6.21 Public Health & Safety (Section 9 of the OHS Act)

The Principal Contractor/Sub-Contractor will be responsible for ensuring that all employees, professional team members, visitors, employees who wish to gain entry onto site in addition to all employees working on this project, are made aware of the dangers likely to arise from construction work as well as the precautionary measures to be observed to avoid or minimise those dangers. Examples of non-employees include persons entering the site for whatever reason, the surrounding community and passers-by to the site.

Appropriate signage must be posted to this effect and all employees on site must be instructed to ensure that non-employees are protected at all times.

No person must be permitted to enter site without first signing a register and undergoing symptomatic screening for the corona virus.

Signage reminding workers to comply with COVID-19 protocols must be displayed at various points on site.

The construction site area must be enclosed with at least a 1,8 meters high fence. The contractor must ensure that all access to the construction area is controlled and enforced.

All non-employees entering the site must receive induction on the hazards and risks and the control measures to mitigate these.

Adequate dust suppression techniques must be implemented.

All truck loads must be covered to prevent materials falling onto public roads.

Noise levels to be managed during construction to minimise disturbances to neighbours.

2.6.22 Edge Protection and Barricading

The Principal Contractor must ensure that all exposed edges and openings are guarded and demarcated at all times until permanent protection has been erected.

The Principal Contractor's fall protection plan must detail the following safety measures: Protection of decking edges; finished floor slab edges; stairways; floor penetrations; lift shafts; and all other openings and areas from where a person may fall.

The placement of edge protection at deck edges must be coordinated so as to minimize the time that such edge protection is not in place (programming issue between Principal Contractor and Formwork / support work Contractor).

The removal of edge protection from formwork decks and the subsequent replacement thereof at the finished floor edge must be systematically coordinated by the Principal Contractor.

During the erection of formwork and support work, edge protection may be waived in lieu of fall arrest equipment. The Principal Contractor and contractors' fall protection plans must include the strategies for management of edge protection and penetrations.

2.6.23 Ladders

The Principal Contractor must ensure that all ladders are:

- inspected daily with monthly records kept;
- in good safe working order;
- the correct height for the task;
- extend at least 1m above the landing;
- fastened and secured; and
- used at a safe angle.

Stepladders must be safe for use, must be the correct height for the task at hand and the top two rungs may not be used. Records of inspections must be kept in a register on site. Contractors using their own ladders must ensure the same.

2.6.24 Hot Work

The Principal Contractor must ensure that all contractors and workers doing Hot Work (steel cutting, welding etc) are in strict compliance with General Safety Regulation 9, sections 1,2,3,4 & 5

2.6.25 Pressure Equipment

The Principal Contractor and all relevant Contractors shall comply with the Pressure Equipment Regulations, including:

- Providing competency and awareness training to the operators / users;
- Providing the relevant PPE and clothing;
- Inspect equipment regularly (every month) and keep records of inspections;
- Providing appropriate firefighting equipment (Fire Extinguishers) on hand;

- Oxygen and acetylene bottles must be secured on a trolley, in an upright position, must not show signs of corrosion or damage and must have flash back arrestors fitted, on both the bottles and torches.

2.6.26 Night Work.

All Contractors must ensure that adequate lighting is provided to allow for work to be carried out safely.

2.6.27 Environmental Management.

- The Principal Contractor and Sub-Contractors shall take all the precautionary steps to prevent any pollution of the Environment.
- Any material, which may pose a harmful effect when disposed of by normal means, must be disposed of in an appropriate manner to eliminate its harmful effect on the environment after disposal.
- Plans to deal with spillages must be in place and maintained.
- No waste materials, liquid or solid, may be disposed of in drains.

2.6.28 Alcohol and other drugs.

- No alcohol and other drugs will be allowed on site without the express permission of the Principal Contractor.
- No person may be under the influence of alcohol or any other drugs while on the construction site.
- Any person on prescription drugs must inform his / her employer, who shall in turn report this to the Principal Contractor forthwith.
- Any person suffering from any illness / condition that may have a negative effect on his / her safety performance must report this to his / her Employer, who in turn must report this to the Principal Contractor forthwith.
- Any person suspected of being under the influence of alcohol or other drugs must be sent home immediately, to report back the next day for a preliminary inquiry. A full disciplinary procedure must be followed by the Contractor concerned and a copy of the disciplinary action must be forwarded to the principal contractor for his records.

BASELINE HAZARD IDENTIFICATION and RISK ASSESSMENT.

CLIENT:	PASSENGER RAIL AGENCY of SOUTH AFRICA. (PRASA)			
PROJECT:	KWAZULU-NATAL PRASA STATION UPGRADE - KWAMASHU SUB-CORRIDOR 1.			
SCOPE OF WORK	REFURBISHMENT OF VANDALIZED RAILWAY STATIONS (Cluster 6 - Kwamashu, Redhill, Umgeni, Moses Mabida, Briardene, Avoca and Greenwood Stations)			
EFFECT	SEVERITY - (S)	FREQUENCY - (F)	PROBABILITY - (P)	RISK RATING = S x F x P
I INJURY	Fatal 3	Continuous 3	Certain 3	LOW RISK 0 to 5
H HEALTH	Serious 2	Occasional 2	May happen 2	MEDIUM RISK 6 to 10
E ENVIRONMENT	Minor 1	Rarely 1	Unlikely 1	HIGH RISK 11 to 27



PERODI
OH&S SERVICES

SOURCE OF HAZARD Activity / Plant / Materials / Process	RISK TO SAFETY	RISK TO HEALTH	RISK TO ENVIRONMENT	EFFECT	RISK RATING				P.P.E.	PREVENTATIVE MEASURES
					S	F	P	R		
1. Site establishment	Unauthorised persons on site.			I	1	2	2	4	Hard hats, safety boots.	1. Contractor to control access to site. 2. Competent supervision. 3. Issue-based risk assessments.
		Loading / unloading materials.		H	1	2	2	4		1. Do not lift heavy objects.
	Tripping over materials not correctly stored or stacked.			I	1	2	2	4		1. Contractor to induct workers. 2. Demarcate stacking and storage
2. Employment of staff.		Employees medically unfit and incorrectly placed for job category.		H	2	1	2	4	Hard hats, safety boots, overalls.	1. New employees to have pre-employment medical examinations to determine suitability for job
	1. Employees not familiar with H&S requirements			I	2	2	2	6		1. All staff to be inducted for site requirements before commencing works.
	1. Unsafe acts in unsafe conditions being practiced on site.			I	2	2	2	8		1. Competent Construction Safety Officer to be appointed. 2. Safety representatives to be appointed for different work areas. 3. Inspections and audits by Pr. CHS Agent.
3. Stripping top soil	1. Vehicles reversing over employees and equipment.			I	2	1	1	2	Hard hats, safety boots, ear plugs, dust masks, reflective bibs, overalls.	1. Reverse hooters on trucks. 2. Use traffic controller. 3. Issue-based risk assessments. 4. Visible bibs to be worn. 5. Training and supervision.
	1. Dirt in eyes and face.	Inhalation of dust		H	1	3	2	6		1. Dust masks to be worn.
			Uncontrolled dust	E	1	2	2	4		1. Spraying with water.
4. Excavate, load and tipping of soil	1. Tip trucks reversing over personnel. 2. Truck colliding with excavator. 3. Collision with other vehicles. 4. Trucks toppling over.			I	3	1	1	3	Hard hats, safety boots, ear plugs, dust masks, reflective bibs, overalls.	1. Issue-based risk assessments. 2. Reverse hooters on trucks. 3. Traffic controller. 4. Clerk to check load levels. 5. Brake testing before work daily. 6. Training and supervision.

SOURCE OF HAZARD Activity / Plant / Materials / Process	RISK TO SAFETY	RISK TO HEALTH	RISK TO ENVIRONMENT	EFFECT	RISK RATING				P.P.E.	PREVENTATIVE MEASURES
					S	F	P	R		
5. Excavate soil by hand	1. Injury to co-workers from tools being used. ie. swinging pick.			I	2	1	1	2	Hard hats, safety boots, overalls.	1. Spacing of workers. 2. Training of workers. 3. P.P.E.
6. Backfilling.	1. Live burials of personnel.								Hard hats, safety boots, overalls.	1. Check all areas before backfilling.
7. Processing and mechanical compacting of soil.	1. Vehicles reversing over employees and equipment.			I	2	1	1	2	Hard hats, safety boots, ear plugs, dust masks, reflective bibs, overalls.	1. Reverse hooters on trucks. 2. Competent supervision. 3. Issue-based risk assessments. 4. Awareness training.
		Noise induced hearing loss.		H	1	2	2	4		
			1. Uncontrolled dust. 2. Oil leaks from compactors.	E	1	1	2	2		
8. Re-inforcing general.	1. Cuts and lacerations.			I	1	2	2	4	Safety boots, gloves.	1. Mark all protruding bars with bright coloured markings, tape.
9. Concrete work (foundations)	1. Personnel and equipment falling in excavation.			I	1	1	2	2	Hard hats, safety boots, gloves, overalls..	1. Provide safe access.
		Chemical reaction in cement causes dermatitis.		H	1	2	2	4		1. Awareness training.
			1. Spillages on to ground	E	1	2	2	4		1. Good housekeeping.
10. Formwork	1. Falls, fractures, death.			I	2	2	2	8	Life lines and safety harnesses.	1. Competent supervision. 2. Issue-based risk assessments.
11. Stripping of formwork.	1. Falling to ground. 2. Falling shutter boards			I	2	2	2	8	Life lines and safety harnesses.	3. Training. 4. Create safe working area.
			1. Spillage of degreasers onto ground.	E	1	2	2	4	Gloves	1. Awareness training. 2. Good housekeeping.
12. Concrete staircases and decks.	1. Personnel and equipment falling from unprotected edge.			I	2	1	2	4	Hard hats, safety boots, gloves, safety harness, overalls..	1. Competent supervision. 2. Issue-based risk assessments. 3. Training. 4. Create safe working area.
		1. Chemical reaction in cement causes dermatitis.		H	1	2	2	4		
			1. Spillages on to ground	E	1	2	2	4		1. Good housekeeping.
13. Brickwork general.		1. Chemical reaction in cement causes dermatitis.		H	1	2	2	4	Hard hats, gloves, safety boots.	1. Awareness training.
14. Scaffolding erection and dismantling.	1. Falls: fractures, death. 2. Falling objects. 3. Collapsing of scaffold.			I	3	2	2	12	Overalls, hard hats, safety shoes, gloves, safety harnesses.	1. Training. 2. Use qualified erectors 3. Secure footing. 4. Tie scaffolding. 5. Scaffolding in good condition.
15. Brickwork at height.	1. Falls, fractures, death.			I	2	2	2	8	Safety harnesses, hard hats, gloves, safety boots.	1. Appoint Fall prevention planner. 2. Develop Fall Prevention Plan. 3. Training. 4. Create safe working area. 5. Competent supervision. 6. Issue-based risk assessments.
		1. Chemical reaction in cement causes dermatitis.		H	1	2	2	4		

SOURCE OF HAZARD Activity / Plant / Materials / Process	RISK TO SAFETY	RISK TO HEALTH	RISK TO ENVIRONMENT	EFFECT	RISK RATING				P.P.E.	PREVENTATIVE MEASURES
					S	F	P	R		
16. Plastering.	1. Risk of falling if working at height.			I	2	1	2	4	Safety harnesses, hard hats, gloves, safety boots.	1. Competent supervision. 2. Issue-based risk assessments. 3. Training. 4. Create safe working area. 5. Awareness training.
		1. Chemical reaction in cement causes dermatitis.		H	1	2	2	4		
			Spillages on to ground	E	1	2	2	4		Good housekeeping.
17. Mixing cement and concrete by hand.		1. Inhalation of cement dust. 2. Contact with skin - dermatitis.		H	1	3	2	6	Dust masks. Gloves.	1. Awareness training. 2. Use correct P.P.E.
18. Ladder usage.	1. Fall from ladder.			I	2	1	2	4	Hard hats, safety boots, overall.	1. Pre-use check. 2. Secure at top and bottom.
19. Structural steel erection.	1. Falls. 2. Falling objects.			I	3	2	2	12	Life line, Safety harness, hard hats, safety boots.	1. Issue-based risk assessments. 2. Competent supervision. 3. Use of qualified steel riggers. 4. Inspection of lifting equipment. 5. Use of scaffolding.
20. Erect roof trusses.	1. Fall from roof height. 2. Materials falling from heights.			I	3	2	2	12	Life line, Safety harness, hard hats, safety boots.	1. Competent supervision. 2. Issue-based risk assessments. 3. Relevant training and preparation. 4. Fall arrest equipment. 5. Lower unneeded material. 6. Provide safe access. 7. Barricade areas below.
21. Roof sheeting at height.	1. Falls and falling objects. 2. Windy and wet conditions.			I	3	2	2	12		
22. Electrical installations.	1. Exposed switches and wires. 2. Uninsulated cables and wires.			I	3	2	2	12		1. Awareness training. 2. Regular inspections.
23. Driving vehicles.	1. Accidents 2. Driver competence. 3. Unroadworthy vehicles. 4. Road and weather conditions.			I	3	2	2	12	Safety belts.	1. Licenced drivers only. 2. Obey driving rules. 3. Inspection of vehicles. 4. Be aware, be alert, be sober. 5. Maintenance records. 6. Medical and psychological fitness.
24. Fire prevention.	1. Combustible refuse, waste. 2. Flammable liquids. 3. Electrical equipment.			I	3	1	2	6	Hard hats, safety boots, aprons, overalls.	1. Training. 2. Good housekeeping. 3. Segregated storage of materials.
25. Load and unload by hand.	1. Back and hand injuries.			I	1	2	2	4	Hard hats, safety boots, gloves, overalls.	1. Training. 2. Clear task communication.
26. Heavy manual work.	1. Back injuries.			I	2	2	2	8	Hard hats, safety boots, gloves, overalls.	1. Training in SWP's. 2. Use of lifting equipment.
27. Falls. (On the ground)	1. Injuries and bruises.			I	1	2	2	4	Hard hats, safety boots, gloves, overalls.	1. Training. 2. Good housekeeping.
28. Vibration (compactor, jack hammer)		1. Kidney complications. 2. Hearing loss.		H	1	2	2	4	Hard hats, safety boots, gloves, ear plugs.	1. Awareness training. 2. Regular rest breaks.

SOURCE OF HAZARD Activity / Plant / Materials / Process	RISK TO SAFETY	RISK TO HEALTH	RISK TO ENVIRONMENT	EFFECT	RISK RATING				P.P.E.	PREVENTATIVE MEASURES
					S	F	P	R		
29. Compressed air tools.	1. Injuries, 2. Eye injuries, 3. Ruptured ear drums.			I	2	2	2	8	Hard hats, safety boots, goggles, ear plugs.	1. Awareness training. 2. Pre-use inspections.
30. Noise.		1. Noise induced hearing loss.		H	1	2	2	4	Ear plugs, ear muffs.	1. Carry out noise surveys. 2. Erect applicable signage. 3. Awareness training of workers. 4. Stagger time of noisy activities if affecting non-employees.
31. Bad lighting.	1. Injuries, 2. Falls.			I	1	2	2	4	Hard hats, safety boots, goggles.	1. Adequate & emergency lighting.
32. Awkward postures.	1. Back injuries.	1. Sufficient access to areas		I	1	2	2	4		1. Health complications from unnatural postures.
33. Climbing up and down, on and off.	1. Trips, 2. Falls, 3. Fractures.			I	2	2	2	8	Hard hats, safety boots, overalls.	1. Awareness training. 2. Adequate and correct access.
34. Visual workshop.	1. Fall from heights, 2. Materials falling from heights, 3. Tripping over materials.								Overalls, hard hats, safety shoes, gloves.	1. Proper and regular housekeeping.
35. Using the right tool for the job.	Injuries, cuts, bruises, fractures.			I	1	2	2	4	Hard hats, safety boots, gloves, goggles, overalls.	1. Awareness training. 2. Dispose of damaged tools. 3. Correct tool inspections.
36. Focusing eyes on activity.	1. Trips, 2. Falls, 3. Fractures.			I	1	2	2	4	Hard hats, safety boots, gloves, goggles, overalls.	1. Awareness training. 2. Looking while walking. 3. Looking at the task at hand.
37. Using electric drill.	1. Eye injuries, 2. General injuries, 3. Electrical shock.			I	2	2	2	8	Hard hats, safety boots, goggles, overalls.	1. Competent supervision. 2. Issue-based risk assessments. 3. Competency training. 4. Used only by competent user. 5. Pre-use checks. 6. Monthly inspections. 7. Work piece secure.
38. Using an angle grinder.	1. Severe injuries, 2. Electrical shocks.			I	3	2	2	12		
39. Using a skill saw.	1. Electrical shocks, 2. Severe injuries, 3. Guard malfunction.			I	3	2	2	12		
40. Using extension leads.	1. Electrical shocks, 2. Trips and falls.			I	2	2	2	8	Hard hats, safety boots, overalls.	1. Training. 2. Pre-use inspection. 3. Maintenance.
41. Use of hand tools.	1. Cuts and bruises.			I	2	2	2	8	Hard hats, safety boots, goggles, overalls.	1. Training in use. 2. Use correct tool for task. 3. Sharpen tools. 4. Regular inspections of tools. 5. Discard damaged tools.

**ANNEXURE A: TASK COMPLETION FORM PRASA STATION UPGRADE – KWAMASHU SUB-CORRIDOR 1:
(Cluster 6 - Kwamashu, Redhill, Umgeni, Moses Mabida, Briardene, Avoca and Greenwood Stations)**

The Contractor must submit proof of compliance with Annexure A with the construction phase H&S Plan where applicable.

Item No.	Requirement	OH&SA Requirement	Submission Date
1	Health and Safety Plan	Complete Annexure A (Construction Regulations)	Upon notification of intention to appoint.
2	Assignment of Responsible Persons	All relevant appointments as per OH&S Act, Construction Regulations, and Annexure B	Together with Health & Safety Plan
3	Competence of Responsible persons.	Client Requirement and OH&S Act	Together with Health & Safety Plan
4	Compensation of Occupational Injuries and Diseases Act (COID Act 130 of 1993)	Construction Regulations and Client Requirements	Together with Health & Safety Plan
5	Occupational Health and Safety Policy	OH&S Act	Together with Health & Safety Plan
6	Health and Safety Organogram	Client Requirement	Together with Health & Safety Plan
7	Initial Hazard Identification and Risk Assessment.	Construction Regulations	Together with Health & Safety Plan
8	Proof of Public Liability Insurance	Construction Regulations	Together with Health & Safety Plan

ANNEXURE B: ASSIGNMENT OF CONTRACTOR'S RESPONSIBLE PERSONS
PRASA STATION UPGRADE – KWAMASHU SUB-CORRIDOR 1:
(Cluster 6 - Kwamashu, Redhill, Umgeni, Moses Mabida, Briardene, Avoca and Greenwood Stations)

The Principal Contractor shall make some of the following appointments according to the initial risk assessment, or as deemed necessary: (further appointments could become necessary as the project progresses.)

Appointment	OHS Act Reference	Requirement abbreviated.
CEO Assignee	Section 16(2) of the OHS Act	A competent person to assist with the on-site H&S, overall responsibility – Contractor's Responsible Person
Construction Manager	Construction Regulation 8(1)	A competent person to supervise and be responsible for Safety, Health and Environmentally related issues on site. The person is appointed to assist the Section 16(2) assignee with his/her overall duties.
Assistant Construction Manager	Construction Regulation 8(2)	A competent person to assist with daily supervision of construction work. The person assists the Construction Work Supervisor.
Health and Safety Officer	Construction Regulation 8(5)	A full-time or part-time construction Safety Officer to assist in the control of all safety related aspects on site.
Construction Supervisor	Construction Regulation 8(7)	A competent person responsible for construction activities and ensuring Health & Safety compliance on the construction site.
Assistant Construction Supervisor	Construction Regulation 8(8)	A competent person(s) responsible for assisting the Construction Supervisor in ensuring Health & Safety compliance for certain defined section(s) of the construction site.
Risk Assessment Co-coordinator	Construction Regulation 9	A competent person(s) to co-ordinate all risk assessments on behalf of the Principal Contractor. The same applies to contractors and sub-contractors.
Fall Protection Plan Developer	Construction Regulation 10	A competent person(s) to prepare and amend the Fall Protection Plan.
Temporary works Inspector	Construction Regulation 12	A competent person(s) to inspect formwork and support work.
Excavation Inspector	Construction Regulation 13	A competent person(s) to inspect excavation work and ensure that approved safe working procedures are followed at all times.
Scaffolding supervisor	Construction Regulation 16.1	A competent person(s) to erect scaffolding

Appointment	OHS Act Reference	Requirement abbreviated.
Explosive Actuated Fastening Device Inspector/Supervisor	Construction Regulation 21	A competent person(s) to inspect and clean the tool daily and control all operations thereof.
Temporary Electrical Installations Supervisor	Construction Regulation 24	A competent person(s) to control all temporary electrical installations.
Stacking & Storage Supervisor	Construction Regulation 28	A competent person(s) to supervise all stacking and storage operations
Fire-fighting equipment Inspector	Construction Regulation 29	A competent person(s) to inspect fire-fighting equipment.
Safety, Health and Environmental Representative	Section 17 of the OHS Act	A competent person(s) to inspect H&S in reference to plant, machinery, Health & Safety of persons in the workplace and Environmental Management.
Safety, Health and Environmental Committee Member(s)	Section 19 of the OHS Act	A competent person(s) representing the employer to assist with the on-site Safety, Health and Environmental matters.
Incident/Accident Investigator	General Administrative Regulation 8	A competent person(s) to investigate incidents / accidents on site and could be: • The employer • SHE Representative • Designated person • Members of the H&S Committee
First Aider	General Safety Regulation 3	A qualified person to address all on-site first aid cases.
Ladder Inspector	General Safety Regulation 13A	A competent person(s) to inspect monthly and ensure that they are safe for use.
Lifting Machinery and Equipment inspector	Driven Machinery Regulation 18	A competent person(s) to inspect lifting machines, equipment & tackle.

ANNEXURE C: OTHER REQUIREMENTS. PRASA STATION UPGRADE – KWAMASHU SUB-CORRIDOR 1:
(Cluster 6 - Kwamashu, Redhill, Umgeni, Moses Mabida, Briardene, Avoca and Greenwood Stations)

The Principal Contractor shall comply with, but not be limited to, the following requirements, and report on these to the Client at progress meetings, or at least monthly, whichever is the sooner.

What	When	Output	Accepted by Client and date.
Induction training	Every worker before he/she starts work.	Attendance registers	
Awareness training (Tool box talks)	At least weekly	Attendance registers	
Safety, Health and Environmental Reports	Monthly	Report covering: - Incidents/accidents and investigations - Non-conformances by employees & external H&S audit reports	
Emergency procedures	Ongoing evaluation of procedure	Table procedure in writing as well as tel. numbers	
Risk assessment	Continuous	Documented risk assessment	
Safe work procedures	Drawn up before workers are exposed to new risks.	Documented set of safe work procedures (method statements) updated and signed off.	
General inspections	Daily, Weekly and Monthly	Report OH&S Act and Con. Regs. Compliance: - Excavations - Formwork and support work - Scaffolding - Ladders - Explosive tools. - Hand tools - Portable electrical equipment - Portable fire extinguishers - First Aid box contents. - Stacking and Storage. - Welfare facilities. - Vehicles and Mobile Plant.	

PRASA SPK7/1 DOC.
Issue 1

SPECIFICATION FOR WORKS ON, OVER, UNDER OR ADJACENT TO RAILWAY LINES AND NEAR HIGH VOLTAGE EQUIPMENT (SPK 7/1)

© This document as a whole is protected by copyright. The information contained herein is the sole property of PRASA Ltd. It may not be used, disclosed or reproduced in part or in whole in any manner whatsoever, except with the written permission of and in a manner permitted by the proprietors. Only photostat reproductions of this master is permitted for use in PRASA tender documentation.

PASSENGER RAIL AGENCY OF SOUTH AFRICA

SPK7/1

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

(This specification shall be used in Passenger Rail Agency of South Africa (PRASA) contracts)

CONTENTS

<u>CLAUSE</u>	<u>DESCRIPTION</u>	<u>PAGE NO'S</u>
1.	DEFINITIONS	3
	PART A - GENERAL SPECIFICATION	
2.	Authority of officers of Transnet or PRASA	4
3.	Contractor's representatives	4
4.	Occupations and work permits	4
5.	Speed restrictions and protection	5
6.	Roads on Transnet or PRASA property	5
7.	Clearances	6
8.	Stacking of material	6
9.	Excavation, shoring, dewatering and drainage	6
10.	Falsework for structures	6
11.	Piling	7
12.	Underground services	7
13.	Blasting	7
14.	Rail trolleys	8
15.	Ancillary trackside equipment and facilities	8
16.	Penalty for delays to trains	8
17.	Compliance with statutes and regulations	8
18.	Temporary level crossings	9
	PART B - ADDITIONAL SPECIFICATION FOR WORK NEAR HIGH-VOLTAGE ELECTRICAL EQUIPMENT	
1.	General	10
2.	Work on buildings of fixed structures	10
3.	Work done on or outside of rolling stock, including loading and unloading	11
4.	Use of equipment	11
5.	Carrying and handling material and equipment	12
6.	Precautions to be taken when erecting or removing poles, antennae and trees	12
7.	Use of water	12
8.	Use of construction plant	12
9.	Work performed under dead conditions under cover of a work permit	13
10.	Traction return circuits in rails	13
11.	Blasting	13
12.	High-voltage electrical equipment not maintained and/or operated by Transnet or PRASA's contractors	14

1. DEFINITIONS

The following definitions shall apply:

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

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

Bond: A short conductor installed to provide electrical continuity.

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

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

Dead: Isolated and earthed.

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

Engineer: The person, firm or company appointed by PRASA to act as Engineer for the purposes of the contract and designated as such in the Special Conditions of Contract, or any other Engineer appointed from time to time by PRASA and notified in writing to the Contractor.

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

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

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

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

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

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

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

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

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

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

PART A - GENERAL SPECIFICATION

2. AUTHORITY OF OFFICERS OF TRANSNET OR PRASA'S MAINTENANCE AND/OR OPERATING CONTRACTOR

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

3. CONTRACTOR'S REPRESENTATIVES

- 3.1 The Contractor shall nominate Responsible Representatives of whom at least one shall be available at any hour for call-out in cases of emergency. The Contractor shall provide the Engineer with the names, addresses and telephone numbers of the representatives.
- 3.2 The Contractor guarantees that he has satisfied himself that the Responsible Representative is fully conversant with this specification and that he shall comply with all his obligations in respect thereof.
- 3.3 The Responsible Representative shall be familiar with the contents and provisions of the ELECTRICAL SAFETY INSTRUCTIONS, copies of which they shall keep in their possession for the duration of the contract.

4. OCCUPATIONS AND WORK PERMITS

- 4.1 Work to be done during total occupation or during an occupation between trains or under a work permit shall be done in a manner decided by the Engineer and at times to suit the requirements of Transnet or PRASA'S maintenance and/or operating Contractor.
- 4.2 The Contractor shall organise the Works in a manner, which will minimise the number and duration of occupations and work permits required.
- 4.3 PRASA shall not be liable for any financial or other loss suffered by the Contractor arising from his failure to complete any work scheduled during the period of an occupation or work permit.
- 4.4 The Contractor shall submit to the Engineer, in writing, requests for occupations or work permits together with details of the work to be undertaken, at least 21 days before they are required. Transnet or PRASA'S maintenance and/or operating Contractor does not undertake to grant an occupation or work permit for any particular date, time or duration.
- 4.5 Transnet or PRASA'S maintenance and/or operating Contractor reserves the right to cancel any occupation or work permit at any time before or during the period of occupation or work permit. If, due to cancellation or change in date or time, the Contractor is not permitted to start work under conditions of total occupation or work permit at the time arranged, all costs caused by the cancellation shall be born by the Contractor except as provided for in clauses 4.6 to 4.8 above.
- 4.6 When the Contractor is notified less than 2 hours before the scheduled starting time that the occupation or work permit is cancelled, he may claim reimbursement of his direct financial losses caused by the loss of working time up to the time his labour and plant are employed on other work, but not exceeding the period of the cancelled occupation or work permit.
- 4.7 When the Contractor is notified less than 2 hours before the scheduled starting time, or during an occupation or work permit, that the duration of the occupation or work permit is reduced, he may claim reimbursement of his direct financial losses caused by the loss of working time due to the reduced duration of the occupation or work permit, but not exceeding the balance of the reduced occupation or work permit.
- 4.8 Reimbursement of the Contractor for any loss of working time in terms of 4.6 and 4.7, shall be subject to his claims being submitted within 14 days of the event with full details of labour and plant involved, and provided that the Engineer certifies that no other work on which the labour and plant could be employed was immediately available.
- 4.9 Before starting any work for which an occupation has been arranged, the Contractor shall obtain from the Engineer written confirmation of the date, time and duration of the occupation including the specified conditions applicable.
- 4.10 Before starting any work for which a work permit has been arranged, the Responsible Representative shall read and sign portion C of Annexure 8.1 of the ELECTRICAL SAFETY INSTRUCTIONS, presented by an authorised person, signifying that he is aware of the limits within which work may be undertaken. After the work for which the permit was granted has been completed, or when the work permit is due to be terminated, or if the permit is cancelled after the start, the same person who signed portion C shall sign portion D of Annexure 8.1 of the ELECTRICAL SAFETY INSTRUCTIONS, thereby acknowledging that he is aware that the electrical equipment is to be made "live". The Responsible Representative shall advise all his workmen accordingly.

5. SPEED RESTRICTIONS AND PROTECTION

- 5.1 When speed restrictions are imposed by Transnet or PRASA'S maintenance and/or operating Contractor because of the Contractor's activities, the Contractor shall organise and carry out his work so as to permit the removal of the restrictions as soon as possible.
- 5.2 When the Engineer considers protection to be necessary the Contractor shall, provide all protection including flagmen, other personnel and all equipment for the protection of Transnet or PRASA's personnel and assets, the public and including trains. The Contractor shall arrange training and Transnet or PRASA's accreditation of the Contractor's flagmen and other personnel performing protection duties. The cost of the training shall be to the Contractor's account. It remains the responsibility of the Contractor to protect his personnel and assets at all times.
- 5.3 The Contractor shall consult with the Engineer, whenever he considers that protection will be necessary, taking into account the minimum permissible clearances set out in PRASA's or Transnet's publication, PERMANENT WAY INSTRUCTIONS.
- 5.4 The Contractor shall appoint a Responsible Representative to receive and transmit any instruction, which may be given by Transnet or PRASA'S maintenance and/or operating Contractor personnel providing protection.

6. ROADS ON TRANSNET OR PRASA PROPERTY

- 6.1 The Contractor shall use every reasonable means to prevent damage to any of the roads or bridges communicating with or on the direct route to the site and shall select routes, use vehicles, and restrict loads so that any extraordinary traffic as may arise from the moving of plant or material to or from the site shall be limited as far as reasonably possible.
- 6.2 The Contractor shall not occupy or interfere in any way with the free use of any public or private road, right-of-way, path or street unless the Engineer has obtained the approval of the road authority concerned.

7. CLEARANCES

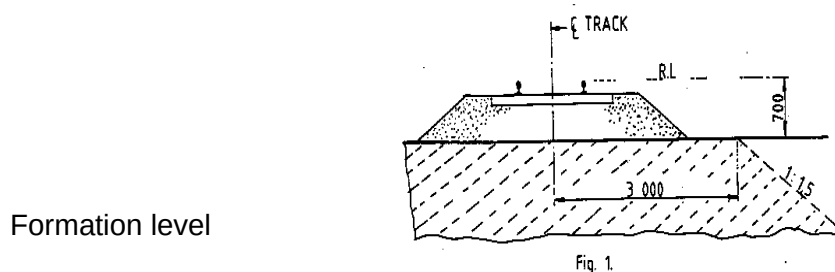
- 7.1 No temporary works shall encroach on the appropriate minimum clearances set out in PRASA or Transnet's publications, PERMANENT WAY INSTRUCTIONS and ELECTRICAL SAFETY INSTRUCTIONS.

8. STACKING OF MATERIAL

- 8.1 The Contractor shall not stack any material closer than 3 metres from the centre line of any railway line or within 2.5 metres of the boundary fence without prior approval of the Engineer and considering the presence of any trackside equipment.
- 8.2 All stacking of material shall take place in accordance with the Occupational Health and Safety Act No. 85 of 1993, and Regulations and Instructions, and the ELECTRICAL SAFETY INSTRUCTIONS.

9. EXCAVATION, SHORING, DEWATERING AND DRAINAGE

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



- 9.2 The Contractor shall provide at his own cost any shoring, dewatering or drainage of any excavation unless otherwise stipulated elsewhere in the Contract.
- 9.3 Where required by the Engineer, drawings of shoring for any excavation under or adjacent to a railway line shall be submitted and permission to proceed obtained, before the excavation is commenced.
- 9.4 The Contractor shall prevent ingress of water to the excavation but where water does enter, he shall dispose of it as directed by the Engineer.
- 9.5 The Contractor shall not block, obstruct or damage any existing drains either above or below ground level unless he has made adequate prior arrangements to deal with drainage.

10. FALSEWORK FOR STRUCTURES

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

11. **PILING**

- 11.1 The Engineer will specify the conditions under which piles may be installed on Transnet or PRASA property.

12. **UNDERGROUND SERVICES**

- 12.1 No pegs or stakes shall be driven or any excavation made before the Contractor has established that there are no underground services, which may be damaged thereby.
- 12.2 Any damage shall be reported immediately to the Engineer, or to the personnel in charge at the nearest station, or to the traffic controller in the case of centralised traffic control.
- 12.3 Any previously uncharted underground services encountered by the Contractor during the course of his activities shall be reported immediately to the Engineer who shall ensure the necessary inclusion in the “as built” drawings.

13. **BLASTING**

- 13.1 No blasting in the vicinity of a railway line shall be carried out except with the prior written permission of the Engineer and under such conditions as he may impose.
- 13.2 The Contractor shall make arrangements for the supply, transport, storage and use of explosives.
- 13.3 The Contractor shall have labour, tools and plant, to the satisfaction of the Engineer, available on the site to clear immediately any stone or debris deposited on the track or formation by blasting, and to repair any damage to the track or formation immediately after blasting. Repairs to the track shall be carried out only under the supervision of a duly authorised representative of the PRASA's maintenance and/or operating Contractor.
- 13.4 The Contractor shall advise the Engineer of his intention to blast at least 21 days prior to the commencement of any blasting operations.
- 13.5 Before any blasting is undertaken, the Contractor and the Engineer shall jointly examine and measure up any buildings, houses or structures in the vicinity of the proposed blasting to establish the extent of any cracking or damage that exists. The Contractor, at his own expense shall make good any deterioration of such buildings, houses, or structures, which, in the opinion of the Engineer, is a direct result of the blasting.
- 13.6 All claims shall be settled by the Contractor as soon as possible. Should unreasonable delays occur, the PRASA will have the right to settle any such claims and recover the costs from the Contractor.
- 13.7 Within a reasonable time after completion of the blasting, the Contractor shall obtain a written clearance from each land owner in the vicinity of the blasting operations to the effect that all claims for compensation in respect of damage caused by the blasting operations to their respective properties have been settled.

- 13.8 The Contractor shall provide proof that he has complied with the provisions of clauses 10.17.1 to 10.17.4 of the Explosives Regulations (Act 26 of 1956 as amended).
- 13.9 Blasting within 500 metres of a railway line will only be permitted during intervals between trains. A person appointed by the Engineer, assisted by flagmen with the necessary protective equipment, will be in communication with the controlling railway station. Only this person will be authorised to give the Contractor permission to blast, and the Contractor shall obey his instructions implicitly regarding the time during which blasting may take place.
- 13.10 The flagmen described in clause 13.9 above, where provided by Transnet or PRASA'S maintenance and/or operating Contractor, are for the protection of trains and Transnet or PRASA property and personnel only, and their presence does not relieve the Contractor in any manner of his responsibilities in terms of Explosives Act or Regulations, or any obligation in terms of this Contract.
- 13.11 The person described in clause 13.9 above will record in a book provided and retained by the Engineer the dates and times:
- (i) when each request is made by him to the controlling station for permission to blast;
 - (ii) when blasting may take place;
 - (iii) when blasting actually takes place; and
 - (iv) when he advises the controlling station that the line is safe for the passage of trains.
- 13.12 Before each blast the Contractor shall record in the same book, the details of the blast to be carried out. The person appointed by the Engineer and the person who will do the blasting shall both sign the book whenever an entry described in clause 13.11 above is made.
- 13.13 The terms of clause 27 hereof shall be strictly adhered to.
- 14. RAIL TROLLEYS**
- 14.1 The use of rail trolleys on a railway line will be permitted only if approved by the Engineer and under the conditions stipulated by him.
- 14.2 All costs in connection with such trolley working requested by the Contractor shall, unless otherwise agreed, be borne by the Contractor, including the costs of any train protection services required.
- 15. ANCILLARY TRACKSIDE EQUIPMENT AND FACILITIES.**
- 15.1 Where signal track circuits are installed, the Contractor shall ensure that no material capable of conducting an electrical current makes contact between rails of a railway line/lines.
- 15.2 No signal connections on track-circuited tracks shall be severed without the Engineer's knowledge and consent.

- 15.3 No ancillary trackside equipment or facilities such as axle counters, bonds, wiring runs, connection boxes, points machines, signals, drainage systems etc. shall be disconnected, removed, altered or in any way interfered with without the Engineer's knowledge and consent.

16. PENALTY FOR DELAYS TO TRAINS

- 16.1 If any trains are delayed by the Contractor and the Engineer is satisfied that the delay was avoidable, a penalty will be imposed on the Contractor in terms of the Special Conditions of Contract.

17. COMPLIANCE WITH STATUTES AND REGULATIONS

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

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

and all regulations framed under these acts.

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

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

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

18. TEMPORARY LEVEL CROSSINGS

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

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

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

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

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

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

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

1 GENERAL

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

2. WORK ON BUILDINGS OR FIXED STRUCTURES

- 2.1 Before any work is carried out or measurements are taken on any part of a building, fixed structure or earthworks of any kind above ground level situated within 3 metres of live high voltage equipment, the Electrical Officer (Contracts) shall be consulted to ascertain the conditions under which the work may be carried out.
- 2.2 No barrier erected to comply with the requirements of the Electrical Officer (Contracts) shall be used as temporary staging or shuttering for any part of the Works.

- 2.3 The shuttering for bridge piers, abutments, retaining walls or parapets adjacent to or over any track may be permitted to serve as a barrier, provided that it extends at least 2,5 metres above any working level in the case of piers, abutments and retaining walls and 1,5 metres above any working level in the case of parapets.

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

- 3.1 No person shall stand, climb or work whilst on any platform, surface or foothold higher than the normal unrestricted places of access, namely:-

- (i) the floor level of trucks;
- (ii) external walkways on diesel, steam and electric locomotives, steam heat vans, etc. and
- (iii) walkways between coaches and locomotives.

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

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

4. USE OF EQUIPMENT

4.1 MEASURING TAPES AND DEVICES.

- 4.1.1 Measuring tapes may be used near live high-voltage equipment provided that no part of any tape or a person's body comes within 3 metres of the live equipment.
- 4.1.2 In windy conditions the distance shall be increased to ensure that if the tape should fall it will not be blown nearer than 3 metres from the live high-voltage equipment.

- 4.1.3 Special measuring devices longer than 2 metres such as survey staves and rods may be used if these are of non-conducting material and approved by the senior responsible Electrical Engineer in Transnet or PRASA'S maintenance contractor, but these devices must not be used within 3 metres of live high-voltage equipment in rainy or wet conditions.
- 4.1.4 The assistance of the Electrical Officer (Contracts) shall be requested when measurements within the limits defined in clauses 4.1.1 to 4.1.3 above are required.
- 4.2 PORTABLE LADDERS.
- 4.2.1 Any type of portable ladder longer than 2 metres may only be used near live high-voltage equipment under the direct supervision of the Responsible Representative. He shall ensure that the ladder is always used in such a manner that the distance from the base of the ladder to any live high-voltage equipment is greater than the fully extended length of the ladder plus 3 metres. Where these conditions cannot be observed, the Electrical Officer (Contracts) shall be advised, and he will arrange for suitable safety measures to be taken.
- 4.3 WORKS FROM INSULATED VEHICLES AND TRESTLE TROLLEYS.
- 4.3.1 Where specially constructed insulated vehicles or trestle trolleys are available for use, authorised persons, category A, or a person issued with a letter of authority (clause 303.0 of the ELECTRICAL SAFETY INSTRUCTIONS) may be permitted to work from the top of such vehicles under "live" overhead track equipment.
- 5. CARRYING AND HANDLING MATERIAL AND EQUIPMENT**
- 5.1 Pipes, scaffolding, iron sheets, reinforcing bars and other material, which exceeds 2 metres in length, shall be carried completely below head height near live high-voltage equipment. For maximum safety such material should be carried by two or more persons so as to maintain it as nearly as possible in a horizontal position. The utmost care must be taken to ensure that no part of the material comes within 3 metres of any live high-voltage equipment.
- 5.2 Long lengths of wire or cable shall never be run out in conditions where a part of a wire or cable can come within 3 metres of any live high-voltage equipment unless the Electrical Officer (Contracts) has been advised and has approved appropriate safety precautions.
- 5.3 The presence of overhead power lines shall always be considered, especially when communications lines or cables or aerial cables, stay wires, etc. are being erected above ground level.
- 6. PRECAUTIONS TO BE TAKEN WHEN ERECTING OR REMOVING POLES, ANTENNAE, TREES ETC.**
- 6.1 A pole may be handled for the purpose of erection or removal near high-voltage equipment under the following conditions:

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

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

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

7. USE OF WATER

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

8. USE OF CONSTRUCTION PLANT

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

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

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

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

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

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

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

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

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

10. TRACTION RETURN CIRCUITS IN RAILS

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

11. BLASTING

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

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

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

Such equipment includes:

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



.....

What	When	Output	Accepted by Client and date.
List of Contractors	List to be updated weekly	Table list, number of workers and Company tel. numbers	
Compensation Commissioner	Ongoing	Table list of Contractor's proofs of good standing with the COID Commissioner	
Construction site rules and Section 37.2 Mandatory Agreement	Ongoing	Table a report of all signed up Mandatories	

PRASA Station upgrade - Kwamashu Sub-Contract

**SPECIFICATION FOR WORKS ON, OVER, UNDER
OR ADJECENT TO RAILWAY
LINES AND NEAR HIGH VOLTAGE EQUIPMENT
(SPK 7/1)**

PRASA SPK7/1 DOC.
Issue 1

SPECIFICATION FOR WORKS ON, OVER, UNDER OR ADJACENT TO RAILWAY LINES AND NEAR HIGH VOLTAGE EQUIPMENT (SPK 7/1)

© This document as a whole is protected by copyright. The information contained herein is the sole property of PRASA Ltd. It may not be used, disclosed or reproduced in part or in whole in any manner whatsoever, except with the written permission of and in a manner permitted by the proprietors. Only photostat reproductions of this master is permitted for use in PRASA tender documentation.

PASSENGER RAIL AGENCY OF SOUTH AFRICA

SPK7/1

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

(This specification shall be used in Passenger Rail Agency of South Africa (PRASA) contracts)

CONTENTS

<u>CLAUSE</u>	<u>DESCRIPTION</u>	<u>PAGE NO'S</u>
1.	DEFINITIONS	3
	PART A - GENERAL SPECIFICATION	
2.	Authority of officers of Transnet or PRASA	4
3.	Contractor's representatives	4
4.	Occupations and work permits	4
5.	Speed restrictions and protection	5
6.	Roads on Transnet or PRASA property	5
7.	Clearances	6
8.	Stacking of material	6
9.	Excavation, shoring, dewatering and drainage	6
10.	Falsework for structures	6
11.	Piling	7
12.	Underground services	7
13.	Blasting	7
14.	Rail trolleys	8
15.	Ancillary trackside equipment and facilities	8
16.	Penalty for delays to trains	8
17.	Compliance with statutes and regulations	8
18.	Temporary level crossings	9
	PART B - ADDITIONAL SPECIFICATION FOR WORK NEAR HIGH-VOLTAGE ELECTRICAL EQUIPMENT	
1.	General	10
2.	Work on buildings of fixed structures	10
3.	Work done on or outside of rolling stock, including loading and unloading	11
4.	Use of equipment	11
5.	Carrying and handling material and equipment	12
6.	Precautions to be taken when erecting or removing poles, antennae and trees	12
7.	Use of water	12
8.	Use of construction plant	12
9.	Work performed under dead conditions under cover of a work permit	13
10.	Traction return circuits in rails	13
11.	Blasting	13
12.	High-voltage electrical equipment not maintained and/or operated by Transnet or PRASA's contractors	14

1. DEFINITIONS

The following definitions shall apply:

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

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

Bond: A short conductor installed to provide electrical continuity.

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

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

Dead: Isolated and earthed.

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

Engineer: The person, firm or company appointed by PRASA to act as Engineer for the purposes of the contract and designated as such in the Special Conditions of Contract, or any other Engineer appointed from time to time by PRASA and notified in writing to the Contractor.

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

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

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

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

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

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

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

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

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

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

PART A - GENERAL SPECIFICATION

2. AUTHORITY OF OFFICERS OF TRANSNET OR PRASA'S MAINTENANCE AND/OR OPERATING CONTRACTOR

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

3. CONTRACTOR'S REPRESENTATIVES

- 3.1 The Contractor shall nominate Responsible Representatives of whom at least one shall be available at any hour for call-out in cases of emergency. The Contractor shall provide the Engineer with the names, addresses and telephone numbers of the representatives.
- 3.2 The Contractor guarantees that he has satisfied himself that the Responsible Representative is fully conversant with this specification and that he shall comply with all his obligations in respect thereof.
- 3.3 The Responsible Representative shall be familiar with the contents and provisions of the ELECTRICAL SAFETY INSTRUCTIONS, copies of which they shall keep in their possession for the duration of the contract.

4. OCCUPATIONS AND WORK PERMITS

- 4.1 Work to be done during total occupation or during an occupation between trains or under a work permit shall be done in a manner decided by the Engineer and at times to suit the requirements of Transnet or PRASA'S maintenance and/or operating Contractor.
- 4.2 The Contractor shall organise the Works in a manner, which will minimise the number and duration of occupations and work permits required.
- 4.3 PRASA shall not be liable for any financial or other loss suffered by the Contractor arising from his failure to complete any work scheduled during the period of an occupation or work permit.
- 4.4 The Contractor shall submit to the Engineer, in writing, requests for occupations or work permits together with details of the work to be undertaken, at least 21 days before they are required. Transnet or PRASA'S maintenance and/or operating Contractor does not undertake to grant an occupation or work permit for any particular date, time or duration.
- 4.5 Transnet or PRASA'S maintenance and/or operating Contractor reserves the right to cancel any occupation or work permit at any time before or during the period of occupation or work permit. If, due to cancellation or change in date or time, the Contractor is not permitted to start work under conditions of total occupation or work permit at the time arranged, all costs caused by the cancellation shall be born by the Contractor except as provided for in clauses 4.6 to 4.8 above.
- 4.6 When the Contractor is notified less than 2 hours before the scheduled starting time that the occupation or work permit is cancelled, he may claim reimbursement of his direct financial losses caused by the loss of working time up to the time his labour and plant are employed on other work, but not exceeding the period of the cancelled occupation or work permit.
- 4.7 When the Contractor is notified less than 2 hours before the scheduled starting time, or during an occupation or work permit, that the duration of the occupation or work permit is reduced, he may claim reimbursement of his direct financial losses caused by the loss of working time due to the reduced duration of the occupation or work permit, but not exceeding the balance of the reduced occupation or work permit.
- 4.8 Reimbursement of the Contractor for any loss of working time in terms of 4.6 and 4.7, shall be subject to his claims being submitted within 14 days of the event with full details of labour and plant involved, and provided that the Engineer certifies that no other work on which the labour and plant could be employed was immediately available.
- 4.9 Before starting any work for which an occupation has been arranged, the Contractor shall obtain from the Engineer written confirmation of the date, time and duration of the occupation including the specified conditions applicable.
- 4.10 Before starting any work for which a work permit has been arranged, the Responsible Representative shall read and sign portion C of Annexure 8.1 of the ELECTRICAL SAFETY INSTRUCTIONS, presented by an authorised person, signifying that he is aware of the limits within which work may be undertaken. After the work for which the permit was granted has been completed, or when the work permit is due to be terminated, or if the permit is cancelled after the start, the same person who signed portion C shall sign portion D of Annexure 8.1 of the ELECTRICAL SAFETY INSTRUCTIONS, thereby acknowledging that he is aware that the electrical equipment is to be made "live". The Responsible Representative shall advise all his workmen accordingly.

5. SPEED RESTRICTIONS AND PROTECTION

- 5.1 When speed restrictions are imposed by Transnet or PRASA'S maintenance and/or operating Contractor because of the Contractor's activities, the Contractor shall organise and carry out his work so as to permit the removal of the restrictions as soon as possible.
- 5.2 When the Engineer considers protection to be necessary the Contractor shall, provide all protection including flagmen, other personnel and all equipment for the protection of Transnet or PRASA's personnel and assets, the public and including trains. The Contractor shall arrange training and Transnet or PRASA's accreditation of the Contractor's flagmen and other personnel performing protection duties. The cost of the training shall be to the Contractor's account. It remains the responsibility of the Contractor to protect his personnel and assets at all times.
- 5.3 The Contractor shall consult with the Engineer, whenever he considers that protection will be necessary, taking into account the minimum permissible clearances set out in PRASA's or Transnet's publication, PERMANENT WAY INSTRUCTIONS.
- 5.4 The Contractor shall appoint a Responsible Representative to receive and transmit any instruction, which may be given by Transnet or PRASA'S maintenance and/or operating Contractor personnel providing protection.

6. ROADS ON TRANSNET OR PRASA PROPERTY

- 6.1 The Contractor shall use every reasonable means to prevent damage to any of the roads or bridges communicating with or on the direct route to the site and shall select routes, use vehicles, and restrict loads so that any extraordinary traffic as may arise from the moving of plant or material to or from the site shall be limited as far as reasonably possible.
- 6.2 The Contractor shall not occupy or interfere in any way with the free use of any public or private road, right-of-way, path or street unless the Engineer has obtained the approval of the road authority concerned.

7. CLEARANCES

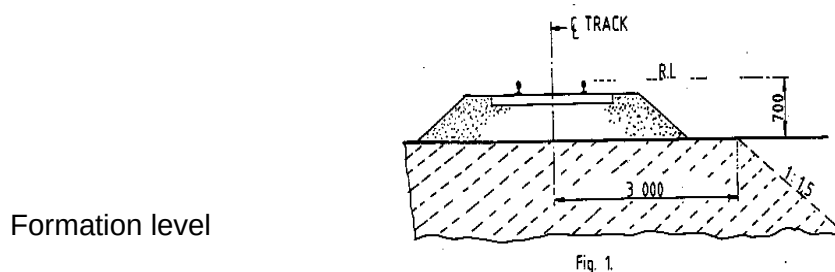
- 7.1 No temporary works shall encroach on the appropriate minimum clearances set out in PRASA or Transnet's publications, PERMANENT WAY INSTRUCTIONS and ELECTRICAL SAFETY INSTRUCTIONS.

8. STACKING OF MATERIAL

- 8.1 The Contractor shall not stack any material closer than 3 metres from the centre line of any railway line or within 2.5 metres of the boundary fence without prior approval of the Engineer and considering the presence of any trackside equipment.
- 8.2 All stacking of material shall take place in accordance with the Occupational Health and Safety Act No. 85 of 1993, and Regulations and Instructions, and the ELECTRICAL SAFETY INSTRUCTIONS.

9. EXCAVATION, SHORING, DEWATERING AND DRAINAGE

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



- 9.2 The Contractor shall provide at his own cost any shoring, dewatering or drainage of any excavation unless otherwise stipulated elsewhere in the Contract.
- 9.3 Where required by the Engineer, drawings of shoring for any excavation under or adjacent to a railway line shall be submitted and permission to proceed obtained, before the excavation is commenced.
- 9.4 The Contractor shall prevent ingress of water to the excavation but where water does enter, he shall dispose of it as directed by the Engineer.
- 9.5 The Contractor shall not block, obstruct or damage any existing drains either above or below ground level unless he has made adequate prior arrangements to deal with drainage.

10. FALSEWORK FOR STRUCTURES

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

11. **PILING**

- 11.1 The Engineer will specify the conditions under which piles may be installed on Transnet or PRASA property.

12. **UNDERGROUND SERVICES**

- 12.1 No pegs or stakes shall be driven or any excavation made before the Contractor has established that there are no underground services, which may be damaged thereby.
- 12.2 Any damage shall be reported immediately to the Engineer, or to the personnel in charge at the nearest station, or to the traffic controller in the case of centralised traffic control.
- 12.3 Any previously uncharted underground services encountered by the Contractor during the course of his activities shall be reported immediately to the Engineer who shall ensure the necessary inclusion in the “as built” drawings.

13. **BLASTING**

- 13.1 No blasting in the vicinity of a railway line shall be carried out except with the prior written permission of the Engineer and under such conditions as he may impose.
- 13.2 The Contractor shall make arrangements for the supply, transport, storage and use of explosives.
- 13.3 The Contractor shall have labour, tools and plant, to the satisfaction of the Engineer, available on the site to clear immediately any stone or debris deposited on the track or formation by blasting, and to repair any damage to the track or formation immediately after blasting. Repairs to the track shall be carried out only under the supervision of a duly authorised representative of the PRASA's maintenance and/or operating Contractor.
- 13.4 The Contractor shall advise the Engineer of his intention to blast at least 21 days prior to the commencement of any blasting operations.
- 13.5 Before any blasting is undertaken, the Contractor and the Engineer shall jointly examine and measure up any buildings, houses or structures in the vicinity of the proposed blasting to establish the extent of any cracking or damage that exists. The Contractor, at his own expense shall make good any deterioration of such buildings, houses, or structures, which, in the opinion of the Engineer, is a direct result of the blasting.
- 13.6 All claims shall be settled by the Contractor as soon as possible. Should unreasonable delays occur, the PRASA will have the right to settle any such claims and recover the costs from the Contractor.
- 13.7 Within a reasonable time after completion of the blasting, the Contractor shall obtain a written clearance from each land owner in the vicinity of the blasting operations to the effect that all claims for compensation in respect of damage caused by the blasting operations to their respective properties have been settled.

- 13.8 The Contractor shall provide proof that he has complied with the provisions of clauses 10.17.1 to 10.17.4 of the Explosives Regulations (Act 26 of 1956 as amended).
- 13.9 Blasting within 500 metres of a railway line will only be permitted during intervals between trains. A person appointed by the Engineer, assisted by flagmen with the necessary protective equipment, will be in communication with the controlling railway station. Only this person will be authorised to give the Contractor permission to blast, and the Contractor shall obey his instructions implicitly regarding the time during which blasting may take place.
- 13.10 The flagmen described in clause 13.9 above, where provided by Transnet or PRASA'S maintenance and/or operating Contractor, are for the protection of trains and Transnet or PRASA property and personnel only, and their presence does not relieve the Contractor in any manner of his responsibilities in terms of Explosives Act or Regulations, or any obligation in terms of this Contract.
- 13.11 The person described in clause 13.9 above will record in a book provided and retained by the Engineer the dates and times:
- (i) when each request is made by him to the controlling station for permission to blast;
 - (ii) when blasting may take place;
 - (iii) when blasting actually takes place; and
 - (iv) when he advises the controlling station that the line is safe for the passage of trains.
- 13.12 Before each blast the Contractor shall record in the same book, the details of the blast to be carried out. The person appointed by the Engineer and the person who will do the blasting shall both sign the book whenever an entry described in clause 13.11 above is made.
- 13.13 The terms of clause 27 hereof shall be strictly adhered to.
- 14. RAIL TROLLEYS**
- 14.1 The use of rail trolleys on a railway line will be permitted only if approved by the Engineer and under the conditions stipulated by him.
- 14.2 All costs in connection with such trolley working requested by the Contractor shall, unless otherwise agreed, be borne by the Contractor, including the costs of any train protection services required.
- 15. ANCILLARY TRACKSIDE EQUIPMENT AND FACILITIES.**
- 15.1 Where signal track circuits are installed, the Contractor shall ensure that no material capable of conducting an electrical current makes contact between rails of a railway line/lines.
- 15.2 No signal connections on track-circuited tracks shall be severed without the Engineer's knowledge and consent.

- 15.3 No ancillary trackside equipment or facilities such as axle counters, bonds, wiring runs, connection boxes, points machines, signals, drainage systems etc. shall be disconnected, removed, altered or in any way interfered with without the Engineer's knowledge and consent.

16. **PENALTY FOR DELAYS TO TRAINS**

- 16.1 If any trains are delayed by the Contractor and the Engineer is satisfied that the delay was avoidable, a penalty will be imposed on the Contractor in terms of the Special Conditions of Contract.

17. **COMPLIANCE WITH STATUTES AND REGULATIONS**

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

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

and all regulations framed under these acts.

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

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

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

18. **TEMPORARY LEVEL CROSSINGS**

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

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

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

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

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

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

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

1 GENERAL

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

2. WORK ON BUILDINGS OR FIXED STRUCTURES

- 2.1 Before any work is carried out or measurements are taken on any part of a building, fixed structure or earthworks of any kind above ground level situated within 3 metres of live high voltage equipment, the Electrical Officer (Contracts) shall be consulted to ascertain the conditions under which the work may be carried out.
- 2.2 No barrier erected to comply with the requirements of the Electrical Officer (Contracts) shall be used as temporary staging or shuttering for any part of the Works.

- 2.3 The shuttering for bridge piers, abutments, retaining walls or parapets adjacent to or over any track may be permitted to serve as a barrier, provided that it extends at least 2,5 metres above any working level in the case of piers, abutments and retaining walls and 1,5 metres above any working level in the case of parapets.

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

- 3.1 No person shall stand, climb or work whilst on any platform, surface or foothold higher than the normal unrestricted places of access, namely:-

- (i) the floor level of trucks;
- (ii) external walkways on diesel, steam and electric locomotives, steam heat vans, etc. and
- (iii) walkways between coaches and locomotives.

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

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

4. USE OF EQUIPMENT

4.1 MEASURING TAPES AND DEVICES.

- 4.1.1 Measuring tapes may be used near live high-voltage equipment provided that no part of any tape or a person's body comes within 3 metres of the live equipment.
- 4.1.2 In windy conditions the distance shall be increased to ensure that if the tape should fall it will not be blown nearer than 3 metres from the live high-voltage equipment.

- 4.1.3 Special measuring devices longer than 2 metres such as survey staves and rods may be used if these are of non-conducting material and approved by the senior responsible Electrical Engineer in Transnet or PRASA'S maintenance contractor, but these devices must not be used within 3 metres of live high-voltage equipment in rainy or wet conditions.
- 4.1.4 The assistance of the Electrical Officer (Contracts) shall be requested when measurements within the limits defined in clauses 4.1.1 to 4.1.3 above are required.
- 4.2 PORTABLE LADDERS.
- 4.2.1 Any type of portable ladder longer than 2 metres may only be used near live high-voltage equipment under the direct supervision of the Responsible Representative. He shall ensure that the ladder is always used in such a manner that the distance from the base of the ladder to any live high-voltage equipment is greater than the fully extended length of the ladder plus 3 metres. Where these conditions cannot be observed, the Electrical Officer (Contracts) shall be advised, and he will arrange for suitable safety measures to be taken.
- 4.3 WORKS FROM INSULATED VEHICLES AND TRESTLE TROLLEYS.
- 4.3.1 Where specially constructed insulated vehicles or trestle trolleys are available for use, authorised persons, category A, or a person issued with a letter of authority (clause 303.0 of the ELECTRICAL SAFETY INSTRUCTIONS) may be permitted to work from the top of such vehicles under "live" overhead track equipment.
- 5. CARRYING AND HANDLING MATERIAL AND EQUIPMENT**
- 5.1 Pipes, scaffolding, iron sheets, reinforcing bars and other material, which exceeds 2 metres in length, shall be carried completely below head height near live high-voltage equipment. For maximum safety such material should be carried by two or more persons so as to maintain it as nearly as possible in a horizontal position. The utmost care must be taken to ensure that no part of the material comes within 3 metres of any live high-voltage equipment.
- 5.2 Long lengths of wire or cable shall never be run out in conditions where a part of a wire or cable can come within 3 metres of any live high-voltage equipment unless the Electrical Officer (Contracts) has been advised and has approved appropriate safety precautions.
- 5.3 The presence of overhead power lines shall always be considered, especially when communications lines or cables or aerial cables, stay wires, etc. are being erected above ground level.
- 6. PRECAUTIONS TO BE TAKEN WHEN ERECTING OR REMOVING POLES, ANTENNAE, TREES ETC.**
- 6.1 A pole may be handled for the purpose of erection or removal near high-voltage equipment under the following conditions:

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

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

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

7. USE OF WATER

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

8. USE OF CONSTRUCTION PLANT

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

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

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

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

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

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

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

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

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

10. TRACTION RETURN CIRCUITS IN RAILS

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

11. BLASTING

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

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

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

Such equipment includes:

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



.....

STRUCTURAL DRAWINGS



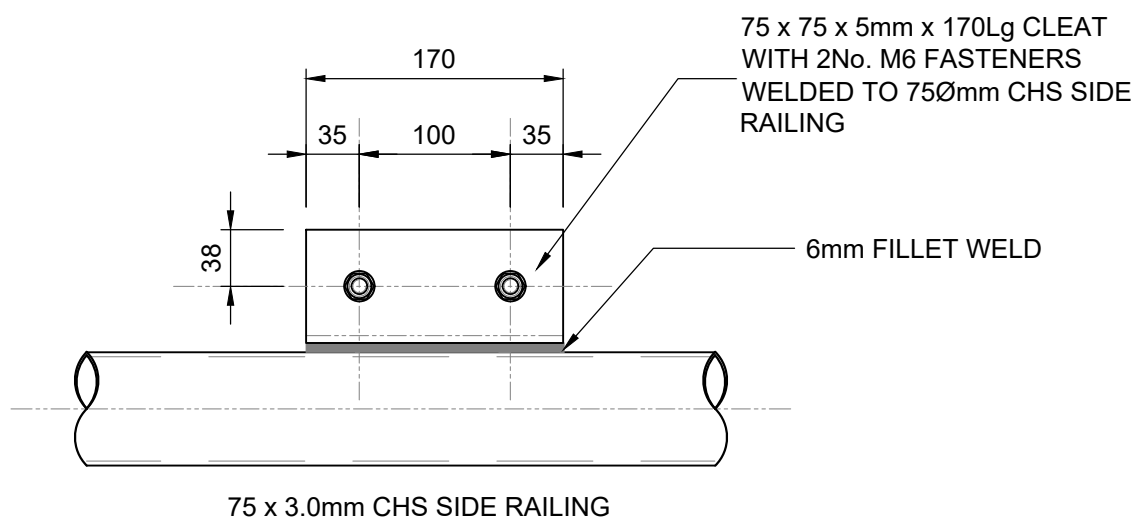
SOUTH WEST ELEVATION - FOOTBRIDGE BALUSTRADE

SCALE 1=25



NORTH-EAST ELEVATION : FOOTBRIDGE BALUSTRADE

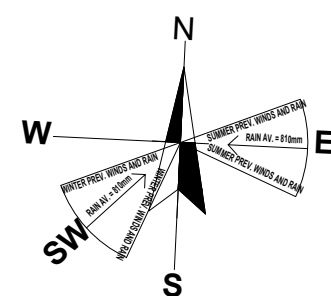
SCALE 1=25



ELEVATION: - CLEAT CONNECTION DETAIL

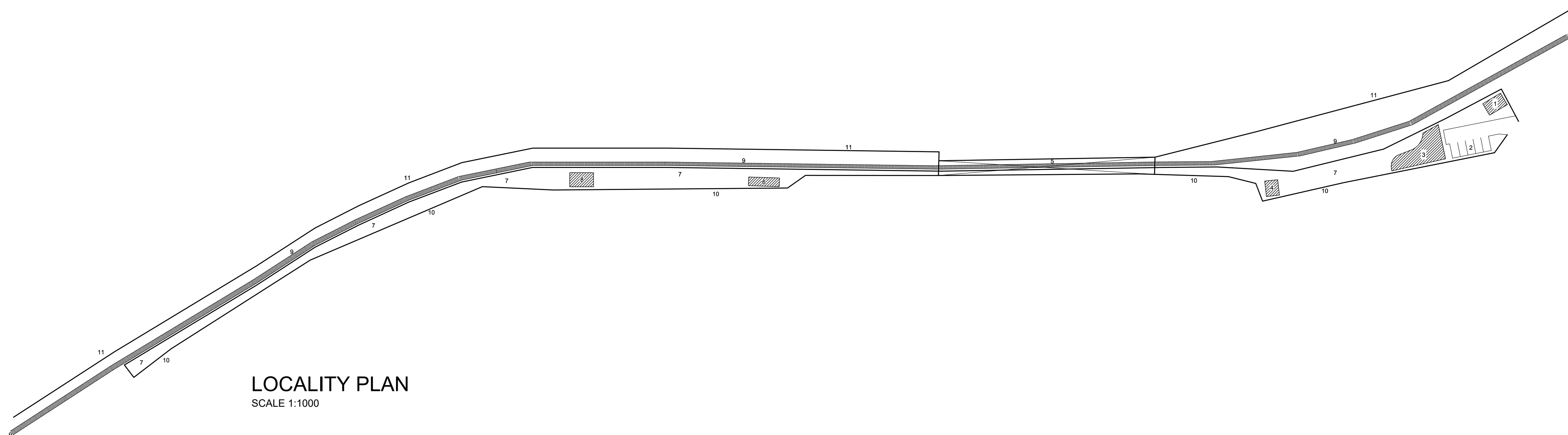
SCALE 1=5

ARCHITECTURAL DRAWINGS



LEGEND

1. EXISTING DAMAGED BIN/STORE AREA. MISSING PRECAST CONCRETE PANELS & NEW GATE TO BE PROVIDED. ALL WEEDS & VEGETATION TO BE REMOVED. TARMAC FLOOR FINISH TO BE REDONE
2. EXISTING PARKING AREA. REMOVE ALL WEEDS & VEGETATION. TARMAC TO BE REDONE
3. EXISTING TICKET SALES OFFICES, PASSENGER ACCESS AREA & STATION OFFICES. BUILDING REQUIRES COMPLETE NEW FITTINGS & FINISHES. STRUCTURE TO BE CHECKED BY ENGINEER FOR ANY DEFECTS.
4. EXISTING TELECOMMUNICATION ROOM. NEW STEEL DOOR TO BE PROVIDED & THE INSIDE TO BE CLEANED.
5. EXISTING STEEL BRIDGE. STRUCTURAL ENGINEER TO CHECK BRIDGE STABILITY. PEDESTRIAN SIDE OF THE BRIDGE TO RECEIVE MISSING BALUSTRADE. RAILWAY TRACK TO BE CHECKED & TO BE CLEARED FROM STORMWATER DEBRIS
6. EXISTING ABLUTION BLOCK. BUILDING TO RECEIVE NEW FITTINGS & FINISHES. NEW ROOF TO BE PROVIDED.
7. EXISTING PLATFORM. WEEDS & VEGETATION TO BE REMOVED. PLATFORM. TARMAC TO BE REPAIRED WHERE DAMAGED
8. EXISTING WAITING AREA. BUILDING TO RECEIVE NEW ROOF. WALLS TO BE REPAINTED & VEGETATION TO BE REMOVED
9. EXISTING RAILWAY TRACK TO BE CHECKED FOR ANY DEFECTS
10. EXISTING BROKEN CONCRETE FENCE TO BE REMOVED & REPLACED WITH CLEARVIEW FENCE. AREAS WHERE STORMWATER DAMAGED ENGINEER TO CHECK & PROVIDE SOLUTION BEFORE NEW FENCE IS FITTED
11. NEW CLEARVIEW FENCE TO BE FITTED
12. BOUNDARY LINE TO RECEIVE NEW CLEARVIEW FENCING.
13. LENGTH OF NEW FENCE IS APPROX 950M

[illegible]

GENERAL DRAWING NOTES

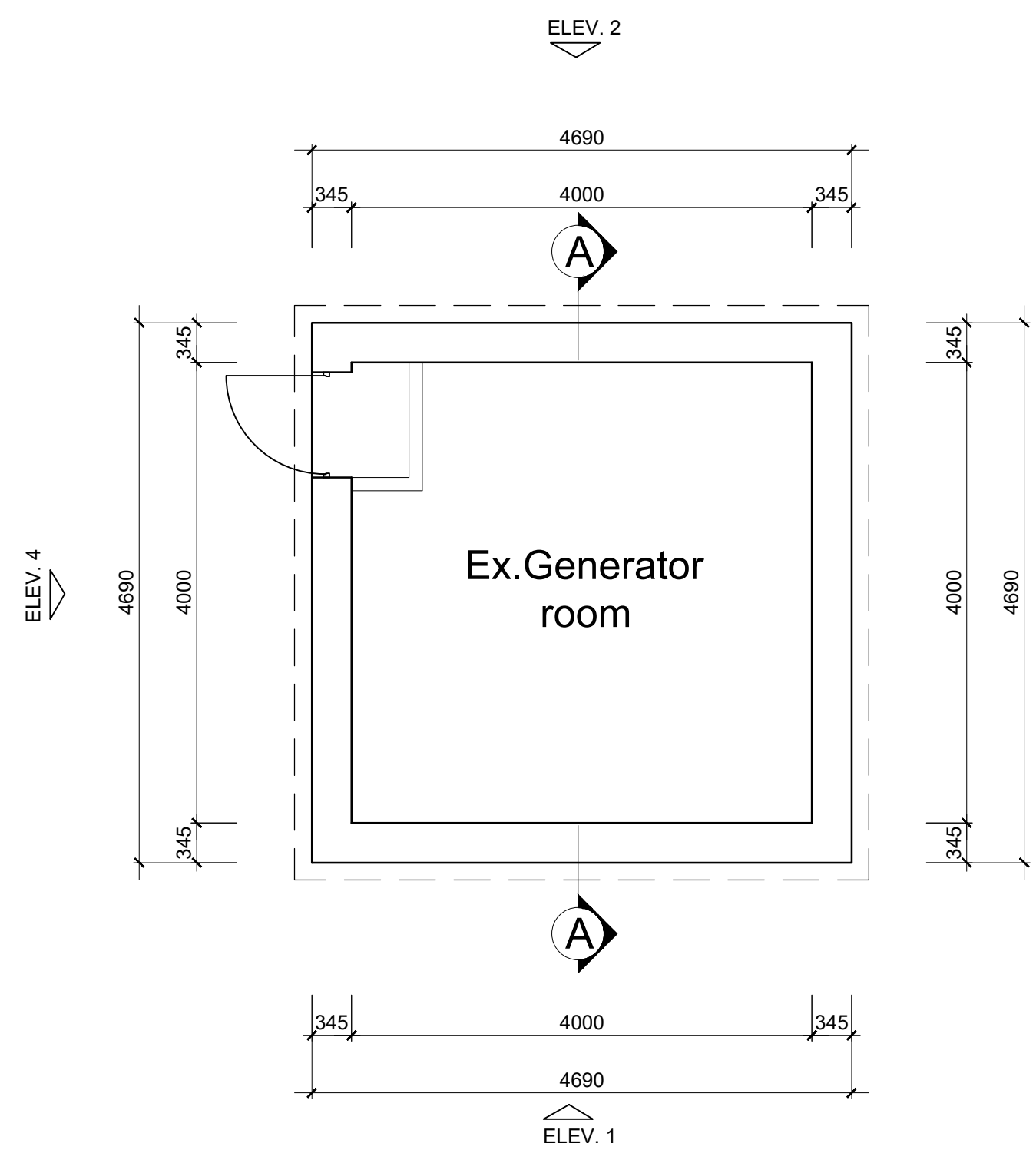
THE DESIGN ON THIS DRAWING IS COPYRIGHT AND REMAINS THE PROPERTY OF THE ARCHITECTS. ALL WORK TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH MUNICIPAL REGULATIONS. DRAWINGS NOT TO BE SCALED. ONLY ANNOTATED DIMENSIONS TO BE USED. ALL RELEVANT DATUM, LEVELS, DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK. ALL DRAWINGS ARE TO BE CHECKED BY THE MAIN CONTRACTOR AND ANY DISCREPANCIES ON THE DRAWINGS OR BETWEEN THE DRAWINGS ARE TO BE REFERRED TO THE ARCHITECT. CONTRACTOR TO CHECK ALL QUANTITIES PRIOR TO ORDERING AND MANUFACTURE. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL BY ARCHITECT PRIOR TO MANUFACTURE.

Revision:

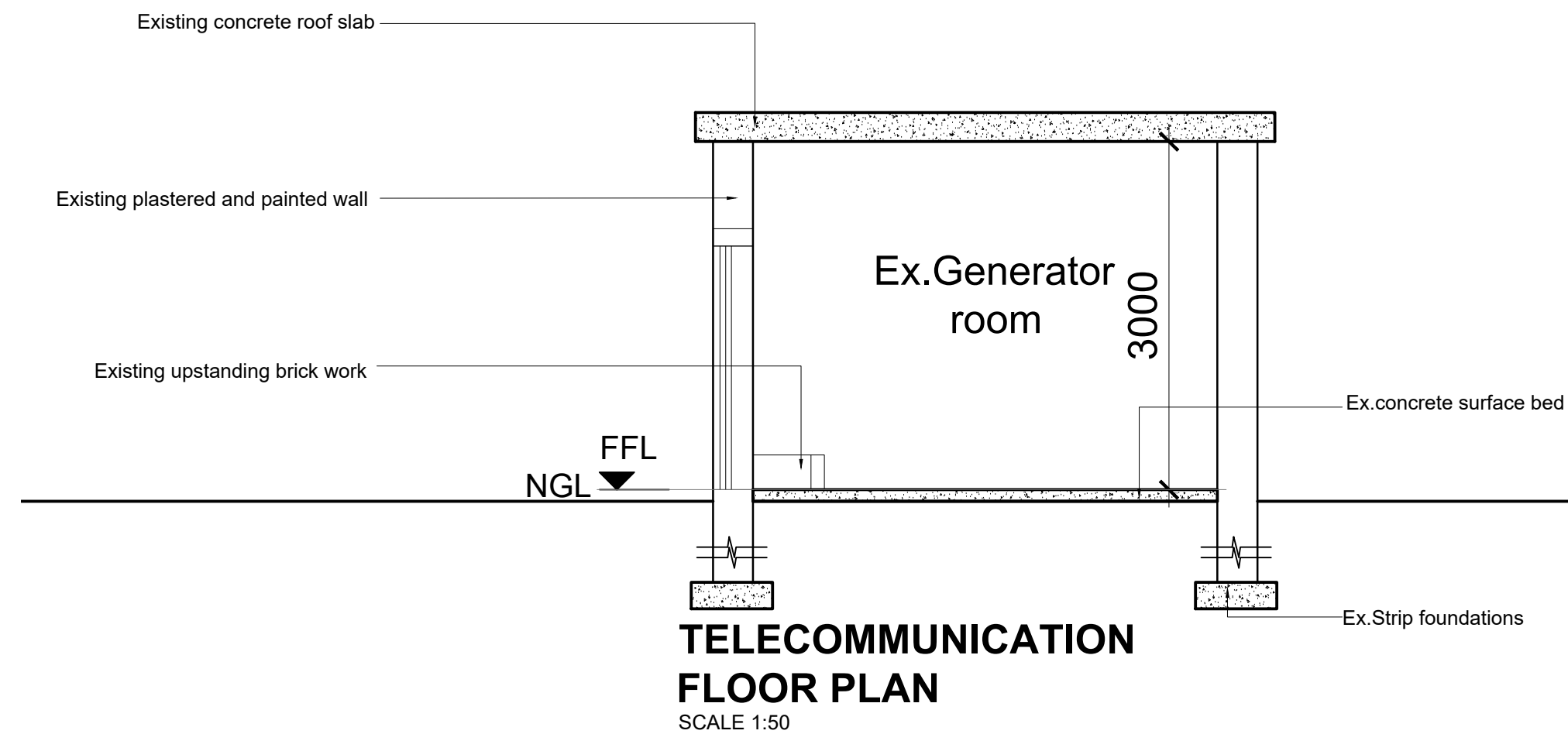
No.:

Date:

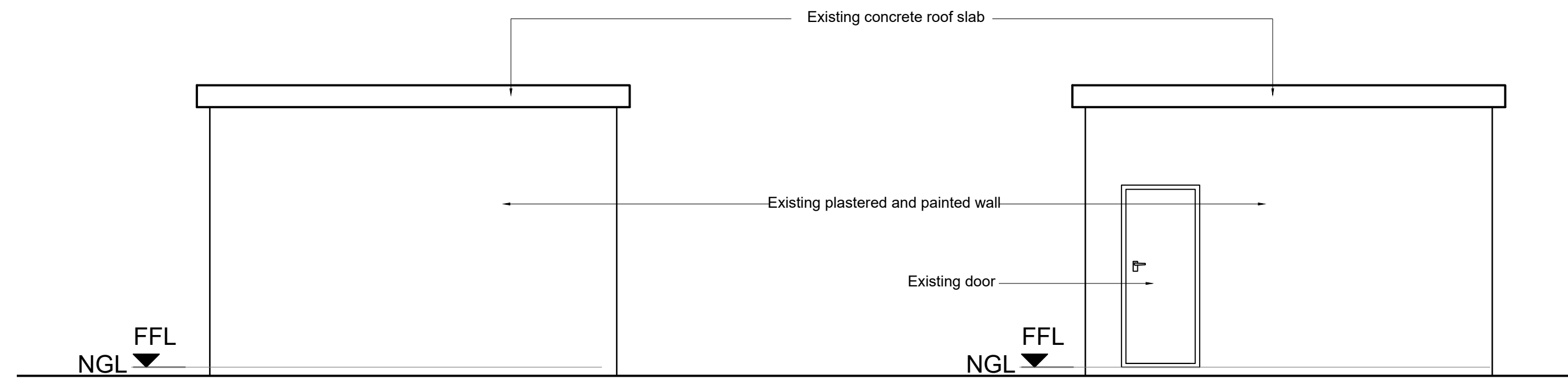
Description:



TELECOMMUNICATION
FLOOR PLAN
SCALE 1:50

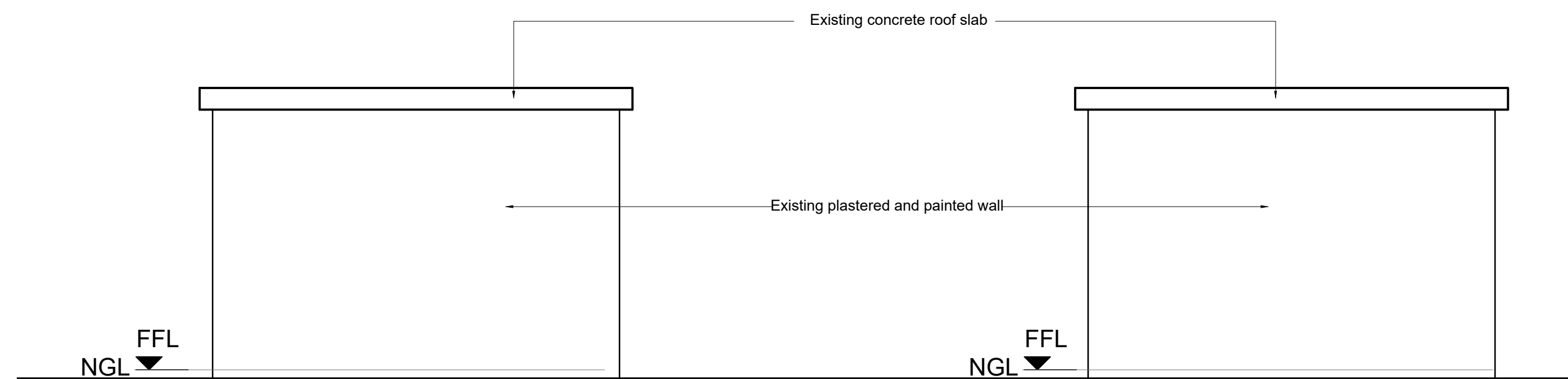


TELECOMMUNICATION
FLOOR PLAN
SCALE 1:50



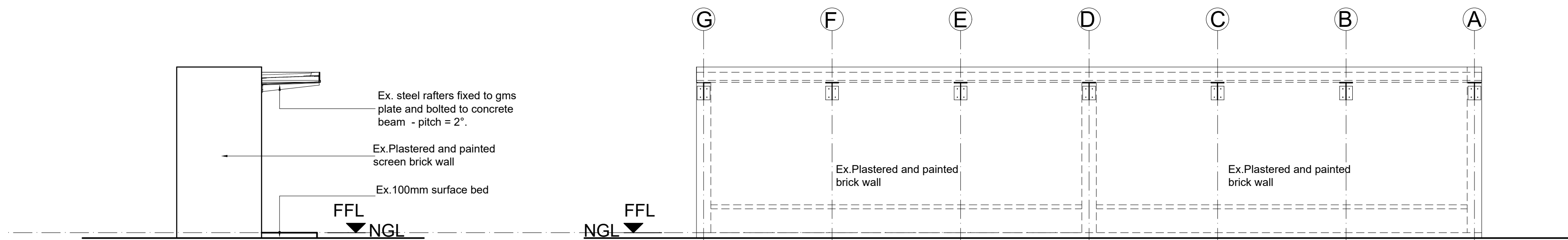
TELECOMMUNICATION
ELEVATION 1
SCALE 1:50

TELECOMMUNICATION
ELEVATION 4
SCALE 1:50



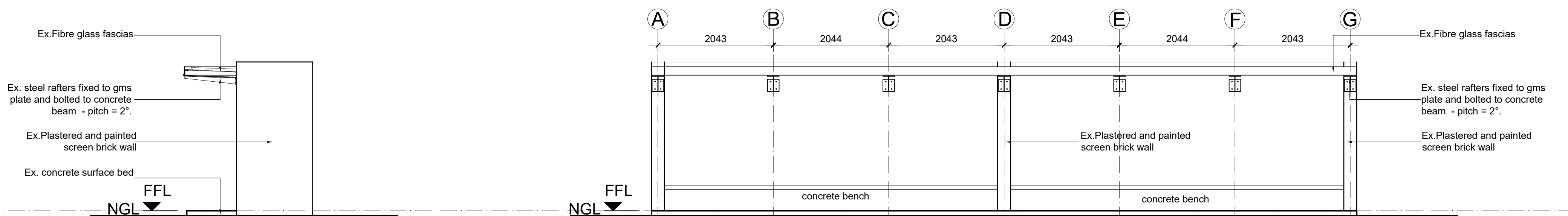
TELECOMMUNICATION
ELEVATION 2
SCALE 1:50

TELECOMMUNICATION
ELEVATION 3
SCALE 1:50



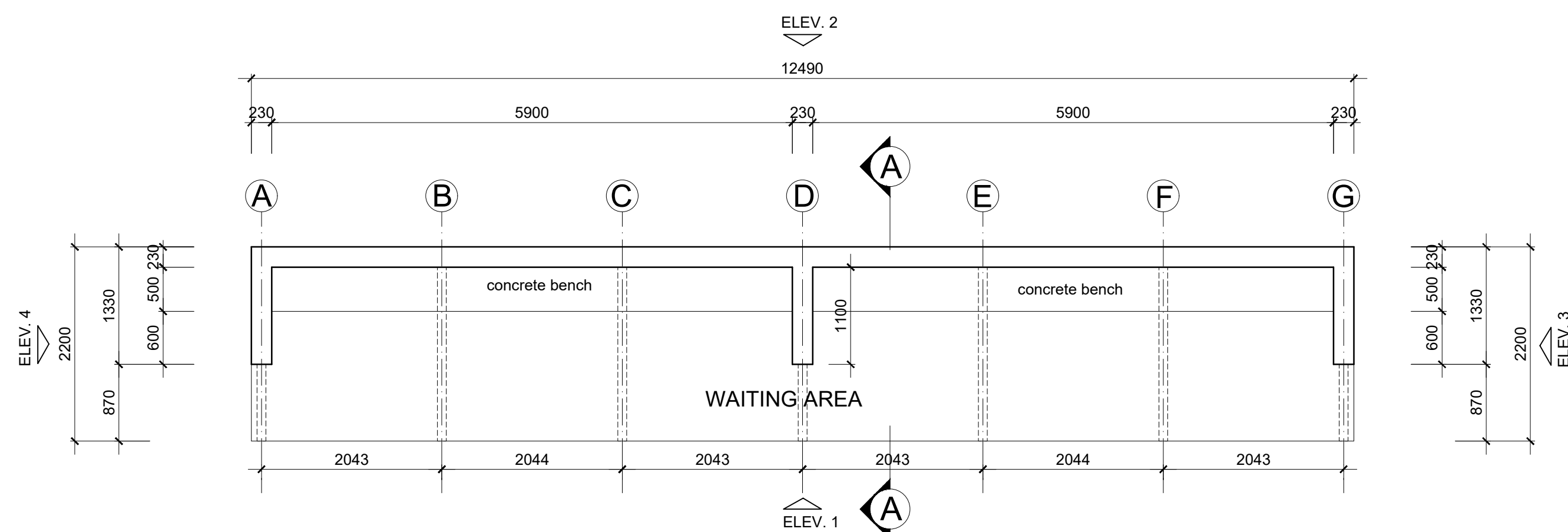
WAITING SHELTER
ELEVATION 3
SCALE 1:50

WAITING SHELTER
ELEVATION 2
SCALE 1:50

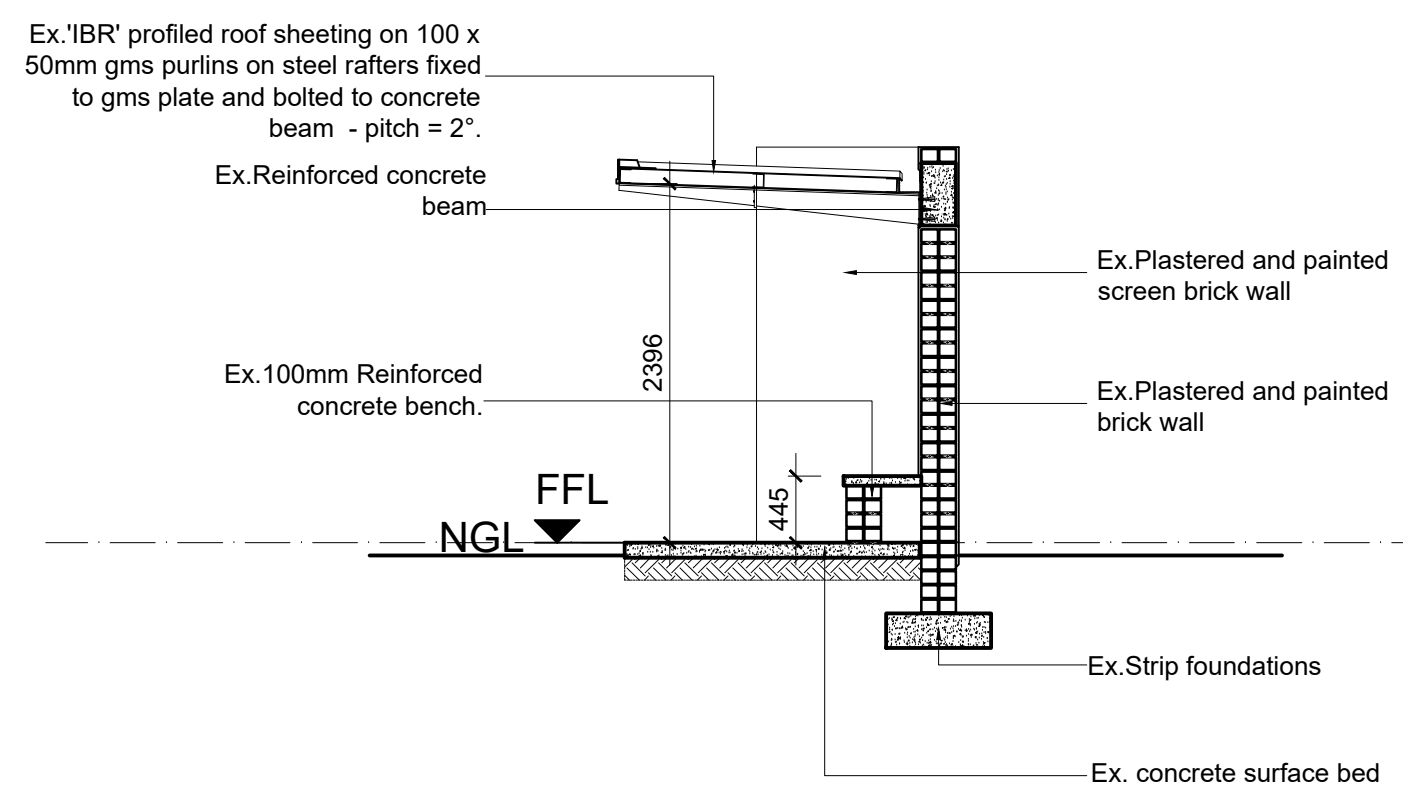


WAITING SHELTER
ELEVATION 4
SCALE 1:50

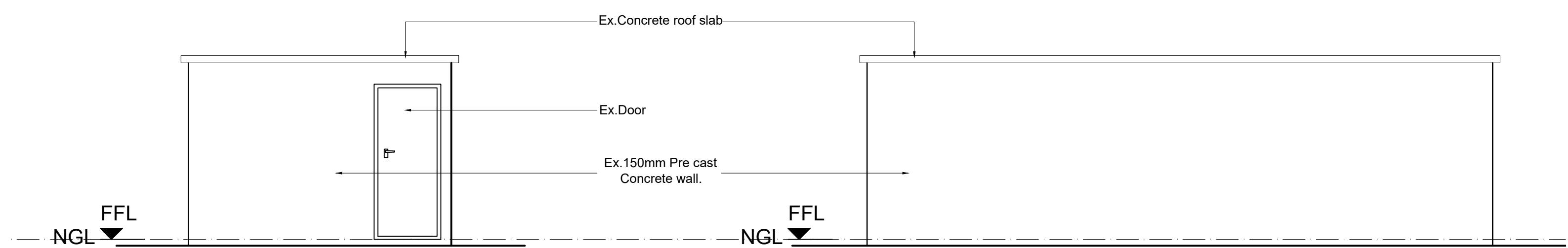
WAITING SHELTER
ELEVATION 1
SCALE 1:50



WAITING SHELTER
FLOOR PLAN
SCALE 1:50

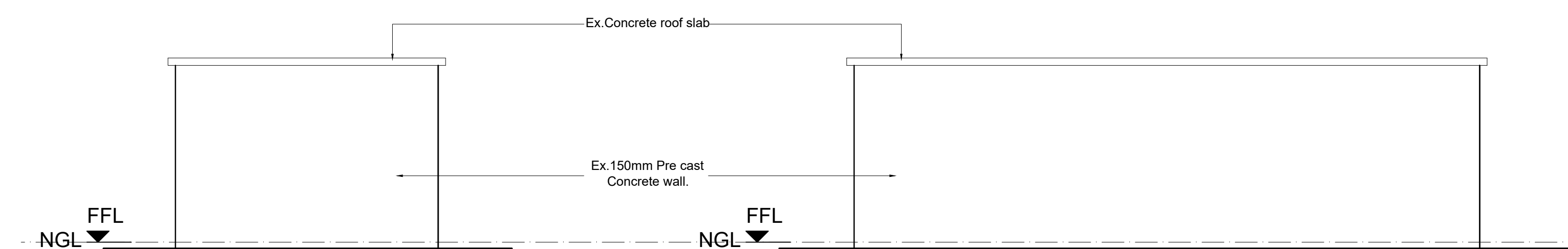


WAITING SHELTER
SECTION A A
SCALE 1:50



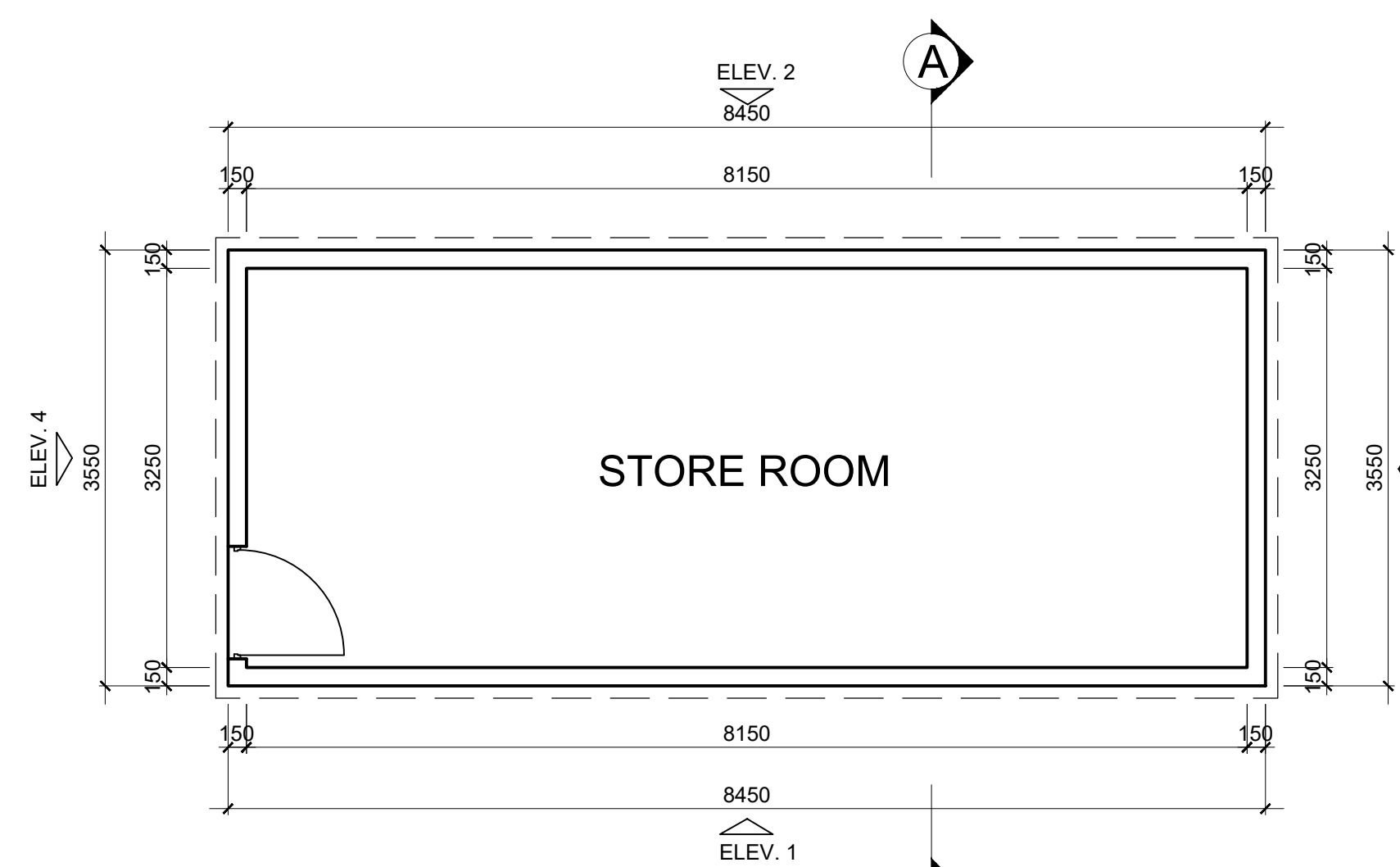
STORE ROOM
ELEVATION 4
SCALE 1:50

STORE ROOM
ELEVATION 2
SCALE 1:50

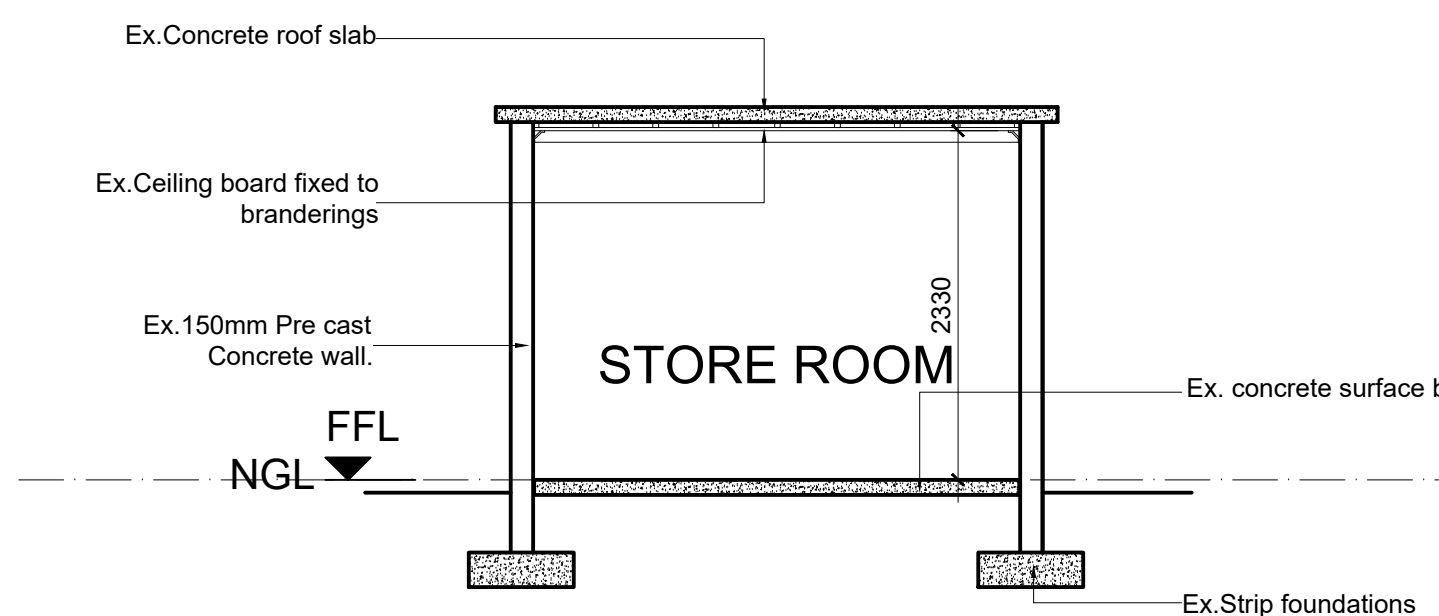


STORE ROOM
ELEVATION 3
SCALE 1:50

STORE ROOM
ELEVATION 1
SCALE 1:50



PUBLIC ABLUTION
FLOOR PLAN
SCALE 1:50



STORE ROOM
SECTION A A
SCALE 1:50

GENERAL DRAWING NOTES

- THE DESIGN ON THIS DRAWING IS COPYRIGHT AND REMAINS THE PROPERTY OF THE ARCHITECTS.
- ALL WORK TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH MUNICIPAL REGULATIONS.
- DRAWINGS NOT TO BE SCALED, ONLY ANNOTATED DIMENSIONS TO BE USED.
- ALL RELEVANT DATUM, LEVELS, DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK.
- ALL DRAWINGS ARE TO BE CHECKED BY THE MAIN CONTRACTOR AND ANY DISCREPANCIES ON THE DRAWINGS OR BETWEEN THE DRAWINGS ARE TO BE REFERRED TO THE ARCHITECT.
- CONTRACTOR TO CHECK ALL QUANTITIES PRIOR TO ORDERING AND MANUFACTURE.
- CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL BY ARCHITECT PRIOR TO MANUFACTURE.

Revision:

No.	Date	Description

Client:

Date:

Project Title:

AVOCA RAILWAY STATION

Date: OCTOBER 2022

Drawn: S.N

Scale: 1:100

Drawing Description:

PUBLIC ABLUTION
AS BUILT

Job no.:

s572-7

Drawing no.:

S572-7-102

Rev. no.:



SAKHISIZWE
ARCHITECTS

33 ADELAIDE TAMBO DR., DURBAN NORTH

TEL: 031 563 3424 FAX: 031 563 3518

www.sakhisizwearchitects.com

TEL: 031-563 3424 FAX: 031-563 3518

www.sakhisizwearchitects.com

Mr K.P.Mawesana (Pr Arch) sacap (7902), saia (7593)

Signature:

Date:

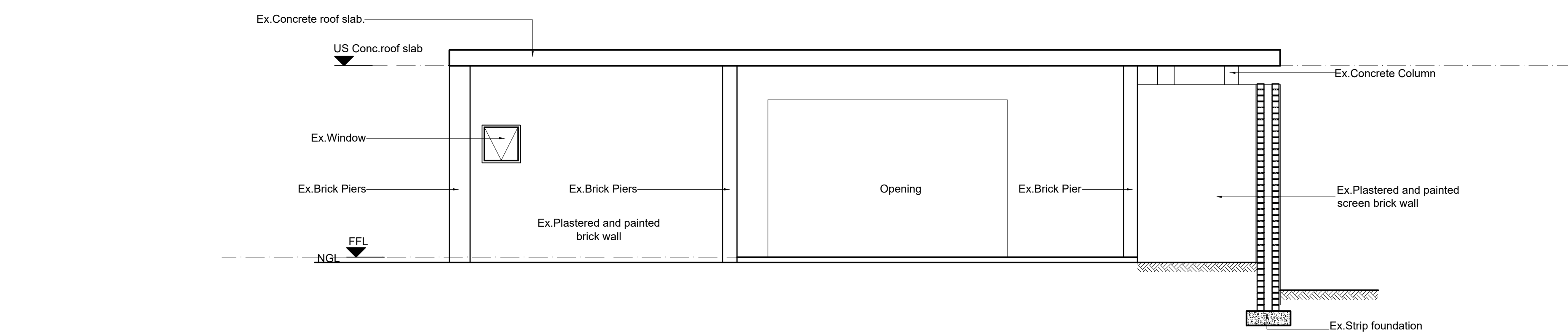
ISSUED FOR APPROVAL

ISSUED FOR INFORMATION

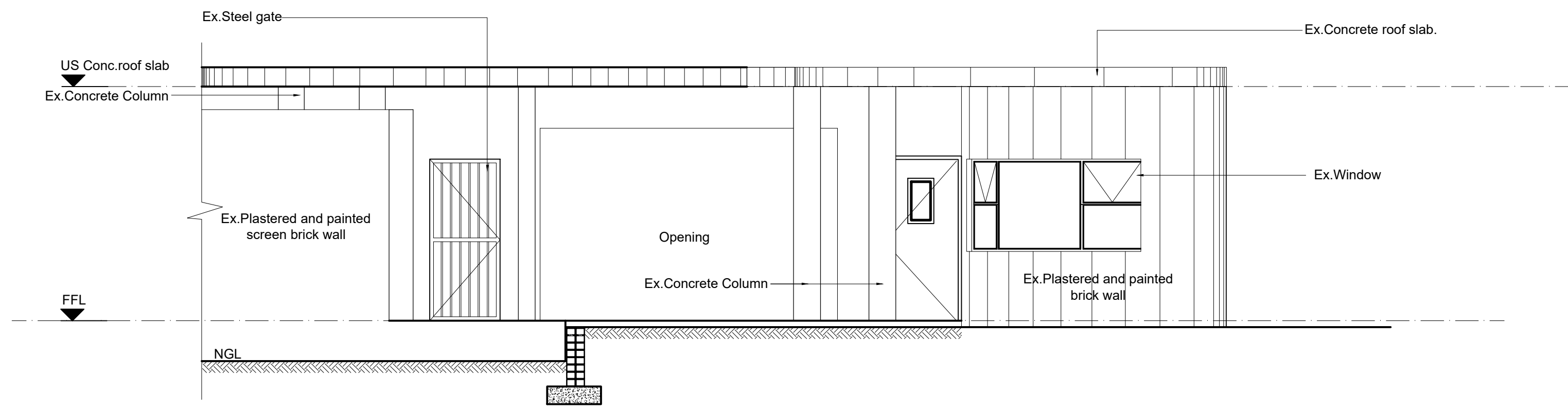
ISSUED FOR SUBMISSION

ISSUED FOR TENDER

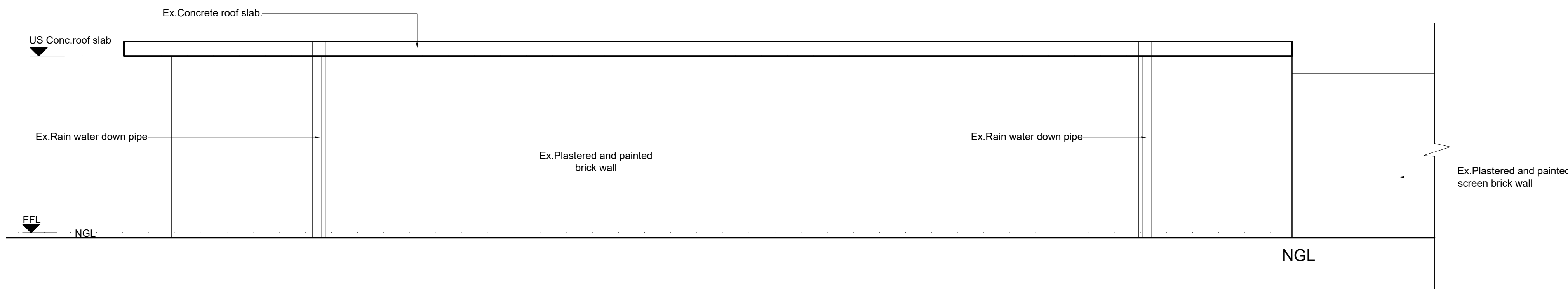
ISSUED FOR CONSTRUCTION



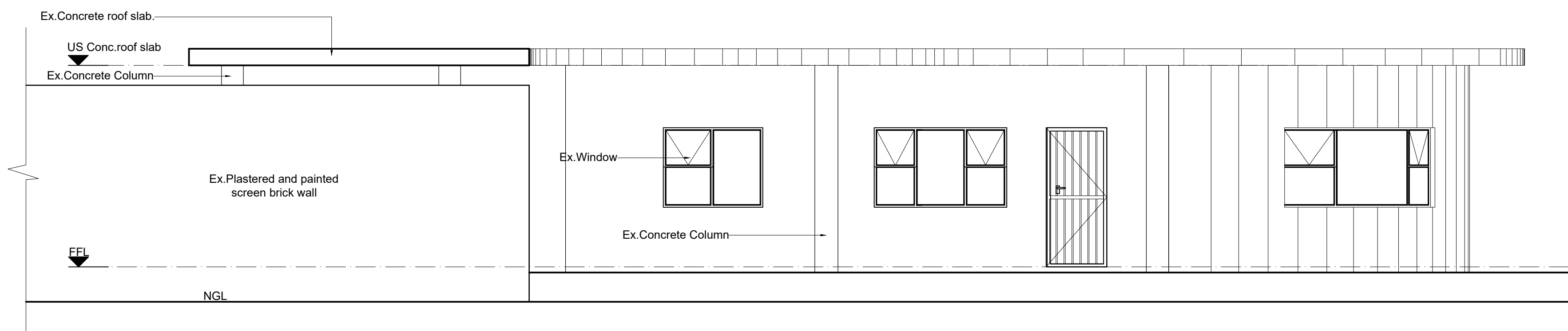
TICKET OFFICE
ELEVATION 4
SCALE 1:50



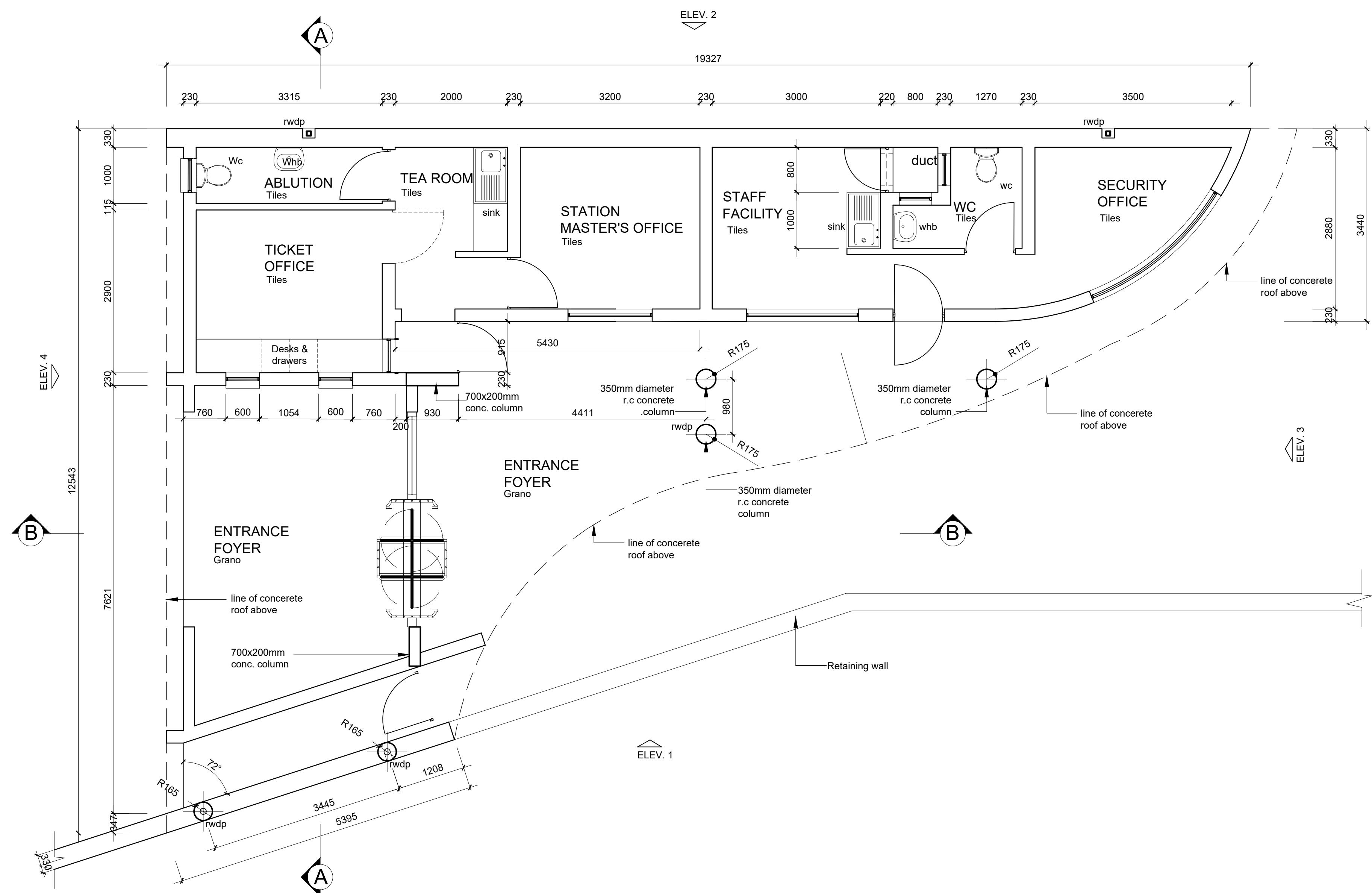
TICKET OFFICE
ELEVATION 3
SCALE 1:50



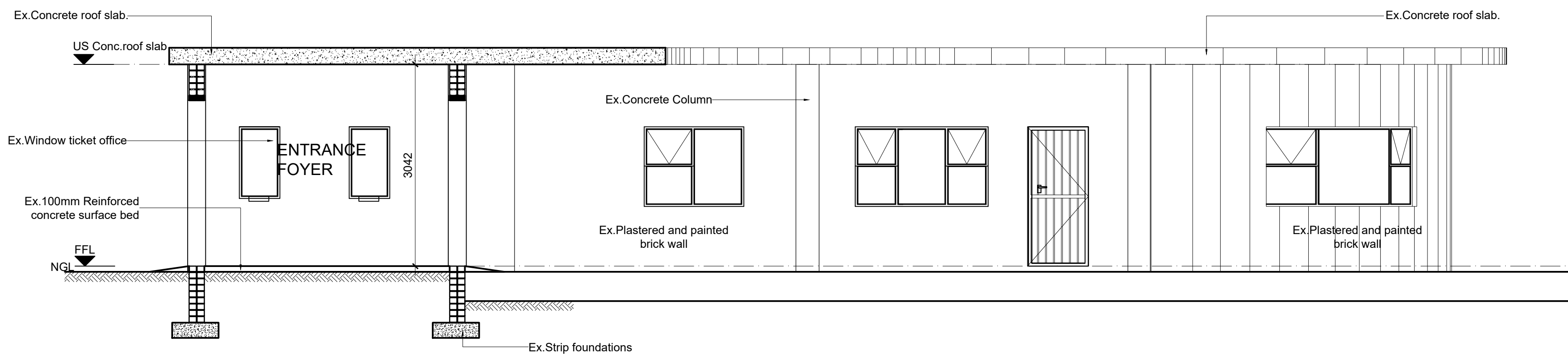
TICKET OFFICE
ELEVATION 2
SCALE 1:50



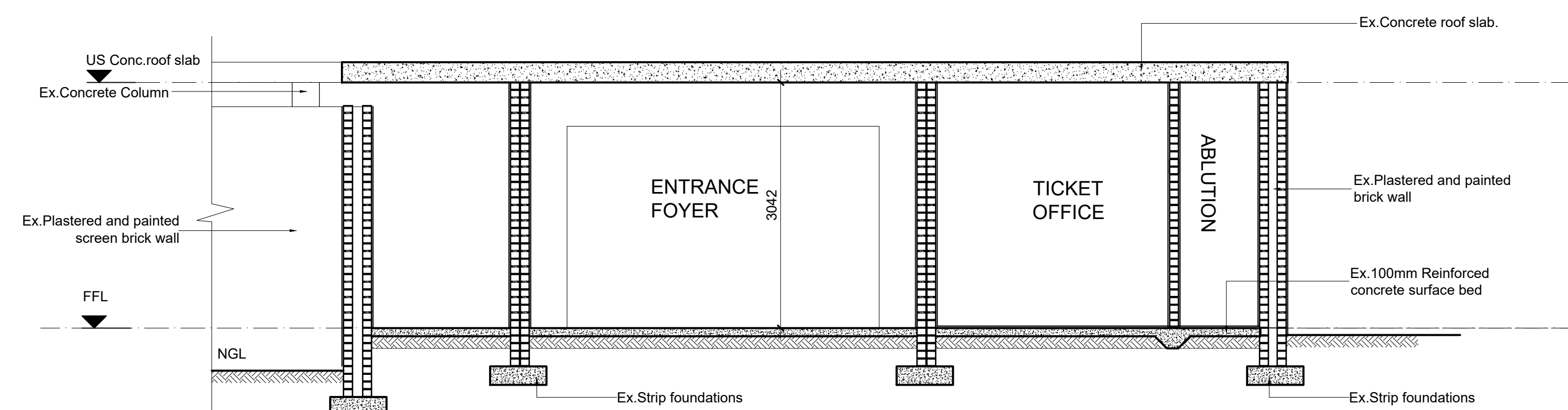
TICKET OFFICE
ELEVATION 1
SCALE 1:50



TICKET OFFICE
FLOOR PLAN
SCALE 1:50



TICKET OFFICE
SECTION A A
SCALE 1:50



TICKET OFFICE
SECTION B B
SCALE 1:50

GENERAL DRAWING NOTES

THE DESIGN ON THIS DRAWING IS COPYRIGHT AND REMAINS THE PROPERTY OF THE ARCHITECTS. ALL WORK TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH MUNICIPAL REGULATIONS. DRAWINGS NOT TO BE SCALED. ONLY ANNOTATED DIMENSIONS TO BE USED. ALL RELEVANT DATUM, LEVELS, DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK. ALL DRAWINGS ARE TO BE CHECKED BY THE MAIN CONTRACTOR AND ANY DISCREPANCIES ON THE DRAWINGS OR BETWEEN THE DRAWINGS ARE TO BE REFERRED TO THE ARCHITECT. CONTRACTOR TO CHECK ALL QUANTITIES PRIOR TO ORDERING AND MANUFACTURE. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL BY ARCHITECT PRIOR TO MANUFACTURE.

Revision:

No.	Date	Description

Client: Date:

Project Title:

AVOCA RAILWAY STATION

Date: OCTOBER 2022 Drawn: S.N Scale: 1:100

Drawing Description:

TICKET OFFICE
AS BUILT

Job no.:

s572-7

Drawing no.:

S572-7-103

Rev. no.:



SAKHISIZWE
ARCHITECTS

33 ADELAIDE TAMBO DR. DURBAN NORTH
TEL: 031-563 3424 FAX: 031-563 3519
www.sakhisizwearchitects.com

TEL: 031-563 3424 FAX: 031-563 3518
www.sakhisizwearchitects.com

Mr K.P.Mawesana (Pr Arch) sacap (7902), saia (7593)

Signature:

Date:

ISSUED FOR APPROVAL

ISSUED FOR INFORMATION

ISSUED FOR SUBMISSION

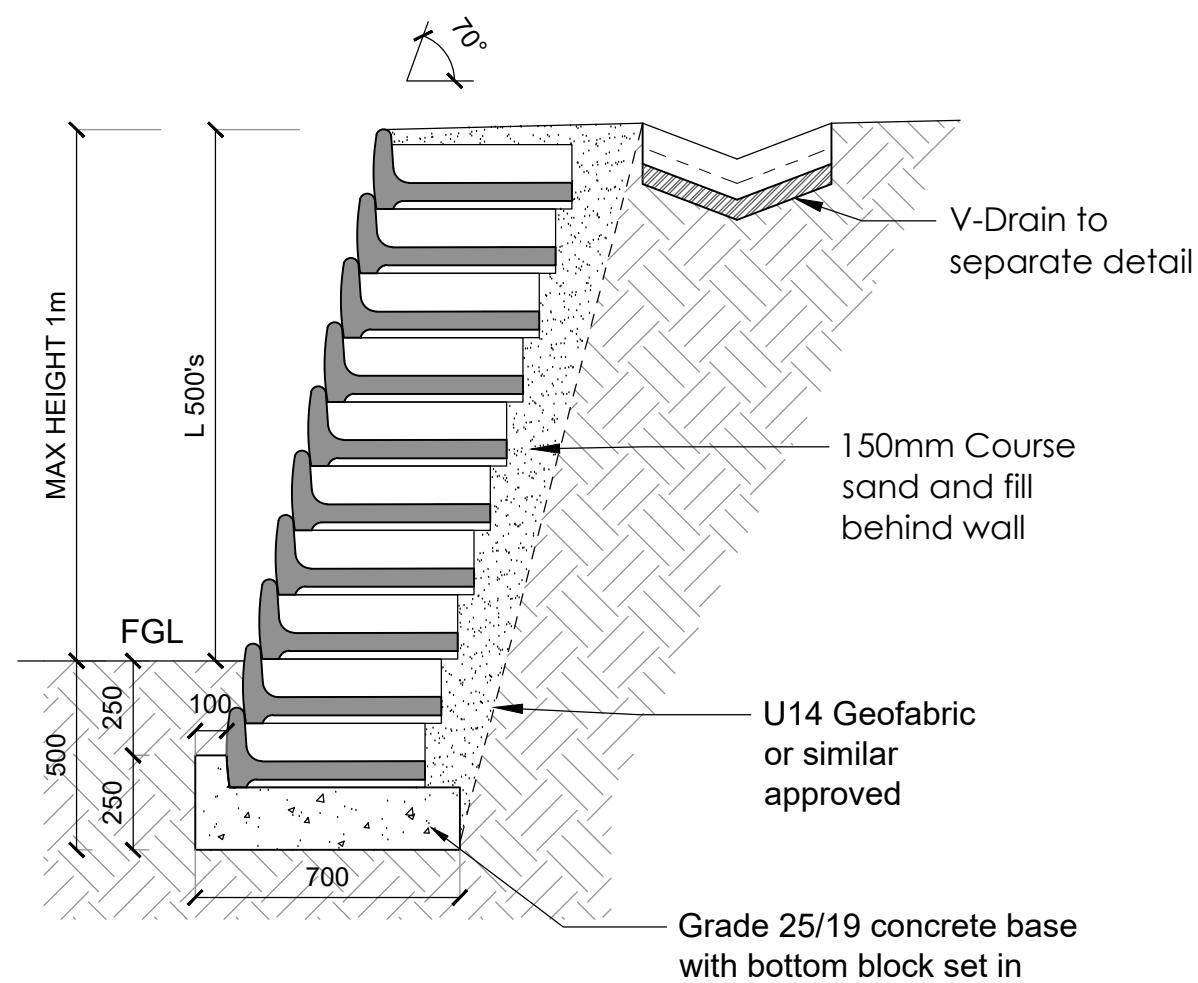
ISSUED FOR TENDER

ISSUED FOR CONSTRUCTION

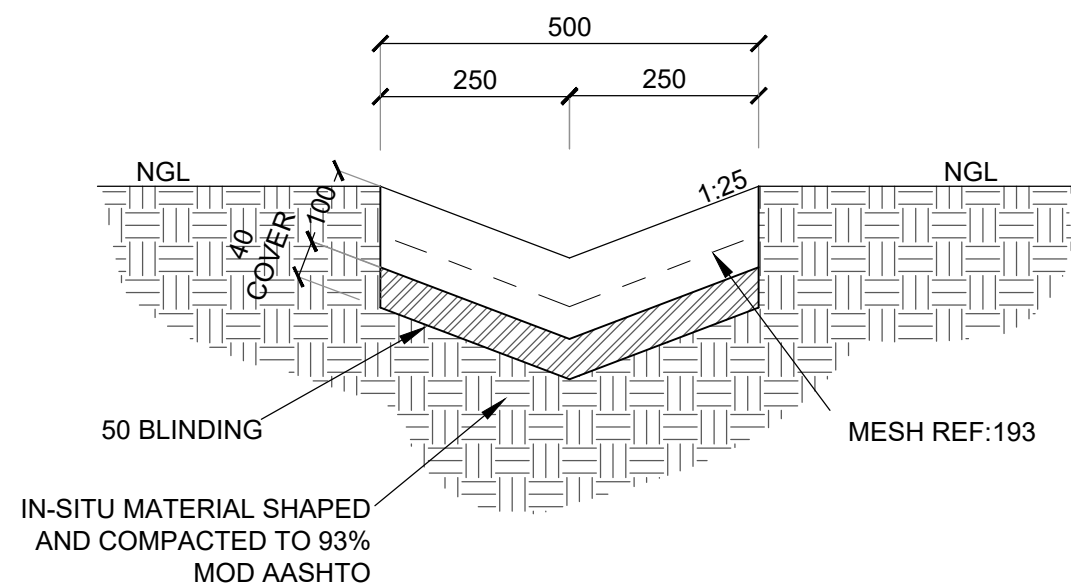
CIVIL DRAWINGS

NOTE:
WATER CHANNEL DISCHARGE TO BE
DIRECTED AWAY FROM ANY BUILDINGS
AS DIRECTED ON SITE BY THE ENGINEER

- NOTE:
1. CONCRETE CHANNEL TO BE 100mm THICK USING 19 / 25 MPa CONCRETE TO BE CAST IN 2,0m ALTERNATE PANELS WITH EXPANSION JOINTS AT 10m INTERVALS (EVERY 65h PANEL)
 2. CONCRETE CHANNEL TO BE REINFORCED WITH MESH REF:193 MINIMUM COVER = 40mm



DETAIL B: TYPICAL DRY STACK
RETAINING WALL FOR WALLS 1.5m HIGH
SCALE 1: 20



TYPICAL CONCRETE V-DRAIN DETAIL
SCALE 1:10

REV	DATE	DESCRIPTION	APPROVED
Notes			