



VOLUME 3 OF 3

THE CONTRACT

DEVELOPMENT BANK OF SOUTHERN AFRICA

TENDER NO. RFP081/2025

THE APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE
DIKIDIKINI BRIDGE OVER MZINTLAVA RIVER NEAR DIKIDIKINI VILLAGE IN
NTABANKULU LOCAL MUNICIPALITY IN THE EASTERN CAPE

Implementing Agent: Development Bank of Southern Africa Limited 1258 Lever Road Midrand Johannesburg Gauteng 1685 Contact: 011 313 3911 As per Tender Notice and Invitation	Project Manager Development Bank of Southern Africa Limited 1258 Lever Road Midrand Johannesburg Gauteng 1685 Contact: 011 313 3911 As per Tender Notice and Invitation
<u>Tenderer Details</u> Name of Tenderer: _____ CIDB Registration No: _____ Contact Person: _____ Contact No: _____	

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Notes:

The Tender Document must be submitted as a whole. All forms must be properly completed as required and the document shall not be taken apart or altered in any way whatsoever.

All forms must be duly completed in **black ink** as required.

The list of returnable documents, which consists of forms and schedules to be completed and company specific certificates and information pages to be attached, comprise the following:

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THE CONTRACT

C1	:	AGREEMENT AND CONTRACT DATA
C2	:	PRICING DATA
C3	:	SCOPE OF WORK
C4	:	SITE INFORMATION

C1: AGREEMENT AND CONTRACT DATA

THE “**GENERAL CONDITIONS OF CONTRACT FOR CONSTRUCTION WORKS – 3RD EDITION 2015**” ISSUED BY THE SOUTH AFRICAN INSTITUTION OF CIVIL ENGINEERING (GCC 2015).
(including amendments).

Document reference	Title	Page No.
C1.1	Form of Offer and Acceptance	5
C1.2	Contract Data	11
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C1.1 FORM OF OFFER AND ACCEPTANCE

C1.1.1 Offer

The Employer, identified in the acceptance signature block, has solicited offers to enter into a contract for the procurement of: **TENDER No: RFP081/2025– THE APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE DIKIDIKINI BRIDGE OVER MZINTLAVA RIVER NEAR DIKIDIKINI VILLAGE IN NTABANKULU LOCAL MUNICIPALITY IN THE EASTERN CAPE**

The Tenderer, identified in the offer signature block, has examined the documents listed in the tender data and addenda thereto as listed in the returnable schedules, and by submitting this offer has accepted the conditions of tender.

By the representative of the Tenderer, deemed to be duly authorized, signing this part of this form of offer and acceptance, the Tenderer offers to perform all of the obligations and liabilities of the service provider under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the contract data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS:

Rand
.....(in words);
R (in figures).

This offer may be accepted by the Employer by signing the acceptance part of this form of offer and acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the tender data, whereupon the Tenderer becomes the party named as the service provider in the conditions of contract identified in the contract data.

Signature

Name

Capacity

For the Tenderer

Name of Tenderer

Address of Tenderer)

Name of witness.....

Signature of witness Date

C1.1 FORM OF OFFER AND ACCEPTANCE (Continued)

C1.1.2 Acceptance

By signing this part of this form of offer and acceptance, the Employer identified below accepts the Tenderer's offer. In consideration thereof, the Employer shall pay the service provider the amount due in accordance with the conditions of contract identified in the contract data. Acceptance of the Tenderer's offer shall form an agreement between the Employer and the Tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

- Part C1: Agreements and contract data, (which includes this agreement)
- Part C2: Pricing data
- Part C3: Scope of work.
- Part C4: Site information

and the schedules, forms, drawing and documents or parts thereof, which may be incorporated by reference into Parts 1 to 4 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be duly signed by the authorized representatives of both parties.

The Tenderer shall deliver the security in terms of Clause 6.2 GCC 2015 within the period stated in the contract Data, and he shall, immediately after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contract the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any other bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data, within 14 days of the date on which this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five days of the date of such receipt notified the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract within parties.

Signature

Name

Capacity

**For the
Employer**

Development Bank of Southern Africa Limited
1258 Lever Road, Headway Hill,
Midrand, Gauteng Province

Name of witness

Signature of witness Date

Schedule of Deviations

The extent of deviations from the Tender documents issued by the Employer prior to the Tender closing date is limited to those permitted in terms of the Tender Data and the Conditions of Tender.

A Tenderer's covering letter will not necessarily be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid becomes the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.

Any cover letter must be referenced here if applicable, or it will not be valid as part of this submission.

Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the Tender documents and which it is agreed by the Parties becomes and obligation of the contract shall also be recorded here.

Any change or addition to the Tender documents arising from the above agreements and recorded here shall also be incorporated in to the final draft of the Contract.

1 Subject

Details

.....

.....

2 Subject

Details

.....

.....

3 Subject

Details

.....

.....

4 Subject

Details

.....

.....

5 Subject

Details

.....

.....

.....

...

By the duly authorized representatives signing this Schedule of Deviations, the Employer and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from the amendments to the documents listed in the Tender Data and addend thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the Tender documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the Tenderer:

Signature(s)

Name(s)

Capacity

Name of Tenderer

Address of Tenderer

Name of witness

Signature of witness Date

For the Employer:

Signature(s)

Name(s)

Capacity

Name of Employer: **Development Bank of Southern Africa Limited**

Address of Employer 1258 Lever Road, Headway Hill, Midrand, Gauteng Province

Name of witness

Signature of witness Date

C1.2 CONTRACT DATA

Document reference	Title	Page No.
C1.2.1	Conditions of Contract	12
C1.2.2	Contract Data (Part 1)	45
C1.2.3	Contract Data (Part 2)	51

C1.2.1 CONDITIONS OF CONTRACT

GENERAL CONDITIONS OF CONTRACT

The Conditions of Contract are clauses 1 to 10 of the **GENERAL CONDITIONS OF CONTRACT FOR CONSTRUCTION WORKS, THIRD EDITION, 2015** (hereinafter referred to as the "GCC 2015") published by the South African Institution of civil Engineering.

Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685 and is obtainable from www.saice.org.za.

The GCC 2015 makes several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the GCC 2015.

Each item of data given below is cross-referenced to the clause in the GCC 2015 to which it mainly applies.

The Conditions of Contract make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Specific Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Conditions of Contract or the Special Conditions of Contract.

The Contract Specific Data, General and Special Conditions of Contract shall have precedence over the Drawings, Scope of Work and Standardised Specifications in the interpretation of any ambiguity or inconsistency.

SPECIAL CONDITIONS OF CONTRACT

1. GENERAL

These Special Conditions of Contract (SCC) form an integral part of the Contract. The Special Conditions of Contract shall amplify, modify or supersede, as the case may be, the Conditions of Contract of GCC 2015 to the extent specified below, and shall take precedence and shall govern in the interpretation of any ambiguity or inconsistency between it and the Conditions of Contract.

The clauses of the Special Conditions hereafter are numbered "SCC" followed in each case by the number of the applicable clause or sub clause in the GCC 2015, and the applicable heading, or (where a new special condition that has no relation to the existing clauses is introduced) by a number that follows after the last clause number in the Conditions, and an appropriate heading.

The Forms included in the GCC 2015, are replaced with the Forms included in this Tender Document.

2. AMENDMENTS AND ADDITIONS

Clause Number	Clause
1.	GENERAL
1.1.0	Definitions
n/a	Where the Contract is executed by virtue of a " <i>Form of Agreement</i> ", all references to " <i>Form of Offer and Acceptance</i> " shall be read as " <i>Form of Agreement</i> ".
1.1.1.1	The definition of " agreed " is amended to read "means <i>expressly</i> agreed in writing by the Employer and the Contractor, unless specifically stated otherwise (<i>but for this purpose, "in writing" shall, notwithstanding the provisions of Clause 1.1.1.34, exclude electronic communication</i>)."
1.1.1.31	The definition of " Supplementary Agreement " is amended to read "means an additional contract <i>agreed</i> between the Employer and the Contractor..."
	Add the following definitions at the end of the clause:
1.1.1.17	Add the following at the end of the Clause: Any reference to the term " Engineer's Representative " in this Contract shall mean " Employer's Agent's Representative " and vice versa.
1.1.1.35	" Cost " means all expenditure reasonably incurred (or to be incurred) on the contract by the Contractor related to the delay, whether on or off the Site, including overhead and similar charges, but does not include profit.
1.1.1.36	" Affiliate " means any other entity that directly or indirectly, through one or more intermediaries, controls or is controlled by, or is under common control with the Party in question. For the purpose hereof, " control " means the beneficial ownership of the majority in number of the issued equity of any entity (or the whole or majority of the entity's assets), and/or the right or ability to directly or otherwise control the entity or the votes attaching to the majority of the entity's issued share capital and, controlled or under common control shall have a similar meaning;
1.1.1.37	" Collusive Practice " means any agreement (which includes, without limitation, a contract, arrangement or understanding, whether or not legally enforceable) or concerted practice (being co-operative, or co-ordinated conduct between firms, achieved through direct or indirect contact, that replaces their independent action, but which does not amount to an agreement) between two or more persons (other than between the Contractor and its Affiliates), regardless of any technological, efficiency or other pro-competitive gains, involving any of the following: (i) the direct or indirect fixing of a purchase or selling price or any other trading condition;

	<p>(ii) the division of markets by allocating customers, suppliers, territories, or specific types of goods or services; or</p> <p>(iii) collusive tendering;</p>
1.1.1.38	“Construction Manager” has the meaning given to it in Clause 4.12.2;
1.1.1.39	<p>“Contractor Delay Event” means:</p> <ul style="list-style-type: none"> (i) any default, failure, negligence or delay by the Contractor or Subcontractor and any event or circumstance arising as a result thereof; and (ii) any other event or circumstance for which Contractor carries the risk or bears the responsibility under the Contract (and generally includes all events or circumstances which, unless expressly stated to be at the risk of the Employer under this Contract, are ordinarily at the risk of the contractor party in contracts for works of the nature of the Works, including breakdown or unavailability of Construction Equipment and the like).
1.1.1.40	<p>“Contractor Insolvency Event” means, and is considered to occur if:</p> <ul style="list-style-type: none"> (i) the Contractor commits an act which, if committed by an individual, would constitute an act of insolvency within the meaning of Sections 8 or 9(3)(a)(v) of the Insolvency Act 24 of 1936, as amended, or any equivalent legislation in any jurisdiction to which it is subject; (ii) the Contractor begins negotiations or takes any other step with a view to generally deferring, re-scheduling or otherwise re-adjusting all or a material part of its indebtedness or proposes or makes a general scheme, arrangement, assignment, or composition with or for the benefit of its creditors or a moratorium is proposed or agreed in respect of or affecting all or a material part of its indebtedness; (iii) the Contractor makes an application to court for business rescue supervision or for its winding-up (whether provisionally or finally); (iv) a court of competent jurisdiction grants an order winding-up Contractor (whether provisionally or finally) or makes an order placing the Contractor under business rescue supervision; (v) an application or other legal process (including the filing of any document commencing judicial process) is issued seeking an order for the winding-up of the Contractor (whether provisionally or finally) or placing the Contractor under business rescue supervision, except for so long as such application or other legal process is being contested in good faith and by appropriate means or except for the bona fide purpose of reconstruction, amalgamation, reorganisation, merger or consolidation; or

	<p>(vi) a resolution is passed by:</p> <ul style="list-style-type: none"> a) the shareholders of the Contractor for the winding-up of the Contractor, whether by way of a members' or creditors' voluntary winding-up; or b) the board of the Contractor for the Contractor to voluntarily begin business rescue proceedings and place himself under business rescue supervision.
1.1.1.41	"Corrupt Act" means any offence in respect of corruption or corrupt activities contemplated in the Prevention and Combating of Corrupt Activities Act No. 12 of 2004;
1.1.1.42	"Parties" means the Employer and the Contractor, and "Party" shall mean either of them, as the context may require;
1.1.1.43	"Performance Guarantee" means the performance guarantee referred to in clause 6.2.1;
1.1.1.44	"Prime Rate" means the publicly quoted rate of interest as certified by any duly authorised representative (whose appointment or authority or designation it shall not be necessary to prove) of Standard Bank of South Africa Limited as being the prime lending rate at which that bank lends in South African Rand from time to time, on the basis of such interest being calculated daily on a 365 (three hundred and sixty-five) day year, irrespective of whether or not the year in question is a leap year;
1.1.1.45	"Progress Reporting Requirements" means the progress reporting requirements set forth in Appendix 3;
1.1.1.46	"Special Conditions" means these Special Conditions of Contract.
1.2	Interpretations
	Amend the following clauses
1.2.1	<p>Delivery of notices</p> <p>Add the following at the end of this Clause: "A <i>written communication</i> includes any letter, notice, drawing, order, instruction, account, claim, determination, certification or site meeting minutes, to be delivered by the Employer or Employer's Agent to the Contractor, or by the Contractor to the Employer or Employer's Agent"</p>
	Insert the following new clauses:
1.2.6	Any reference to a person includes any individual, body corporate, unincorporated association, firm, company, corporation, government, state or agency of a state or any trust, association or partnership (whether or not having separate legal personality) or two or more of the foregoing or other entity recognised under any law as having a separate legal existence or personality.

1.2.7	References in the Special Conditions to “clauses” are to clauses of the General Conditions of Contract, as amended, where applicable, by the Special Conditions.
1.2.8	Any word or expression defined in any clause in these Special Conditions shall, unless the application of the word or expression is specifically limited to the clause in question, bear the meaning ascribed to the word or expression throughout these Special Conditions.
1.2.9	The schedules and appendices to the Contract form an integral part hereof and words and expressions defined in the Contract shall bear, unless the context otherwise requires, the same meaning in such appendices and schedules.
1.2.10	If any provision in a definition is a substantive provision conferring rights or imposing obligations on any Party, notwithstanding that it appears only in an interpretation clause, effect shall be given to it as if it were a substantive provision of the Contract.
1.2.11	References to a statutory provision include any subordinate legislation (including regulations) made from time to time under that provision and references to a statutory provision include that provision as from time to time modified or re-enacted as far as such modification or re-enactment applies, or is capable of applying, to the Contract.
1.2.12	Any reference in the Contract to “the Contract” or “this Contract” or any other agreement, document or instrument shall be construed as a reference to the Contract or that other agreement, document or instrument as amended, varied, restated, novated or substituted from time to time.
1.2.13	Unless otherwise expressly stated, any number of Days prescribed shall be determined by excluding the first and including the last day. In the event that the Day for payment of any amount due by the Employer in terms of the Contract should fall on a Saturday, Sunday or official public holiday, the relevant day for payment shall be the next ordinary business day.
1.2.14	Save to the extent expressly provided for, no provision of the Contract constitutes a stipulation for the benefit of any person who is not a Party to the Contract.
1.2.15	Where figures are referred to in numerals and in words, if there is any conflict between the two, the words shall prevail.
1.2.16	The use of the word “including” followed by a specific example/s shall not be construed as limiting the meaning of the general wording preceding it and the <i>eiusdem generis</i> rule shall not be applied in the interpretation of such general wording or such specific example(s).
1.3.0	General Provisions
	Insert the following new clauses at the end of this clause:
1.3.8	Severance If any provision of the Contract is rendered void, illegal or unenforceable in any respect under any law, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

1.3.9

Entire Agreement & Amendments to Contract

The Contract contains the entire agreement between the Parties in regard to the subject matter. No matter, whether in writing, oral communication or implied, not expressly contained in the Contract shall have any meaning or effect in the Contract.

Save to the extent expressly otherwise provided for in the Contract no amendment or consensual cancellation of the Contract or any provision or term thereof (including this Clause) shall be binding or have any force or effect unless reduced to writing and signed by or on behalf of the Parties (by duly authorised representatives). Without derogating from the foregoing, no agreement or purported agreement reached at any project review or other meeting, notwithstanding that it may be contained in any minute signed by or on behalf of the Parties, shall constitute an amendment to the Contract unless and until incorporated in a formal addendum to the Contract signed by or on behalf of the Parties (by duly authorised representatives). The provisions of this clause do not, however, limit or derogate from the provisions of Clause 6.3.

2.

BASIS OF CONTRACT

2.1.2

Available data and information

Obtaining information

Add the following at the end of Clause 2.1.3:

"The Contractor shall furthermore be deemed to have:

- (i) obtained all information and to have satisfied himself as to the laws, procedures and labour practices applicable to the country, the Works and the execution thereof; and*
- (ii) satisfied himself before tendering as to the correctness and sufficiency of his tender for the Works and of the rates and prices for the Works (as applicable), which rates and prices shall (except in so far as otherwise provided in the Contract) collectively cover full payment for the discharge of all his obligations under the Contract and all matters and things necessary for the proper completion of the Works.."*

2.2.4

Adverse Physical Conditions

Contractor's right to claim

Add the following at the end of Clause 2.2.4:

"However, when determining the Contractor's entitlement to such proven additional cost, the Employer's Agent may:

- (i) take into account the extent to which relevant physical conditions encountered by the Contractor while carrying out the Works were more favourable than could reasonably have been foreseen when the Contractor submitted his tender; and*

	(ii) <i>appropriately reduce the Contractors claimed entitlement to take into account the savings enjoyed by the Contractor's by reason of these more favourable physical conditions."</i>
2.5	Assignment
2.5.1	<p>Clause 2.5.1 is deleted and replaced with the following:</p> <p><i>"The Employer may, on written notice to the Contractor, cede and delegate its rights and obligations under this Contract to a Related Party or a Client of the Employer. The Contractor may subcontract part (but not all) of the Works in the manner provided for and subject to the terms of this Contract. The Contractor shall procure from the subcontractor all consents required in order to ensure that all the rights and obligations the Contractor may have under the subcontract agreements can be ceded and delegated. Save as aforesaid, neither party shall cede, delegate or assign any of its rights or obligations to any person without the prior written consent of the other.</i></p> <p><i>For the purpose hereof:</i></p>
2.5.1.1	<i>an "Employer party" means the Employer and includes its successors in title and permitted assignees under this Contract;</i>
2.5.1.2	<i>a "Related Party" means any entity that directly or indirectly, through one or more intermediaries, controls or is controlled by, or is under common control with the Employer and includes any other "Organ of State" as defined in section 239 of the Constitution of the Republic of South Africa, 1996 and any entity or Organ of State for whom the Employer carries out the Works or acts as an implementing agent; and</i>
2.5.1.1	<i>"Control" means the beneficial ownership of the majority in number of the issued equity of any entity (or the whole or majority of the entity's assets), and/or the right or ability to direct or otherwise control the entity or the votes attaching to the majority of the entity's equity and "controlled" or "under common control" shall have a similar meaning."</i>
3.	EMPLOYER'S AGENTS
3.2.3	<p>Specific approval of the Employer required Delete clause 3.2.3 and replace with the following:</p> <p><i>"The Employer's Agent, before instructing or approving any Variation or any other changes to the Works (including any increase in quantities), is required to obtain the prior written approval of the Employer if the Variation or other change ("restricted change" for the purpose of this Clause):</i></p> <ul style="list-style-type: none"> <i>(i) constitutes additional work which (reasonably considered) ought to be the subject matter of a Supplementary Agreement; or</i> <i>(ii) either itself or taken in the aggregate with all prior Variations or other changes:</i>

	<p>a) <i>will result in the Contract Price (excluding amounts for adjustment under clause 6.8.2 or 6.8.3 if any), whether lump-sum or re-measurable, exceeding the Contract Sum;</i></p> <p>b) <i>will, for the re-measurable portions of the Contract Price, result in the final measured quantity of any item exceeding the estimated quantity of that item as stated in Bill of Quantities; or</i></p> <p>c) <i>will result in a contingency deficit (and for this purpose “contingency deficit” means that the Contract Price, whether as a result of changes to the Works or otherwise, exceeds the Contract Sum or such higher amount as the Employer may notify the Contractor in writing from time to time); or</i></p> <p><i>The Contractor shall be solely responsible for ascertaining and satisfying himself that each restricted change has been expressly and specifically approved in writing by the Employer and accepts that it is not, notwithstanding anything to the contrary in the Contract, entitled to any upward adjustment to the Contract Price pursuant to a restricted change unless the restricted change has been so approved by the Employer (and in the case of (i) above, is provided for by way of a Supplementary Agreement).</i></p> <p><i>The Employer’s Agent shall have no authority (i) to amend the Contract or (ii) unless and except to the extent expressly and specifically authorised to do so by the Employer in writing from time to time, to relieve the Contractor of any of his obligations under the Contract.”</i></p>
3.2.4	<p>Delete clause</p> <p>Add the following to the Clause “The Employer shall appoint an independent Health and Safety Agent (HSA) on this Contract in terms of the Construction Regulations, 2014, as promulgated in terms of section 43 of the Occupational Health and Safety Act, 1993.</p> <p>The Contractor shall prepare a Health and Safety Plan in accordance with the Site-Specific Health and Safety Specification and submit such to the appointed HSA for legal compliance assessment and verification/approval prior to any works commencing.”</p>
3.2.5	<p>New Clause: The Employer’s Agent shall have the authority to suspend, without any additional cost, portions of the Works if there are any acceptance test results outstanding (including level control), as required in terms of the relevant standardised or project specific specifications.</p>
3.3.6	<p>Contractor’s right to refer to Employer’s Agent</p> <p>Amend clause 3.3.6 by inserting the words “<i>within 7 (seven) days thereof</i>” directly after the words “he shall be entitled”.</p>

4.	CONTRACTOR'S GENERAL OBLIGATIONS
4.3.1	<p>Add the following to the Clause</p> <p>"The Contractor shall comply with the:</p> <ul style="list-style-type: none"> • Basic Conditions of Employment Act, Act No 75 of 1997. • National Environmental Management Act, Act 107 of 1998. • The Basic Conditions of Employment Act, Act No 75 of 1997. • Occupational Health and Safety Act, Act No 85 of 1993. • Construction Regulations 2014. • Health and Safety Specification prepared by the Employer in terms of the Construction Regulations 2014. • WULA, Environmental Management Specification; and <p>All other relevant applicable laws, regulations, statutory provisions, and agreements."</p>
4.3.3	Insert the following new Clause 4.3.3 with marginal heading "Health and Safety"
4.3.3.1	The Contractor shall take all reasonable steps and precautions to assess the Site, consider and receive all relevant information on the Site and health and safety related to the Works, maintain the health and safety of persons in and about the execution of the Works.
4.3.3.2	The Contractor acknowledges that the Occupational Health and Safety Act No. 85 of 1993 and the regulations promulgated therein ("the Act"); and the Construction Regulations 2014 promulgated under the Act ("the Construction Regulations") will in all respects be applicable to this Contract and the Works.
4.3.3.3	The Employer appoints the Contractor as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014) for the Site.
4.3.3.4	Accordingly, the Contractor is responsible for all obligations of the "Principal Contractor" as defined and provided for under the Act and the Construction Regulations including but not limited to those obligations defined and provided for in Annexures A Baseline Risk Assessment and Health and Safety Specifications of this Contract.
4.3.3.5	The Contractor hereby confirms that it has received sufficient information about the Site and the Works in order to:
4.3.3.5.1	comply with the provisions of the Act and the Construction Regulations,
4.3.3.5.2	comply with the provisions of this clause 4.3;
4.3.3.5.3	adhere to the employer's health and safety specification as set out in Annexures A, B and C; and
4.3.3.5.4	be properly appointed in accordance with Section 37(2) of the Act as contemplated in clause 4.3.7.1.
4.3.3.6	The Contractor acknowledges that the Employer's Agent acts as the

	Employer's "Agent" as defined in the Construction Regulations and the Act.
4.3.3.7	Without limitation, the Contractor:
4.3.3.7.1	notwithstanding any actions which the Employer may take, accepts sole liability for due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures imposed by the Act, all its regulations (including the Construction Regulations , 2014) , Health and Safety Specifications and Annexures A(Baseline Risk Assessment . By entering into this Contract it shall be deemed that the parties have agreed in writing to the above provisions in terms of Section 37 (2) of the Act;
4.3.3.7.2	acknowledges and confirms that the Contract Price includes a sufficient amount for proper compliance with the Construction Regulations 2014, Health and Safety Specifications and , all applicable health and safety laws, regulations, rules, guidelines, procedures and all obligations imposed by this Contract and Annexures A and generally for the proper maintenance of health and safety in and about the execution of Works;
4.3.3.7.3	undertakes, in and about the execution of the Works, to comply with all applicable health and safety laws, regulations, rules, guidelines and procedures otherwise provided for under this Contract and shall ensure that all subcontractors, employees and others under the Contractor's direction and control, likewise observe and comply with the foregoing; and
4.3.3.7.4	indemnifies the Employer against any loss, damage or claim suffered by the Employer due to a failure to comply with any provision of this clause 4.3 by the Contractor.
4.3.3.8	The Contractor and his designer shall accept full responsibility and liability to comply with the Act, the Construction Regulations 2014, Health and Safety Specifications and Annexures A, Baseline Risk Assessment for the design of the Temporary Works and those parts of the Permanent Works which the contractor is responsible to design in terms of this Contract;
4.3.3.9	The Employer retains a right to inspect, review, obtain copies of all documents regarding, attend and participate in all meetings regarding; all inquiries, audits and reports conducted under this Contract including but not limited to those that are conducted in accordance with:
4.3.3.9.1	Annexures A of this Contract; and
4.3.3.9.2	Section 31 and/or 32 of the Act, its regulations and the Construction Regulations 2014 following any incident involving the Contractor and/or subcontractor and/or their employees.
4.3.3.10	The Contractor shall notify the Employer's Agent and copy in the Employer, immediately on receiving notice in writing or otherwise, in writing of all inquiries, audits, reports, investigations, complaints or criminal charges which may arise pursuant to work performed under this Contract.
4.3.3.11	The Employer and the Employer's Agent shall, at all times during construction and for a period of 5 (five) years after final completion, have the right to access

	and inspect any part of the site/ works and all documents, reports, designs, specifications whatsoever that are prepared pursuant to any clause of this Contract.
4.3.3.12	The Contractor shall liaise with the Employer and the Employer's Agent regarding all issues related to this clause 4.3, and shall in particular, comply with all reasonable requests from the principal agent to (i) attend any meetings and/or (ii) provide any documents, audits and reports; required by the Employer or Employer's Agent.
4.4.8	<p>Subcontracting</p> <p>Insert the following new clause 4.4.8:</p> <p><i>"The Contractor shall ensure that each subcontract shall include provisions which would entitle the Employer access to information regarding the execution of the subcontract or to require the subcontract to be assigned to the Employer, in full without limitation and/or further consent being required from the Contractor, under sub-clause 4.4.6 and sub-clause 4.4.7."</i></p>
4.4.9	<i>The Contractor shall submit the subcontract agreements and the supporting documents for each of its subcontractors to the Employer's Representative Agent and the Employer at least thirty (30) days prior to such subcontractor commencing with the works on site, failing which the Contractor shall be in breach of the Contract. The Contractor may redact all commercially sensitive information from the subcontract agreements.</i>
4.4.10	<p>Add new clause</p> <p>"supporting documents to subcontracting agreements" means the following: Certified Copy of valid B-BBEE Certificate/ Affidavit; Copy of valid/ active CIDB registration in the case of construction work.; Copy of valid/ active registration to application regulatory institutions (where stipulated) in the case of professional services work; A valid and active Tax Compliance Status Pin issued by South African Revenue Services.</p> <p>Submission of National Treasury Central Supplier Database (CSD) Summary Report.</p>
4.9.1	<p>Construction Equipment</p> <p>Insert the following sentence at the end of Clause 4.9.1:</p> <p><i>"The Contractor shall be solely and exclusively responsible for all the Construction Equipment provided by the Contractor."</i></p>
4.11.2	<p>Removal of incompetent employees</p> <p>Insert the following after the words "is guilty of misconduct, or"</p> <p><i>", in the opinion of the Employer's Agent,"</i></p>

	Contractor's Superintendence
4.12.1	<p>Add the following to the Clause:</p> <p>This will include as a minimum:</p> <p><u>Pile designer</u> with registration as a professional engineer or technologist with the engineering council of South Africa, and with at least 10 years pre-registration experience and experience on at least 10 similar projects as a pile designer.</p> <p><u>Contracts Manager</u> – (Construction Manager in terms of the general conditions of contract) qualification as a B ENG (civil engineering) or BSc (Civil Engineering) or BTech (Civil Engineering) with at least 15 years post qualification experience and at least 5 years in a similar role. With experience in at least 2 contracts, in a similar role, for a vehicular bridge.</p> <p><u>Site Agent</u> Minimum qualification of B Tech (civil engineering) with at least 10 years post qualification experience and at least 5 years in a similar role. With experience in at least 2 contracts, in a similar role, for a vehicular bridge.</p> <p><u>Site/general Forman</u> at least 20 year's experience, with experience in at least 2 contracts, in a similar role, for a vehicular bridge.</p> <p>Full time Construction Health and Safety Officer to have SACPMMP registration</p> <p>And all other operatives and superintendence for the successful completion of the project.</p>
	Construction Manager
4.12.2	<i>Notwithstanding the requirements of this clause, the Contractor's appointed Construction Manager shall be solely dedicated to this contract and shall be on site at all times when work is being performed.</i>
4.12.3	<p>Add the following new sentence after the last sentence in sub-clause 4.12.3:</p> <p><i>"The Construction Manager shall also have authority to generally act for and bind the Contractor under the Contract but shall not (unless expressly authorised thereto by the Contractor from time to time) have the authority to amend the Contract."</i></p>
5.	TIME AND RELATED MATTERS
5.3	Commencement of the Works
5.3.1	<p>Commencement of the Works</p> <p>Amend the first sentence of this clause by inserting the following words after the words "<i>commence carrying out the Works</i>": "<i>and shall proceed with the</i></p>

Works with due expedition and without delay.”

Add the following after the last sentence of sub-clause 5.3.1:

The documentation required before Commencement of the Works are:

- Notice to the Department of Labour that construction work shall commence
- Approved Health and Safety Plan (Refer to clause 4.3)
- Approved Environmental Management Plan
- SMME Management & Procurement Method Statement
- Initial cash flow projection linked to the programme (Refer to clause 5.6.2.6)
- Initial Programme (Refer to clause 5.6)
- Confirmation of Security Plan and the appoint of security staff (Refer to clause 6.2)
- Presentation of proof of Insurance (Refer to clause 8.6)
- Presentation of CV's of Construction Manager and other relevant staff (Refer to clause 4.12)
- Letter of Good Standing with the Civil Engineering Bargaining Council
- Advance Payment Guarantee for Bridge
- Advance Payment Guarantee for Piling
- Subcontract agreement or subcontract agreement between the main contractor and the piling contractor.
- Foundation Failure Indemnity/Piling Guarantee - R5,000,000 on any one occurrence, period of 10 years from handover of works.
- Provision of a quality control plan to include:
 - Contractors quality policy
 - Index of procedures to be used during the project
 - Audit schedule for internal and external audit during the contract
 - ISO 9001 certification
 - Typical quality manual
 - Typical quality control plan
- Contractors Methodology

5.3.2

Add the following after the last sentence of sub-clause 5.3.2:

Notwithstanding the requirements of this clause the Contractor is required to submit the documents listed in Contract Data clause 5.3.1 to the Employer's Agent for his approval prior to the Commencement Date of the Works.

5.3.4

Insert the following new Clause 5.3.4 with marginal heading “Setting Out”:

“The Employer's Agent shall establish the basic reference pegs and benchmarks on the Site and give to the Contractor the particulars thereof in sufficient time to enable the Contractor to proceed with the Works. After compliance by the Employer's Agent with the foregoing, the Contractor shall be

responsible for the true and proper setting out of the Works and for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and labour in connection therewith.

The Contractor shall carefully protect and preserve all benchmarks, sight-rails, pegs and other things used in setting out the Works.

The checking of any setting-out or of any line or level by the Employer's Agent shall not relieve the Contractor of his responsibility for the correctness thereof.

If at any time during the progress of the Works, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor shall at his own expense rectify such error to the satisfaction of the Employer's Agent. If, however, such error is based on incorrect data supplied in writing by the Employer's Agent or if there is any delay by the Employer's Agent in providing the particulars required in terms of this Clause, the Contractor shall, in respect of that delay and the cost of such rectification, be entitled to make a claim in accordance with Clause 10."

5.4

Access to the Site

5.4.4

Insert the following new Clause 5.4.4 with marginal heading "Setting Out Access Routes to Site":

"The Contractor shall be deemed to have satisfied himself as to the suitability and availability of access routes to the Site. The Employer

- (i) shall not be responsible for any claims which may arise from the use or otherwise of any access route; and*
- (ii) does not guarantee the suitability or availability of any particular access routes to or at Site and costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor."*

5.6

Programme

5.6.6

Insert the following additional clause as clause 5.6.6:

"Without limiting or derogating from the other rights of the Employer, the Employer's Agent shall not issue (and shall not be obliged to issue) any payment certificates, and the Contractor's rights to payment under the Contract shall be deemed suspended, until the Contractor has furnished the detailed programme as per Clause 5.6.1 and if and for so long as the Contractor is otherwise in default of any of its obligations under this Clause 5.6."

5.6.7

Progress Reporting Requirements

Insert the following additional clause as Clause 5.6.7:

"Without derogating from the obligations of the Contractor to otherwise report

	<i>under the Contract or limiting the rights of the Employer or the Employer's Agent to require the Contractor to furnish information under the Contract (whether under this Clause 5.6, Clause 7 or otherwise), the Contractor shall monitor and report on the progress of the Works in accordance with the Progress Reporting Requirements. Neither the submission of a progress report nor anything contained in any progress report shall constitute notice of a claim under the Contract (whether in terms of GCC clause 10.1 or otherwise)."</i>
5.7	Progress of the Works
5.7.1	<p>Rate of Progress</p> <p>The words "or is too slow for the Works to be completed by the Due Date for Completion" are inserted in the second line of clause 5.7.1 after the words "the approved programme".</p>
5.7.4	<p>Contractor's Progress Report</p> <p>Insert the following additional clause as Clause 5.7.4:</p> <p>The Contractor shall submit a comprehensive progress report at least 24 hours prior to monthly site meetings. The progress report shall consist of at least the following documents on a monthly basis:</p> <ul style="list-style-type: none"> • Approved programme indicating the base programme, actual and planned percentage complete of each item including the "time now" line; • A summary of the progress to date; • Updated realistic cash flow; • Any delays encountered or anticipated, including rainfall statistics for the month; • An information required schedule indicating any information or drawings required; • Plant and Labour Report; and • EME subcontract progress. <p>Failure to submit the complete progress report will result in a fine of R 10 000 being deducted from the next payment certificate by the Employers Agent.</p>
5.8	Non-working times
5.8.1	<p>Delete the words "between sunset and sunrise" in the first line and replace with "outside normal working hours".</p> <p>Add the following to the Clause "Normal working hours shall be those as stated in the applicable Sectoral Determination applicable to a 5 (five) day week (Monday to Friday) from 07:00 to 17:00. Application may be made for longer day periods and shall be considered on condition that additional labour</p>

	resources shall be made available to ensure that labour hours for individual labourers shall remain within legal limits.
5.12	Extension of time for Practical Completion
5.12.2.2	Some reasons for extension of time Amend this Sub-Clause by adding the words “ <i>subject to Clause 5.12.5</i> ” at the end of “ <i>Abnormal climatic conditions</i> ”.
5.12.2.4	Add the following to the Clause: Any disruption which is entirely beyond the Contractor’s control except for internal (Contractor’s own or his subcontractors labour) unrest, disruptions, strikes, lock-outs, etc.
5.12.3	Delete the contents of Clause 5.12.3 and replace with the following “If an extension of time is granted, the Contractor shall be paid such proven additional costs including for special non-working days, if applicable, as are appropriate regarding any other compensation which may have already been granted in respect of the circumstances concerned.”
5.12.5	Abnormal rainfall formula Insert the following new Clause 5.12.5: Extensions of time in respect of clause 5.12 in respect of abnormal rainfall shall be calculated using the following formula for each calendar month or part thereof: $V = (Nw - Nn) + \frac{(Rw - Rn)}{X}$ Where: V = Extension of time in calendar days in respect of the calendar month under consideration. Nw = Actual number of days during the calendar month on which a rainfall of 10 mm or more has been recorded. Nn = Average number of days in the relevant calendar month, as derived from existing rainfall records, on which a rainfall of 20mm or more has been recorded for the calendar month. Rw = Actual average rainfall in mm recorded for the calendar month under consideration. Rn = Average rainfall in mm for the calendar month as derived from existing rainfall records as stated in the Site Information.

For purposes of the Contract Nn, Rn, X and Y shall have those values assigned to them in the South African Weather Service's rainfall records of the nearest station to the site:

<u>Month</u>	<u>Nn (days)</u>	<u>Rn (mm)</u>
January	1.3	103.8
February	1.0	84.8
March	1.1	92.5
April	0.7	57.3
May	0.1	21.6
June	0.0	9.3
July	0.3	18.2
August	0.4	25.8
September	0.6	39.0
October	0.4	53.0
November	1.1	89.5
December	0.9	83.3

$X = 20$

If V is negative and its absolute value exceeds Nn, then V shall be taken as equal to minus Nn.

The total extension of time shall be the algebraic sum of all monthly totals for the period under consideration, but if the total is negative the time for completion shall not be reduced due to subnormal rainfall. Extensions of time for part of a month shall be calculated using pro rata values of Nn and Rn. This formula does not take account flood damage which could cause further or concurrent delays and will be treated separately as far as extension of time is concerned.

The factor $(Nw - Nn)$ shall be considered to represent a fair allowance for variations from the average in the number of days during which rainfall exceeds 10 mm. The factor $(Rw - Rn)$ shall be considered to represent a fair allowance for variations from the average in the number of days during which the rainfall did not exceed 10 mm but wet conditions prevented or disrupted work.

For the purpose of applying the formula, accurate rain gauging shall be taken at a suitable point on the Site and the Contractor shall at his own expense, take all necessary precautions to ensure that rain gauges cannot be interfered with by unauthorized persons.

During the execution of the Works, the Employer's Agent's Representative will certify a day lost due to rainfall only if at least 75% of the work force and

	<p>plant on site could not work during that specific working day. A delay caused by inclement weather conditions will be regarded as a delay only if, in the opinion of the Employer's Agent, all progress on an item or items of work on the critical path of the working programme of the contractor has been brought to a halt. Delays on working days only (based on a five-day working week) will be taken into account for the extension of time, but the Contractor shall make provision in his programme of work for an expected delay of "n" working days caused by normal rainy weather, for which he will not receive any extension of time, where "n" equals 23 days. Extension of time during working days will be granted to the degree to which actual delays, as defined above, exceed the number of "n" workings days.</p>
5.12.6	<p>Add the following Clause "Critical Path Provision: A delay in so far as extension of time is concerned, will be regarded as a delay only if, on a claim by the Contractor in accordance with the General Conditions of Contract, the Employer's Agent rules that all progress on an item or items of work on the critical path of the approved programme for the execution of the Works by the Contractor, has been brought to a halt. Delays on normal working days only, based on a working week of five normal working days, will be taken into account for the extension of time."</p>
5.14.	Completion
5.14.1	<p>Practical Completion</p> <p>Delete the second paragraph of Sub-clause 5.14.1 and replace it with the following:</p> <p><i>"When the Works are about to reach the said stage, the Contractor shall, in writing, request a Certificate of Practical Completion and the Employer's Agent shall, within 14 days after receiving such request, if he considers that the Works have achieved Practical Completion issue a Practical Completion Certificate or if he considers that the Works have not achieved Practical Completion issue to the Contractor a written list setting out the work to be completed to justify Practical Completion. Should the Employer's Agent not issue such a list within 14 days, and if the requirements for Practical Completion have been substantially achieved, Practical Completion shall be deemed to have been achieved on the expiry of the 14 days.</i></p>
5.14.5.1	<p>Consequences of Completion</p> <p>Amend this clause by deleting clause 5.14.5.1 in its entirety and mark it [NOT USED"]</p>
6	PAYMENT AND RELATED MATTERS
6.1	Payment to the Contractor

6.1.2	<p>Invoice Procedure</p> <p>Insert the following new Sub-clause 6.1.2:</p> <p><i>“The Contractor shall issue invoices to the Employer for the amounts due to it from time to time and payment of amounts due and payable to the Contractor shall be made by way of electronic money transfer directly into the Contractor Designated Account.”</i></p> <p>Insert the following new sub-clause 6.1.3:</p> <p><i>“The Contractor shall not, subject only to Clause 9.3, be entitled to stop or suspend the further execution of the Works by reason of any dispute relating to the payment of any amount due to or claimed to be due to it.”</i></p>
6.2	<p>Security</p>
6.2.1	<p>Replace the wording “as selected” in Clause 6.2.1 with “as stated”.</p> <p>The security to be provided by the Contractor shall be a Fixed Performance Guarantee of 10% the Contract Sum.</p> <p>The Fixed Performance Guarantee shall be from an Insurance Company or Financial Institution that is issued by either an insurance company duly registered in terms of the Short-Term Insurance Act, 1998 (Act 53 of 1998) or by a bank duly registered in terms of the Banks Act, 1990 (Act 94 of 1990).</p> <p>The wording of the fixed performance guarantee shall be identical to the pro-forma provided under Clause C1.3: Form of Guarantee.</p>
6.2.3	<p>Validity of performance guarantee</p> <p>Amend the first sentence of this clause by deleting the words “Certification of Completion” and replacing them with the words “<i>Final Approval Certificate</i>”.</p> <p>Delete the second sentence of Clause 6.2.3 starting with the words “<i>The performance guarantee shall...</i>” and replace it with the following:</p> <p><i>“If the terms of the performance guarantee specify its expiry date and the Contractor has not become entitled to receive the Final Approval Certificate of the Works (“expiry event”) by the date 28 Days prior to the said expiry date, the Contractor shall promptly (and in any event within not more than 3 Days thereof) extend the validity of the performance guarantee until the expiry event has occurred. If the Contractor fails to do so, the Employer may (without limiting the Employer’s other rights under the Contract) claim the full amount of the performance guarantee, which shall then be retained by the Employer as cash security (and the Employer’s Agent is hereby authorised to issue a payment certificate or other certificate as required by the terms of the performance guarantee to facilitate this claim and payment). The amount so claimed against and paid under the performance guarantee shall be reimbursed to the Contractor (without interest or other additional charge) if and when the performance guarantee is reinstated, extended or substituted in compliance</i></p>

	<i>with the above (as the case may be) and the Employer's Agent shall forthwith issue a payment certificate certifying the amount so due to the contractor."</i>
6.2	Insert the following new Clauses 6.2.4 with marginal heading "Claims under the performance guarantee"
6.2.4	The Employer may make a claim under the performance guarantee, for amounts to which the Employer is entitled under the contract in the event of:
6.2.4.1	failure by the Contractor to extend the validity of the performance guarantee as described in 6.2.3 above, in which event the Employer may claim the full amount of the performance guarantee,
6.2.4.2	failure by the Contractor to pay the Employer an amount due, as either agreed with the Contractor or assessed by the Employer's Agent (or otherwise determined) in accordance with the provisions of this contract, within 28 days after this agreement, assessment or determination,
6.2.4.3	failure by the Contractor to remedy a default within 28 days after receiving the Employer's notice requiring the default to be remedied, or
6.2.4.4	a termination by the Employer in accordance with clause 9.2.1.
6.2.	Insert the following new Clauses 6.2.5 with marginal heading "Indemnity for invalid claims"
6.2.5	The Employer indemnifies and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the performance guarantee to the extent to which the Employer is not entitled to make the claim.
6.2	Insert the following new Clauses 6.2.6 with marginal heading "Step Down"
6.2.6	The performance guarantee shall reduce by half of its value on the date of issue of the Certificate of Practical Completion. The performance guarantee shall lapse/expire on the issue of the Final Approval Certificate.
6.2	Insert the following new clause 6.2.7 "Advance Payment"
6.2.7	An advance payment is an interest free loan, not exceeding ten percent (10%) of the Contract Sum, unless agreed by the Employer , for items that may require upfront disbursement by the Contractor to subcontractors and/or suppliers.
6.2.8	Should the Contractor require an advance payment, the Contractor shall make a formal request for consideration by the Employer for payment of an advance payment. The Contractor shall, with its formal request submit reasonable justification for the requirement of an advance payment supported by relevant documentation. In addition, the Contractor is required to submit with its formal request, a written proposal to the Employer regarding the amortisation of the advance payment. Only once the Employer accepts the Contractor's reasonable justification for the advance payment and the amortisation

	proposal, the Employer shall pay the advance payment. Such acceptance shall be communicated formally by the Employer to the Contractor.
6.2.9	The precondition for the payment of the advance payment by the Employer to the Contractor is the provision of a valid unconditional / on-demand advanced payment guarantee for the total amount of the advance payment, in the form acceptable by the Employer.
6.3	Variations
6.3.1	<p>Variations</p> <p>Amend Sub-Clause 6.3.1.2 to read “<i>Omit any such work (provided it is not to be carried out by someone else, unless the Contractor is in default as provided for below),</i>”</p> <p>Insert the following new paragraph at the end of Sub-Clause 6.3.1.6 but before the final paragraph of Clause 6.3.1:</p> <p><i>“A variation may comprise the omission of any work which is to be carried out by someone else where the Contractor is in default. In such event the Employer’s Agent shall first give notice to the Contractor to make good the failure under Clause 11.1. The omission may include any part of the Works which, in the opinion of the Employer’s Agent, should be omitted to allow the default to be remedied by the Contractor (whether by the reallocation of resources or otherwise) or by others.”</i></p>
6.8	Adjustment in rates and/or prices
6.8.4	<p>Subsequent changes in legislation</p> <p>Clause 6.8.4 is amended by adding the following at the end of the clause:</p> <p><i>“Notwithstanding anything contained in this clause or this agreement, a “change in legislation” shall not include any law or piece of legislation that was enacted or made but not yet in force as at the date when the tender was submitted, or any proposed or draft law that was promulgated or issued for comment at any time before the tender was submitted if and to the extent that such law when enacted or made and brought into effect is materially unchanged;</i></p>
6.10	Payments
6.10.3	<p>Retention money</p> <p>Replace the entire contents of Clause 6.10.3 with the following: “Payment of the amounts referred to in Clauses 6.10.1.1, 6.10.1.2, 6.10.1.3 and 6.10.1.4 shall be subject to a retention by the Employer of an amount (called the “retention money”), being the percentage retention stated in the Contract Data, of the said amounts due to the Contractor, until the retention money reaches the “Limit of retention money” stated in the Contract Data.</p>

6.10.4	<p>Delivery, dissatisfaction with and payment of payment certificate</p> <p>Clause 6.10.4 is amended as follows:</p> <p>The period of “28 days” in clause 6.10.4 is changed to “30 days”.</p> <p>Delete the last sentence in this sub-clause and replace with the following:</p> <p><i>“Payment within the said 30 day period is subject to the Contractor submitting a valid tax invoice and compliance by Contractor with the Invoice Procedure.”</i></p>
6.10.6.2	<p>Set-off and delayed payments</p> <p>Clause 6.10.6.2 is amended as follows:</p> <p>The words “the prime overdraft rate certified by the Contractor’s banker” in the second and third lines of Clause 6.10.6.2 are substituted with “<i>Prime Rate</i>”.</p>
6.10.8	<p>Contractor’s completion statement</p> <p>Clause 6.10.8 is amended as follows:</p> <p>The period of “28 days” in Clause 6.10.8 is changed to “30 days”.</p> <p>The following sentence is to be inserted at the end of Clause 6.10.8: “<i>Payment within the said 30 day period is subject to compliance by Contractor with the Invoice Procedure.</i>”</p>
6.10.9	<p>Final Payment Certificate</p> <p>Clause 6.10.9 is amended as follows:</p> <p>The period of “28 days” in Clause 6.10.9 is changed to “30 days”.</p> <p>The following sentence is to be inserted at the end of Clause 6.10.9: “<i>Furthermore, payment within the said 30 day period is subject to compliance by Contractor with the Invoice Procedure.</i>”</p>
8.3	Excepted Risks
8.3.1.12	The words “or defects in the materials supplied by the Employer for incorporation in the Works” in the penultimate and last line of Clause 8.3.1.12 are deleted.
8.6	Insurances
8.6.1	Add the following at the end of the Clause:

	<ul style="list-style-type: none"> All policies shall note the Employer as additional insured Certificates of insurance and proof of premium paid must be submitted before access to site <p>The Contractor shall immediately notify the Employer of any incident that may give rise to a claim</p>
8.6.1.1	<p>Contract Works Insurance</p> <p>Amend the Clause as follows “Insurance of the Works, <i>shall cover physical loss or damage to the Works, Temporary Works, Plant and Materials on site, including transportation across the river, losses due to accidental damage, fire, flood, storm or collapse</i> for incorporation in the Works, arising from whatever cause (except the causes set out in Clause 8.3.1), for the period for which the Contractor is responsible for the Works in terms of Clause 8.2.1, and for a sum insured which shall be the aggregate of:”</p> <p>In addition to the above add the following requirement for Insurance of the Works:</p> <p>Extension required: Specific coverage for transport and construction activities involving water crossings and riverbanks.</p>
8.6.1.1.1	<p>Replace the wording “The Contract Price” with “The Contract Sum plus 10%”</p>
8.6.5	<p>At the end of the sub-clause, add the following paragraph:</p> <p>“Except where otherwise provided in the Contract Data, the insurance policy shall contain a specific provision whereby cancellation of the policy prior to the end of the period referred to in Clause 8.2.1 cannot take place without prior written approval of the Employer.”</p>
8.6.7	<p>Insert the following at the end of clause 8.6.7:</p> <p><i>“Notwithstanding anything contained in this Contract, the Employer shall be entitled to cancel this Contract if the Contractor fails to effect and keep in force any of the insurances referred to in Clause 8.6.1.”</i></p>
	<p>Add the following new Clauses</p>
8.6.8	<p>The Contractor and/or Sub-Contractor shall provide, as a minimum, the following:</p> <p>(a) Where the Contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or</p>

	<p>fabrication. In the event of the Employer having an insurable interest in such works during manufacture or fabrication, then such interest shall be noted by endorsement to the Contractor's Policies of Insurance</p> <p>(b) Imported equipment or component parts or materials to be supplied in terms of this Contract which require any process of assembly or finishing in South Africa prior to delivery to the site are to be insured by the Contractor up to the commencement of transit to site of the assembled or finished equipment, component parts or materials, unless special arrangements are made with the Employer.</p>
8.6.9	<p>These insurances shall be maintained in force for the duration of the Contract, including any Defects Liability Period and in respect of Sub-Contractors, the Contractor shall be deemed to have complied with the provisions of the requirements relating to insurance by ensuring that the Sub-Contractors have effected such insurance.</p>
8.6.10	<p>The Contractor may effect, at his own cost, any insurance additional to that effected by the Employer which he deems necessary in his own interests. The Employer reserves the right to call for full information regarding such insurances.</p>
8.6.11	<p>The insurances to be provided by the Contractor and Sub-Contractor shall be effected with Insurers on terms approved by the Employer (which approval shall not be unreasonably withheld) and the Contractor shall, if required by the Employer, produce to the Employer the Policy or Policies of insurance and the receipts for payment of the current premiums.</p>
8.6.12	<p>If the Contractor fails to effect and keep in force the insurances referred to, then the Employer may affect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and, from time to time, deduct the amount paid by the Employer from any monies due or which may become due to the Contractor or recover same as a debt from the Contractor.</p>
8.6.13	<p>Where the Contractor is responsible for the appointment of Sub-Contractors, then the Contractor shall</p> <p>(a) ensure that potential and appointed Sub-Contractors are aware of the whole content of this Contract; and</p> <p>(b) ensure the compliance of Sub-Contractors with this Contract clause, where applicable.</p>

	The Contractor warrants that he shall give all notices and shall observe all the terms and conditions and requirements and compliances with all insurances and performance guarantees applicable to this Contract.
9	TERMINATION OF CONTRACT
9.2	Termination by Employer
9.2.1	<p>Termination by the Employer</p> <p>Clause 9.2.1.1 is replaced in its entirety with “<i>A Contractor Insolvency Event occurs;</i>”</p> <p>Clause 9.2.1.2 is replaced in its entirety with “<i>The Contractor:</i></p> <ul style="list-style-type: none"> (i) <i>attempts or purports, save to the extent permitted under the Contract, to cede any of its rights or delegate any of its obligations under or in terms of the Contract to any third party,</i> (ii) <i>committed or commits any Corrupt Act in relation to procurement, entering into or execution of this Contract or generally in connection with the Works;</i> (iii) <i>committed, engaged in or engages in any Collusive Practice in connection with this Contract or generally in connection with the Works.</i>” <p>At the beginning of Clause 9.2.1, in the main body of the clause after 9.2.1.3.8, insert the following after “then the Employer may,”: “ (i) where Clause 9.2.1 1 or 9.2.1.2 apply, on written notice to the Contactor (with specific reference to this Clause and with or without, at the Employer’s sole and absolute discretion, first giving the Contractor an opportunity to remedy the event or default)) terminate the Contract and order the Contractor to vacate the Site and hand it over to the Employer or (ii) where Clause 9.2.1.3 applies, ...”</p> <p>Clause 9.2.1.3.6 is replaced in its entirety with “(i) <i>has failed to make good a failure and remedy it within the time required by the Employer’s Agent pursuant to a notice under Clause 11.1, (ii) is not carrying out the Works in accordance with the Contract, or (iii) is neglecting to carry out his obligations under the Contract; or</i>”</p> <p>Insert a new clause 9.2.1.3.9 at the end of clause 9.2.1.3 “<i>Has failed to comply with the provisions of clauses 11.7 or 11.8;</i>”</p> <p><u>Add “or” at the end of Clause 9.2.1.3.8 and add the following three Clauses:</u></p> <p>9.2.1.3.9 Has failed to provide the required insurances or fixed performance guarantee within the prescribed time;</p>
9.2.3	<p>Notices to trustee/liquidator</p> <p>Delete the words “<i>If the provisions of Clause 9.2.1.1 apply, any notice or order</i></p>

	<i>referred to in this Clause shall be delivered to the trustee or liquidator,” and replace with “In the event of a Contractor Insolvency Event and a trustee, liquidator, business rescue practitioner or like administrator is appointed, any notice or order referred to in this Clause shall be delivered to that person...”</i>
9.2	Insert the following new Clause 9.2.4 with marginal heading “Termination for Convenience”
9.2.4	<p>Termination for Convenience</p> <p><i>“The Employer shall be entitled to terminate the Contract, at any time for the Employer’s convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28 days after the later of the dates on which the Contractor receives this notice or the Employer returns the performance guarantee and all monies held in retention. The Employer shall not terminate the Contract under this sub-clause in order to execute the Works himself or to arrange for the Works to be executed by another contractor. The Employer shall return the performance guarantee and/or all monies held in retention promptly after such termination takes effect, unless there are outstanding calls/claims thereon in which event, and if applicable, the Employer shall return the performance guarantee and/or the monies held in retention promptly after the last of the outstanding calls/claims have been met.”</i></p>
9.3	Termination by Contractor
9.3.1.2	<p>Termination by the Contractor</p> <p>Amplify this clause by including the following after the words “<i>within the time of payment provided for in the Contract</i>”:</p> <p><i>“and persisting in such default for more than 30 days after receipt of a written notice from the Contractor requiring such payment to be made (which notice, to be valid must (i) refer to this Clause and (ii) notify the Employer of the Contractor’s intention to exercise his rights in terms hereof if payment is not made)”</i></p>
9.3.2.2	Delete the words “ <i>without prejudice to the exercise of any lien the Contractor may have acquired over the Employer’s property.</i> ”
9.3.2.3	<p>Removal of items and payment to Contractor</p> <p>The word “<i>direct</i>” is inserted before the words “<i>loss or damage</i>” in the 6th line of this Clause.</p>
9.3.3	<p>Other rights of the Contractor</p> <p>Delete this Clause and replace with the following:</p> <p><i>“The Contractor’s rights to payment and damages arising in connection with such termination shall be limited to the remedies and amounts payable under Clause 9.3.2.3.”</i></p>
9.3.4	<p>Notices to trustees/liquidators</p> <p>Delete this Clause in its entirety.</p>

10	CLAIMS AND DISPUTES
10.1	Contractor's Claim
10.1.3.4	The words "conclusive evidence" in Clause 10.1.3.4 are deleted and replaced with the words "prima facie evidence".
10.1.3.6	Records of facts and circumstances for claim Delete this Sub-clause in its entirety.
10.1.6	Insert the following new Clause 10.1.6 with marginal heading "Critical Path & Concurrent Delays & General Limitation on Entitlement"
10.1.6.1	<p><i>"Notwithstanding anything to the contrary in the Contract:</i></p> <ul style="list-style-type: none"> <i>(i) Only delays to activities on the critical path that will actually delay Practical Completion of the Works beyond the Due Completion Date, or to such activities therein that are reasonably calculated to become critical due to the delay in question, will found claims for an extension of time;</i> <i>(ii) The Contractor shall not be entitled to an extension of time for any Contractor Delay Event or to the extent that Practical Completion of the Works would in any event have delayed beyond the Due Completion Date by reason of a Contractor Delay Event.</i> <i>(iii) The Contractor shall not be entitled to any extension of time or additional payment or compensation if and to the extent the cause, event or circumstance giving rise thereto is attributable to:</i> <ul style="list-style-type: none"> <i>a) the negligence, error or default of the Contractor or any subcontractor or any Affiliate of the Contractor;</i> <i>b) any matters or events which are within the reasonable control of the Contractor or of any of its subcontractors or any Affiliate of the Contractor which should reasonably have been foreseen and provided for or avoided by the Contractor or by any of its subcontractors;</i> <p><i>The Contractor shall use reasonable endeavours and take reasonable steps to preclude the occurrence of delays, avoid and/or minimise the consequences of delays and generally to mitigate the effects of a cause or circumstance giving rise to a claim (whether for extension of time or compensation).</i></p> <p><i>The Contractor shall bear the onus of showing that its claim for an extension of time and/or additional compensation satisfies all of the requirements of this Clause 10.1."</i></p>
10.2	Dissatisfaction Claim
10.2.2	Failure to claim dissatisfaction Delete and replace this Clause with the following:

	<i>"If, in respect of any matter referred to in Clause 10.2.1 above, the Contractor fails to submit a claim within 28 days after the cause of the dissatisfaction, he shall have no further right to raise any dissatisfaction on such matter."</i>
10.5	Adjudication
10.5.4	<p>Implementation of decision</p> <p>Replace the first sentence of this clause with the following:</p> <p><i>"Subject to Clause 10.6.3, the parties shall implement the Adjudication Board's decision without delay whether or not the dispute is to be referred to arbitration or court proceedings."</i></p>
10.6	Disagreement with Adjudication Board's decision
10.6.1.1	<p>Disagreement with Adjudication Board's decision</p> <p>Delete and replace this clause with the following:</p> <p><i>"Subject to clause 10.6.3, the decision shall be binding on both parties unless and until it is revised by an arbitration award or court judgment, whichever is applicable in terms of the Contract."</i></p>
10.6.3	<p>Failure to give a decision in time</p> <p>Delete and replace this Clause with the following:</p> <p><i>"If the Adjudication Board does not give its decision within the time stated in the Adjudication Board Rules, or otherwise extended in writing by the parties, any decision delivered thereafter shall not be binding on the parties, and shall not be a "decision" for the purposes of Clauses 10.5 to 10.10. Either party shall then have a right to submit the dispute to arbitration or court proceedings, whichever is applicable in terms of the Contract, provided that a written notice is given to the other party, referring to this Clause, within 28 days after the decision should have been given. If either party fails to give such a notice within the 28 days, the ruling of the Employer's Agent shall be final and binding."</i></p>
11	Insert the following new clause "11. FURTHER RIGHTS AND REMEDIES"

11.1

Insert the following new Clause 11.1 with marginal heading “Employer’s Agent’s right to require performance”

“If the Contractor fails to comply with or carry out any of his obligations under the Contract, the Employer’s Agent may (without limiting the Employer’s other rights under the Contract) give notice to the Contractor to make good the failure and remedy it within a time which the Employer’s Agent considers reasonable for that purpose. The Contractor’s failure to comply with any such notice constitutes a default of the Contractor under the Contract.

11.2

Insert the following new Clause 11.2 with marginal heading “Employer’s right to step-in”

“If the Contractor fails to comply with or carry out any of his obligations under the Contract and fails to make good the failure and remedy it within the time specified by the Employer’s Agent in a notice under Clause 11.1, the Employer, without prejudice to its other rights, powers and remedies under the Contract or in law, shall be entitled to make good the failure and remedy it either himself or via other persons, and the reasonable costs of doing so shall be for the account of the Contractor. Further, notwithstanding anything contained in this Contract, where the Employer has “stepped-in” the Contractor shall remain responsible for the Works as if it was the executing the Works itself, up to the date of issue of the Certificate Of Completion

The Contractor shall co-operate with the Employer and facilitate and permit the use of all required goods, information, materials and other matter (including drawings, CAD files, technical data, models, plans, designs (if any), diagrams, evaluations, details, specifications, schedules, reports, calculation results, manuals or other documents or recorded information (electronic or otherwise) which have been or are at any time prepared by or on behalf of the Contractor under the Contract or otherwise for and/or in connection with the Works) and shall generally do all things required by the Employer’s Agent to achieve this end.

Any information, materials and other matter made available by the Contractor under this Clause shall be used solely and exclusively for the purpose of making good and remedying the Contractor’s failure and shall thereafter be returned to the Contractor.”

11.3

Insert the following new Clause 11.3 with marginal heading “Further Remedy for Breach”

“Without derogating from its other rights, the Employer is entitled to withhold 10% (ten per cent) from any payments otherwise due to the Contractor, and the Employer’s Agent is empowered to withhold that amount from any payment certificate, without the Employer incurring any obligation for interest, where and for so long as the Contractor fails to comply with or carry out any of his obligations under the Contract and fails to make good the failure and remedy it within the time specified by the Employer’s Agent in a notice under Clause 11.1.”

11.4

Insert the following new Clause 11.4 with marginal heading “Early Warning”

*“In order to mitigate risk, the Employer and the Contractor require open and effective communication and co-operation to deal with events, circumstances or factors which may adversely affect the Works or the progress thereof, including any events, circumstances or factors which may delay the execution of the Works or increase the Contract Price (“**Early Warning Event**”).*

With a view to facilitating this, the Contractor shall give written notice to the Employer’s Agent of an Early Warning Event as soon as reasonably possible, but in any event within 7 (seven) days, after it has come to his attention. In such notice the Contractor shall provide:

- (i) detailed particulars of the event and the potential adverse effects; and*
- (ii) proposals for the steps to be taken to mitigate the potential adverse effects thereof.*

Either the Employer’s Agent or the Contractor shall be entitled, by written notice, to require the other of them to attend an early warning meeting in respect of any Early Warning Event (whether or not notified by the Contractor). The purpose of the early warning meeting is to raise and discuss Early Warning Events in a co-operative manner and to jointly make and consider proposals and seek solutions to mitigate the potential adverse effects thereof.

The early warning notice and meetings contemplated in this Sub-clause are intended as a risk management tool and open discussion is of paramount importance. To this end:

- A. notification in terms of this Clause shall not constitute notification of a claim for extension of time or additional payment under the Contract,*
- B. unless otherwise specifically agreed in writing by the Employer and the Contractor from time to time nothing raised or agreed at any early warning meeting shall limit or derogate from the rights and obligations of the Employer, the Employer’s Agent or Contractor under the Contract.”*

11.5	<p>Insert the following new Clause 11.5 with marginal heading “Access to Works Records”</p> <p><i>“The Contractor shall maintain all records and accounts pertaining to the Works, during the execution thereof and for a period of 5 (five) years after the Due Completion Date and shall ensure that his Subcontractors do likewise. The Employer’s personnel and the Employer’s other authorised representatives and agents (including the Employer’s Agent) have the right to examine, audit, copy and inspect the said records and accounts at all reasonable times during the execution of the Works and during the said 5 (five) year period.”</i></p>
11.6	<p>Insert the following new Clause 11.6 with marginal heading “Employer Procured Materials”</p>
11.6.1	<p><i>“The Employer is entitled but not obliged to procure materials and goods on behalf of the Contractor. The Contractor may request that the Employer procures materials and goods on its behalf</i></p>
11.6.2	<p><i>Should the Employer exercise this right, or should the employer accept the Contractor’s request, the Contractor shall:</i></p>
11.6.2.1	<p><i>issue to the Employer Agent a list of all materials and goods the Contractor requires;</i></p>
11.6.2.2	<p><i>state in the list considered above, the time within which such materials and goods must be provided;</i></p>
11.6.2.3	<p><i>take delivery of such materials and goods provided by the Employer;</i></p>
11.6.3	<p><i>The Contractor shall be responsible for and takes the risk on all materials and goods after taking delivery of such materials and goods at Site and indemnifies the Employer against all losses or costs arising from any damage, loss or theft of such materials and goods</i></p>
11.6.4	<p><i>The Contractor shall not be entitled to any extension of time and costs for the late delivery of any materials and goods to be procured by the Employer under the provision of this clause 11.6</i></p>
11.6.5	<p><i>The direct cost of all materials and goods procured by the Employer on behalf of the Contractor in accordance with the provisions of this clause 11.6 shall be deducted from each payment due to the Contractor</i></p>

11.6.6	<i>The Contractor acknowledges that all Employer supplied materials and goods remain the property of the Employer</i>
11.7	Insert the following new Clause 11.7 with marginal heading “Broad Based Black Economic Empowerment, Construction Industry Development Board grading and the relevant Tax Clearance Certificate”
	<i>The Contractor warrants that it will:</i>
11.7.1	<i>comply with all laws including the Broad Based Black Economic Empowerment Act 53 of 2003, its regulations and Codes of Good Practice; and the Preferential Procurement Act 5 of 2000 and all its regulations;</i>
11.7.2	<i>maintain or improve (i) the BEE rating stated in its BEE certificate (ii) the contractors Construction Industry Development Board grading, and (iii) its Tax Clearance Certificate submitted at tender stage; and</i>
11.7.3	<i>not conduct any Fronting practices as defined in the Codes of Good Practice.</i>
11.8	Insert the following new Clause 11.8 with marginal “The contractor’s recovery plan”
11.8.1	<i>“Where actual progress on site is not in accordance with the most current programme or where the Employer or Employer’s Agent is of the opinion, at any time during the execution of the Works, that the Contractor will not achieve completion on the date stated contract data, the Contractor shall prepare a recovery plan within 14 days of receipt of an instruction from the Employer or Employer Agent requesting such recovery plan detailing:</i>
11.8.1.1	<i>the Contractor’s plan to ensure that the works will achieve completion on the date stated in the contract data;</i>
11.8.1.2	<i>all additional resources which will be employed by the Contractor in order to ensure that the Contractor achieves completion on the date stated in the contract data;</i>
11.8.1.3	<i>any other information which may be required by the Employer or the Employers Agent to ascertain that the Contractor will achieve completion on the date stated in the contract data”</i>

C1.2.2 PART 1: CONTRACT-SPECIFIC DATA PROVIDED BY THE EMPLOYER

The Contract Data shall be read with the General Conditions of Contract for Construction Works, Third Edition (2015) published by the South African Institution of Civil Engineering and the Special Conditions of Contract.

Item No.	Clause Number	Description
1	1.1.1.13	The Defects Liability Period is 3 years , measured from the date of the Certificate of Completion.
2	1.1.1.14	The time for achieving Practical Completion, from the Commencement Date, is 12 Calendar Months .
3	1.1.1.15	The Employer is "Development Bank of Southern Africa Limited"
4	1.2.1.2	<p>The address of the Employer is:</p> <p>Telephone: (011) 313 3911</p> <p>Facsimile: (011) 313 3086</p> <p>E-mail: iddlegal@dbsa.org</p> <p>Physical Address:</p> <p>1258 Lever Road, Headway Hill, Midrand, 1685</p> <p>Postal Address:</p>

		P O Box 1234 Halfway House Midrand 1685
5	1.1.1.16	The name of the Employer's Agent is: Uhambiso Consult (Pty) Ltd
6	1.2.1.2	The address of the Employer's Agent is: Uhambiso Consult (Pty) Ltd Queenstown - Komani 6065 Contact Person : Mr Sazi Nyikana Tel : 045 838 5046 Email : snyikana@uhambiso.co.za
7	1.1.1.26	The pricing strategy is Re-measurement. <ul style="list-style-type: none"> Any allowance for a contingency amount is solely at the discretion and use of the Employer All prices must be quoted in Rand. Tenderers will be required to price the bill of quantities. Employer reserves the right to accept or reject any additional items proposed by the Tenderers.
8	1.2.1.2	The Employer's address for receipt of communications and notices is: DBSA Development Bank of South Africa Johannesburg 2031 South Africa Contact Person: Mr Vusi Khumalo Tel : (011) 313 3911 Email : vusik3@dbsa.org
9	1.2.1.2	The Employer's Agent's address for receipt of communications and notices is: Uhambiso Consult (Pty) Ltd Queenstown - Komani 6065 Contact Person : Mr Sazi Nyikana Tel : 045 838 5046 Email : snyikana@uhambiso.co.za

10	5.1.1 and 5.8.1	<p>Non-working days are Saturdays and Sundays.</p> <p>Application may be made to work on outside Normal working hours. Such application may be considered but approval of this is not guaranteed. If such extension is approved then the Contractor shall ensure that competent supervisory staff shall be on duty and that the type of work shall be such that it shall not create large noise;</p> <p>Special non-working days are:</p> <p>The special non-working days are the official public holidays of the Republic of South Africa and the industry year end break with effective dates published by the South African Forum of Civil Engineering Contractors (SAFCEC)."</p>
	NEW 4.12.4	<p>The Contractor shall submit a comprehensive progress report at least 24 hours prior to monthly site meetings. The progress report shall consist of at least the following documents on a monthly basis:</p> <ul style="list-style-type: none"> • Approved programme indicating the base programme, actual and planned percentage complete of each item including the "time now" line; • A summary of the progress to date; • Updated realistic cash flow; • Any delays encountered or anticipated, including rainfall statistics for the month; • An information required schedule indicating any information or drawings required; • Plant and Labour Report; and • EME subcontract progress. <p>Failure to submit the complete progress report will result in a fine of R 10 000 being deducted from the next payment certificate by the Employers Agent.</p>
	5.3.1	<p>The documentation required before Commencement of the Works are:</p> <ul style="list-style-type: none"> • Notice to the Department of Labour that construction work shall commence • Approved Health and Safety Plan (Refer to clause 4.3) • Approved Environmental Management Plan • SMME Management & Procurement Method Statement • Initial cash flow projection linked to the programme (Refer to clause 5.6.2.6) • Initial Programme (Refer to clause 5.6) • Confirmation of Security Plan and the appointment of security staff (Refer to clause 6.2) • Presentation of proof of Insurance (Refer to clause 8.6) • Presentation of CV's of Construction Manager and other relevant staff (Refer to clause 4.12) • Letter of Good Standing with the Civil Engineering Bargaining Council

		<ul style="list-style-type: none"> • Foundation Failure Indemnity/Piling Guarantee – R5,000,000 on any one occurrence, period of 10 years from handover of works. • Provision of a quality control plan to include: <ul style="list-style-type: none"> ○ Contractors quality policy ○ Index of procedures to be used during the project ○ Audit schedule for internal and external audit during the contract ○ ISO 9001 certification ○ Typical quality manual ○ Typical quality control plan • Contractors Methodology
11	5.3.2	<p>Notwithstanding the requirements of this clause the Contractor is required to submit the documents listed in Contract Data clause 5.3.1 to the Employer's Agent for his approval prior to the Commencement Date of the Works.</p> <p>The time to submit the documentation required before commencement with Works execution is 14 days.</p>
12	5.13.1	<p>The penalty for failing to complete the Works at the Due Completion Date is R1, 650.00 per day.</p> <p>The Contractor is to note that delay penalties, in addition to monies still owed to the Contractor (including retention monies) and the Guarantee, shall effectively be used to address additional costs incurred by the Employer, such as the Employer's Agent's construction monitoring fees and other service providers' fees and wayleave extension costs, as a result of the Works not being completed at Practical Completion.</p> <p>The Employer shall have a right during the identified delay period to intervene and accelerate the work or appoint a third party to assist or complete the works to reach practical completion at the planned period. The cost of the appointed third party work shall be borne by the contractor.</p>
13	5.14.1	<p>The requirements for achieving Practical Completion will be when the whole of the Works and all its components (inter alia approaches, paving, piling, foundations, abutments, steel structures, bridge deck, walking surfaces, drainage, balustrades, lighting, signage etc.) have been completed by the Contractor in accordance with the Employers designs and specifications, and has been approved by the Employer's Agent, and therefore have reached a state of readiness and fitness for purpose and occupation without danger or undue inconvenience to the Employer. These requirements shall be recorded in the minutes of the first Site Meeting/Handover Meeting (Refer to 1.1.1.24 for a generic definition). The requirements are to be regularly reviewed with respect to any variations to the Contract.</p>
14	5.16.3	<p>The latent defect period is 5 years. The latent defects period shall commence on the</p>

		date of the Final Approval Certificate.
15	6.8.2	Contract Price Adjustment shall NOT BE APPLICABLE .
16	6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80%.
17	6.10.3	The percentage retention shall be 10% of payments due up to the "Limit of retention money" which shall be 5% of the Contract Sum."
18	8.6.1.1.1	Replace the wording "The Contract Price" with "The Contract Sum plus 10%"
19	8.6.1.1.2	The value of plant and materials supplied by the Employer to be included in the insurance sum: Not Required
20	8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is 10% of the Contract Sum.
21	8.6.1.2	SASRIA Coupon Policy for Special Risks to be issued in joint names of the Employer and Contractor for the full value of the works (including VAT).
22	8.6.1.3	<p>Liability insurance</p> <p>Liability insurance to the sum of a minimum of R10 million per claim , and unlimited claims from commencement to Final Completion, with extended reporting period of 12 months post-completion.</p> <p>Includes:</p> <ul style="list-style-type: none"> • Damage to property adjacent to or downstream from the site • Injuries caused by construction activities near or over the river • Pollution events arising from accidental spillage into the river <p>Sudden or accidental environmental damage</p>
23	8.6.1.4	<p>Ground Support Insurance:</p> <ul style="list-style-type: none"> • Minimum amount for any one occurrence, unlimited as to the number of occurrences, against any claim for damages or loss caused by vibration and / or removal of lateral support: R 2,000,000. • Maximum first excess: R 50,000.
24	8.6.1.5	The Contractor is to provide all additional insurances including for, but not limited to, his own employees, vehicles and equipment and plant not incorporated into the

		<p>Works. Furthermore, the insurance cover effected by the Contractor shall meet the following requirements:</p> <p>Third Party Insurance (Public Liability)</p> <ul style="list-style-type: none"> • Minimum amount for any one occurrence, unlimited as to the number of occurrences, for the period of the contract, inclusive of the maintenance period: R 10,000,000. • Consequential loss to be covered by policy : Yes • Liability section of policy to be extended to cover blasting : Nil • Maximum excess per claim or series of claims arising out of any one occurrence: R 50,000 <p>Insurance of Works</p> <ul style="list-style-type: none"> • Minimum amount for additional removal of debris (no damage): R 2,000,000. • Minimum amount for temporary storage of materials off site, excluding Contractor's own premises : R 15,000,000. • Minimum amount for transit of materials to site: R 15,000,000. <p>Foundation Failure Indemnity/Piling Guarantee – R10,000,000 on any one occurrence, period of 10 years from completion of works.</p> <p>Bridge Failure Indemnity/Bridge Guarantee – R 15,000,000 on any one occurrence period of 10 years from completion of works.</p>
25	NEW 8.6.1.6	<p>Environmental Impairment Liability</p> <p>Covering the Contractor's liability for gradual and sudden pollution or environmental damage caused during construction. Minimum indemnity R10,000,000 per event.</p> <p>Covers: Water contamination, ecosystem damage, cost of clean-up or remediation, legal defence costs.</p> <p>Duration: From commencement to Final Completion, with extended reporting period of 12 months post-completion.</p>
26	NEW 8.6.1.7	<p>Transit and marine insurance</p> <p>Covering materials, plant, and equipment during transportation to and across the river and site. Including loading and unloading.</p> <p>Minimum cover: Full replacement value.</p> <p>Includes: Accidental loss or damage during transit</p> <p>Spillage of dropping of materials into the river</p>

		River barge or boat transport (if applicable)
27	10.5.1	Dispute resolution shall be by adjudication. However, a standing Adjudication Board shall not be used.
28	10.5.2	Dispute resolution shall be by ad-hoc adjudication.
29	10.5.3	The number of Adjudication Board Members to be appointed is ONE (1).
30	10.7.1	Dispute resolution shall be by ad-hoc adjudication. If a dispute is unresolved by adjudication the dispute shall be finally settled by an arbitrator to be agreed between the parties

C1.2.3 PART 2: CONTRACT-SPECIFIC DATA PROVIDED BY THE CONTRACTOR

Clause	
1.1.1.9	The Contractor is
1.2.1.2	<p>The Contractor's address for receipt of communications is:</p> <p>Physical address: Postal address:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Fax: </p> <p>E-mail: </p>
1.1.1.14	The time for completing the works is days
6.5.1.2.3	The percentage allowance to cover overhead charges is 7.5%

ADDITIONAL CLAUSE TO THE GENERAL CONDITIONS OF CONTRACT

1	<p>The penalty for failure, on the part of the Contractor, to submit any regular monthly report as set out elsewhere in this document on the 20th day of each month (or the previous work day for the applicable month) until the issue of the Certificate of Completion shall be subject to a penalty of R10000.00 per report per day, until report is submitted and which shall not be reversible.</p>
2	<p><u>COMMUNITY LIAISON OFFICER</u></p> <p>The Ward Councillor(s) in whose ward(s) work is to be done will, collectively, identify a community liaison officer (CLO) for the project and make the person known to the Contractor within two days of being requested to do so. The Contractor will be required to enter a written contract with the CLO that specifies:</p> <ul style="list-style-type: none"> • The hours of work and the wage rate of the CLO (R5,500.00 per month per CLO). • The duration of the appointment. • The duties to be undertaken by the CLO which could include: <ul style="list-style-type: none"> ○ Assisting in all respects relating to the recruitment of local labour. ○ Acting as a source of information for the community and councillors on issues related to the contract. ○ Keeping the Contractor advised on community issues and issues pertaining to local security. ○ Assisting in setting up any meetings or negotiations with affected parties. ○ Keeping a written record of any labour or community issue that may arise. ○ Any other duties that may be required by the Contractor. <p>Responsibility for the identification of a pool of suitable labour shall rest with the CLO, although the Contractor shall have the right to choose from that pool. The Contractor shall have the right to determine the total number of labourers required at any one time and this may vary during the contract.</p> <p>The Contractor shall have the right to replace labour that is not performing adequately. Should such occasion arise, it must be done in conjunction with the CLO.</p> <p>Payment: The CLO will be reimbursed from the “Provisional Sum” item in the Preliminary & General Section of the Bill of Quantities taking cognisance of all statutory requirements such as UIF, SDL etc. The contractor will be required to submit to the Engineer, proof of payment to the CLO and timesheets prior to the processing of monthly payment certificates.</p>

	Payment to the CLO will be based on the number of hours worked, i.e. the CLO will be paid for each hour worked instead of a flat monthly rate.
3	<p><u>EMPLOYMENT OF LOCAL LABOUR</u></p> <p>It is a condition of Contract that the Contractor will be required to employ local labour. The Contractor will be required to ensure that the labour force is made up of local labour where applicable. For the purposes of this Contract, "Local labour" will be deemed to be any persons who reside within Ntabankulu Local Municipality. The Contractor will be required to provide proof of authenticity of local labour. Signed confirmation by the appointed CLO will suffice for this.</p> <p>No additional costs will be entertained due to this Particular Specification. The Contractor will remain responsible for providing proper supervision of all labour, and will be responsible for the quality of work produced.</p>
4	<p><u>DAMAGE TO PERSONS AND PROPERTY</u></p> <p>1. The Contractor shall indemnify and keep indemnified the Council against any claim for death, injury or loss to any person or property whatsoever in respect thereof or in relation thereto.</p> <p>2. The Contractor enters into this contract as an independent contractor and shall be solely liable in respect to any claim for death, injury, damage or loss to any person or property whatsoever in respect thereof or in relation thereto.</p>
5	<p>A condition of Contract is that:</p> <p>a) The Contractor shall achieve in the performance of the contract the Contract Skills Development Goal (established in the CIDB Standard for Developing Skills through Infrastructure Contracts, published in Gazette Notice No 43495 of 3 July 2020.</p> <p>b) The Contractor shall achieve in the performance of the contract the Contract Participation Goals (CPG) relating to the engagement of targeted enterprises as established in the CIDB Standard for Indirect Targeting for Enterprise Development through Construction works Contracts Gazette Notice No 36190 of 25 February 2013.</p>

C1.3 CONSTRUCTION GUARANTEE

Pro-Forma Performance Guarantee

For use with the General Conditions of Contract for Construction Works, Third Edition, 2015.

GUARANTOR DETAILS AND DEFINITIONS

“Guarantor” means:.....

Physical Address:.....

“Employer” means:.....

“Contractor” means:.....

“Employer’s Agent” means:.....

“Works” means:.....

“Site” means:.....

“Contract” means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.

“Contract Sum” means: The accepted amount inclusive of tax of R.....

Amount in words:.....

“Guaranteed Sum” means: The maximum aggregate amount of R.....

Amount in words:.....

“Expiry Date” means:.....(Give date) or any other later date set by the Contractor and/or Employer provided such instruction is received prior to the Expiry Date as indicated here.

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificate and the Certificate Completion of the Works as defined in the Contract.

PERFORMANCE GUARANTEE

1. The Guarantor’s liability shall be limited to the amount of the Guaranteed Sum.

2. The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.
3. The Guarantor hereby acknowledges that:
 - 3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;
 - 3.2 its obligation under this Performance Guarantee is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:
 - 4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;
 - 4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;
 - 4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.
5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum of the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:
 - 5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or

- 5.2 a provisional or final sequestration of liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and
- 5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.
6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.
7. Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.
8. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
9. Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.
10. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
11. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
12. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
13. This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.

14. Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at:.....

Date:.....

Guarantor's signatory (1) :.....

Capacity:.....

Guarantor's signatory (2) :.....

Capacity:.....

Witness signatory (1) :.....

Witness signatory (2) :.....

C1.4 BLASTING INDEMNITY

CONTRACT NO.

Given by

*Company Registration No.:

Address:

A *Company incorporated with limited liability according to the company laws of the Republic of South Africa, *Partnership, *Close Corporation, *Public Company (hereinafter called the Contractor), represented herein by in his capacity as the Contractor duly Authorized.

Hereto by a resolution of the Contractor dated a certified copy of which resolution is attached to this indemnity.

WHEREAS the Contractor has entered into a Contract with Development Bank of Southern Africa (hereinafter called the DBSA) for, and the Company required this Indemnity from the Contractor.

NOW THEREFORE THIS DEED WITNESSETH that the Contractor does hereby indemnify and hold harmless the DBSA in respect of all loss or damage that may be incurred or sustained by the DBSA by reason of or in any way arising out of or caused by blasting operations that may be carried out by the Contractor in connection with the aforementioned Contract and also in respect of all claims that may be made against the DBSA in consequence of such blasting operations, by reason of or in any way arising out of any accidents or damage to persons, life or property or any other cause whatsoever, and also in respect of all legal or other expenses that may be incurred by the DBSA in examining, resisting or settling any such claims; for the due performance of which the Contractor binds itself according to law.

THUS DONE AND SIGNED for and on behalf of the Contractor at

on the _____ day of _____ 20__ in the presence of the subscribing witnesses.

AS WITNESSES

1. _____

SIGNATURE DESIGNATION OF SIGNATORY

2. _____

SIGNATURE DESIGNATION OF SIGNATORY

* Delete where not applicable

C1.5 ON-DEMAND ADVANCE PAYMENT GUARANTEE

Pro-Forma GCC On Demand Advance Payment Guarantee

To: Development Bank of Southern Africa

Dear Sirs

Reference No. [●] *[Drafting Note: Bank reference number to be inserted]*

Advanced Payment Guarantee – Demand Guarantee: *[Drafting Note: Name of Contractor to be inserted]*

XXXXXXXXXXXXXXXXX Project, Contract Reference/RFP: [●] *[Drafting Note: Contractor contract reference number to be inserted]*

1. In this Advanced Payment Guarantee – Demand Guarantee the following words and expressions shall have the following meanings:-
 - 1.1 “Bank” - means [●], [●] Branch, (Registration No. [●]); *[Drafting Note: Name of Bank to be inserted]*
 - 1.2 “Bank’s Address” - means [●]; *[Drafting Note: Bank’s physical address to be inserted]*
 - 1.3 “Contract” – means the written agreement relating to the Project, entered into between DBSA and the respective Contractors, on or about the dates listed in the table below as amended, varied, restated, novated or substituted from time to time;

1.4 “Contractor” – means [●] a company registered in accordance with the laws of [●] under Registration Number [●]; [*Drafting Note: Name and details of Contractor to be inserted*]

1.5 “Employer” - means The Development Bank of Southern Africa Limited, a juristic person in terms of section 2 of The Development Bank of Southern Africa Limited Act, 13 of 1979;

1.6 “Expiry Date” – shall be after the deduction of the last scheduled recoupment payment or on settlement of the full outstanding balance this Advance Payment Guarantee which ever is the first occurring;

1.7 “Guaranteed Sum” - means the sum of R [●] ([●] Rand) as reduced from time to time as provided for in paragraph 4 below; and [*Drafting Note: Amount of Advanced Payment Guarantee to be inserted.*]

1.8 “Project” - means the XXXXXXXXXXXXXXXXXXXX.

2. At the instance of the Contractor, the Bank hereby confirms that we hold the Guaranteed Sum at the disposal of DBSA, as security for the proper performance by the Contractor of all of its obligations under the Contract which are to be performed by the Contractor, specifically in connection with the advanced payment under the letter to the Contractor dated [insert] (the Letter) and hereby undertake to pay to DBSA, on written demand from DBSA received prior to the Expiry Date, any sum or sums not exceeding in total the Guaranteed Sum.

3. A demand for payment under this Advance Payment Guarantee shall be made in writing at the Bank’s address and shall:

3.1. be signed on behalf of DBSA by the Group Executive of an DBSA Group or by a Divisional Executive of any DBSA Division or by any board director of DBSA;

3.2. state the amount claimed (“the Demand Amount”);

3.3. state that the Contractor has failed to carry out his obligations due in connection with the advanced payment under the Letter (and the nature of such obligations);

4. The Guaranteed Sum shall be reduced from time to time upon receipt by the Bank of the Principal Agent’s (as defined in the Contracts) written certificate certifying the amount of such the reduction and the Contractor’s entitlement thereto under the Contracts.

5. Notwithstanding the reference herein to the Contracts and the Letter, the liability of the Bank in terms hereof is as principal and not as surety and the Bank’s obligation/s to make payment:

5.1. is and shall be absolute and unconditional in all circumstances; and

5.2. is not, and shall not be construed to be, accessory or collateral on any basis whatsoever.

6. The Bank’s obligations in terms of this Advanced Payment Guarantee:

6.1. shall be restricted to the payment of money only and shall be limited to the maximum of the Guaranteed Sum; and

6.2. shall not be discharged and compliance with any demand for payment received by the Bank in terms hereof shall not be delayed, by the fact that a dispute may exist between DBSA, the Contractor and/or the Supplier.

7. DBSA shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting our liability under this Advanced Payment Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Letter.

8. Should DBSA cede its rights against the Contractor to a third party where such cession is permitted under the Contract, then DBSA shall be entitled to cede to such third party the rights of DBSA under this Advance Payment Guarantee on written notification to the Bank of such cession.

9. This Advance Payment Guarantee:

9.1. shall expire on the Expiry Date until which time it is irrevocable;

9.2. is, save as provided for in above, personal to DBSA and is neither negotiable nor transferable;

9.3. shall be returned to the Bank upon the earlier of payment of the full Guaranteed Sum or expiry hereof;

9.4. shall be regarded as a liquid document for the purpose of obtaining a court order; and

9.5. shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the Courts of the Republic of South Africa.

10. The Bank chooses *domicilium citandi et executandi* for all purposes in connection with this Advance Payment Guarantee at the Bank's Address.

Signed at _____

Date _____

C2: PRICING DATA

The General Conditions of Contract for Construction Works, Third Edition 2015, issued by the South African Institution of Civil (including amendments).

Document reference	Title	Page No.
C2.1	Pricing Instructions	64
C2.2	Bill of Quantities	67

C2.1 PRICING INSTRUCTIONS

1. The General Conditions of Contract, the Contract Data, the Specifications (including the Project Specifications), the Drawings, the Public Financial Management Act and the Supply Chain Management Regulations shall be read in conjunction with the Bill of Quantities.

2. The Bill comprises items covering the Contractor's profit and costs of general liabilities and of the construction of Temporary and Permanent Works.

Although the Bidder is at liberty to insert a rate of his own choosing for each item in the Bill, he should note the fact that the Contractor is entitled, under various circumstances, to payment for additional work carried out and that the Engineer is obliged to base his assessment of the rates to be paid for such additional work on the rates the Contractor inserted in the Bill.

Clause 8 of each Standardized Specification, and the measurement and payment clause of each Particular Specification, read together with the relevant clauses of the Project Specifications, all set out which ancillary or associated activities are included in the rates for the specified operations.

3. Descriptions in the Bill of Quantities are abbreviated and may differ from those in the Standardized and Project Specifications. No consideration will be given to any claim by the Contractor submitted on such a basis. The Bill has been drawn up generally in accordance with the latest issue of Civil Engineering Quantities¹. Should any requirement of the measurement and payment clause of the appropriate Standardized or Project Specification(s) be contrary to the terms of the Bill or, when relevant, to the Civil Engineering Quantities, the requirement of the appropriate Standardized, Project, or Particular Specification as the case may be, shall prevail.
4. Unless stated to the contrary, items are measured net in accordance with the Drawings without any allowance having been made for waste.
5. The amounts and rates to be inserted in the Bill of Quantities shall be the full inclusive amounts to the Employer for the work described under the several items. Such amounts shall cover all the costs and expenses that may be required in and for the construction of the work described, and shall cover the costs of all general risks, profits, taxes (but excluding value-added tax), liabilities and obligations set forth or implied in the documents on which the Bid is based.
6. The quantities set out in the schedule of quantities are only approximate quantities. The quantities of work finally accepted and certified for payment, and not the quantities given in the schedule of quantities, will be used to determine payments to the contractor.
7. A price or rate shall be entered against each item in the Schedule of Quantities, whether quantities are stated or not. An item against which no price is entered will be considered to be covered by the other prices or rates in the Schedule.

¹ The standard system of measurement of civil engineering quantities published by the South African Institution of Civil Engineers.

The Bidder shall also fill in a rate against the items where the words "rate only" appear in the amount column. Although no work is foreseen under these items and no quantities are consequently given in the quantity column, the bid rates shall apply should work under these items actually be required.

Should the Bidder group a number of items together and bid one sum for such group of items, the single bid sum shall apply to that group of items and not to each individual item, or should he indicate against any item that full compensation for such item has been included in another item, the rate for the item included in another item shall be deemed to be nil.

The bid rates, prices and sums shall, subject only to the provisions of the Conditions of Contract, remain valid irrespective of any change in the quantities during the execution of the Contract.

8. The quantities of work as measured and accepted and certified for payment in accordance with the Conditions of Contract, and not the quantities stated in the Bill of Quantities, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by differences between the quantities in the Bill of Quantities and the quantities certified for payment.

Ordering of materials are not to be based on the Bill of Quantities, but only on information issued for construction purposes.

9. For the purposes of this Bill of Quantities, the following words shall have the meanings hereby assigned to them:

Unit	:	The unit of measurement for each item of work as defined in the Standardized, Project or Particular Specifications
Quantity	:	The number of units of work for each item
Rate	:	The payment per unit of work at which the Bidder bids to do the work
Amount	:	The quantity of an item multiplied by the bid rate of the (same) item
Sum	:	An amount bid for an item, the extent of which is described in the Bill of Quantities, the Specifications or elsewhere, but of which the quantity of work is not measured in units

10. The units of measurement indicated in the Bill of Quantities are metric units. The following abbreviations may appear in the Bill of Quantities:

mm	=	millimetre
m	=	metre
km	=	kilometre
km-pass	=	kilometre-pass
m ²	=	square metre
m ² -pass	=	square metre-pass
ha	=	hectare

m ³	=	cubic metre
m ³ -km	=	cubic metre-kilometre
kW	=	kilowatt
kN	=	kilonewton
kg	=	kilogram
t	=	ton (1 000 kg)
%	=	per cent
MN	=	meganewton
MN-m	=	meganewton-metre
PC Sum	=	Prime Cost Sum
Prov Sum	=	Provisional Sum

C2.2 BILL OF QUANTITIES

Use this page as a cover page to the *Contractor's Bill of Quantities*.

- 1) Tenderers are to ensure that adequate provision for the health and safety measures have been and provided detailed breakdown in the *Bill of Quantities*, as required by the Department of Labour.
- 2) The PDF/ original format *Bill of Quantities* must be populated by hand in black ink and will be the document used for evaluation purposes.
- 3) Tenderers are also required to electronically populate the Excel format and add to the required electronic Drive with your submission. This will be used to support verification of pricing errors.

I, _____ of _____,
(Authorised Signatory) (Company Name)

Hereby acknowledge having read, understood and agree to requirements as set out in C2.2 and warrant that the documents submitted are true and accurate.

(Signature)

(Date)

BILL OF QUANTITIES FOR DIKIDIKINI BRIDGE

BILL NO. 1 - PRELIMINARIES AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		<u>BILL NO. 1 PRELIMINARIES</u>				
		NOTES Tenderers are referred to the General Conditions of Contract for Construction Works GCC (Third Edition, 2015), relevant parts of SANS 1921: Construction and Management Requirements for Works Contracts, Occupational Health & C3: Scope of Works documents for the full intent and meaning of each clause thereof (hereinafter referred to by heading and clause number only) for which such allowance must be made as may be considered necessary.				
		Changes made to the standard GCC document referred to above, are described in C1.2: Contract Data.				
	PSA8.3	<u>SCHEDULED FIXED-CHARGE AND VALUE RELATED ITEMS</u>				
1	PSA8.3.1	Contractual requirements	Sum	1		
2		Political Riot Insurance	Sum	1		
3	PSA 8.3.1.1	Occupational Health and Safety compliance fixed charge and value related costs	Sum	1		
4	PSA 8.3.1.2	Environmental Management Plan compliance fixed charge and value related cost	Sum	1		
	PSA 8.3.1.3	Advance Payment Guarantee Fixed Charge and Value related costs for:				
5		Bridge Deck	Sum	1		
6		Piling Works	Sum	1		
	8.3.2	<u>Establishment of Facilities on Site</u>				
	PSA 8.3.2.1	<u>Facilities for Engineer</u>				

7	a)	One furnished office as specified including: One Standard office table or desk, three chairs, acceptable lighting, a connection for electricity, Air-conditioning and a filing cabinet	Sum	1		
8	b)	One Contract Nameboard	Sum	1		
9	c)	Shaded carport	Sum	1		
10	d)	Survey equipment and assistants (2 No.)	Sum	1		
11	e)	DCP Testing equipment	Sum	1		
	PSA 8.3.2.2	<u>Facilities for Contractor</u>				
12	a)	Offices and storage sheds	Sum	1		
13	b)	Workshops	Sum	1		
14	c)	Laboratories	Sum	1		
15	d)	Living Accommodation	Sum	1		
16	e)	Ablution facilities	Sum	1		
17	f)	Tools and equipment	Sum	1		
18	g)	Water supplies, electric power and communications	Sum	1		
19	h)	Dealing with Water (see PSA5.5)	Sum	1		
20	i)	Access	Sum	1		
21	j)	Plant	Sum	1		
22	8.3.3	<u>Other Fixed Charge Obligations</u>	Sum	1		
23	8.3.4	<u>Removal of Site Establishment on completion</u>	Sum	1		
	PSA8.4	<u>SCHEDULED TIME RELATED ITEMS</u>				
24	PSA8.4.1	<u>Contractual Requirements</u>	Sum	1		
25	PSA 8.4.1.1	All Occupational Health and Safety compliance time related costs	Sum	1		
26	PSA 8.4.1.2	All Environmental Management Plan compliance time related costs	Sum	1		
	PSA 8.4.1.3	Advance Payment Guarantee Time- related costs for:				
27		Bridge Deck	Sum	1		
28		Piling Works	Sum	1		
	8.4.2	<u>Operation and Maintenance of Facilities on Site, for Duration of Construction</u>				

	8.4.2.1	<u>Facilities for Engineer</u>				
29	a)	One furnished office as specified including: One Standard office table or desk, three chairs, acceptable lighting, a connection for electricity, Air-conditioning and a filing cabinet	Sum	1		
30	b)	One Contract Nameboard	Sum	1		
31	c)	Shaded carport	Sum	1		
32	d)	Survey equipment and assistants (2 No.)	Sum	1		
33	e)	DCP Testing equipment				
	PSA 8.4.2.2	<u>Facilities for Contractor</u>				
34	a)	Offices and storage sheds	Sum	1		
35	b)	Workshops	Sum	1		
36	c)	Laboratories	Sum	1		
37	d)	Living Accommodation	Sum	1		
38	e)	Ablution facilities	Sum	1		
39	f)	Tools and equipment	Sum	1		
40	g)	Water supplies, electric power and communications	Sum	1		
41	h)	Dealing with Water (see PSA5.5)	Sum	1		
42	i)	Access	Sum	1		
43	j)	Plant	Sum	1		
44	k)	Provision of 24-hour security to the site camp	Sum	1		
45	l)	Provision of monthly labour return	Sum	1		
46	8.4.3	<u>Supervision for Duration of Construction</u>	Sum	1		
47	8.4.4	<u>Company and Head Office Overhead Cost for the duration of the Contract</u>	Sum	1		
48	PSA 8.4.5	<u>Other Time-Related Obligations</u>	Sum	1		
	PSA8.5	<u>SUMS STATED PROVISIONAL BY ENGINEER</u>				
49	(a)	Drilling & determining compressive strength of 100 mm diameter concrete cores	Sum	1	10 000	R10 000.00
50	(b)	Overheads charges and profit on item 49 (a) above	%	10 000		
51	(a)	Remuneration of CLO for 2 persons. CLO rate is	Sum	1	121 000	R121 000.00

		R5 500,00 pm				
52	(b)	Overheads charges and profit on item 51 (a) above	%	121 000		
53	(a)	Reimbursement of PSC members (3 persons) for the attendance of site meetings to the value of R400.00 each member	Sum	1	26 400	R26 400.00
54	(b)	Overheads charges and profit on item 53 (a) above	%	26 400		
	8.7	<u>DAYWORK (Provisional)</u>				
		<u>NOTE:</u>				
		(i) All rates to be Gross (Mark up, profits under overheads, etc. and all requirements listed in item 8.7 included)				
		(ii) The Tenderer must state the capacity of the Plant that his rate is based on:				
		(iii) Dayworks will apply in quantities. Sub clause 6.5 of the General Conditions of Contract Limiting increases in quantities and/or any Sub items will not apply in day works				
		(iv) Standing time will be taken as 2/3 of the Rate				
	8.7.1	<u>Labour</u>				
55	(a)	Site Foreman	Hr			Rate Only
56	(b)	Trade Foreman	Hr			Rate Only
57	(c)	Supervisor	Hr			Rate Only
58	(d)	Artisan	Hr			Rate Only
59	(e)	Operator	Hr			Rate Only
60	(f)	Gang Boss	Hr			Rate Only
61	(g)	Leading Hand	Hr			Rate Only
62	(h)	Survey Assistant	Hr			Rate Only
63	(i)	Labourer	Hr			Rate Only
	8.7.2	<u>Plant</u>				
64	(a)	Track Excavator minimum 20 tons. State make and model	Hr			Rate Only
65	(b)	Track Excavator minimum 40 tons. State make and model	Hr			Rate Only

66	(c)	Backhoe TLB type min. 60kW. State make and model	Hr			Rate Only
67	(d)	Bulldozer (CAT D7 or similar approved - approx. 145 Kw)	Hr			Rate Only
68	(e)	Grader (CAT 140H or similar approved)	Hr			Rate Only
69	(f)	Rubber tyred front-end loader mi. 90kW. State make and model	Hr			Rate Only
70	(g)	Pedestrian type vibrating roller (Bomag BW65H or similar approved). State make and model	Hr			Rate Only
71	(h)	Compacting vibrating roller - Single Drum Smooth - Self Propelled - min. 12 tons. State make and model	Hr			Rate Only
72	(i)	Compacting vibrating roller - Single Drum Padded or Grid - Self Propelled - min. 12 tons. State make and model	Hr			Rate Only
73	(j)	Compactor (PAN)	Hr			Rate Only
74	(k)	Water cart (9000 litre)	Hr			Rate Only
75	(l)	Water cart (5000 litre)	Hr			Rate Only
76	(m)	Tip-up truck (10 m³)	Hr			Rate Only
77	(n)	Tip-up truck (6 m³)	Hr			Rate Only
78	(o)	Compressor: min 250 cfm complete with hand tools and attachments. State make and model	Hr			Rate Only
79	(p)	Bakkie (1 ton)	Hr			Rate Only
80	(q)	Cement	Bag			Rate Only
81	(r)	Building Sand	m³			Rate Only
82	(s)	Crushed Stone (19mm)	m³			Rate Only
83	(t)	Bricks (ROK's)	1,000			Rate Only
	PSA8.8	TEMPORARY WORK				
84	PSA8.8.1	Main Access road to Works (construct and Maintain)	Sum	1		
85	8.8.2	Accommodation of Traffic	Sum	1		
	8.8.4	Existing Services				
86		c)Excavate by hand in soft material to locate existing services	m³	150		

	8.8.5	Cost of survey in terms of Land Survey Act				
87	(a)	Locate, record and protect erf boundaries and survey pegs	Sum	1		
88	(b)	Replace pegs recorded as missing at commencement of Contract	Sum	1		
89	8.8.6	Special Water Control in Terms of Project Specification	Sum	1		
	PSA8.8.7	Fencing				
90		Supply, Installation and removal of temporary fencing. Fencing will be 1.8m high Bonnox Wire Fencing (galvanized) including all supports, equipment, labour, material and excavation required	m	300		
	PSA8.8.8	Access to Western Embankment of River				
91		Provision for the supply, installation and maintenance of all provisions required for the safe access across the river to the Western Embankment for all staff, labour, site visitors, plant, equipment and material for the duration of the contract.	Sum	1		
	PSA8.8.9	Dewatering				
92	PSA8.8.9.1	The contractor is referred to the geotechnical report for this project attached as addendum C4.2 highlighting the high water table on both embankments of the river. The Contractor must make provision for de-watering of all open excavations as necessary for construction to safely proceed until all backfilling of open trenches have been completed. The contractor must comply with all statutory regulations, including the environmental- & health and safety specifications during construction, operation and dismantling.	Sum	1		

93	PSA8.8.9.2	The contractor to provide temporary drainage works, temporary pumps and other equipment as may be necessary for the protection, draining and dewatering of the works; at stream and river crossings provide stream and river diversions to safeguard the works against floods of an acceptable return period. The contractor must comply with all statutory regulations, including the environmental- & health and safety specifications during construction, operation and dismantling.	Sum	1		
	PSA8.8.10	Temporary Launch Platform or structure for bridge deck				
94		Temporary launch platform / structure to be designed, constructed, maintained and removed as per PSA 8.8.11. The contractor must comply with all statutory regulations, including the environmental- & health and safety specifications during construction, operation and removal/dismantling.	Sum	1		
95	PSA8.9	Dealing with Water	Sum	1		
Total Preliminaries (Carried to Final Summary)						

BILL NO. 2 - BULK EARTHWORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SABS 1200C: SITE CLEARANCE						
		<u>Clear and grub</u>				
1	8.2.1	Clear and grub	ha	0.2		
2	PSC8.2.3	Remove all trees and tree stumps regardless of girth	No.	5		
3	PSC 8.2.10	Remove topsoil to nominal depth of 150 mm to stockpile and maintain for later use and rehabilitation	m ³	400		
4	PSC8.2.11	Taking down and repositioning and re-erect of existing fences	m	230		
SABS 1200D: BULK EARTHWORKS						
	PSD 8.3.2	<u>Bulk Excavation</u>				
	PSD 8.3.2.1	Excavate in all materials and use for embankment or backfill including processing, shaping and compaction to 90% MOD AASHTO				
5		To reach suitable roadbed founding material to approach and access roads	m ³	200		
6		To drainage ditch	m ³	20		
	PSD 8.3.2.2	Extra-over items 5 and 6 for				
7	a)	Hard Rock (Provisional)	m ³	0		Rate Only
8	b)	Boulder excavation Class A (Provisional)	m ³	90		
9	c)	Boulder excavation Class B (Provisional)	m ³	90		
	PSD 8.3.2.2	Excavate in all materials and stockpile				
10		To reach suitable roadbed founding material to approach and access roads	m ³	300		
11		To drainage ditch	m ³	20		
	PSD 8.3.2.2	Extra-over items 10 and 11 for				
12	a)	Hard Rock (Provisional)	m ³	0		Rate Only
13	b)	Boulder excavation Class A (Provisional)	m ³	150		
14	c)	Boulder excavation Class B (Provisional)	m ³	100		
	PSD 8.3.2.1	Excavate in all materials and dispose of as ordered				
15		To reach suitable roadbed founding material to approach and access roads	m ³	200		
16		To drainage ditch	m ³	20		

	PSD 8.3.2.2	Extra-over items 15 and 16 for				
17	a)	Hard Rock (Provisional)	m ³	0		Rate Only
18	b)	Boulder excavation Class A (Provisional)	m ³	100		
19	c)	Boulder excavation Class B (Provisional)	m ³	50		
	8.3.4	Extra-over items 5 to 9 for importing of materials:				
20	8.3.4 a)	Extra-over for importation of materials from: commercial sources including processing, shaping and compaction to 90% MOD AASHTO	m ³			Rate Only
21	8.3.4 a)	Extra-over for importation of materials from borrow pits including processing, shaping and compaction to 90% MOD AASHTO	m ³	200		
22	8.3.4 b)	Opening up and closing down of designated borrow pit	Sum	1		
23	8.3.4 c)	Dealing with overburden (Provisional)	m ³	100		
24	8.3.9	Extra-over for Backfill or for fill material to top of pile caps and foundations, including processing, shaping and compaction to 90% MOD AASHTO	m ³	200		
Total Bulk Earthworks (Carried to Final Summary)						

BILL NO. 3 - ROADWORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SABS 1200DM: EARTHWORKS (ROADS, SUBGRADE)						
	PSDM 8.3.7	<u>Stockpile to fill, use for embankment or backfill including processing, shaping and compaction to 90% MOD AASHTO</u>				
1	a)	Soft excavation	m ³	200		
	PSDM 8.3.7	<u>Dispose of stockpiled material as ordered</u>				
2	a)	Soft excavation	m ³	100		
	PSDM 8.3.4b)	<u>Rock fill (hard, durable, and inert material preferably shall consist of rock fill material varying in size between 150mm and the maximum size of 500mm including processing, shaping and compaction to the applicable specification from commercial sources</u>				
3		To underside of link mattresses at East Abutment	m ³	1800		
4		To underside of link mattresses at West Abutment	m ³	200		
	PSDM 8.3.4b)	<u>Rock fill (hard, durable, and inert material preferably shall consist of rock fill material varying in size between 150mm and the maximum size of 500mm including processing, shaping and compaction to the applicable specification from designated borrow pits</u>				
5		To underside of link mattresses at East Abutment	m ³			Rate Only
6		To underside of link mattresses at West Abutment	m ³			Rate Only
7	1200D 8.3.4 b)	Opening up and closing down of designated borrow pit	Sum			Rate Only
8	8.3.4 c)	Dealing with overburden	m ³			Rate Only
		Bridge approach				
9		Cart surplus excavated material to spoil	m ³	110		
	PSDM8.3.3	Treatment of road-bed				
10	a)	Road bed preparation and compaction of material to 93% Mod AASHTO Density	m ³	110		
11	b) i)	In-place treatment of roadbed in hard rock material by ripping (Provisional)	m ³	10		

12		150mm Sabunga wearing course from designated borrow pit or commercial source compacted to 95% Mod AASHTO density	m ³	110		
SABS 1200ME: SUBBASE						
	PSME8.3.3	<u>Construct the subbase course / shoulders / gravel wearing course with material from commercial sources or designated borrow areas</u>				
13		150mm Subbase G5 material compacted to 95% Mod AASHTO Density	m ³	60		
14		150mm Gravel Wearing Course (CBR minimum 45%, PI>6 and not more than (3xGM)+10, max. stone size 40mm) compacted to 95% Mod AASHTO maximum density	m ³	10		
		Testing (Additional tests as required by the Engineer)				
15		Modified AASHTO Density tests by registered laboratory	No.	10		
SABS 1200MM: ANCILLARY ROADWORKS						
	8.2.1	SANS 1350 hot dipped Galvanized Guardrails on Standard timber posts 1800mm long x 150-175mm diameter.				
16		to Eastern approach road	m	110		
17		to Western approach road	m	40		
	8.2.2	End Units				
18		Fishtail Terminal end wings	No	8		
Total Roadworks (Carried to Final Summary)						

BILL NO. 4 - CONCRETE ABUTMENTS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SABS 1200D: EARTHWORKS						
	PSD8.3.3	Restricted excavation in earth and deposit excavated material on site for use as filling, backfilling or carting away (elsewhere measured)				
1		To underside of pile caps including working around piles	m ³	328		
	8.3.7	Extra over restricted excavation for				
2		Soft excavation	m ³	120		
3		Hard excavation	m ³	25		
4		Boulder excavation Class B	m ³	60		
	8.3.5	Working space excavation for a width as necessary and backfill on completion with in-situ material from stockpiles on site				
5		Working space for formwork to sides of pile caps (Excavation not exceeding 3m deep)	m ²	135		
		Risk of collapse of excavations				
6		Sides of pile cap excavations exceeding 1,5m deep	m ²	265		
7	8.3.7	Include a Provisional Sum of R 200 000.00 (Two Hundred Thousand Rand) nett for Additional Lateral Support around pile cap excavations as directed by the Engineer (provisional)	Sum	1		R200 000.00
		Filling				
8		Granular earth filling arising from the excavations compacted in multiple layers not exceeding 150mm thick to 93% Mod AASHTO density in backfilling to foundation excavations	m ³	197		
		Carting away				
9		Excavate into stockpile and cart surplus excavated material off site to an approved Municipal Landfill site irrespective of any freehaul distance	m ³	251		
SABS 1200G: CONCRETE (STRUCTURAL)						
		FORMWORK				
	8.2.1	Rough				
10		To sides of blinding	m ²	10		
11		To sides of pile caps	m ²	75		
	8.2.1	Smooth				

12		To sides of bridge abutments not exceeding 8m high	m ²	103		
13		To edge of abutment support	m ²	5		
14		To 45° underside of corbel to abutment not exceeding 300mm wide	m	7		
15		To Semi circular end of concrete abutment 750mm diameter x 7840mm high (rectangular sides elsewhere measured)	No	4		
		Boxing in to smooth formwork				
16		To form horizontal rebate size 100mm wide x 150mm deep at top edge of abutment support	m	7		
	8.3	REINFORCEMENT				
	8.3.1	Steel Bars				
17		Mild steel bars of varying diameter	t	2		
18		High tensile bars of varying diameter	t	30		
19		R24 x 750mm long L-shaped dowel cast into abutment with one end projecting 200mm	No	22		
		CONCRETE				
	8.4.2	Blinding				
20		Blinding layer under pile caps	m ³	15		
	8.4.3	Strength concrete 35/19				
21		Pile caps	m ³	108		
22		Bridge abutments	m ³	107		
	8.4.4	Unformed surface finishes				
23		Broom finish to top of abutment	m ²	3		
		JOINTS				
24		10mm Bitumen impregnated softboard not exceeding 300m wide between concrete surfaces	m	6		
		SUNDRIES				
25		Set of three concrete strength cubes each size 150 x 150 x 150mm, send to an independent laboratory for test crushing including all charges	No	20		
26		Take delivery and cast in exact position set of eight anchor bolts in to of abutment support	No	4		
27		20mm Thick Non-shrink grout between concrete and steel baseplate	m ²	1		
		METALWORK				
28		80x80x8 angles hot dipped galvanized cast into edges of concrete abutments with 200 long x 30mm wide x 5mm thick fishtale lugs at 300mm c/c	m	21		

29		Extra on last for mitred and welded corner	No	8		
Total Concrete Abutments (Carried to Final Summary)						

BILL NO. 5 - GABIONS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SABS 1200D: EARTHWORKS						
	PSD8.3.3	<u>Restricted Excavation</u>				
	PSD8.3.3 a)	Restricted excavation in all materials and spoiling to an approved Landfill site irrespective of any freehaul distance				
1		To underside of Gabions and Link Mattresses	m ³	330		
	8.3.5	Working space excavation for a width as necessary and backfill on completion with in-situ material from stockpiles on site				
2		Working space around gabions (Excavations not exceeding 3m deep)	m ²	310		
SABS 1200DM: EARTHWORKS ROADS						
	PSD8.3.3	<u>Treatment of road-bed</u>				
	a)	Road-bed preparation and compaction of material to				
3		minimum of 93% of modified AASHTO maximum density for Gabions/Reno Matresses(where required by Engineer)	m ³	200		
SABS 1200DK GABIONS AND PITCHING						
		<u>GABIONS EASTERN EMBANKMENT</u>				
4	PSDK8.2.1	Surface Preparation for gabions	m ³	200		
	8.2.2	<u>Mesh Type 60 double twisted hexagonal galvanized mesh. Steel wire used to manufacture the mesh, lacing, bracing and selvedge shall be heavily Galfan coated to class A according to EN 10244-2 Table 2 and the wire shall further be PVC coated to a nominal thickness of 0.5 mm</u>				
5		Gabions 1x1x2m to sides of concrete abutment	m ³	200		
6		Gabions 1x1x2m to sides of concrete access road	m ³	1500		

7	8.2.3	Extra over items 5 to 6 for packing selected stone for exposed face	m ²	560		
		<u>Mattresses</u>				
	8.2.2	<u>Mesh Type 60 double twisted hexagonal galvanized mesh. Steel wire used to manufacture the mesh, lacing, bracing and selvedge shall be heavily Galfan coated to class A according to EN 10244-2 Table 2 and the wire shall further be PVC coated to a nominal thickness of 0.5 mm</u>				
8		Bed mattress 2x1x0.3m	m ³	100		
	8.2.4	<u>Geotextile (or geomembrane)</u>				
9		Filter fabric Bidim A6 or similar approved: Supply geotextile, cutting, waste, placing, joining, overlapping and fastening geotextile in position to external face of baskets	m ²	1200		
10		Filter fabric Bidim A4 or similar approved: Supply geotextile, cutting, waste, placing, joining, overlapping and fastening geotextile in position to underside of mattresses	m ²	1700		
		<u>GABIONS WESTERN EMBANKMENT</u>				
11	PSDK8.2.1	Surface Preparation for gabions	m ³	200		
	8.2.2	<u>Mesh Type 60 double twisted hexagonal galvanized mesh. Steel wire used to manufacture the mesh, lacing, bracing and selvedge shall be heavily Galfan coated to class A according to EN 10244-2 Table 2 and the wire shall further be PVC coated to a nominal thickness of 0.5 mm</u>				
12		Gabions 1x1x2m to sides of concrete abutment	m ³	200		
13		Gabions 1x1x2m to sides of concrete access road	m ³	600		
14	8.2.3	Extra over items 12 to 13 for packing selected stone for exposed face	m ²	340		
		<u>Mattresses</u>				
	8.2.2	<u>Mesh Type 60 double twisted hexagonal galvanized mesh. Steel wire used to manufacture the mesh, lacing, bracing and selvedge shall be heavily Galfan coated to class A according to EN 10244-2 Table 2 and the wire shall further be PVC coated to a nominal thickness of 0.5 mm</u>				
15		Bed mattress 2x1x0.3m	m ³	50		
	8.2.4	<u>Geotextile (or geomembrane)</u>				
16		Filter fabric Bidim A6 or similar approved: Supply geotextile, cutting, waste, placing,	m ²	400		

		joining, overlapping and fastening geotextile in position to external face of baskets				
17		Filter fabric Bidim A4 or similar approved: Supply geotextile, cutting, waste, placing, joining, overlapping and fastening geotextile in position to underside of mattresses	m ²	1350		
	8.2.2	<u>APPROACH ROAD</u>				
		<u>Mattresses</u>				
		<u>Mesh Type 60 double twisted hexagonal galvanized mesh</u>				
18		Bed mattress 2x1x0.3m	m ³	140		
		<u>Scour Bags</u>				
19		Duffle top, closed bottom bulk bag, with a 2000kg capacity filled with material from excavations or borrow pits	No	100		
20		Duffle top, closed bottom bulk bag, with a 1000kg capacity filled with material from excavations or borrow pits	No	150		
Total Gabions (Carried to Final Summary)						

BILL NO 6: PILING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SABS 1200D: BULK EARTWORKS						
	8.3.2	<u>Bulk Excavation cut to fill</u>				
	8.3.2 a)	Excavate in all materials to embankment and fill adjacent areas in cut to fill operation and dispose surplus material as ordered				
1		To form temporary platform for piling equipment on Western bank	m ³	240		
SABS 1200F: PILING						
		DESIGN, SUPPLY AND INSTALLATION OF ODEX PILES RATES INCLUDED BELOW TO INCLUDE FOR FULL DESIGN AND SUPPLY OF EACH PILE, RATES ARE TO INCLUDE ALL REQUIREMENTS LISTED IN THE DOCUMENTS PROVIDED BELOW. Geotechnical Report - Dikidikini Bridge 31.1.2023 Rev1 PSF PILING WORKS rev2 A_GA30-01_T03 - Pile Layout and Details				

		All measurement items below are in accordance with SABS 1200F				
		Notes:				
		The piling contractor must take note of the condition of the main access road to the site and that access to the site is only possible from the East of the river. All prices in this Bill must include for moving equipment and materials across the river for those portions of work on the Western embankment and back on completion, by a means determined by the piling contractor. The piling contractor must visit the site beforehand to acquaint himself with the conditions and restrictions on site as no claims due to want of knowledge will be entertained				
2	8.2.1	Establishment on Site of for permanently cased, rotary bored, reinforced concrete ODEX piles socketed into the underlying bedrock, for both the Western and Eastern embankments (The sum shall include for the cost of carrying out operations the cost of which does not vary with the actual amount of piling done, and of general levelling of the piling site and the establishment on site and subsequent removal of all special plant and equipment for piling.)	Sum	1		
3	8.2.2	Move Equipment to and set up at each Pile Position (The quantity measured will be equal to the number of piles plus the number of heaved piles redriven on instruction by the engineer. The rate shall cover the cost of moving and setting up equipment)	No.	60		
4	8.2.4	<u>Auger or Bore holes for Piles of mm Diameter (as defined by pile designer contractor to insert diameter) Through material in the following successive depth ranges for material as detailed in the Geotechnical report</u> (The limits for the successive depth ranges will be measured from the working level (see 5.1.6) to the agreed founding level. The depth measured will be that of the accepted hole. The contractor to allow for disposal of augered material at suitable dump site.)				

4.1		0 to 8m - silty sandy gravel with cobbles and BOULDERS	m	480		
4.2		8 to 10m - moderately to highly weathered, very fine grained, intensely laminated, very highly to highly fractured, soft to medium hard rock, SHALE	m	120		
4.3		10 to 14m - very fine grained, intensely laminated, very highly to highly fractured, soft to medium hard rock, SHALE.	m	240		
5	8.2.15	Install Permanent steel Pile Casings in augered holes as directed for Piles of diameter mm (as defined by pile designer - contractor to insert diameter). Thickness of casing of..... mm (as defined by piling contractor - contractor to insert casing thickness). (The length measured will be that of the permanent casing used The rate shall cover the cost of supply and installation)	m	840		
6	8.2.16	Steel Reinforcement in Cast-in-situ piles				
6.1		Mild steel bars	t	2		
6.2		High Tensile Steel Bars	t	24		
7	8.2.17	Concrete for cast-in-situ Piles, Underreams, Bulbous Bases and Sockets 30 Mpa maximum water cement ratio of 0.55	m3	200		
		(The volume measured will be that of concrete placed in cast-in-situ piles, underreams, bulbous bases, and sockets. The volume will be computed from the nominal pile diameter and length of pile from the founding level (extremity of pile or bottom of socket, as applicable) to 80mm into the pile cap plus the additional quantity of concrete in the underream or bulbous base, as applicable. The rate shall cover the cost of supplying all materials and plant, mixing, transporting, placing, compacting, curing, and repairs to defective concrete)				
8	8.2.18	Extra-over 8.2.17 for concrete cast under water	m3	200		
		(The rate shall cover the cost of all additional work and extra cement required to place the concrete under water)				

9	8.2.20	Strip cut pile heads (The rate shall cover the cost of stripping/cutting a pile head)	No.	60		
10	8.2.21	Establishment on Site for the Load Testing of Piles (The sum shall cover the cost of establishment on site and subsequent removal of all special plant and equipment required for carrying out load testing of piles, the cost of which does not vary with the actual number of load tests to be done)	Sum	1		
11	8.2.22	<u>Load test on piles</u> (Only load test actually performed on written instructions from the engineer, for each specified test load will be measured. Test piles, but not anchor piles, will be measured as specified above for permanent piles. the rate shall cover the cost of moving and setting up the pile testing assembly, provision of kentledge or the installation of anchor piles and anchors, where necessary, performing the load tests, processing and submission of results and removal of assembly.)				
11.1		Compression	No.	2		
11.2		Tension	No.	1		
Total Piling (Carried to Summary)						

BILL NO. 7 - BRIDGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		<u>DESIGN , SUPPLY AND ERECTION OF BRIDGE OVER NEWLY CONSTRUCTED CONCRETE ABUTMENTS</u>				
		<u>Notes:</u>				

		The contractor is referred to the following documentation attached as an addendum to this document in pricing this section: - Bridge Performance Specification - 8547AP-STR-SPEC02-T03 - Addendum Drawings A GA30-04_T01 A GA30-05_TO1				
		<u>Mabey or equal approved Modular Compact 200 single span bridge as per the attached Bridge Performance Specification Annexure N 8547AP-STR-SPEC02-T03</u>				
1		Design, fabrication and supply per 8547AP-STR-SPEC02-T03 for 1 Number bridge structure	Sum	1		
2		Delivery to site	Sum	1		
3		Erection Complete	Sum	1		
		<u>Temporary works and requirements as set out in Clause 5 of the Bridge Performance Specification</u>				
4		Temporary Works and Structures	Sum	1		
5		Temporary Works designer	Sum	1		
		<u>Forward Cover for Foreign Exchange fluctuations</u>				
6		Rates and prices are fixed for the duration of the Contract and not subject to adjustment. The Contractor must therefore make allowance for forward cover for expected exchange rate fluctuations between the Rand and currency of the country of origin on the cost of all imported material and include this in his price. This forward cover shall be from the date of submission of tender up to the end of the tender validity period (90 days) in terms of Clause C2.16 of the Tender Data including the time period from date of award (which could be on	Sum	1		

		day 90 after tender submission) to the arrival of the material in South Africa				
Total Bridge (Carried to Final Summary)						

BILL NO. 8: CONTRACT PARTICIPATION GOALS

ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Note to tenderers: As CPGs may not provide any bidder a competitive advantage. Provisional amounts and fixed percentages for profit and attendance have been provided. Only the provisional amount will be adjusted once the awarded tender amount and/or the beneficiaries have been appointed, and the final values have been ascertained.				
1	<u>MINIMUM TARGETED ENTERPRISE DEVELOPMENT</u>				
1.1	A provisional amount has been allowed for in the execution of this project as described in C3.1 Project Specifications. The provisional amount allowed is for the appointment of training coordinator, mentor, training service providers and training of the beneficiary enterprises including monitoring and monthly reporting.	PS	1		R 785 000.00
1.2	Allowance for profit all-inclusive of associated costs to the contractor for implementation.	%	1	5%	
1.3	Allowance for attendance all-inclusive of associated costs to the contractor for implementation.	%	1	5%	
2	<u>MINIMUM TARGETED SKILLS DEVELOPMENT GOALS</u>				

2.1	A provisional amount has been allowed for the Minimum Targeted Development CPG in the execution of this project as described in C3.1 Project Specifications				
	<ul style="list-style-type: none"> • stipends payable to the beneficiaries • appointment of training coordinator • appointment of mentor (where applicable) • appointment of training service providers • other additional costs as per table 3 of the Standard • monitoring and monthly reporting 	PS	1		R 812 000.00
2.2	Allowance for profit all-inclusive of associated costs to the contractor for implementation.	%	1	5%	
2.3	Allowance for attendance all-inclusive of associated costs to the contractor for implementation.	%	1	5%	
Total Contract Participation Goals (Carried to Summary)					

MAIN SUMMARY PAGE

FINAL SUMMARY			
BILL NO	DESCRIPTION		AMOUNT
1	PRELIMINARY AND GENERAL		
2	BULK EARTHWORKS		
3	ROADWORKS		
4	CONCRETE ABUTMENTS		
5	GABIONS		
6	PILING		
7	BRIDGE		
8	CONTRACT PARTICIPATION GOAL		
	Sub Total A		
	Allow 10% Contingency Amount for the unforeseen and the sum provided is under the sole control of the client and upon approval by the Client Representative and deducted in whole or in part.		
	Sub Total B		
	Value Added Tax 15%		
Total including VAT Carried to Form of Tender			

C3: SCOPE OF WORK

Document reference	Title	Page No.
C3.1	Description of the Works	92
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C3.1 DESCRIPTION OF THE WORKS

1.1. Employer's objectives

The Employer's objectives are:

- To provide residents of the Villages with safe light vehicle and pedestrian access
- To use locally based residents for construction tasks to inject cash into rural areas;
- To provide formal training to workers, where appropriate, to ensure development of a skills base;
- To use the Development Bank of Southern Africa Supply Chain Management procedures in the appointment of contractors.


This Tender requires that specific work tasks be executed by labour only. Labour-intensive works comprise the activities described in the Labour-Intensive Specification. Such works shall be constructed using local workers who are temporarily employed in terms of this scope and be of 10% value of the contract price.

1.2. Overview of the works

The Works under this contract relates to:

Civil Works

- Bulk earthworks for the bridge abutments on the eastern and western embankments
- Construction of the two (2) reinforced concrete abutments including but not limited to:
 - Excavation for pile cap bases for abutments in riverbed,
 - Provision of permanent dewatering measures in the form of continuously pumped sumps or cofferdams or other means as required for the safe construction of the bridge foundations or any combination of the aforementioned.
 - Trimming of existing piles to design cut off level,
 - Placement and fixing of reinforcement for pile cap bases,
 - Provision and erection of formwork for pile cap bases
 - Provision and placement of concrete for pile cap bases,
 - Provision and erection of formwork for bridge abutments,
 - Provision and placement of concrete for bridge abutments,
- Construction of reinforcement concrete corbels for bridge abutments,
- Construction of all cast in items for the reinforced concrete bridge abutments, including:
 - Bridge holding down bolts,
 - Cast in corner angle protection,

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- Cast in sliding joints as required.
- Construction of rockfill support structure
- Construction of gabion embankment protection
- Erection of the prefabricated bridge structure, along with all temporary works and required for the erection of the bridge, including but not limited to:
 - Cranage,
 - Scaffolding,
 - Temporary platforms as required for launching of the bridge,
 - Counter-weights for the launching of the bridge.

Piling and Associated Works

The Works under this contract relates to:

- Establishment on site of piling rig, mixing equipment and all other equipment required for the successful completion of the project.
- Setting out of piles on site.
- The complete construction of the piling system including but not limited to:
 - Boring for Odex piling
 - Provision of grout for construction of Odex piles, with due consideration of (and adherence to) statutory environmental (and other) regulations,
 - Provision of casings for Odex piling systems,
 - Provision of reinforcement for Odex piling systems,
- Setting up piling rig on both the western and eastern edges of the river,
- Provision of access across the river irrespective of time of year or flow contained within the river,
- Drilling and provision of permanently cased, rotary bored, reinforced Odex piles socketed into the underlying bedrock,
- Sonic testing of all piles on site,
- Provision of two number dedicated load test piles,
- Tension testing of piles,
- Compression testing of piles,
- Removal from site of all piling equipment, and waste material.

Design and supply of Prefabricated Bridge

The Works under this contract relates to:

The supply of one (1) Mabey Compact 200 Panel Bridge or similar approved.

The bridge is expected to comprise the following, but to be confirmed upon receipt of final design information from the bridge supplier:


- longitudinal trusses formed of prefabricated modular steel panels with pinned end connections and transverse cross girders bolted between these at approximately 3.048m centres longitudinally.
- The cross girders will support proprietary Mabey steel decks with raised 'durbar' raised pattern plate finish forming the carriageway.
- All bolted connections will use Grade 8.8 bolts.
- The bridge includes proprietary Mabey bearings.
- The bridge includes Mabey Smart-Edge TM Infill panels.
- The bridge includes all tools and supplementary erection equipment.
- The supply of the bridge includes the complete design of the bridge, the bridge will be designed to meet the following requirements:
 - Conformance to the South African Loading Code for bridges TMH7 Part 1 and 2.
 - This code requires a minimum loading of NA + NB24.

The work will include delivery to site of the bridge structure from the R61 to the Eastern embankment of the river and include the following:

- All craneage for the erection of the bridge.
- Complete supervision of erection and commissioning of the bridge.

Careful consideration will need to be undertaken for bridge erection. The contractor would need to provide as part of their tender an erection method for the erection of the bridge. The current method foreseen could include any of the following – but not limited to:

- The possible extension and raising of the embankment on the eastern edge of the river of sufficient length to allow for the jacking of the bridge across the river. The

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bridge would need to be counterweighted on the jacking side, through the use of pre-cast concrete blocks on the bridge deck on the eastern side. The bridge will be pushed across the river through the use of suitable means.

- The possibility of providing a temporary pier in the centre of the river could also be considered for ease of erection. This will need to be included as part of the Contractor's preliminary temporary works design submitted with their tender.
- The possible use of a crane on the Western edge of the embankment to keep the bridge elevated during the process of jacking the bridge across the river.
- Or any other suitably approved method as provided by the contractor.

a) Specific Requirements relating to Scope of Work

The following key factors must be considered:

- The contractor will be responsible for any damage to property caused as a result of construction activities, movement of equipment, plant and materials, labourer negligence etc.
- All labourers must always be dressed in uniform clearly indicating company details. Furthermore, all labourers must be in possession of identity cards clearly reflecting their employment with the company. No labourers will be allowed to carry out works without these identification items.
- In addition to the above, the contractor shall be fully responsible for the safe, efficient and careful execution of the works
- The contractor shall be fully conversant with the Environmental Management Programme (EMPr) attached to this document and shall price accordingly in the Bill of Quantities.

b) Co-Operation with other Service Providers

All interaction with various departments such as Electricity, Telkom and Neotel are to run parallel to construction works should any of the above services be affected.

c) Approvals

The contractor is to obtain approval in writing from the Engineer prior to commencing any works that deviate from drawings and/or specifications.

d) Software Application for Programming

For ease of submission and uniformity, it is a requirement that the construction programme shall be prepared by the successful tenderer using *Microsoft Project*.

e) Quality Management

The successful tenderer shall implement specific quality control measures to ensure that the works are constructed as per the standard specifications, project specifications and construction drawings. The Quality Management Plan shall be attached to returnable form T2.3.7: "Quality Plan" and reference shall be made to site control testing, construction supervision, structured monitoring mechanisms such as checklists and other measures/processes that the tenderer deems to be significant. The Engineer will continually assess the quality of works on site and instructions will be provided for non-compliance accordingly.

f) Format of Communications

Each instruction, certificate, submission, proposal, record, acceptance, notification, reply and other communication which this contract requires is to be communicated in a form which can be read, copied and recorded. Writing is to be in the language of this contract, i.e. English.

The contractor is to only receive instructions from the Engineer or the Engineer's representative. Should the contractor undertake any works from an instruction given to him by a third party, he will be solely responsible for any impacts thereof, including costs.


g) Management Meetings

There will be a minimum of one (1) progress meeting per month. The contractor is to ensure that the Contracts Manager and Site Agent are present during this meeting. The CLO will be required to attend all progress meetings. This is over and above all meetings that the Contractor may deem necessary for the execution of the works.

h) Daily Records

It is a requirement that a site diary with all relevant details be maintained on site. This diary must be signed off and agreed to by both the Engineer and Contractor, on a daily basis. These site diaries must accompany the Contractor's monthly payment certificates and payment shall not be processed should this not be complied to.

A suitable format of the site diary will be made available to the successful tenderer, by the Client.

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i) Payment Certificates

Payment certificates are to reach the Client by the 25th of each month. The following items are to accompany each payment certificate, but shall not be limited to the list below:

- Tax Invoice – Tax invoice number, Contract number, Project Description, correctly dated, to include both the Client's and contractor's Tax numbers, physical and postal addresses and to be addressed to DBSA
- Fully completed FTE's (Client to provide format)
- Summary of supporting agreed measurements for period of claim – to be signed off by both the Contractor and Engineer.

j) Property provided for the Contractor's use

Where possible, the Employer and/or Engineer will initially identify a proposed location for the Contractor's camp site and storage yard, however, the responsibility lies on the Contractor to liaise with the CLO/Ward Councillor in order to locate a suitable site that is available for occupation

1.3. Location of the Works

The Works is located in the Ntabankulu Local Municipality in the Alfred Nzo District Municipality in the Eastern Cape Province. The bridge shall connect two villages, namely the esiDikidikini village in the Ntabankulu LM area (West), and Ncembe village in the Ingquza Hill LM area (East). These villages are located in an isolated rural area on either side of the Mzintlava river without any formal roads to either of these two villages.

The site is accessed from the East, via a rural gravel road connecting to the R61 at Ludeke. The travel time from the R61 turnoff to the bridge site is approximately 1 hour, dependant on weather conditions. There are two minor river crossings on the road to the bridge site.

Description	Longitude	Latitude
Project Location	29°18'56.97"E	31°10'5.09"S

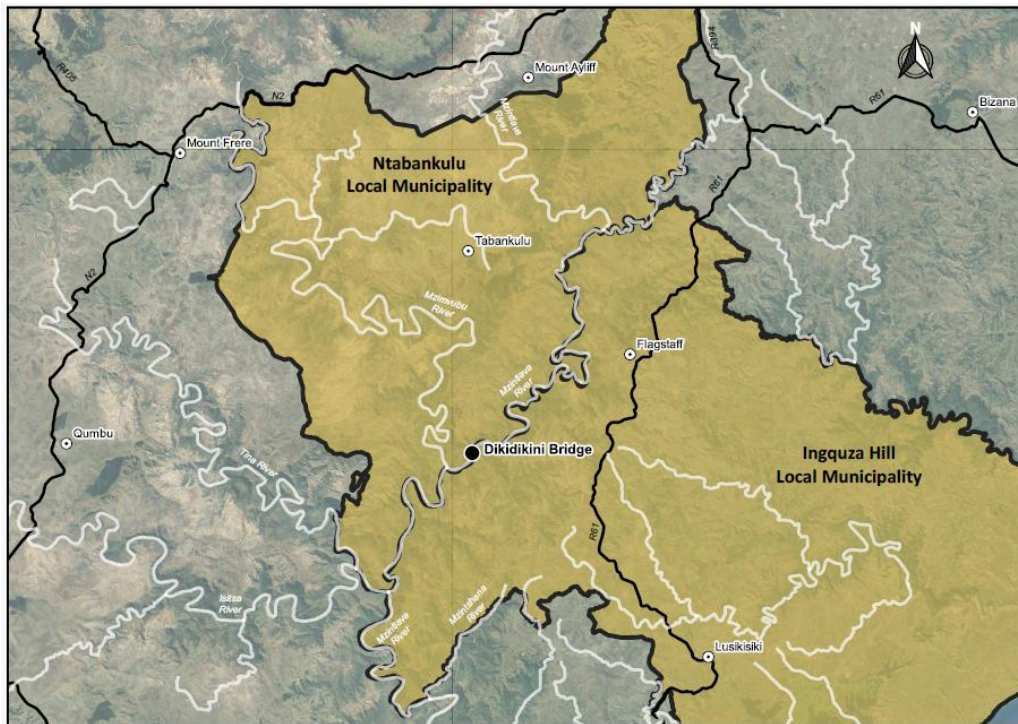


Figure 1: Dikidikini Bridge Locality plan

1.4. Occupation Health and Safety

The contractor needs to comply with the following legal requirements:

- Occupational Health and Safety Act, 85 of 1993, Edition 23 (latest edition) and the Construction Regulations, 2014;
- Code of Practice: Managing exposure to SARS-Cov-2 in the workplace
- Annexure A - DBSA Occupational Health and Safety Baseline specification
- Annexure B - DBSA Baseline Risk Assessment
- Annexure C - Safety, Health, Environment and Quality Policy.

C3.2 PROJECT SPECIFICATION

PREAMBLE

In the event of any discrepancy between a part or parts of the Standard or Particular Specifications and the Project Specification, the Project Specification shall take precedence. Specifications listed in Annexure N shall take precedence over the specifications listed in this section. In the event of a discrepancy between the Specifications, (including the Project Specifications) and the drawings and / or the Bill of Quantities, the discrepancy shall be resolved by the Employer's Agent before the execution of the work under the relevant item.

C3.2.1 GENERAL

PS.1 PROGRAMME, METHOD OF WORK AND QUALITY CONTROL

This Clause is to be read in conjunction with the provisions and obligations as contained in SANS 1921-1 and SANS 1921-2.

PS.1.1 Preliminary Programme

The Contractor shall include with his tender a preliminary programme on the prescribed form (see Part T2.3.6: Programme) to be completed by all Tenderers. The programme shall be in the form of a simplified bar chart with sufficient details to show clearly how the works will be performed within the time for completion as stated in the Contract Data.

Tenderers may submit tenders for an alternative Time for Completion in addition to a tender based on the specified Time for Completion. Each such alternative tender shall include a preliminary programme similar to the programme above for the execution of the works, and shall motivate his proposal clearly by stating all the financial implications of the alternative completion time.

The Contractor shall be deemed to have allowed fully in his tendered rates and prices as well as in his programme for all possible delays due to normal adverse weather conditions (refer to Clause 5.12.2.2) and special non-working days (refer to Clause 5.1.1.1) as specified in the in the Contract Data.

PS.1.2 Programme in Terms of Clause 5.6 of the General Conditions of Contract

The submission of a construction programme as stated per Clause 5.6 of the General Conditions of Contract is compulsory.

Before any work is to be commenced on the site, the contractor must submit a detailed project programme for the construction of the Works to the Engineer for his approval. The preliminary programme to be submitted with the tender shall be used as basis for this programme.

The programme must consist of a detailed schedule or block diagram covering all aspects of the Works and the planned time thereof must, with the Contract Period as time basis, be shown.

Rainfall conditions will be taken as abnormal when the average rainfall is exceeded and the contractor must then apply in writing for extension of the contract period using Clause 5.12 of the General Conditions of Contract.

The Contractor shall submit to the Engineer a realistic, detailed programme not later than 28 days after receipt of the Letter of Acceptance. The programme shall detail how the Contractor proposes to complete the work covered by this contract by the Due Completion Date.

The Tenderer's attention is drawn to the fact that a number of factors will affect the programming of and method of carrying out the works. The more important of these are:

- (1) Time allowances to be made for the ordering of special items.
- (2) Notification required by service organisations.
- (3) Any special sequence in which work must be carried out. Must certain areas of work be finished before work commences on others?
- (4) If delays are anticipated with service relocations the contractor should be asked to allow time.
- (5) Is work required out of normal hours? (e.g. to accesses).
- (6) All other considerations

The following details must be stated:

The quantity of work applicable to each bar item as well as the rate at which the work will be completed.

A budget of the value of completed work, month by month, for the full contract period.

The Contractor's plant commitment on the contract for every fortnight.

The critical path.

The programme shall be kept up to date. If a Contractor fails to maintain progress in terms of the programme, he shall produce a revised programme showing the modifications to the original programme necessary to ensure completion of the Works before the Due Completion Date.

PS.1.3 Delay in Completion

The Contractor shall organise the Works in such a manner that no delays occur. Delay due to poor organisation or lack or shortage of materials or labour or co-operation with other parties or to any other cause within the control of the Contractor will not be countenanced and full power is reserved by the Engineer to order the Contractor to expedite the work should the work, in the opinion of the Engineer, not progress in a satisfactory way.

PS.1.4 Method Statement

The contractor is to prepare a method statement for any activities or sections of works should the engineers require this.

PS.1.5 Quality Requirements

The Contractor is responsible for the complete quality assurance requirements imposed on his Sub-contractors and suppliers, in terms of SANS ISO 9000 Series.

The Contractor is responsible to inspect, expedite, administer and monitor in a pro-active manner Sub-contractors and supplier's work and the enforcing of the terms and conditions of their Tenders, except where extraordinary circumstances warrant the inclusion of Employer's participation.

A Quality Control Plan (QCP), which includes hold points and an inspection plan are provided by the Contractor to the Contract Manager for all fabrication, supply (transport) and installation of components for approval prior to start of manufacturing. The Employer uses or modifies the Contractor's QCP's and this includes inspection hold points, dimensional checks, material quality checks, tagging procedure for items, etc.

Contractor submits 3 (three) copies of his QCP to the Engineer for review and acceptance within 2 (two) weeks after tender award.

PS.1.5.1 Contractors' QA/QC Responsibilities

All machinery, material and workmanship comply with the appropriate specifications and codes, and bear the official mark of such specifications and codes;

All machinery and material is of suitable grade, and suitable to withstand and to operate satisfactorily under all possible climate and weather conditions which are reasonably expected at the Site. Such machinery and material is subject to inspection and/or test by the Engineer, who is granted access by the Contractor and Sub-Contractor.

The Contractor conducts a continuous programme of construction quality control for all work performed on the Site. All relevant inspections and tests are adequately documented and signed off by the Engineer;

The Contractor complies with any quality assurance procedures required by the Employer.

The Engineer monitors the Contractor's adherence to quality requirements independently. Any rejections by the Supervisor based on design, specifications, codes and the like is binding.

(i) Quality Audits

The Employer reserves the right to perform quality audits at any time during the execution of the Works.

The Contractor gives 48 (forty-eight) hours' notice (in writing) to the Engineer, prior to testing. The Supervisor exercises the option to witness or not, such test.

PS.1.6 Pedestrian Movement

The Contractor shall make provision for accommodating all pedestrian movements in the area of the works. Allowance shall be made in the relevant rates for any barricades and signs required.

PS.2 SERVICES

This Clause is to be read in conjunction with the provisions and obligations as contained in SANS 1921-1 and SANS 1921-2.

PS.2.1 Existing Services

The Contractor will be held responsible for any damage to known existing services caused by or arising out of his operations and any damage shall be made good at his own expense. Damage to unknown services shall be repaired as soon as possible and liability shall be determined on site when such damage should occur.

PS.2.2 Proving Underground Services

It is stressed that all services in a particular area must be proven before commencing work in that area. Insofar as bulk earthworks are concerned, where services can reasonably be expected that such services are likely to exist where excavations are to take place, the Contractor shall without instructions from the Employer's Agent carefully excavate by hand to expose and prove their positions.

When a service is not located in its expected position the Contractor shall immediately report such circumstances to the Employer's Agent who will decide what further searching or other necessary action is to be carried out and shall instruct the Contractor accordingly.

Should any service be damaged by the Contractor in carrying out the works and should it be found that the procedure as laid down in this clause has not been followed, then all costs in connection with the repair of the service will be to the Contractor's account.

Proving of services shall be completed at least two weeks in advance of the actual programmed date for commencing work in the area. The position of these services located must be co-ordinated and levelled by the Contractor, and the information given in writing to the Employer's Agent's Representative.

The requirements of this clause do not relieve the Contractor of any obligations as detailed in the Conditions of Contract or under Clause 4.17 of SANS 1921-1.

PS.2.2.1 Proving Electrical Services

Where electrical cables are known to exist in the vicinity of the proposed works and have been indicated on the drawings, the following procedures must be adhered to:-

The area must be scanned, using approved cable locating devices, to confirm the horizontal position and vertical depth of the cables.

An adequate number of pilot trenches must be excavated to expose the exact position of the electrical cables. Only hand excavation will be permitted to prevent electrocution/injury and damage to the cables.

Once the exact positions of the cables have been established the TLB can be used to excavate, at a safe working distance, away from the cables.

If there is any indication of the presence of high voltage cables, work must be stopped and the relevant authority must be contacted.

PS.2.3 Accommodation of Services

Further to Clauses PS.2.1 - PS.2.2 of this specification, tenderers are to note that allowance must be made under this item and / or the appropriate rates, for all costs incurred as a result of complying with these clauses. It shall also cover liaison with the services organisations and accommodation of their work gangs / contractors on site.

PS.3 DAYWORKS

PS.3.1 GENERAL

In cases where the Engineer orders any variation in the form, quality or quantity of the work or any extra work to such an extent that the tendered rates for specific items are no longer applicable, or where a combination of tendered rates cannot be applied to compensate for such work, the Engineer may, in terms of the General Conditions of Contract, order that the amended or extra work be carried out as dayworks at the cost of labour, plant and materials. For that purpose provision is made for the Contractor to tender his rates for labour and plant in the Daywork Schedule which forms part of this Contract.

No work will be measured as daywork unless:

- (a) the Engineer agrees that the varied work is not in accordance with the specification or scope of a measured item in the contract;
- (b) the Engineer has issued an order in writing for the execution of such varied work; and
- (c) statements of plant and labour are submitted daily to the Engineer for his consideration and approval.

All work valued at the tendered rates in the Daywork Schedule will be subject to contract price adjustment as applicable to the Contract.

PS.3.2 SALARIES AND WAGES OF WORKMEN

The amount to be paid for labour will be based on the rates tendered in the Daywork Schedule for the workers executing the work. The tendered rates shall be all-inclusive and shall be held to cover all charges for the Contractor's profits, timekeeping, clerical work, insurance, establishment, superintendence, the use of hand tools, etc., and no additional surcharge over and above the tendered rates will be applicable.

PS.3.3 CONSTRUCTION PLANT

Where plant or equipment for which no rates exist in the Daywork schedule are employed, the cost thereof shall be determined as agreed with the Engineer in terms of the General Conditions of Contract. In such case contract price adjustment will only be applicable if the agreed cost is based on rental rates at the time of the base month before closing of tenders, or if the ruling rates current at the time of the execution of the work are de-escalated to the base month.

The Contractor will be paid for the transport to and from the site of constructional plant not on site and specially ordered by the Engineer to be brought on site for the specific purpose of undertaking dayworks. No payment will be made for transport of equipment listed in the Contractor's Schedule of Constructional Plant in the tender document, or for equipment which

has been removed from the site on request of the Contractor, or for equipment already on site, regardless of whether it appears on the Schedule of Constructional plant or not.

PS.3.4 MATERIALS

Materials required for daywork items which cannot be compensated under existing rates and have to be purchased, will be paid for at cost, excluding VAT, plus a surcharge of 15%. The cost of materials provided for daywork at current rates at the time when the work is executed, will not be subject to contract price adjustment unless the prices of the materials are de-escalated to the base month for escalation.

PS.3.5 MEASUREMENT AND PAYMENT

Item	Unit
PS.3.5.1 Labour	
(a) Unskilled workers	hour
(hr)	
(b) Skilled workers (Artisans).....	hour
(hr)	
(c) Operators and drivers (where measured separately)	hour (hr)
(d) Foremen	hour (hr)
(e) Surveyor	hour (hr)
(f) Surveyor's assistant	hour (hr)

The unit of measurement is the hour or part thereof during which workers were engaged in daywork. The tendered rate shall include full compensation for all salaries, wages, bonuses, pension, insurance, medical aid and other benefits as well as overheads arising from administrative personnel, site agents, supervisors, tools and profit. No surcharge will be paid on the tendered rates. The cost of operators included in the rates for constructional plant, will not be measured again under Labour.

Item	Unit
PS.3.5.2 Construction Plant	
(a) Lowbed transport of plant to and from the site.....	kilometre (km)
(b) Track-type bulldozer, 200 kW power	hour (hr)

- (c) Self-propelled motor grader mass not less than 9 tons, hour (hr)
power approx. 100 kW
- (d) Front-end loader minimum power 90 kW hour (hr)
- (e) Tractor, loader, backhoe, 55-70 kW 0.5 m³ bucket hour (hr)
- (f) Crawler excavator minimum power 140 kW hour (hr)
- (g) Tractor for towing, 90 kW power hour (hr)
- (h) Vibrating plate compactor minimum power 2 kW hour (hr)
- (i) Tip truck minimum load capacity 10 m³ hour (hr)
- (j) Flatbed truck minimum load mass 10 tons hour (hr)
- (k) Water cart minimum capacity 10 kl.....hour (hr)
- (l) Dewatering pump including generators and accessories..... hour (hr)
(50 mm pump, 600 l per minute)
- (m) Self-propelled vibratory roller, 9-12 tons hour (hr)
- (n) Light delivery vehicle minimum load mass 1 ton kilometre (km)
- o) Bulldozer (D6 or similar)hour (hr)

The unit of measurement for sub item PS3.5.2(a) is by the kilometre distance over which the plant has been transported with a lowbed transporter as ordered by the Engineer, irrespective of the tare mass of the equipment being transported.

The unit of measurement for sub items PS3.5.2(b) to (m) and including item (o) is the hour or part thereof during which the item of plant had been in active use for the daywork operation, including stopping time of less than five minutes.


The unit of measurement for sub item PS3.5.2(n) is the kilometre travelled to collect or transport small quantities of materials. Kilometres travelled in light delivery vehicles by supervisors in the execution of normal supervisory duties, shall not be measured for payment.

The tendered rates shall include full compensation for the supply, maintenance, service, repairs, depreciation as well as fuel, lubricants, licensing, insurance, overheads and profit. It shall also include the cost of drivers and operators.

PS.4 ELECTRICAL PLANT

PS.4.1 General

Various types of electrical cables including high voltage, low voltage, street lighting and domestic connection cables may be affected by the contract. The laying, relocation and jointing of all cables will be carried out by local electricity authority work gangs/or agents appointed by them/

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or contractor (if permission from local electricity authority is granted), whilst the excavation and backfilling forms part of this contract.

PS.4.2 Relocation of Existing Services

Should it be necessary to adjust the line, level and / or position of any service not catered for in the contract to enable the construction to proceed the Contractor shall on no account effect such adjustment himself but shall notify the Engineer who will arrange for the work to be carried out at no cost to the Contractor.

PS.5 TELKOM/NEOTEL

PS.5.1 General

Both service providers have been contacted in an effort to determine the location of services and the construction drawings will reflect the information at hand. It must be noted that there may be telecommunications infrastructure within the project area that are not reflected on the drawings and it is the Contractor's responsibility to prove and protect all services throughout the contract.

PS.5.2 Relocation of Existing Services

Should it be necessary to adjust the line, level and / or position of any service not catered for in the contract to enable the construction to proceed the Contractor shall on no account effect such adjustment himself but shall notify the Engineer who will arrange for the work to be carried out at no cost to the Contractor.

PS.6 MANAGEMENT OF THE ENVIRONMENT

The Contractor shall pay special attention to the following:

PS.6.1 Natural Vegetation

The Contractor shall confine his operation to as small an area of the site as may be practical for the purpose of constructing the works. Only those trees and shrubs directly affected by the works and such others as the Engineer may direct in writing shall be cut down and stumped. The natural vegetation, grassing and other plants shall not be disturbed other than in areas where it is essential for the execution of the work or where directed by the Engineer.

Since there will be works undertaken in the Uhlanjana River, strict adherence to all legislation (as outlined in the site specific EMP) will be essential. The successful tenderer will be fully responsible for any transgressions.

PS.6.2 Fires

The Contractor shall comply with the statutory and local fire regulations. He shall also take all necessary precautions to prevent any fires. In the event of fire the Contractor shall take active steps to limit and extinguish the fire and shall accept full responsibility for damages and claims resulting from such fires which may have been caused by him or his employees.

PS.6.3 Environmental Management Programme (EMPr)

In addition to the above, all requirements according to the Environmental Management Programme as detailed in C3.4: Particular Specifications, shall be adhered to and priced for.

PS.7 OCCUPATIONAL HEALTH AND SAFETY

PS.7.1 General Statement

When considering the safety on site the Contractor's attention is drawn to the following:

The project includes works in sensitive areas, in the vicinity of the Uhlanjana River and on steep gradients. The necessary precautions must be taken at all times.

It is a requirement of this contract that the Contractor shall provide a safe and healthy working environment and to direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. To this end the Contractor shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the OHSA 1993 Construction Regulations 2014 issued on 7 February 2014 by the Department of Labour.

For the purpose of this contract the Contractor is required to confirm his status as mandatory and employer in his own right for the execution of the contract by entering into an agreement with the Employer in terms of Section 37(2) of the Occupational Health and Safety Act.

PS.7.2 Health and Safety Specifications and Plans to be submitted at tender stage

PS.7.2.1 Employer's Health and Safety Specification

The Employer's Health and Safety Specification is included in Part C3.4: Particular Specifications.

PS.7.2.2 Tenderer's Health and Safety Plan

At tender stage only a brief overview of the tenderers perception on the safety requirements for this contract will be adequate. This will be attached to Part T2.3.8: Health and Safety.

Only the successful Tenderer shall submit a separate Health and Safety Plan as required in terms of Regulation 7 of the Occupational Health and Safety Act 1993 Construction Regulations 2014, and referred to in Part T2.3.8: Health and Safety.

The detailed safety plan will take into consideration the site specific risks and must cover at least the following:

- (i) A proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 9 to 29;
- (ii) Pro-active identification of potential hazards and unsafe working conditions;
- (iii) Provision of a safe working environment and equipment;
- (iv) Statements of methods to ensure the health and safety of subcontractors, employees and visitors to the site, including safety training in hazards and risk areas (Regulation 7);

(v) Monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations;

(vi) Details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 8 and other applicable regulations; and

(vii) Details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2014.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan.

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim for extension of time or standing time and related costs. A generic plan will not be acceptable.

PS.7.3 Cost of compliance with the OHSA Construction Regulations

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract. Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

Items that may qualify for remuneration will be specified in the Employer's Health and Safety Specification.

PS.8 CONSTRUCTION AND MANAGEMENT REQUIREMENTS

PS.8.1 General

The Contractor is referred to SANS 1921: 2004 parts 1, 2, 3 and 5: Construction and Management Requirements for Works Contracts. These specifications shall be applicable to the contract under consideration and the Contractor shall comply with all requirements relevant to the project. Certain aspects, however, require further attention as described hereafter.

PS.8.2 Workmanship and Quality Assurance (Read with SANS 1921-1: 2004 clause 4.4)

The onus to produce work that conforms in quality and accuracy of detail to the requirements of the Specifications and Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality control system and provide suitably qualified and experienced engineers, foremen, surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the Works at all times.

To this end it will be the full responsibility of the Contractor to institute an appropriate Quality Assurance (QA) system on site. The Engineer will audit the Contractor's quality assurance (QA) system on a regular basis to verify that adequate independent checks and tests are being carried out and to ensure that the Contractor's own control is sufficient to identify any possible quality problems which could cause a delay or failure.

The Contractor shall ensure that efficient supervisory staff, the required transport, instruments, equipment and tools are available to control the quality of his own workmanship in accordance with his QA-system. His attention is drawn to the fact that it is not the duty of the Engineer or the Engineer's representative to act as foreman or surveyor.

The cost of supervision and process control, including testing carried out by the Contractor, will be deemed to be included in the rates bidden for the related items of work.

On completion and submission of every part of the work to the Engineer for examination and measurement, the Contractor shall furnish the Engineer with the results of the relevant tests, measurements and levels to demonstrate the achievement of compliance with the Specifications.

PS.8.3 Management and disposal of water (Read with SANS 1921 - 1 : 2004 clause 4.6)

The Contractor shall pay special attention to the management and disposal of water and stormwater on the site. It is essential that all completed works or parts thereof are kept dry and properly drained. Claims for delay and for repair of damage caused to the works as a result of the Contractor's failure to properly manage rain and surface water will not be considered.

The possibility of flooding shall be borne in mind by the Contractor when drawing up his tender and he shall effect relevant insurance as the Council will accept no responsibility whatsoever for any loss or damage from such flooding including any loss or damage to the temporary or the permanent works.

PS.8.4 Disposal of Spoil or Surplus Material (Read with SANS 1921 - 1 : 2004 clause 4.10)

The Contractor shall dispose all surplus and unsuitable material in authorized spoil areas of his own choice and in accordance with the requirements of the environmental specifications. He shall be responsible for all arrangements necessary to obtain such spoil sites.

PS.8.5 Testing (Read with SANS 1921 – 1 : 2004 clause 4.11)

PS.8.5.1 Contractor to engage services of an independent laboratory

Notwithstanding the requirements of the Specifications pertaining to testing and quality control, the Contractor shall engage the services of an approved independent laboratory to undertake all testing of materials, the results of which are specified in, or may reasonably be inferred from, the Contract. These results will be taken into consideration by the Engineer in deciding whether the quality of materials utilised and workmanship achieved by the Contractor comply with the requirements of the Specifications. The foregoing shall apply irrespective of whether the specifications indicate that the said testing is to be carried out by the Engineer or by the Contractor.

The Contractor shall be responsible for arranging with the independent testing laboratory for the timeous carrying out of all such testing specified in the Contract, at not less that the frequencies and in the manner specified. The Contractor shall promptly provide the Engineer with copies of the results of all such testing carried out by the independent laboratory.

For the purposes of this clause, and “independent laboratory” shall mean an “approved laboratory” (as defined in subclause 7.2 of SANS 1200A) which is not under the management or control of the Contractor and in which the Contractor has no financial interest, nor which has any control or financial interest in the Contractor.

PS.8.5.2 Additional testing required by the Engineer

In addition to the provisions of subclause PS.8.5.1: Contractor to engage services of an independent laboratory, the Engineer shall be entitled at times during the Contract to require that the Contractor arrange with the independent laboratory to carry out any such tests, additional to those described in subclause PS.8.5.1, at such times and at such locations in the Works as the Engineer shall prescribe. The Contractor shall promptly and without delay arrange with the independent laboratory for carrying out all such additional testing as required by the Engineer, and copies of the test results shall be promptly submitted to the Engineer.

PS.8.5.3. Tests in terms of subclause PS.8.5.1

The costs of all testing carried out by the independent laboratory in accordance with the requirements of subclause PS.8.5.1, above shall be borne by the Contractor and shall be deemed to be included in the bidden rates and process for the respective items of work as listed in the Schedule of Quantities and which require testing in terms of the Specifications. No separate payments will be made by the Employer to the Contractor in respect of any testing carried out in terms of subclause PS.8.5.1.


Where, as a result of the consistency of the materials varying or as a result of failure to meet the required specifications for the work, it becomes necessary to carry out additional tests (eg re-tests on rectified work and/or replacement materials), the costs of such additional testing shall be for the Contractor’s account.

PS.8.5.4 Additional tests required by the Engineer

The costs of any additional tests required by the Engineer in terms of subclause PS.8.5.1: Additional testing required by the Engineer, shall be reimbursed to the Contractor against substitution of the Provisional Sum allowed therefore in the Schedule of Quantities; provided always that the costs of any such additional test ordered by the Engineer, the results of which indicate that the quality of the materials utilised and/or the standard of workmanship achieved are/is not in accordance with the specifications, shall not be reimbursable to the Contractor.

PS.8.6 Survey beacons (Read with SANS 1921 - 1 : 2004 clause 4.15)

The Contractor shall take special precautions to protect all permanent survey beacons or pegs such as bench-marks, stand boundary pegs and trigonometrical beacons, regardless whether such beacons or pegs were placed before or during the execution of the Contract. If any such

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beacons or pegs have been disturbed by the Contractor or his employees, the Contractor shall have them replaced by a registered land surveyor at his own cost.

PS.8.7 Overhaul

No payment will be made for overhaul on this contract.

PS.8.8 Security

The Contractor shall provide security watchmen for the Contract as he deems fit at no extra cost to the Employer. The Contractor must ensure that all his employees as well as the employees of his subcontractors are able to identify themselves as members of the construction team.

PS.9 SITE FACILITIES AVAILABLE

PS.9.1 Contractor's camp site and depot (Read with SANS 1921 - 1: 2004 clause 4.14)

The Contractor's office for this contract shall be as required to fulfil his obligations under the Contract. The Contractor is responsible to provide a suitable site for his camp and to provide accommodation for his personnel and labourers. If the Employer can make any specific site available to the Contractor, such site will be pointed out to the Contractor.

The Contractor shall, at his own cost, be responsible for locating and making all arrangements necessary for securing an area suitable to meet his needs in respect of the erection of the Contractor's offices, stores and other facilities, including the facilities to be provided for the Engineer in accordance with the Contract.

Any potential area proposed by the Contractor shall be within reasonable proximity to the Site of the Works and its location shall be subject to the approval of the Engineer, which approval shall not be unreasonably withheld.

(a) Contractor's camp site/store yard

The proposed position of the camp site/store yard lies on the Contractor to liaise with the CLO/Ward Councillor in order to identify a suitable site for occupation. The Contractor must first obtain the written permission of the landowner, and subsequently the Engineer, prior to occupation of the land.


Any clearing of the site that is necessary and the making good after de-establishment will be the responsibility of the Contractor.

In addition to the requirements of SANS 1200 A clause 8.3.2.2 the following conditions shall also apply:-

None of the existing roads shall be damaged in any way.

Electrical and Potable water facilities may be available in the vicinity of the site but the contractor shall make his own arrangements for all connections.

It shall be the responsibility of the Contractor to make good any damage caused to the camp site area or any improvements on it, including services, and for reinstating it to its former

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condition when vacated. Particular attention should be directed to these requirements and written clearances from the relevant Departments or other owners will be required.

PS.9.2. Notice Board

The following requirements shall apply with regards to the notice board:

The wording in the space for "Project Title" shall be:

CONSTRUCTION OF DIKIDIKINI BRIDGE

The words to follow "For" shall be:

DEVELOPMENT BANK OF SOUTHERN AFRICA LIMITED

The words to follow "Designed" shall be:

To be confirmed

PS.9.2 Accommodation of Employees

No employees, except for security guards, will be allowed to sleep or be accommodated on the site in urban areas. No housing is available for the Contractor's employees and the Contractor shall make his own arrangements to house his employees and to transport them to site. No informal housing or squatting will be allowed. The Contractor shall provide the necessary ablution facilities at his camp site and the site of the works for the use of his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

PS.9.3 Power supply, water and other services

The Contractor shall make his own arrangements concerning the supply of electrical power, water and all other services. No direct payment will be made for the provision of electricity, water and other services. The cost thereof shall be deemed to be included in the rates and amounts tendered for the various items of work for which these services are required, or in the Contractor's preliminary and general items as the case may be.

(a) Water for Works

The Contractor shall allow in his Establishment rates for the securing of a suitable water supply, the payment of any connection fee and for any water charges for the duration of the contract.

(b) Power supply for works

The contractor will be responsible for arranging whatever temporary supplies may be required and he will be required to bear all costs involved and to pay the ruling tariffs applicable to such supplies.

Excrement disposal

No water-borne sewage or other off-site excrement disposal systems are available in the vicinity of the Site. The Contractor is to provide chemical toilets.

PS.10 SITE FACILITIES REQUIRED

PS.10.1 Temporary offices

PS10.1.2 Electricity supply for the Engineer

All electricity supply to the Engineer's office and laboratory, whether provided by the Contractor by way of a reticulated supply from a local authority or other authorised electricity supply, or by way of on-site generators, shall be regulated by the Contractor to within limits such as to prevent damage due to fluctuations in the electrical current supply that may occur to any electrical plant and equipment provided by the Contractor or the Engineer.

The Contractor shall be liable for and pay to the Engineer on demand, all costs that the Engineer may incur in the repair or replacement of any electrical equipment provided by the Engineer on the Site. Reliance by the Contractor on the regulation of the electrical supply by the supplier or on current regulators fitted to generators shall not absolve the Contractor of his liabilities in terms of this Subclause and, where appropriate, the Contractor shall provide and install at his own cost, all such electrical current-regulating equipment as is necessary to prevent damage to the said equipment.

PS10.2 Site Meeting and Venue

The Contractor and his authorised representative shall attend all meetings held on the Site with the Employer and the professional team at dates and times to be determined by the Engineer. Such meetings will be held to evaluate the progress of the Contract, and to discuss matters pertaining to the Contract that any of the parties represented may wish to raise. It is not the intention to discuss day-to-day technical matters at such meetings.

The Contractor shall provide within his own site establishment facilities, a suitably furnished office or other venue capable of comfortably accommodating a minimum of ten (10) persons at site meetings. The Engineer shall be allowed free use of such venue for conducting any other meetings concerning the Contract at all reasonable times.

PS10.3 Contract Nameboards

The Contractor shall provide, erect and maintain 2 (two) contract nameboards at such position and location as are directed by the Engineer, in accordance with the requirements set out in sub-clause 3.1 of SANS 1200 AB.

The Contractor shall before ordering or manufacturing any such contract nameboard, obtain the Engineer's written approval in respect of all names and wording to appear on the contract nameboard.

PS10.4 Site instruction book

The Contractor shall keep a triplicate book for site instructions on the Site at all times.

PS10.5 Water

The Contractor shall, at his own expense, be responsible for obtaining and providing all water as may be required for the purposes of executing the contract, including water for both construction purposes and domestic use, as well as for making all arrangements in connection therewith. The Contractor shall further, at his own expense, be responsible for providing all necessities for procuring, storing, transporting and applying water required for the execution of the Contract as well as for all work and superintendence associated therewith.

The sources of all water utilised for the purposes of the Contract shall be subject to the prior approval of the Engineer, which approval shall not be unreasonably withheld.

The Contractor shall comply with all prevailing legislation in respect of drawing water from natural and other sources and shall, when required by the Engineer, produce proof of such compliance. The distribution of water shall be carried out by the Contractor strictly in accordance with the applicable laws and regulations.

All water provided by the Contractor for construction purposes shall be clean, free from undesirable concentrations of deleterious salts and other materials and shall comply with any further relevant specifications of the Contract. The Contractor shall, whenever reasonably required by the Engineer, produce test results demonstrating such compliance. Water provided by the Contractor for human consumption shall be healthy and potable to the satisfaction of the health authorities in the area of the Site.

No separate payment will be made to the Contractor for the obtainment, providing and consumption of water, the costs of which will be deemed to be included in the Contractor's billed rates.

PS10.6 Electricity

The Contractor shall, at his own expense, be responsible for obtaining and providing all electricity as he may require for the purposes of executing the Contract, including electricity for both construction purposes and domestic use, as well as for making all arrangements in connection therewith.

The distribution of electricity shall be carried out by the Contractor strictly in accordance with the applicable laws and regulations.

No separate payment will be made to the Contractor for the obtainment, providing and consumption of electricity, the costs of which will be deemed to be in the Contractor's billed rates and prices.

PS10.7 Excrement disposal

The Contractor shall, at his own expense, be responsible for safely and hygienically dealing with and disposing of all human excrement and similar matter generated on the Site during the course of the Contract, to the satisfaction of the responsible health authorities in the area of the Site and the Engineer. All such excrement shall be removed from the Site and shall not be disposed of by the Contractor on the Site.

The Contractor shall further comply with any other requirements in this regard as may be stated in the Contract.

No separate payment will be made to the Contractor in respect of discharging his obligations in terms of this subclause and the costs thereof shall be deemed to be included within the Contractor's bidden Preliminary and General Items.

PS.11 DRAWINGS AND SPECIFICATIONS

The Contractor shall use only the dimensions stated in figures on the Drawings in setting out the Works, and dimensions shall not be scaled from the Drawings, unless required by the Engineer. The Engineer will, on the request of the Contractor in accordance with the provisions of the Conditions of Contract, provide such dimensions as may have been omitted from the Drawings.

The levels given on the structural drawings are subject to confirmation on the site, and the Contractor shall submit all levels to the Engineer for confirmation before he commences any structural construction work. The Contractor shall also check all clearances given on the drawings and shall inform the Engineer of any discrepancies.

The Contractor will be supplied with three unreduced paper prints of each of the drawings. These prints will be issued free of charge and the Contractor shall make any additional prints he may require at his own cost.

The Contractor shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the contract. Where necessary, levels shall also be given. A marked-up set of drawings shall also be kept and updated by the Contractor. This information shall be supplied to the Engineer's Representative on a regular basis.

All information in possession of the Contractor, required by the Engineer and/or the Engineer's Representative to complete the as-built/record drawings, must be submitted to the Engineer's Representative before a Certificate of Completion will be issued.

All drawings prepared by the engineer and/or contractor in complying with any performance specifications, form part of the contract.

All shop drawings are to be approved by the engineer prior to ordering of the materials.

PS.12 SUBCONTRACTING

PS.12.1 Preferred Subcontractors/Suppliers

All matters pertaining to subcontractors and the work executed by them shall be dealt with directly between the Engineer and the Contractor in the context of all subcontract work being an integral part of the Works for which the Contractor is responsible.

The Contractor shall be responsible for all work carried out by subcontractors on his behalf. The Engineer will not liaise directly with any such sub-contractor, nor will he become involved in any problems and/or disputes related to payments, programming, workmanship, etc., unless provided for in the Conditions of Contract. Such problems and/or disputes shall remain the sole concern of the Contractor and his subcontractors.

PS.13 Survey

PS.13.1 Survey for, and Preparation of, "As Built" Drawings

The Contractor shall submit the following “As Built” data to the Engineer to complete the required “As Built” Drawings before a Certificate of Completion will be issued:-

All details relating to bridge including co-ordinates and levels of the structural infrastructure.

Co-ordinates of all other services that have been either modified or constructed as new, during the contract.

General:

Notwithstanding the above, the Contractor is to supply to the Engineer all other information necessary, to clearly indicate changes/modifications to the construction drawings during the contract period that will be required by the Engineer so that they can produce the “As Built” drawings.

Each surveyed point shall be suitably coded and identifiable by the Engineer and shall be supplied on a CD/DVD, in an Ascii file with the following format:-

Code[SPACE]XCo-ordinate[SPACE]YCoordinate[SPACE]Level[SPACE]Description

The above information is to be given to an accuracy of three decimal places and is to be surveyed by a suitably qualified person.

In addition to the above, all ‘as built’ information must be provided as a drawing in AutoCAD and DXF format together with a hard (paper) copy format showing the modifications undertaken during the contract period. Suitable checks on the accuracy of the information provided may be carried out by the Engineer and should any of the information provided be found to be inaccurate or untrue, the Employer reserves the right to withhold payment or to employ the services of an engineering surveyor to re-survey all the works listed above, at the Contractor’s expense. The Employer shall request a minimum of three quotations from three independent engineering surveyors of his choice, and the lowest quotation will be appointed and the cost thereof will be deducted from monies owing to the Contractor.

The ‘as built’ data shall be the responsibility of the Contractor and shall be paid for under the relevant item in the Bill of Quantities.

The Contractor must also forward to the Engineer, a materials “as built” spreadsheet in a format that is acceptable by the Employer.

The unit of measurement shall be (sum) and the rate shall include for all components outlined in this specification.

The completion certificate shall not be issued unless the above information in totality, has been forwarded to the Engineer.

PS.13.2 Setting Out of Works

The setting out of the works shall be the responsibility of the Contractor and shall be paid for under the relevant item in the Contractor’s Preliminary and General Costs. Any specific requirements pertaining to setting out and tolerances are noted in the relevant Standard Engineering Specifications.

The unit of measurement shall be metre (m) and the rate shall include for the following:

The Contractor shall do the setting out to and beyond the obstructions. Such obstructions shall be reported to the Engineer as soon as possible. No additional payment shall be made for listing and reporting these obstructions and the re-establishment to set out areas that were affected by the obstructions.

PS.13.3 Additional Site Survey

The Engineer may instruct the contractor to conduct a survey during the course of the contract in order to facilitate re-design due to immovable obstructions. The contractor will be required to submit all survey files in an ASCII format and drawings in a DXF/DWG format.

The unit of measurement shall be metre (m) and the rate shall include for the survey (15m wide) as directed by the Engineer and the submission of all hardcopy and electronic files required by the Engineer.

PS.14 CONTRACTOR'S PLANT

The Engineer shall have the right to order the immediate removal from the site of any plant which he may deem to be unsatisfactory for the proper execution of the work. The Contractor shall obtain without delay satisfactory plant to replace that removed. Any costs arising out of the removal and subsequent replacement of plant shall be to the Contractor's account.

PS.15 BARRICADING OF EXCAVATIONS


All excavations in road reserves and in any other areas in close proximity to pedestrian and vehicular traffic are to be barricaded to the satisfaction of the Engineer. All costs arising from these requirements are to be included in the tendered rates.

PS.16 GRASSING

This specification details the required methodology for reinstatement of surfaces.

Following the backfill process, areas to be grassed by sodding shall be given a layer of topsoil of 100 mm in thickness unless the Engineer and ECO orders the topsoil to be reduced or omitted. The areas to be sodded shall be thoroughly watered beforehand so that it will be moist to a depth of at least 150 mm during sodding. The surface shall be roughened slightly to ensure a good penetration of roots into the soil. Sods shall be protected against drying out and kept moist from the time of harvesting until they are finally placed. The handling of the sods shall not result in the sods losing their prescribed soil thickness.

The first row of sods shall, where possible, be laid in a straight line, and if on a slope, laying the sods shall start at the bottom of the slope. The sods shall be butted tightly against each other, and care shall be taken not to stretch or overlap the sods. Where a good fit cannot be obtained, any intervening spaces shall be filled with topsoil. The next row shall be similarly placed tightly against the bottom row with staggered joints, and so on until the entire area has been covered with sods. Sods shall be laid in such a way that unnecessary trampling over areas previously laid is prevented. To this end, a diagonal method of laying sods is preferred, moving up the slope and behind previously laid sods. On steep slopes and batters the sods shall be held in position

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by a sufficient number of wooden stakes approximately 300 mm long by 20 mm in thickness and these stakes shall be knocked in to a depth of 100 mm into the subsoil.

Sods laid adjacent to concrete abutment shall be laid in such a manner that the sodding will be 20 mm higher than the concrete. When strip sodding is required, the sods shall be laid in such a manner that the sods are proud of the surrounding ground level. As sodding is completed, each section shall be lightly rolled or firmly pressed to ensure a proper bond with the underlying material, and thoroughly watered afterwards.

Maintenance of all grassed areas - Maintenance shall include watering, weeding, mowing, re-fertilisation where necessary, re-grassing of areas that, in the opinion of the Engineer, are unsatisfactory, and any other work that is necessary to achieve full, healthy and weed-free grass cover to banks, reinstated trenches etc. until the end of the defects liability period.

PS.17 MONTHLY STATEMENTS AND PAYMENT CERTIFICATES

The statement to be submitted by the Contractor in terms of Clause 6.10 of the Conditions of Contract shall be prepared by the Contractor at his own cost, strictly in accordance with the standard payment certificate prescribed by the Engineer, in digital electronic computer format. The Contractor shall, together with a copy of the digital electronic computer file of the statement, submit two (2) A4 size paper copies of the statement.

C3.3 STANDARD SPECIFICATION

C3.3.1 LISTING OF THE STANDARD SPECIFICATIONS

The standard specifications on which this contract is based are Standards South Africa's Standardized Specifications for Civil Engineering Construction SABS 1200. In addition, any Particular Specifications referred in the Scope of Work shall also be applicable.

(Note : "SABS" has been changed to "SANS, without change to the contents of the specifications. Where reference is made to SABS, it shall also apply to SANS, and vice versa, as applicable.)


The following national and international standards and associated specification data are applicable:

SANS 10400

- Part A General principles & requirements
- Part B Structural design
- Part F Site operation
- Part G Excavations
- Part R Stormwater disposal

- SABS 1200A: General
- SABS 1200 AB: Engineer's Office
- SABS 1200 AH: General (Structural)
- SABS 1200 C: Site Clearance
- SABS 1200 D: Earthworks
- SABS 1200 DA: Earthworks (Small Works)
- SABS 1200 DB: Earthworks (Pipe Trenches)
- SABS 1200 DK: Gabions and Pitching
- SABS 1200 DM: Earthworks (Roads and Subgrade)
- SABS 1200 F: Piling
- SABS 1200 G: Concrete
- SABS 1200 H: Structural Steelwork
- SABS 1200 HA: Structural Steelwork (Sundry Items)
- SABS 1200 HC: Corrosion Protection of Structural Steelwork
- SABS 1200 LE: Stormwater drainage
- SABS 1200 M: Roads (General)
- SABS 1200 ME: Sub-Base
- SABS 1200 MF: Base
- SANS 1200MM: Ancillary Roadworks

- SABS 0100-1:2000: The structural use of concrete, Part 1: Design
- SABS 471: Portland cement (ordinary, rapid-hardening and sulphate-resisting)
- SABS 626: Portland blast furnace cement
- SABS 82: Bending dimensions of bars for concrete reinforcement
- SABS 824: Lime for soil stabilization
- SABS 831: Portland cement 15 and rapid-hardening Portland cement 15
- SABS 878: Ready-mixed concrete
- SABS 920: Steel bars for concrete reinforcement

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SABS 1083: Aggregates from natural sources
SANS 10064:2005: The preparation of steel surfaces for coating
SANS 10160-1:2010, Basis of structural design and actions for buildings and industrial structures,
Part 1: Basis of structural design
SANS 10160-2:2010, Basis of structural design and actions for buildings and industrial structures,
Part 2: Self-weight and imposed loads
SANS 10160-3:2010, Basis of structural design and actions for buildings and industrial structures,
Part 3: Wind actions
SANS: 10162: The structural use of steel
Part 1:2005: Limit-states design of hot-formed steelwork
Part 2:1993: Limit-states design of cold-formed steelwork
Part 4:1997: The design of cold-formed stainless steel structural members
SANS 10162-1:2005: The structural use of steel, Part 1: Limit-state design of hot-rolled steelwork
SANS 10162-2:2005: The structural use of steel, Part 2: Cold-Formed Steel Structures- Southern African Steel Construction Handbook, 5th Edition, 2005
Part 1:2003: Limit-states design
Part 2:2001: Allowable stress design

BS 4504: Flanges and bolting for pipes, valves and fittings. Metric series Part I: Ferrous
BS 4772: Ductile iron pipes and fittings
BS 5950-1:2000 Structural use of steelwork in building. Part 1.

SIS 05 59 00: Pictorial surface preparation standards for painting steel surfaces

TMH 1: Standard methods of testing road construction materials
TMH 5: Sampling methods for road construction materials

TRH 4: Structural Design of Road Pavements,

UTG 3: Roads pavements will be designed in accordance with Structural Design of Urban Roads, 1993, published by the Committee of Urban Transport Authorities
A bidder should get his own copies of the above documentation.

The following SANS specifications are also referred to in this document and the Contractor is advised to obtain them from Standards South Africa (a division of SABS) in Pretoria.

SANS 10396:2003 : Implementing Preferential Construction Procurement Policies using Targeted Procurement Procedures

SANS 1914-1 to 6 (2002) : Targeted Construction Procurement

SANS 1921-1 (2004) :Construction and Management Requirements for Works Contracts Part 1: General Engineering and Construction Works

C3.3.2 AMENDMENTS TO THE STANDARD SPECIFICATIONS

INTRODUCTION

In certain clauses the standard, standardized and particular specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternative or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains additional specifications required for this particular contract.

The number of each clause and each payment item in this part of the project specifications consists of the prefix PS followed by a number corresponding to the number of the relevant clause or payment item in the standard specifications. The number of a new clause or payment item, which does not form part of a clause or a payment item in the standard specifications and which is included here, is also prefixed by PS, but followed by a new number which follows on the last clause or item number used in the relevant section of the standard specifications.

PS A General Specifications

PSAB Engineers Office

PS C Site Clearance

PS D Earthworks

PS DMEarthworks (Roads, Subgrade)

PS F Piling

PS G Concrete (Structural)

PS H Structural Steelwork

PS HC Corrosion Protection of Structural Steel

PS ME Subbase

PS MF Base

PSA GENERAL (SANS 1200 A)

PSA-2 INTERPRETATIONS

PSA-2.3 Definitions

(a) General

Add the following definitions:

General Conditions: The General Conditions of Contract specified for use with this Contract and the Special Conditions of Contract.

Specified: As specified in the Standardized Specifications, the Drawings or Project Specifications. Specifications shall have the corresponding meaning, as provided for in Sub-sub-Clause 1(1)(u) of the General Conditions of Contract.

(c) Measurement and Payment:

Replace the definitions for fixed charge, time-related and value-related charge, with the following:

"Fixed charge: A charge that is not subject to adjustment on account of variation in value of the Contract Amount or the Contract Time of Completion.

"Time-related charge: A charge, the amount of which is varied in accordance with the time for completion of the work, as adjusted in accordance with the provisions of the Contract.

"Value-related charge: A charge, the amount of which is varied pro rata to the final value of the measured work executed and valued, in accordance with the provisions of the contract.

PSA-3 MATERIALS

PSA-3.1 Quality

Where applicable, material shall bear an official standardisation mark.

"Where proprietary materials are specified it is to indicate the quality or type of materials or articles required, and where the terms "or similar approved" or "or approved equivalent" are used in connection with proprietary materials or articles, it is to be understood that the approval shall be at the sole discretion of the Engineer".

Add the following sub-clause:

PSA-3.3 Ordering of Materials

The quantities set out in the Schedule of Quantities have been determined from calculations based on data available at the time and should therefore be considered to be approximate quantities only. The liability shall rest entirely and solely with the Contractor to determine before ordering, the required types and quantities of the various materials required for the completion of the works in accordance with the Specifications and Drawings issued to the Contractor for construction purposes.

Any reliance placed by the Contractor on the estimated quantities stated in the Schedule of Quantities issued for tendering purposes, or measurements made by the Contractor from Drawings issued for tendering purposes only, shall be entirely at the Contractor's risk and the Employer accepts no liability whatever in respect of materials ordered by the Contractor for construction purposes.

PSA-4 PLANT

PSA-4.2 Contractor's Offices, Stores and Services

Add the following to this clause;

"The Contractor's construction camp shall be fenced off and shall contain all offices, stores, workshops, testing laboratories, toilet facilities, etc. The camp shall be kept neat and clean at all times and all surplus or rejected material shall be removed from the site.

No personnel will be allowed to reside on the Site. The Contractor shall be responsible for the security of his construction camp and of the construction Site, at his own cost. Only night-watchmen may be on the Site after hours.

The Contractor shall provide on the Site and in close proximity in close consultation with the ECO and to the actual locations where the work is being executed, one chemical toilet per 10 workmen, which toilets shall be effectively screened from public view and their use enforced. Such toilets shall be relocated from time to time as the location of the work being executed changes, so as to ensure that easy access to the toilets is maintained.

The Contractor shall, where applicable, make all necessary arrangements and pay for the removal of night soil.

PSA-4.2.1 Site Diary

A site diary, in triplicate format, which will be supplied by the Contractor, must be filled in on a daily basis and submitted to the Engineer on a weekly basis. No claims will be considered without the site diary's schedules properly completed (on a daily basis) and submitted."

PSA-5 CONSTRUCTION

PSA-5.1 Survey

PSA-5.1.1 Setting out of the Works

Add the following to this clause;

"The Contractor shall check all reference pegs, bench marks and line pegs well before he intends constructing any portion of the Works. Should any peg have been disturbed or any discrepancy in the positions or levels be discovered, the Engineer shall be informed as soon as possible in writing, but in any event at least 7 days before such construction is due to start. If no written statement is received from the Contractor it will be held that the Contractor has satisfied himself that the positions and levels of the reference pegs and bench marks are correct.

Payment to check and verify the reference and benchmark pegs will be made in terms of PSA 8.8.5."

PSA-5.1.2 Preservations and Replacement of Beacons and Pegs Subject to the Land Survey Act

Delete the first sentence in the 2nd paragraph, "Before the commencement of construction.....compile a list of such pegs that are apparently in their correct positions.", and replace with the following;

"Before commencing work on the site the Contractor shall locate and mark all survey beacons within and on the perimeter of the site. The marking shall consist of a cairn of stones

painted white and iron standard to the approval of the Engineer protruding at least one metre above the ground. Should any beacon be found to be missing or disturbed during the initial search, the Engineer must be informed in writing immediately. The Engineer will immediately arrange for the beacon to be re-established by a registered Land Surveyor at no expense to the Contractor. Should any beacon be disturbed or destroyed during the contract for whatever reason, it will be replaced by a registered Land Surveyor at the Contractor's expense. Allowance must be made by the Contractor for beacons which may be unavoidably disturbed during the contract."

PSA-5.2 Watching, Barricading, Lighting and Traffic Crossings

Add the following to this clause;

Temporary Traffic Signs

The Contractor shall provide, erect and maintain on the site and at such positions on the approaches to the site all traffic signs necessary for the direction and control of traffic.

The details of all such signs, which shall conform to the current Road Traffic Ordinance and the departmental publication entitled "Safety in Road Construction", must be approved by the Engineer before erection. The signs shall be reflectorised or adequately illuminated at night in a manner approved by the Engineer and kept clean and legible at all times. The Contractor shall reposition, cover or remove signs as required during the progress of the works.

PSA-5.3 Protection of structures

Replace the reference to "Machinery and Occupational Safety Act, 1983 (Act No 6 of 1983) with "Occupational Health and Safety Act, 1993 (Act No 85 of 1993).

PSA-5.4 Protection of Overhead and Underground Services

Replace with the following:

The Contractor is reminded of his obligations to prove the actual position of all services on site before any work commences in the vicinity of the services. The Contractor is further required to measure accurately the chainage and level at which these services occur and to report this information to the Engineer.

The Contractor must take cognisance of the above possibility that there may be services in the vicinity of the bridge that may affect his works and provide sufficient flexibility within his programme of works to accommodate any alterations that might be necessary.

Should it be necessary to adjust the line, level and / or position of any service not catered for in the contract to enable the construction to proceed, the Contractor shall on no account effect such adjustments, without the prior consent of the Engineer.

Buried electrical and telephone cables shall be exposed using hand tools initially before allowing the uncontrolled use of picks and other implements, or before using machines to excavate.

Supporting or diverting cables must be done by, or in consultation with, officials of the Electricity Service Unit, Eskom or Telkom respectively.

When cables are not in the positions shown on the drawings and cannot be found after proving trenches have been put down, assistance may be obtained by calling an official from the appropriate authority during office hours.

Existing services including water mains, sewer pipes, storm water pipes and drains, electricity and telephone lines, cables, poles and conduits shall be protected, supported, maintained in service and restored to the condition in which found by the Contractor at his expense, or where necessary by the appropriate authority at the Contractor's expense.

Provided that where it is necessary to relocate such existing services, such relocation shall be arranged by and carried out at the Employer's expense.

PSA-5.5 Dealing with water on works

Add to Clause 5.5, water shall include ground water, in fall, stormwater run-off, flood water, water used during the course of construction, water from the river that crosses the site.

PSA-5.8 Ground and Access to Works

Add the following to this clause;

"Where necessary the contractor will make provision for temporary gates, ramps and roads to obtain access to the site. Where it involves these activities, the Contractor will obtain the necessary approvals from the land owners to do so.

On completion of operations the Contractor shall restore the ground surface, wherever it may have been disturbed, to its original condition by filling in all ruts with material similar to the material within the rut and levelling the ground and, where necessary, planting grass and shrubs as may be required. Any boundary fences which have been removed or damaged by his operations and activities shall be repaired and/or reinstated at the Contractor's expense".

Add the following new sub clause:

PSA-5.9 Accommodation of Traffic

"Where construction work has to be carried out on or near public roads, the Contractor shall deal with traffic as specified in SANS 1921-2 (2004): Construction and Management Requirements for Works Contracts, Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor.

Add the following new sub clause:

PSA-5.10 drawings

Construction drawings and additional detailed information will be made available to the Contractor as and when required by him. Tender drawings shall not be used for construction.

Add the following new Clause:

PSA-6 TOLERANCE

Add the following sub-clause

PSA 6.4 General

“No is given that the full specified tolerances will be achievable independently of each other and the Contractor is cautioned in regard to the fact that the liberal or full use of any one or more of the tolerances may deprive him of the full or any use of tolerances relating to other aspects of the works.

Except where the contrary is specified, or when clearly not applicable, all quantities shall for the purposes of measurement and payment be determined from the “authorised” dimensions. This shall be taken to mean the dimensions as specified or shown on the drawings or, if changed, as finally instructed by the Engineer, without any allowance for the tolerance specified. Save as hereunder specified to the contrary, all measurements for determining quantities for purposes of payment will be based on the “authorised” dimensions.

If the work is therefore constructed in compliance with the “authorised” dimensions plus or minus any tolerances allowed, quantities will be based on the “authorised” dimensions regardless of the actual dimensions to which the work has been constructed.

Where the work is not constructed in accordance with the “authorised” dimensions plus or minus any tolerances allowed, the Engineer may nevertheless, on his sole discretion accept the work for payment. In such cases, no payment shall be made in respect of quantities of work or materials in excess if those calculated from the “authorised” dimensions and where the actual dimensions are less than the “authorised” dimensions minus any tolerance allowed, the quantities for payment shall be based on actual dimensions as constructed.”

PSA-7 TESTING

PSA 7.2 Approved Laboratories

Unless otherwise specified in the relevant specification or elsewhere in the Scope of Work, the following shall be deemed to be approved laboratories in which design work, or testing required in terms of a specification for the purposes of acceptance by the Engineer of the quality of materials used and/or workmanship achieved, may be carried out:

- Any testing laboratory certified by the South African National Accreditation Systems (SANAS) in respect of the nature and type of testing to be undertaken for the purpose of the Contract.

PSA-8 MEASUREMENT AND PAYMENT

PSA 8.3.1 Contractual Requirements

Add the following:

“The sum shall include for effecting compliance with all other general conditions and requirements, including, but not limited to, setting out, on-site training of labour, and provision of as built drawings, which are not specifically measured elsewhere for payment in these Contract Documents.”

PSA 8.3.2.2 Facilities for the Contractor

e) Ablution facilities

Add to following:

Sanitary arrangements should be to the satisfaction of the Engineer and ECO. Chemical toilets must be supplied (1 per 10 persons) and must be regularly cleaned and maintained by the Contractor. The positioning of the chemical toilets is to be done in consultation with the ECO. The toilets must be emptied by a licensed service provider on a weekly basis. The Contractor will be entirely responsible for enforcing their use and for maintaining the chemical toilets in a clean, orderly, and sanitary condition to the satisfaction of the ECO. If necessary, the ablution facilities must be screened from the public view. In remote areas where chemical toilets may not be a viable option, agreement must be reached on alternatives before construction starts.

PSA 8.3.1.1 Occupational Health and Safety (New Sub-Clause)

The sum shall cover all the Contractor's fixed charge and value related costs involved in complying with the requirements of the Occupational Health and Safety Act and "The Health and Safety Specification".

Item Unit

Occupational Health and Safety compliance fixed charge and value related costs.....Sum

PSA 8.3.1.2 Environmental Management (New Sub-Clause)

The Lump Sum shall cover all the Contractor's fixed costs and overheads involved in complying with the requirements of the Environmental Management Plan, contained in "Part C5.2: Environmental Management Plan".

Item Unit

Environmental Management Plan compliance fixed charge and value related cost Sum


PSA 8.3.2 Establishment of Facilities on Site

PSA 8.3.2.1 Facilities for the Engineer

Add the following:

"The rate tendered by the Contractor shall be deemed to include for providing and maintaining a single office (one room) with a floor area of at least 20 m² and a ceiling height of at least 2,5 m. The office shall be lockable and waterproof. Ablution facilities for the sole use of the Engineer and his site staff shall also be provided. The office furnishings shall include:

- a) One standard office table or desk;
- b) Three chairs
- c) Acceptable lighting.
- d) A connection for electricity.

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e) Air-conditioning.

f) Filing cabinet.

The Engineer shall be provided with the following:

a) Survey equipment.

b) DCP testing equipment.

c) Shaded carport.

The Contractor shall maintain the office in accordance with the requirements of subclause 5.2 of SANS 1200 AB.”

Item	Unit
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Office facilities.....	Sum
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PSA 8.4.1 Contractual Requirements

Add the following:

“The sum shall also include for effecting compliance with all other general conditions and requirements, including, but not limited to, setting out, on-site training of labour, and provision of as built drawings, which are not specifically measured elsewhere for payment in these Contract Documents.

PSA 8.4.1.1 Occupational Health and Safety (New Sub-Clause)

The sum shall cover the time-related costs associated with complying with the requirements of the Occupational Health and Safety Act and “Section C4.5: The Health and Safety Specification and Baseline Risk Assessment”. This shall include for the provision of all materials, plant and equipment required by the Act and not allowed for elsewhere in the Bills of Quantities.

Item	Unit
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All Occupational Health and Safety compliance time related costs	Sum
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PSA 8.4.1.2 Environmental Management (New Sub-Clause)

The sum shall cover the time-related costs associated with complying with the requirements of “Part C5.2: Environmental Management Plan”. This shall include for the provision of all materials, plant and equipment required by the Act and not allowed for elsewhere in the Bills of Quantities.

Item	Unit
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All Environmental Management Plan compliance time related costs	Sum
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PSA 8.4.2.2 Facilities for Contractor

Add new items:

g) Provision of 24-hour security to the site camp Unit: Sum

This item is to cover all costs associated with the provision of 24-hour security to the site camp. The Contractor shall engage the services of a suitably experienced firm or locals to undertake security at the camp site. Payment shall be made on a pro-rata basis based on the percentage progress of Works.

i) Provision of monthly labour return Unit: Sum

This item is to cover all costs associated with submission of labour returns to the Employer in the prescribed format. The report shall include the identity documents of labour, full details and days worked recorded and reported on a monthly basis.

PSA 8.4.5 Other Time-Related Obligations

Add the following:

The contractor shall provide security personnel. This item shall cover the cost of providing such security personnel the Contractor deems appropriate, taking cognizance of the location of the site, the historical record of incidents of crime in the area and the politically sensitive environment.

PSA-8.5 Sums stated provisionally by Engineer

Insert before the last sentence of Clause 8.5:

“Payment will be made on the basis of the sums actually paid for such work.”

PSA-8.8 Temporary Works

PSA-8.8.1 Main Access road to Works (Construct and Maintain)

Add the following:

The Contractor must take note of the remote vicinity of the bridge site and make allowance for the preparation, maintenance, and reinstatement of the main access road for the duration of the contract as necessary for transport of all plant to site, including piling/drilling plant, and delivery of all materials to site including bridge components and bridge installation equipment or plant supplied by the bridge sub-contractor / supplier. No additional payment for maintenance and reinstatement will be made to the Contractor over and above this all-inclusive sum.

The final alignment of the access routes shall be planned in conjunction with the Engineer/Project Manager and the Environmental Control Officer (ECO) and once finalised only the agreed roads must be used. Existing tracks shall be utilised as far as practicable. Any deviation, widening, or new access shall require prior approval from the Engineer and ECO. Roads must be planned to deviate around significant trees and Red Data Species, marked out in an approved manner by the ECO where necessary.

The Contractor to include approved vehicle turning areas, avoiding selected ecological sensitive areas or species, and have turning area routes approved by the ECO. Temporary access roads must be rehabilitated after usage to contract specifications.

Construction roads and tracks should not be wider than necessary with a maximum width of 3 m. Should a wider road be required, specific approval from the ECO must be obtained, but under no circumstances may the width exceed 4 m in Critical Biodiversity Areas. For two-way traffic, passing bays are to be used instead of continuous road widening.

The Contractor must take note that the access route crosses drainage courses. No works within 32 m of a watercourse may be undertaken without prior approval from the Engineer and ECO. Any temporary structures within this regulated area must:

- Have a footprint of less than 10 m²,
- Be designed to minimise disturbance, and
- Be removed and rehabilitated after use to the satisfaction of the Engineer and ECO.

The Contractor must include allowance for all accommodation of traffic and temporary road signs that will be required. The Contractor must comply with all statutory regulations, including the Environmental Specification and Management Programme (EMPr), environmental legislation, and health and safety specifications during construction, operation, and reinstatement of the site.

The Contractor will receive no compensation in the event that the site could not be accessed due to the condition of the access road or due to restrictions imposed in terms of environmental legislation.

All temporary works to be covered under the Contractor's insurance policies. No claims will be entertained due to damage to the access road.

Add the following new Sub clause:

PSA-8.8.7 Fencing


The unit of measurement shall be metre (m) and the rate shall include for the supply of 1.8m high Bonnox Wire Fencing (Galvanized) including all supports, equipment, labour and excavation required. The fencing shall be removed when no longer required.

Add the following new Sub clause:

PSA-8.8.8 Access to Western Embankment of the River

The contractor must take note that access to the site is only possible from the East of the river and that provision must be made for safe access across the river to the Western embankment for all staff, labour, site visitors, plant, equipment, and material for the duration of the contract.

The contractor is required to submit a method statement to the Engineer for approval, 7 days prior to commencing any construction activities on the Western embankment. Provision to be

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made in terms of the requirements of the health and safety specifications as well as the Environmental Management Plan and Water use licence.

The contractor must visit the site beforehand to acquaint himself with the conditions and restriction on site as no claims due to want of knowledge will be entertained. The contractor to also be aware of the seasonal effects the local climate has on the site conditions and ensure this is considered, as the river water levels, and flow rates will fluctuate throughout the year.

All temporary works to be covered under the Contractor's insurance policies. No claims will be entertained due to access issues to the Western Embankment

Add the following new Sub clause:

PSA-8.8.10 Dewatering

PSA-8.8.10.1 Groundwater

The contractor is referred to the geotechnical report for this project, attached as addendum C4.2, highlighting the high water-table on both embankments of the river, further the Contractor must understand that the river is perennial and water levels indicated in the Geotech report may be exceeded. The contractor must make provision for de-watering all open excavations as necessary for construction to safely proceed until all backfilling of open excavations or trenches are completed.

PSA-8.8.10.2 Temporary Drainage Works – Dealing with River

The contractor to provide temporary drainage works, temporary pumps and other equipment as may be necessary for the protection, draining and dewatering of the works at stream or river crossings, provide stream and river diversions to safeguard the works against floods of an acceptable return period. Rate to include for the design and construction of any dry-dam or similar techniques required by the Contractor to complete the works without delay due to the proximity of the works to the river. The rate further needs to include for any pumping system or backup pumping systems to be designed and supplied by the Contractor.

The contractor will receive no compensation in the event that the works are not accessible due to the proximity of the works to the river.

The contractor must comply with all statutory regulations, including the environmental- & health and safety specifications during construction, operation, and dismantling.

Add the following new Sub clause:

PSA-8.8.11 Temporary launch Platform or structure for bridge deck

The contractor to design and construct a temporary work platform or structure for the launching of the bridge deck. Platform to be long enough to accommodate the bridge section (and launching moment nose if applicable). The contractor to provide the Engineer with drawings and method statement for the construction and removal/dismantling of the temporary platform for the launch, for approval 21 days prior to the planned launch date.

Drawings indicating surveyed ground levels as well as the proposed bridge deck length, section and deck level has been provided to the contractor. The contractor is required to take all the information on the drawings into account, as well as ensuring an on-site investigation has been completed to ensure that the tendered sum is all inclusive of material, equipment and plant required to construct the platform/structure.

Should the contractor require to open a borrow pit for the construction of the temporary platform, all requirements of SABS 1200D Clause 5.2.2.2 are to be adhered to, including the closing of- and reinstatement of the borrow pit.

The contractor must comply with all statutory regulations, including the environmental- & health and safety specifications during construction, operation, and dismantling.

All temporary works to be covered under the Contractor's insurance policies. No claims will be entertained as a result of damage to the temporary launching platform / structure.

PSA-8.9 Dealing with Water

The cost of supplying and operating the equipment for dewatering of excavations and controlling of water as described in PSA 5.5, will be held to be included in the tendered sum Dealing with Water under Section A Preliminary and General and no separate payment will be made for this work.

The sum shall cover the cost for the provision, operation, maintaining and removal of all plant and materials required to deal with any water anywhere on site as required in terms of Subclause 5.1.3 of SABS 1200 D and Subclause 5.1.2 of SABS 1200 DB. No additional payment will be made for "Special water hazards".

The sum shall cover the cost of providing the necessary plant or materials, or both, fully erected and operative on the Site, the cost of operating and maintaining pumps, well points, sheeting, close timbering, and other equipment, as applicable, for 24 hours a day, 7 days a week, throughout the period during which the facilities are required, and the cost of removing such goods and restoring the Site to its original condition on completion of that part of the project for which the temporary works were erected.


PSA 8.10 Freehaul and Overhaul

Notwithstanding any clauses in the Standardised Specifications dealing with transport, freehaul and / or overhaul, no measurement or payment will be made for overhaul. All haulage will be regarded as freehaul and the cost thereof will be deemed to be covered by the rates for the provision or disposal of the applicable material.

PSAB ENGINEER'S OFFICE (SANS 1200AB)

PSAB 1 Scope

PSAB 1.1 Sub-Clause

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Replace the clause with: -

"This specification covers the requirements for office facilities for the Engineer's supervisory staff on site."

PSAB 3 Materials

PSAB 3.1 Nameboards

Replace the clause with: -

The Contractor will be required to supply 2 nameboards under this contract

PSAB 5 Construction

PSAB 5.5 Survey Assistant

Delete the first sentence and substitute the following:

"The Contractor shall make available to the Engineer throughout the duration of the contract one suitably trained and educated labourer for use on and about the site on survey and other work as and when required by the Engineer."

PSC SITE CLEARANCE (SANS 1200 C)

PSC-3 MATERIALS

PSC-3.1 Disposal of Material

Add the following to this clause;

Material obtained from clearing must be disposed off site by the Contractor unless otherwise agreed with the ECO. The Contractor will be held responsible for observing by-laws and regulations of the relevant local authority and for any injury to persons and damage to property caused by any fire starting on site, in his camp, or a fire started for any reason by his employees, regardless of whether such injury or damage is the direct or indirect result of such fire. The Contractor shall indemnify the Employer against all claims or damages arising from this source. Burning of combustible material shall not be allowed.

The location of spoil stockpile sites shall be agreed upon by the ECO prior to commencement of any operations that will generate spoil materials. The Contractor shall ensure that the material does not blow or wash away. If the spoil material is in danger of being washed or blown away, the Contractor shall cover it with suitable material, such as hessian or plastic.

Every spoil site provided by the contractor shall be approved by the local authority in whose area it is located, and the spoiling shall comply with the applicable statutory and municipal regulations as well as the requirements of the owner of the spoil site.

PSC-5 CONSTRUCTION

PSC-5.1 Areas to be cleared and grubbed

The Contractor shall ensure that the areas cleared and grubbed are kept to the minimum area necessary for the execution of the Works.

The Contractor shall clear and grub the area required for the Works, areas on which material will be stockpiled for later use and areas where material is to be dumped and spread, unless instructed otherwise by the Engineer.

No heavy machinery shall be permitted for any purpose, except emergency procedures, without the prior approval of the ECO. Clearing of vegetation shall be conducted by hand. All cleared and trimmed vegetation shall be removed from any natural watercourse to prevent flooding/snagging hazards being created.

PSC-5.2 Cutting of trees

The Contractor shall not remove trees with a trunk girth of more than 1 m without the written permission of the Engineer. Except to the extent necessary for the carrying out of Works (as per an approved method statement), flora shall not be removed, damaged or disturbed. Firewood may not be collected from site unless written approval is provided from the ECO/Engineer.

PSC-5.6 Conservation of Topsoil

Add the following to this clause;

The Contractor is required to strip topsoil together with grass/groundcover from all areas where permanent or temporary structures are located, construction related activities occur; access roads are to be constructed, etc. This must be read together with the contract specifications and conditions.

Topsoil must be stockpiled for later use. Topsoil is to be handled twice only – once to strip and stockpile, and secondly to replace, level, shape and scarify.


Topsoil stockpiles are not to exceed 1.5m in height and should be protected to prevent erosion where needed.

Topsoil stockpiles are to be maintained in a weed free condition.

Topsoil is to be replaced by direct return where feasible (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods.

Topsoil stripped from the road diversion to the temporary crossing and within the 32m zone from the edge of the Mzintlava river must:

- Not exceed 1.5 meters in height;
- Not be compacted;
- Be separated from other stockpiles to avoid soil mixing and maintain soil material for rehabilitation, and be covered with hessian, shade cloth or damp proof course (DPC) in order to avoid erosion.

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- Be located on an area of level ground that will not be in the path of runoff water during a storm, away from the work installed area, drainage lines, areas of valuable vegetation and/or on the bases of the watercourse.

PSC-8 MEASUREMENT AND PAYMENT

PSC-8.2.3 Clear and grub

Add the following:

For the clearance of road reserves, only the plan area of the road reserve will be measured. Measurement for working space will be deemed to be included in the rates for clearance of the road reserve.

The rate tendered for clearing and grubbing shall cover the cost of disposal of the material, unless instructed otherwise by the Engineer.

PSC-8.2.10 Removal and conservation of topsoil

The rate tendered for the removal of in situ topsoil shall, in addition to the items listed in Clause 8.2.10, also cover the cost of stabilizing, watering and protecting the stockpiles of topsoil and the provisions of clause PSC-5.6.

PSD EARTHWORKS (SANS 1200 D)

PSD-2 INTERPRETATIONS

PSD-2.1 Supporting Specifications

PSD-2.1.2

Replace the clause 2.1.2 with the following:

"Any of the other SABS 1200 specifications may form part of the Contract Documents"


PSD-2.3 Definitions

Replace the definition "Borrow" with the following :-

"Borrow material : Material, other than materials obtained from excavations required for the Works, obtained from sources such as borrow pits or the authorised widening of excavations. 'Borrow' shall have a corresponding meaning."

Replace the definition for "specified density" with the following:

"Specified density: the specified dry density expressed is a percentage of modified AASHTO dry density."

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Replace the definition "Stockpile" with the following :-

"Stockpile (Verb) : The process of selecting and, as may be necessary, loading, transporting and off-loading material in a designated area for later use and a specific purpose."

Add the following definitions :-

"Fill : An embankment or terrace constructed from material obtained from excavations or borrow.

Fill (Material) : Material used for the construction of an embankment or terrace.

Roadbed: The natural in situ material on which the fill, or in the absence of fill, the pavement layers, are constructed."

PSD-3 MATERIALS

PSD-3.1 Classification for excavation Purposes

PSD-3.1.1 Method of Classifying

Add the following:

The classification of material other than 'soft excavation' shall be agreed upon before excavation may commence.

The Contractor shall immediately inform the Engineer if and when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Engineer in good time shall entitle the Engineer to reclassify, at his discretion, such excavated material.

PSD-3.1.2 Classes of Excavation


Notwithstanding the provisions of this subclause no distinction will be made between soft and intermediate excavation.

PSD-3.2.3 Material Suitable for Backfill or fill against structures

Replace the contents of this subclause with the following:

"Material used for backfill behind structures shall generally be the material excavated, subject to the following conditions:

- a) The material shall not contain an excessive number of stones retained on a 50 mm sieve; and
- b) The material shall not contain large clay lumps that do not break up under the action of compaction equipment, and
- c) The liquid limit of the material shall not exceed 40; neither shall the PI exceed 18.
- d) The minimum compaction shall be 93% of modified AASHTO maximum density."

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PSD-3.3 Selection

PSD-3.3.1 General

Replace the second paragraph with the following:

"The Contractor shall deal selectively with materials from all excavations to ensure that no acceptable backfill of bedding material is contaminated by material unfit for use. No additional payment shall be made in this regard and all costs related to the above selection process shall be included in the applicable payment items. Should useful material be contaminated to such an extent that it is regarded as unfit for use the Contractor shall, at his own cost, dispose of this material and replace it with material of an equivalent standard to the acceptable in situ material"

PSD-5 CONSTRUCTION

PSD-5.1 Precautions

PSD-5.1.1.1 Barricading and Lighting

Replace "Machinery and Occupations Safety Act, 1983 (Act 6 of 1983) with Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Construction Regulations 2003"

PSD-5.1.1.2 Safeguarding of Excavations

Add the following to paragraph (b) (1):

"Payment for supporting the sides of excavations and trenches shall be deemed to be included in the rates tendered for excavations. No separate payment will be made in this regard and it will be the Contractor's responsibility to ensure the safety and stability of all excavations.

Where trenches have to be widened to accommodate manholes, junctions, boxes, etc, the cost of supporting the vertical sides of such additional excavations will be deemed to be included in the rates tendered for excavations"

Add the following to paragraph (b) (2)

"The slope of the sides of an excavation or trench may never be steeper than 60° to the horizontal and all costs incurred to slope the sides of an excavation or trench will, irrespective of the angle of the slope, be deemed to be included in the rates quoted for excavation".

PSD-5.1.1.3 Explosives

Replace with the following:


Blasting is not permitted for this contract.

PSD-5.2 Methods and Procedures

PSD-5.2.1 Site Preparation

PSD-5.2.1.2 Conservation of Topsoil

The Contractor is required to strip topsoil together with grass/groundcover from all areas where permanent or temporary structures are located, construction related activities occur; access

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roads are to be constructed, etc. This must be read together with the contract specifications and conditions.

Topsoil must be stockpiled for later use. Topsoil is to be handled twice only – once to strip and stockpile, and secondly to replace, level, shape and scarify.

Topsoil stockpiles are not to exceed 1.5m in height and should be protected to prevent erosion where needed.

Topsoil stockpiles are to be maintained in a weed free condition.

Topsoil is to be replaced by direct return where feasible (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods.

Topsoil stripped from the road diversion to the temporary crossing and within the 32m zone from the edge of the Mzintlava river must:

- Not exceed 1.5 meters in height;
- Not be compacted;
- Be separated from other stockpiles to avoid soil mixing and maintain soil material for rehabilitation, and be covered with hessian, shade cloth or damp proof course (DPC) in order to avoid erosion.
- Be located on an area of level ground that will not be in the path of runoff water during a storm, away from the work installed area, drainage lines, areas of valuable vegetation and/or on the bases of the watercourse.

PSD-5.2.2 Excavations

PSD-5.2.1 Excavation for General Earthworks and for Structures

Replace the first sentence of paragraph (e) with the following:

"Where excavations have been carried below the authorised levels, the Contractor shall backfill such excavations to the correct level with approved G5 gravel material or better compacted to 98% of modified AASHTO density or to the density of the surrounding material, whichever is the higher density.

Where excavations for structures have been carried out in hard material, the Engineer may direct that over-excavation be backfilled with Class 10MPa concrete if there is a danger of settlement or differential settlement of the foundations.

Where the sides of excavations against which concrete is to be cast have been over-excavated or have collapsed partially, the Contractor shall re-trim the excavations if necessary and, unless other remedial measures are agreed to by the Engineer, shall cast the concrete for the structure, including the additional concrete that may be required as a result of the over-excavation or partial collapse. The cost of the additional concrete or remedial measures shall be for the Contractor's account.

PSD-5.2.2.3 Disposal

Replace the second sentence with the following;

The location of spoil stockpile sites shall be agreed upon by the ECO prior to commencement of any operations that will generate spoil materials. No spoil material shall be dumped outside the defined site. The Contractor shall ensure that the material does not blow or wash away. If the spoil material is in danger of being washed or blown away, the Contractor shall cover it with suitable material, such as hessian or plastic.

Every spoil site provided by the contractor shall be approved by the local authority in whose area it is located, and the spoiling shall comply with the applicable statutory and municipal regulations as well as the requirements of the owner of the spoil site.

Payment to the Contractor in respect of locating and making arrangement of suitable spoil sites and spoiling material at such sites will be made in accordance with the provisions of Subclause PSD 8.3.15"

PSD-5.2.2.4 Selection and Stockpiling

Approval or designation of the material in a particular borrow pit or excavation for a particular purpose does not imply that all the material in the borrow pit or excavation is suitable for the particular purpose for which the said approval or designation relates, nor that all material in the borrow pit or excavation soil be used for the particular purpose. The Contractor shall select suitable material from that borrow pit or excavation, discard unsuitable material and reserve material for other purposes as necessary.

The Contractor shall organise and carry out its operations in such a manner as will prevent the contamination of suitable embankment fill, and backfill material with unsuitable materials. Any excavated material which becomes, in the Engineer's opinion, unsuitable for use in embankments, fills or backfills as a result of contamination shall dispose of in a manner acceptable to the Engineer and shall be replaced by the Contractor with materials acceptable to the Engineer, all at the Contractor's cost.

When required, or when ordered by the Engineer, material shall be temporary stockpiled at sites indicated by the Engineer for later use. The additional costs of stockpiling material shall be paid to the Contractor in accordance with the provisions of Subclause PSD 8.3.145."

PSD-5.2.3 Placing and Compaction

PSD-5.2.3.1 Embankments

Replace the first sentence of the sixth paragraph with the following:

"Each layer shall be compacted at OMC to a density as specified and in the case of cohesive soil and 100% of modified AASHTO maximum density in the case of non-cohesive soil".

PSD-5.2.3.3 Material Layers

The material of each area of fill shall, unless otherwise approved, be deposited in layers of thickness, before compaction, not exceeding 150 mm. The material shall be spread to form a layer that is approximately uniform thickness and graded over the whole area of the fill site.

Each layer shall be compacted at OMC to a density of at least 93% of modified AASHTO density in the case of cohesive soil or 100% in the case of non-cohesive soil. Should the material be too wet, owing to rain or any other cause, it shall be harrowed and allowed to dry out to the correct moisture content before compaction is undertaken.

The Contractor shall ensure that stormwater will be at all times be discharged uniformly over the full fill area or through specially prepared and protected drainage ditches to prevent scouring of the slopes."

PSD-5.2.3.4 Backfilling over-excavation and Overbreak

The material to be used shall comply with 3.2.1, except that the maximum particle size shall not exceed $\frac{2}{3}$ of the thickness of the layer being placed, and shall be compacted to at least 93% of modified AASHTO maximum density.

PSD-5.2.5 Transport for Earthworks

Replace the contents of Subclause 5.2.5 with the following:

"The transport and haul of all excavated materials, as well as material imported from commercial sources or borrow pits selected by the Contractor, irrespective of the distance and source, shall be deemed to be freehaul, the cost of which shall be included in the Contractor's tendered rates and prices for the excavation of the materials. No separate compensation shall apply for the transportation of excavated materials.

PSD-6 TOLERANCES

PSD-6.1 POSITIONS, DIMENSIONS, LEVELS, ETC

Add the following:

"PSD-6.1 (c) Bulk Earthworks

The tolerances applicable to excavations for structural foundations (degree accuracy II), as specified in Subclause 6.1 (a) shall apply, provided no ponding areas or adverse grades result"

PSD-7 TESTING

PSD-7.2 TAKING AND TESTING OF SAMPLES

Replace the contents of this subclause with the following:

"The Contractor shall arrange with the approved independent laboratory engaged by the Contractor in terms of clause PS.8.5, to carry out sufficient tests on a regular basis as agreed between it and the Engineer to determine whether the degree of compaction, and, where applicable, the quality of materials used, comply with the Specifications and shall submit the result of the test to the Engineer in a form approved by him.

The compaction requirement for fills shall be deemed complied with when at least 75% of the dry-density tests on any lot show values equal to or above the specified density and when no single value is more than five percentage points below the specified value"

PSD-8 MEASUREMENT AND PAYMENT

PSD-8.3 SCHEDULED ITEMS

PSD-8.3.1 Site Preparation

Replace Clause 8.3.1.1 and 8.3.1.2 with the following:

"Where Site preparation such as clearing, grubbing, the removal of large trees or the removal and stockpiling of topsoil or surface obstructions are required the provisions and scheduled items of SABS 1200C shall apply:

PSD-8.3.2 Bulk Excavations

Replace the contents of subclause 8.3.2 with the following:

"PSD-8.3.2.1 Excavate in all materials and use for embankment or backfill or dispose as orderedUnit: m³

"The unit of measurement shall be the cubic meter measured in place in accordance with Subclause 8.2 of SABS 1200D.

Separate items will be scheduled for each type of excavation or structure and for each type or manner of disposal of excavated material.

The tendered rates shall cover the cost of excavation in all material, complying with all the precautions required in terms of Subclause 5.1 of SABS 1200D (as amended) in addition to the cost of excavation, for basic selection and keeping selected material separate, for loading, transporting within the applicable freehaul distance, off-loading at the spoil or stockpile site, maintaining and finishing the spoil site, spreading, backfilling, watering, compacting as specified on the Drawings, final grading, shaping and trimming, for complying with the requirements for tolerances, providing for testing, finishing and tidying, all in accordance with the specifications.

The rate shall further also provide for backfilling any over-excavation or overbreak in accordance with the requirements of PSD-5.2.3.3"

PSD-8.3.2.2 Extra-over items PSD-5.3.2.1 for:

(a) Hard rock excavationUnit: m³


(b) Boulder excavation, Class A Unit: m³

(c) Boulder excavation, Class B Unit: m³

The rate shall cover the additional cost of the operations enumerated in Subclause 8.3.2.1 above for any portion of the excavation that is classified as hard rock, boulder excavation Class A or boulder excavation Class B as applicable.

NOTE:

The rates tendered for Subclauses 8.3.2.1 and 8.3.2.2 above shall also provide for backfilling any over-excavation or overbreak in accordance with the requirements of PSD-5.2.3.3"

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PSD-8.3.3 Restricted Excavation

Replace the heading of subclause 8.3.3 (a) and the contents of the first two paragraphs with the following:

"PSD-8.3.3 (a) Excavate for Restricted Foundations, Footings, Trenches, Stormwater Drains Outside Road Reserve, Open Drains and Cut-Off Drains, in All Materials And Use For Fill Or Backfill Or Berm Or Dispose, As Ordered.....Unit: m³

Separate items will be scheduled for each category of excavation and for each class or manner of disposal of excavated material.

All restricted excavation shall be measured by volume.

Replace "in 5.2.2.1 - 5.2.2.3 (inclusive)" at the end of subclause (a) with "in Clauses 5.2.2.4 (inclusive)."

Delete clause 8.3.3 (b) (1) as well as any reference to intermediate excavation in subclause (b). For the purposes of measurement and payment, excavation other than hard rock and boulder excavation will not be separately classified (refer PSD-3.1.2)"

"PSD-8.3.3 (c)* Extra over 8.3.3 (a) for hand excavation where ordered.....Unit: m³

This item shall refer to hand excavation ordered by the Engineer or when the Engineer considers that, owing to circumstances, excavation by mechanical excavators is not practicable. It shall not apply to hand excavation for trimming or finishing an excavation made by mechanical means.

The rate tendered shall cover the additional cost, extra over that provided for under 8.3.3 (a), for carrying out restricted excavation by hand tools where ordered by the Engineer.

The volume shall be computed from the dimensions specified, shown on the drawings, or ordered by the Engineer.

NOTE:

Normal handwork required cleaning and trimming the sides and bottoms of mechanically completed restricted excavations will not qualify for payment in terms of this Clause,"

"PSD-8.3.16* Extra and dispose of unsuitable material from sides or bottom of restricted foundations, footings, trenches and stormwater drains where ordered and replace with:

(a) Selected material complying with Subclause 3.2.2 of SABS 1200ME compacted to 90% of modified AASHTO maximum densityUnit: m³

(b) 15Mpa/19 concreteUnit: m³

Separate items will be scheduled for each type of excavation, source of backfill material and manner of backfill.

The rates tendered shall cover the cost of excavating the unsuitable material to the extend ordered by the Engineer, disposing of the material at a spoil site provided by the Contractor and subsequent backfilling of the excavation using selected material or concrete as ordered.

NOTE:

The work required to construct the selected layer beneath areas to be concrete lined will be measured for payment under (a) as applicable. The unit of measurement shall be the cubic meter of selected material placed and compacted. Any excavation required to accommodate the concrete lining will be deemed to be covered by Subclause 8.3.4 of SABS 1200DM".

PSDK GABIONS AND PITCHING (SABS 1200DK)

PSDK 3 MATERIALS

PSDK 3.1.2 Gabion cages

Replace the last sentence with the following:

"Steel wire used to manufacture the mesh, lacing, bracing and selvedge shall be heavily Galfan coated to Class A according to EN 10244-2 Table 2 and the wire shall further be PVC coated to a nominal thickness of 0.5 mm.

The properties and tolerances of the steel wire shall further, as a minimum, comply with following:

Wire for mattresses				
Use	Units	For Lacing	For Mesh	For Selvedge
Galvan + PVC	Ø mm	2,2 / 3,2	2,2 / 3,2	2,7 / 3,7
Wire Tolerance*	Ømm	+/- 0.08	+/- 0.08	+/- 0.08
Quantity of Galfan **	g/m²	230	230	245
Tensile strength ***	N/mm²	350 - 575		
* to SANS 675 / ** To EN 102442-2, Table 2, Class A / *** To SANS 1580 and SANS 675				

Wire for mattresses	Wire for mattresses	Wire for mattresses	Wire for mattresses	Wire for mattresses
Use	Use	Use	Use	Use
Galvan + PVC	Ø mm	2,2 / 3,2	2,7 / 3,7	3,4 / 4,4
Wire Tolerance*	Ømm	+/- 0.08	+/- 0.08	+/- 0.1
Quantity of Galfan **	g/m²	230	245	265
Tensile strength ***	N/mm²	350 - 575		
* to SANS 675 / ** To EN 102442-2, Table 2, Class A / *** To SANS 1580 and SANS 675				

PSDK 3.1.3 Geotextile

Replace the last sentence with the following:

"The make and grade of the geotextile shall, as a minimum, comply with that specified on the drawings and in the Bill of Quantities."

PSDK 3.2.1 Stone

Replace the contents of Table 2 with the following:

TABLE 2 SIZE AND MASS OF INDIVIDUAL STONES FOR PITCHING			
1	2	3	4
Size / mass of pitching	Thickness of pitching mm, min	Least dimension mm, min	Mass kg , min
Extra heavy	600	300	180
Heavy	400	190	50
Medium	300	150	27
Light	200	110	11

PSDK 5 CONSTRUCTION

"PSDK 5.2.8* General

In addition to the above, gabion mattresses and boxes shall be installed strictly in accordance with the approved manufacturer's installation guidelines and the Contractor shall ensure that sufficient pliers, nippers Spenax tools as well as closing tools are available for use by his labour force."

PSDK 5.3.1 General

Notwithstanding the provisions of this Clause the excavation footing trench shall be backfilled with Class 20/19 concrete to the proposed top level of the pitching.

PSDK 5.3.2 Grouted pitching

Add the following:

"The exposed stone surfaces shall be cleaned of excess mortar within 1 day of being grouted."

PSDK 5.3.3 Grouted pitching

Replacing the "(Table 4)" in the second line of the first paragraph with "(Table 2)"

PSDK 6 TOLERANCES

Notwithstanding the provisions of this Clause, the materials and the finish of the work applicable to all gabion work shall be to Degree Accuracy I and the permissible deviations shall be within the limits given for a Degree of Accuracy I.

PSDK 8 MEASUREMENT AND PAYMENT

Replace the heading and contents of Clause 8.2.1 with the following:

PSDK 8.2.1 Surface preparation for bedding gabionsUnit: m³

The rate tendered shall cover the cost of all labour, plant and equipment required to effect minor shaping as well as compact any loose material to leave a firm surface, ready for bedding the gabion cages, mattresses and pitching."

PSDK 8.2.5 Pitching

Notwithstanding the provisions of this Clause the excavation and backfill of footing trenches will be measured for payment under PSDK 8.2.8

PSDK 8.2.8 Excavation and Concrete Backfilling of Footing Trenches for Pitching.....Unit: m³

The rates tendered shall cover the cost of excavating footing trenches over the lengths, widths and depths ordered as if in soft material, trimming trenches, compacting inverts, class 20/19 concrete backfilling, as well as the cost of loading, transporting within a free haul distance of 0,5 km and disposal of excavation material as directed.

The volume will be computed from the dimensions ordered. No payment will be made for over-excavation or resultant additional concrete backfill.

PSDM EARTHWORKS (ROADS, SUBGRADE) (SANS 1200 DM)

PSDM-1 Scope

The construction of road verges, including where such construction extends beyond the road reserve, shall be carried out under this specification.

This specification shall also cover the construction of the pioneer layer.

PSDM-2 Interpretations

PSDM-2.1 Supporting specifications

Delete from Clause 2.1(c) "or SABS 1200 DA, as applicable" and throughout the specification delete all reference to SABS 1200 DA.

PSDM-2.3 Definitions and Abbreviations


Notwithstanding the definition of roadbed given under Clause 2.2 of SABS 1200M, all in-situ surfaces requiring compaction as indicated on the drawings, shall be classified as roadbed.

PSDM 3 Materials

PSDM 3.1 Classification for excavation purposes

Notwithstanding the provisions of this Clause, the excavation of material will, for purposes of measurement and payment, be classified as specified in PSD-3.1.2

PSDM 3.2.2 Fill

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Notwithstanding the requirements of this Clause, material from commercial sources or borrow pits located by the Contractor, to be used in the fill, shall comply with the requirements of Clause 3.2.3 and PSDM 3.2.3

PSDM 3.2.3 Selected Layer

Replace the contents of this Clause with the following:

- (a) Maximum particle size 60% of compacted layer thickness
- (b) Unstabilised selected layer
- (i) Upper selected layer

Minimum CBR at 93 % of modified AASHTO density: 15

Maximum PI: 12 (the Engineer has the right to alter this requirement to 3 x the grading modulus + 10)

Note:

The requirements for the upper selected layer also apply where only one selected layer is specified

- (ii) Lower selected layer

Minimum CBR at 93 % of modified AASTO density: 7

Maximum PI: 12 (the Engineer has the right to alter this requirement to 3 x the grading modulus + 10)

PSDM 3.3 SELECTION

Notwithstanding the provisions of this Clause, the Contractor shall note that the excavation from the cutting shall be utilized for the construction of the lower layers of fills.

PSDM 5 Construction

PSDM 5.1.2 Accommodation of Traffic

The requirements of Clauses PSA 5.10 and PSD-5.1.6 shall apply regarding the control and temporary accommodation of traffic

PSDM 5.2.2.2 Dimensions of cuts

Delete "suitable material7" in the fifth line and replace with "material complying with 3.2.3 and PSDM 3.2.3"

Add after "drawings" in the second line of this Subclause "which shall include for channels and sidewalks with the road reserve".

PSDM 5.2.2.3 Use of material

Add after "borrow pits" in the second line of Subclause (d): "or commercial sources."

Add the following after Subclause (d):

"(e) Commercial sources

The provisions of subclause PSD-5.2.2.5 or SABS 1200D as amended shall apply"

PSDM 5.2.2.5 Disposal of Surplus or Unsuitable Material

Add after "directed" in the second line of this Clause "(refer PSD-5.2.2.3)".

PSDM 5.2 Methods and procedures

PSDM 5.2.3.2 Removal of Unsuitable Ground

Replace the second sentence of paragraph (a) with the following:

"The excavated spaces shall then be backfilled with approved imported material compacted to the required density".

Add the following sentence to paragraph (b):

"Unsuitable excavated material will be paid for as cut to spoil."

PSDM 5.2.3.3 Treatment of roadbed

Add the following to clause (a):

"The depth of compaction shall be 150 mm. Where road bed preparation takes place in sand the in-situ sand layer is to be watered and compacted to 100% of mod. AASHTO max. density. The surface of the in-situ sand layer is to be firm and smooth in order to receive the subsequent S.S.G. or subbase layer, as the case may be. To this end the Engineer may order that unnecessary construction traffic remain off the finished in-situ sand layer until the subsequent layer has been completed".

PSDM 5.2.4.2 Placing and compaction


Material used for filling behind kerbs above subgrade level and below sidewalk base or gravel surfacing shall be of selected subgrade quality. This material shall be compacted to at least 93% of mod. AASHTO max. density (100% in the case of sand). The Contractor may however, at his own additional expense, construct all or portion of this fill using subbase material rather than selected subgrade material.

PSDM 5.2.4.3 Finishing

Notwithstanding the provisions of this Clause the requirements of PSDM 5.2.9 shall as applicable apply to the finishing off of verges.

PSDM 5.2.5 Selected Layer

Replace the contents of this Clause with the following:

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"Except with regard to density the requirements of Clause 5.2.4 shall apply. The degree of compaction shall be:

Upper selected / Selected:	95% of modified AASHTO maximum density
Lower selected:	93% of modified AASHTO maximum density

PSDM 5.2.8 Transport

Replace the contents of this Subclause with the following;

"The provisions of Subclause PSD-5.2.5 of SABS 1200D (as amended), shall apply.

PSDM 5.2.9 Trimming and grading of verges

During the initial earthworks the verge width shall be cut or filled to approximately the final level and shall be kept trimmed and tidy during construction of the works. After completion of the road layers, excluding the base course with surfacing and paving or gravel wearing course, and after construction of the necessary kerbs, including the satisfactory backfilling behind the kerb, the verge shall be trimmed off to the lines and levels shown on the drawings or as specified. That is, all backfill behind kerbs, trimming, shaping and clean up in a road reserve is to be completed prior to commencing with the construction of either the gravel wearing course, premix or concrete block paving.

The verge material shall consist of that material which would normally occur at that position or depth when in cut and shall not be contaminated by foreign materials such as bricks, base course material, horticulturally inferior materials from trench excavations, etc. Verges in fill conditions are to consist of the material as specified for the fills and similarly not be contaminated with foreign materials.

Over those sections of verge where grass is to be planted or where the Engineer deems it necessary to spread topsoil, he may instruct the Contractor at the stage of the major earthworks operation to work to levels altered from those shown on the drawings.

Topsoil may be provided from stockpiles on site in which case the Contractor shall load, transport and spread as ordered by the Engineer. In the case of topsoil provided and imported by the Contractor the quality of the topsoil shall be approved of by the Engineer beforehand.

The Contractor shall be responsible for taking the necessary precautions and measures to control the dust nuisance which may arise due to his operations on the verge, whether from the natural ground surface or topsoil layer, until the verge is accepted by the Engineer.

PSDM 5.2.11 REQUESTING OF TESTS

Tests and Inspections of the works will only be carried out by the Engineer once the appropriate test / inspection request forms have been fully completed.

Test/inspection request forms can be obtained from the Engineer.

PSDM 7 TESTING

Replace Table 2 and the contents of Clause 7.3.2 with the following:

"The dry density requirements for a particular lot of selected layer or wearing course shall be deemed to be satisfied if the average density and the results of individual tests meet the requirements specified in Table 2 below. Refer to Clause PSD-7.2 for the requirements for fill.

TABLE 2 - DENSITIES

1	2	3	4	5
Layer	Specified density (% for modified AASHTO density)	Number of tests per lot	Average density %	Minimum density for any single test %
Upper selected	95	3 and 4 5 6	95,1 95,4 95,6	91,4 91,2 91,0
Lower selected layer or pioneer layer	93	3 and 4 5 6	93,1 93,4 93,6	89,4 89,2 89,0

PSDM 7.4 INSPECTIONS AND TESTING BY ENGINEER

The requirements of PSM 7.3 shall apply."

PSDM 8 MEASUREMENT AND PAYMENT

PSDM 8.1 BASIC PRINCIPALS

Add the following:

"The requirement of PSM 8.2 shall apply. The Contractor shall further make provision in the various rates for the construction of the roadbed, fill and selected layer for the cost of his own process control testing and the cost of complying with PSDM 6.5 and PSDM 7.4"

PSDM 8.2 COMPUTATION OF QUANTITIES

Replace Clauses 8.2.1 to 8.2.3 (inclusive) with the following:

PSDM 8.2.1 The Provision of Clause 8.2.1 of SABS 1200D Shall Apply


PSDM 8.2.2 The Provision of Clause 8.2.2 of SABS 1200D Shall Apply

PSDM 8.2.3 The Provision of Clause 8.2.2 of SABS 1200D Shall Apply

PSDM 8.2.8 Verifying Quantities.

Replace the first sentence of this Clause "before the work ... quantities" with the following:

"After the works have been set out and the area cleared (including demolition of buildings and removal of brick and asphalt paving as well as surface obstructions), the Contractor shall allow

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the Engineer reasonable time to take cross-sections for the purpose of measurement and payment of cut and fill quantities, the latter being subject to the adjustments stipulated in Clause 8.2.2

PSDM 8.3 SCHEDULED ITEMS

The rates for treatment of road-bed (8.3.3), cut and borrow to fill (8.3.4) and selected layer (8.3.5), shall also cover the cost of all testing.

PSDM 8.3.3 Treatment of Roadbed

Add the following to clause 8.3.3 (a):

"(4) Minimum of 93% of modified AAHSTO maximum densityUnit: m³

Add the following paragraph to the end of Clause 8.3.36 (a):

"The unit of measurement shall be the cubic meter of material re-compacted as specified and the volume shall be determined from levelled cross-sections on which are superimposed the levels to which the roadbed is to be constructed. When material is imported to make up required volume, such material will be paid for as cut or borrow to fill as relevant.

NOTE:

No additional payment will be made for difficulty work or hand operations in confined areas."

Replace the heading of Subclause (b) with the following:

"(b) In-place treatment of roadbed in hard rock material by"

PSDM 8.3.4 (a) Cut to Fill, Borrow to Fill


Replace the contents of this Clause with the following

"(a) cut to fill compacted to 93% of modified AASHTO maximum density.....Unit: m³

The rate tendered shall cover the cost of excavating from the site as if in soft material, transporting, preparing processing, shaping, watering, mixing, compacting to percentage of modified AASHTO maximum density specified, trimming and testing the fill.

Borrow to fill from commercial or off sit sources located by the Contractor compacted to 93% of modified AASHTO maximum densityUnit: m³

The rate tendered shall cover the cost of acquiring the material from commercial or off site sources located by the Contractor, any excavation and selection required, loading, transporting to the point of use irrespective if distance, temporary stockpiling if necessary, placing, watering, compacting to percentage of modified AASHTO maximum density specified, trimming and testing the fill.

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No additional payment will be made for difficulty work or hand operations in confined areas.

Replaced the heading and contents of Clause 8.3.5 with the following:

"PSDM 8.3.5 Selected Layers

(a) Selected layers using material cut from the site and compacted to

(i) 93 % of modified AASHTO maximum densityUnit: m³

(ii) 95 % of modified AASHTO maximum densityUnit: m³

The rate tendered shall cover the cost of excavating as if in soft material, selecting loading transporting, placing, watering, compacting to percentage of modified AASHTO maximum density specified, trimming and testing the selected layer.

(b) Selected layers using material from commercial or off site sources located by the Contractor, compacted to:

(i) 93 % of modified AASHTO maximum density.....Unit: m³

(ii) 95 % of modified AASHTO maximum density.....Unit: m³

The tendered rate shall cover the cost of acquiring the material from commercial or off site sources located by the Contractor, any excavation and selection required, loading, transporting to the point of use irrespective of distance, temporary stockpiling if necessary, placing watering, compacting to percentage of modified AASHTO maximum density specified, trimming and testing the selected layer.

NOTE:

No additional payment will be made for difficult work or hand operations in confined areas."

Replace the heading and contents of Clause 8.3.6 with the following:

"PSDM 8.3.6 Extra Over items 8.3.4 and 8.3.5 for Excavating and Breaking Down Material in

(a) Hard excavationsUnit: m³

Measurement will be in terms of 8.2.1 and 8.2.2. the rates will be paid extra-over the rates for items 8.3.4 and 8.3.5 and shall cover the additional cost of excavation in the various materials including the breaking down of the material as specified.

PSDM 8.3.7 Cut To Spoil or Stockpile from

Delete paragraph (b). In terms of PSDM 3.1 intermediate excavation will not be separately measured for payment

Add the following:

"Separate items will be scheduled for cut to spoil and cut to stockpile. The rate tendered shall further cover the cost of complying with the requirements of Clause 5.2.3.2 irrespective of the

depth or extent of the material ordered to be removed, or whether the order to remove unsuitable material is given after the completion of any initial cut operation.

"The tendered rate shall further, in the case of cut to spoil, include full compensation for transporting the material regardless of the distance involved and for all other incidental cost to dispose of the spoil material. (Refer also PSD-5.2.2.3, PSD-5.2.5 and PSDM 8.3.12)."

PSDM 8.3.9 Overbreak of excavation in

Delete sub-item (a). In terms of PSDM 3.1 intermediate excavation will not be separately measured for payment.

PSDM 8.3.11 Extra over 8.3.2, 8.3.4 or 8.3.5 for temporary stockpiling of material

Add the following:

"The temporary stockpiling of material from commercial sources or borrow pits located by the Contractor will not be measured for payment."

PSDM 8.3.12 OVERHAUL

Delete this item as no overhaul will be paid on material for the purposes of this contract and all the costs for transporting material shall be included in the applicable tendered rates and amounts.

PSDM 8.4 IMPORTATION OF MATERIAL

The rate for selected subgrade material imported from commercial sources shall cover the cost of supply, transport, placing and compaction of the selected subgrade layer as specified.

PSDM 8.5 VERGES

The cost of constructing verges shall be included in the rates tendered for the construction of the subgrade.


PSDM 8.3.13 SURFACE FINISHES

Add the following to Clause (c):

The major earthworks required to bring the verge to the required level and the additional depth of excavation or reduction in fill height as ordered for the topsoil operation shall be measured and paid for under the appropriate excavation item.

Only the following verge item will be measured and paid for separately.

The unit of measurement for trimming and grading of verges shall be per square metre.

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The rate tendered for the above item shall include for all things necessary to complete the work as specified.


PSF PILING (SANS 1200 F)

This specification applies to all piling works in the contract

The standard specifications on which this contract is based is the “STANDARD SPECIFICATION FOR CIVIL ENGINEERING CONSTRUCTION – SABS 1200F”

Piling Contractors Compliance List

- 1. The piling contractor needs to demonstrate that they have sufficient experience in undertaking piling contracts of this magnitude and nature. This will include demonstration of:**
 - a. Demonstrate that they have completed at least ten piling contracts of this magnitude and type within the Republic of South Africa.
 - b. Provide at Least five contactable references for projects listed above.
 - c. List of equipment indicating that they meet the piling type requirements as listed in items 4 through to 6 below. Including:
 - i. List of piling rigs available for the contract, minimum three number,
 - ii. List of Mixing equipment
 - iii. List of testing equipment
- 2. The piling contract will be a design and supply contract i.e. it remains the responsibility of the piling contractor to design and construct the pile system.**
The number of piles currently indicated on the construction drawing needs to be provided as a minimum.
- 3. Staffing requirements:**
 - a. *Design Engineer/responsible person* - Piling contractor needs to ensure that the piles are designed by a professionally registered engineer with engineering council of South Africa. The professionally registered individual needs to demonstrate that they have a minimum ten years experience post professional registration, as a pile/foundation designer.
 - b. *Contracts Manager* – needs to demonstrate that they have a minimum twenty years experience working for a main piling contractor, within the republic of South Africa, with a minimum of ten years as a contracts manager.
 - c. *Site Agent* - needs to demonstrate that they have a minimum fifteen years experience working for a main piling contractor, within the republic of South Africa, with a minimum of five years as a site agent/site manager.
- 4. The piling contractor needs to completely familiarize themselves with the contents of the**

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geotechnical report and equipment provided needs to be of sufficient capacity for construction of the pile type described.

5. The recommended pile type for the project will be permanently cased, rotary bored, reinforced concrete ODEX piles.

6. GEOTECHNICAL INFORMATION

The following geotechnical information is provided as part of this specification:

<i>Document Name</i>	<i>Document Number</i>
GEOTECHNICAL REPORT FOR THE PROPOSED DIKIDIKINI PEDESTRIAN BRIDGE, NTABANKULU LOCAL MUNICIPALITY, PROVINCE OF THE EASTERN CAPE	Ref No: 2022\Uhambiso Consult\Dikidikini Bridge\Report\Report 31.1.2023 Rev1

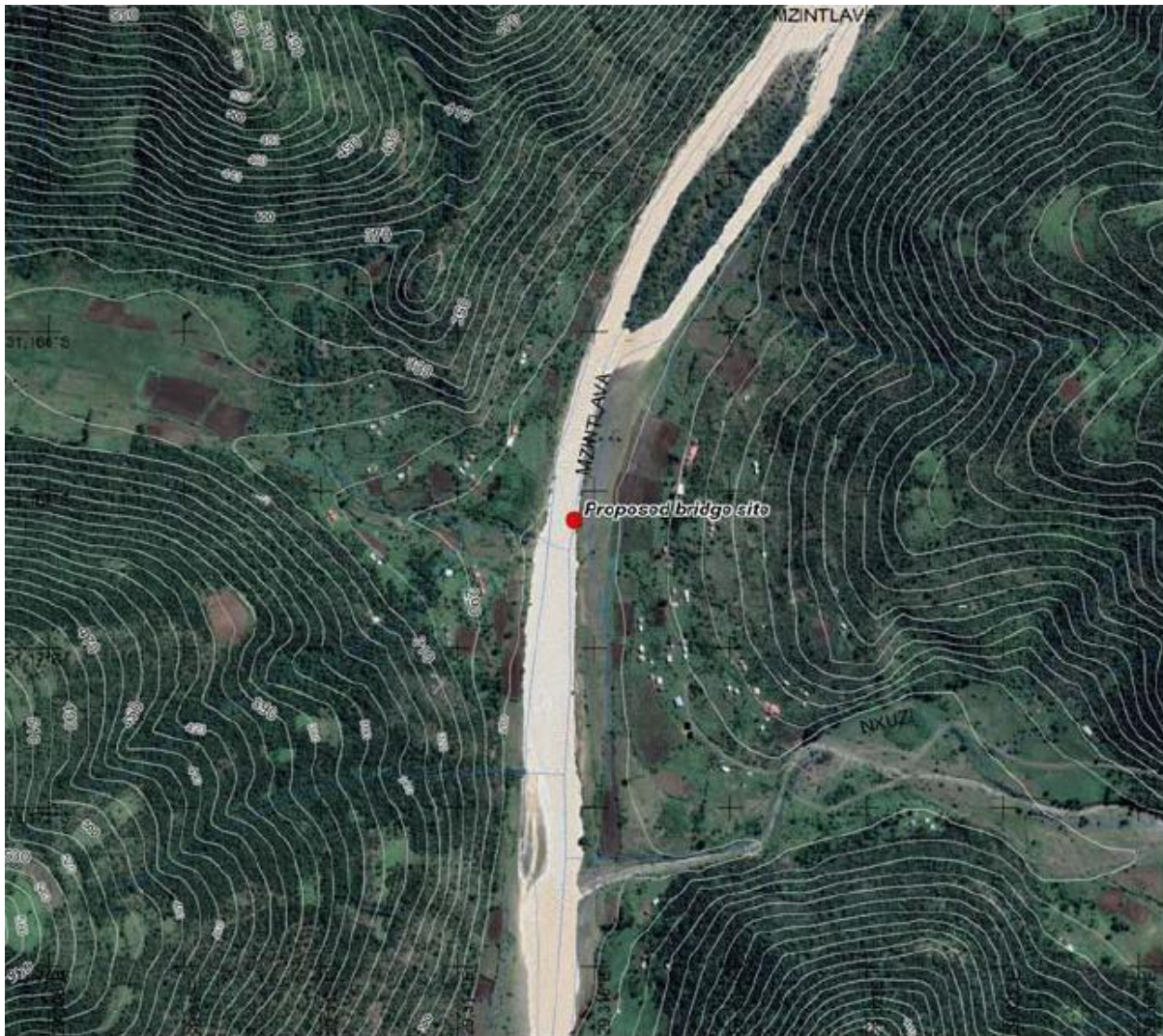
7. DRAWINGS

The following drawings are relevant to the piling. In terms of pile sizing and type these drawings are preliminary and it remains the responsibility of the piling sub-contractor to provide drawings and designs as detailed in section 5.1.1 of this document.

Drawing	Drawing Number
Pile Layout and Details	A_GA30-01_T03

8. Site location

The site is located at the Mzintlava River approximately 68km Northeast of Mthatha. Please see below for the location of the site.



9. Site Access

The contractor is to fully familiarize themselves with the site. It remains the responsibility of the contractor to allow for accessing the site. Ensure that they are able to deliver equipment to the site.

Access of piling rigs to both embankments of the river will remain the responsibility of the piling contractor and the contractor needs to ensure that this is properly considered. No additional costs will be entertained for access to the either embankment. This needs to be done considering the perennial nature of the river.

The below clauses will take precedence over the clauses given in SABS 1200F

PSF3 MATERIALS

In addition to clause three (3)

The following minimum material performance specifications are required:

Reinforcement:

High yield strength: $f_y = 480 \text{ MPa}$

Mild steel: $f_y = 250 \text{ MPa}$

Concrete/Grout:

Concrete will be specified in terms of cube strength. All grout will be 30Mpa and will have a maximum water cement ratio of 0.55.

PSF5 CONSTRUCTION

PSF5.1 GENERAL

In addition to clause 5.1.1:

PSF5.1.1.1 Pile Type

The recommended pile type for the works will be permanently cased, rotary bored, reinforced concrete ODEX piles.

The piles shall be augured and cased as to prevent collapse of ground into the pile shaft. The base of each pile will be augured a minimum of 1.5m into the bedrock, ensuring that the vertical deflection of the pile head when loaded to the specified capacity does not exceed 5 mm.

PSF5.1.1.2 Pile Schedule and Supporting Documents

The contractor shall submit with his tender and again at commencement of construction a pile schedule listing all the piles.

The pile schedule will as a minimum contain the following information.

- Diameter of pile,
- Depth of pile,
- Embedment into bedrock,
- Casing material for pile,
- Pile type – Note pile type to be permanently cased, rotary bored, reinforced concrete ODEX piles,
- Layout drawing for the piles,
- Load capacity of each pile in both
 - o Tension,
 - o Compression,
 - o Horizontal and,
 - o Bending

PSF5.1.3.5 Factors of Safety in Design

The design factor of safety against failure for skin friction design shall be 2,0, for end bearing it shall be 3,0 and the minimum overall factor of safety shall be 2,5.

Allowable Settlements shall be as follows 15mm between any adjacent foundations.

PSF 5.1.4 Approval of Working Drawings

Replace “Except where such data have been provided by the contractor in terms of 5.1.3, within 4 weeks after the date of the contract the contractor shall submit to the engineer for his approval full details” with

“Except where such data have been provided by the contractor in terms of 5.1.3, within 2 weeks after the date of the contract the contractor shall submit to the engineer for his approval full details”

PSF5.2 AUGERING AND BORING

PSF5.2.1 General

Delete Clause 5.2.1.2 entirely and replace with:

PSF5.2.1.2 No part of the works shall be accepted as completed until all auger spoil, concrete or grout spillage and pile trimmings have been broken up and **cleared away** from

the affected area. The cleared material may be stored temporarily in an agreed spoil area on site but must be removed from site before completion of the Contract.

No overhaul will be paid as part of the contract.

PSF5.4 CONCRETE AND REINFORCEMENT

Delete Clause 5.4.1 entirely and replace with:

PSF5.4.1 Quality Control

The mixing, handling, placing, compacting, curing, of concrete and reinforcement for the piles shall comply with the relevant requirements of SABS 1200 G.

The grade of concrete/grout required for all piles shall be min 30MPa, with a minimum water cement ratio of 0.55.

On Site Mixing of Concrete/Grout

Concrete/grout may be mixed on site if required due to access/logistical requirements.

If concrete is mixed locally on-site trial mixes are to be produced that confirm the adherence of the mix in terms of

- Strength Seven (7) days
- Strength twenty – Eight (28) days

The sample mix shall be of a minimum quantity to be able to produce ten sets (10) of three (3) cubes.

The water used for the mixing of grout/concrete needs to meet the requirements of “BS EN1008:2002 - Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete”

Below highlights critical requirements that need to be adhered **to**, noting that all requirements of BS EN1008:2002 need to be adhered to.

4.2 Preliminary Assessment

	Description	Requirement	Test Procedure
1	Oils and Fats	Not more than visible traces	In accordance with 6.1.1 of BS EN1008:2002
2	Detergents	Any foam should disappear within 2 minutes.	In accordance with 6.1.1 of BS EN1008:2002
3	Colour	Water not from sources classified in 3.2: The colour shall be assessed qualitatively as pale yellow or paler.	In accordance with 6.1.1 of BS EN1008:2002
4	Suspended Matter	Water recovered from processes in the concrete industry	Section A.4 of BS EN1008:2002
		Water from other sources – including underground or waterways – Maximum 4ml sediment per 100ml.	In accordance with 6.1.1 of BS EN1008:2002
5	Odour	Water recovered from process in the concrete industry. No smell, except the odour allowed for potable water and a slight smell of cement and where blastfurnace slag is present in the water, a slight smell of hydrogen sulphide.	In accordance with 6.1.1 of BS EN1008:2002

		Water from other sources. No smell, except the odour allowed for potable water. No smell of hydrogen sulphide after addition of hydrochloric acid.	In accordance with 6.1.1 of BS EN1008:2002
6	Acids	pH \leq 4	In accordance with 6.1.1 of BS EN1008:2002
7	Humic Matter	The colour shall be assessed qualitatively as yellowish brown or paler, after addition of NaOH.	In accordance with 6.1.1 of BS EN1008:2002

The following chemical properties of the mixing water need to be adhered to:

4.3.1 Chlorides

The maximum chloride content within the water must be limited to 500mg/l

4.3.2 Sulphates

The maximum sulphate content shall be limited to 1000mg/l tested in accordance with section 6.1.3 of BS EN 1008:2002 and EN 196-2.

4.3.3 Alkali

The equivalent sodium oxide content of the water shall not normally exceed 1 500 mg/l tested in accordance with BS EN 1008:2002 and EN 196-21.

4.3.4 Harmful contamination

In the first instance qualitative tests for sugars, phosphates, nitrates, lead and zinc may be carried out. If the qualitative tests show a positive result, either the quantity of the substance concerned shall be determined or tests for setting time and compressive strength shall be performed.

Limiting requirements for of harmful substances

Substance	Maximum Content (mg/l)	Test Procedure
Sugars	100	In accordance with 6.1.3 of BS EN1008:2002
Phosphates; expressed as P ₂ O ₅	100	In accordance with 6.1.3 of BS EN1008:2002
Nitrates; expressed as NO ₃	500	ISO 7890-1
Lead; expressed as Pb ²⁺	100	In accordance with 6.1.3 of BS EN1008:2002
Zinc; expressed as Zn ²⁺	100	In accordance with 6.1.3 of BS EN1008:2002

4.4 Setting time and strength

When tested in accordance with 6.1.4 the initial setting time obtained on specimens made with the water shall be not less than 1 hour and not differ by more than 25 % from the initial setting time obtained on specimens made with distilled or de-ionised water. The final setting time shall not exceed 12 hours and not differ by more than 25 % from the final setting time obtained on specimens made with distilled or de- ionised water.

The mean compressive strength at 7 days of the concrete or mortar specimens, prepared with the water, shall be at least 90 % of the mean compressive strength of corresponding specimens prepared with distilled or de-ionised water.

Integrity Testing of Piles

The integrity of every pile shaft is to be proven by integrity tests.

All integrity tests will be conducted on all piles. These tests will be done before trimming of piles and after trimming of piles i.e. integrity testing will be undertaken twice on each individual pile.

All tests will include a graphical representation of the response of the piles. The results need to be interpreted by suitable independent professionally registered engineer with the Engineering Council of South Africa (ECSA).

PSF5.4.3 Reinforcement Details

In addition to clause 5.4.2:

PSF5.4.3.1 Reinforcement for concrete piles will not be scheduled on the drawings. The reinforcing schedule is a list compiled by the Contractor of all piles. The schedule, which is to be submitted with and shall form an integral part of the tender, shall indicate without ambiguity the reinforcing details for every pile listed.

The reinforcement shall be assembled into cages that are sufficiently rigid to ensure that they do not distort permanently while being handled. In the case of cast-insitu piles, the space inside the cage shall be kept **clear to provide free access for concrete**.

PSF5.5.1 Pile Reinforcement

Delete clause 5.5.1.6 entirely and replace with:

PSF5.5.1.6 Reinforcement shall be supported at such a level that it will project at least 50 times the diameter of the thickest bar above the cut-back level. The cut-back level shall be as specified on the drawings.

PSF5.8 OBSTRUCTIONS

Delete clause 5.8 entirely and replace with:

PSF5.8 Where natural obstructions such as boulders make it difficult to install certain piles in the positions shown and to the proper lengths, the Contractor shall inform the Engineer.

Where piling is suspended due to natural obstructions, the Contractor shall not be paid for standing time.

Allowance should be made in the tender for a chiselling, percussive drilling or otherwise advancing the pile shaft excavations for 20% of total pile lengths through boulders up to 1.2m in diameter.

PSF5.10 PILE HEADS AND CAPS

PSF5.10.1 Stripping of Pile Heads

Stripping of pile heads to cut off level will remain the responsibility of the piling contractor.

PSF6 TOLERANCES

PSF6.1 GENERAL

Replace "The Engineer will check tolerances at the earliest practicable opportunity"

With "After the installation of each pile, the Contractor shall provide the Engineer with a plan showing the exact position of the pile in relation to the building grid system. The Contractor shall allow in his price for any survey work necessary to obtain the above-mentioned information."

PSF6.3 CAST IN-SITU PILES

Tolerances shall be to Degree of Accuracy II except that the permissible deviation of pile centre from position shown on setting out drawing shall be 50mm at piling platform level for vertical piles.

PSF7 TESTS

Load tests on dedicated test piles

Two dedicated test piles will be provided for every 100 piles with one tension test been undertaken and one compression test been undertaken.

PSF7.3 TEST PROCEDURE

Clause 7.3.1 shall be amended to read:

PSF7.3.1 General

The test procedure shall be the British procedure.

PSF7.4 British Procedure

Amend the clause to include the following:

Pile testing shall be performed on test piles according to the British Procedure to 1,5 times the nominal load.

One pile/s shall be tested in compression and one in tension for every 100 piles.


All piles are to receive low strain impact integrity testing in accordance with ASTM 5882.

All piles to receive sonic integrity testing. Integrity testing to be undertaken prior to trimming of piles and after trimming of piles to the correct level

i.e. each pile to receive integrity testing twice.

Delete Clause 7.6 entirely and replace with:

PSF7.6 ACCEPTANCE CRITERIA

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Piles shall be deemed to satisfy the test requirements if the maximum settlement measured at the pile cap does not exceed 5 mm under the specified capacity (W), and 10mm under the test load (1.5 W).

PSF8 MEASUREMENT AND PAYMENT

PSF8.1 PRINCIPLES

Delete Clause 8.1.1 entirely and replace with:

PSF8.1.1 General

The design of the piles and pile groups is to be based on the geotechnical data provided in the geotechnical report.

Should the conditions encountered during piling differ materially from the conditions indicated in the geotechnical report, the Contractor shall inform the Engineer immediately. The responsibility for determining the founding level of a pile shall rest with the Contractor.

PSG CONCRETE (STRUCTURAL) (SANS 1200 G)

PSG 1 SCOPE

This specification applies to all Structural concrete for bridge abutments and approach slabs.

PSG 2 INTERPRETATIONS

PSG 2.3 DEFINITIONS

Under (a) add:

*Constructional joint: a joint required on account of constraints or convenience in the method of construction and that is not a movement, contraction or expansion joint *.

PSG 2.4.2 STRENGTH CONCRETE

Concrete will be specified in terms of cube strength. The following strengths will be used on the project:

Element	Strength Designation	Maximum Water Binder ratio
Unreinforced blinding	20/19	N/A
Reinforced Abutment Bases	40/19	0.55
Reinforced Concrete	40/19	0.55
Abutments		

PSG 2.4.3 JOINTS

Notwithstanding clause 2.4.3 "designated joints" will only be joints that are shown on the drawings. Any other joints that are required by the Contractor as a result of his construction constraints or for any other reason, whether approved by the engineer or not, will not be considered to be designated joints as defined in clause 3.4.3 i.e. they will be considered to be "nondesignated" joints.

PSG 3 MATERIALS

PSG 3.2 CEMENT

Where "blast furnace slag concrete: is specified on the drawings, or scheduled, blast furnace slag shall be a constituent of the concrete as specified in PSG 3.9.

The standard cement specifications SABS ENV 197-1 and -2: Common cements, and SABS ENV 413-1 and -2: Masonry cement will be applicable to this contract, and the descriptions and types of cements specified, will be based on the designations as defined in these specifications.

The following blends of cements must be used unless prior agreement in writing from the engineer is obtained.

CEMI or, CEMII A or B or CEM II A, or 70% CEM I + 30% FA, or 50% CEM I+

50% GGBS

Supply all cement and other approved binder constituents from the same sources for the duration of the Contract.

PSG 3.2.3 STORAGE

Add the following clause:

Cement and slagment shall be used in the order in which it is received.

Unless approved by civil Engineer, cement and slagment kept in storage for longer than 8 weeks shall not be used in the Works.

Any cement that contains lumps that cannot easily be crumbled to powder between the fingers, may not be used.

PSG 3.3 WATER

Contractor to be aware of the available water results, however it remains the Contractor's obligation to ensure that any water used in construction activities are to meet the requirements and specifications for the project.

The water used for the mixing of grout/concrete needs to meet the requirements of "BS EN1008:2002 - Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete".

Below highlights critical requirements that need to be adhered to, noting that all requirements of BS EN1008:2002 need to be adhered to and that shall take precedence.

4.2 Preliminary Assessment

	Description	Requirement	Test Procedure
1	Oils and Fats	Not more than visible traces	In accordance with 6.1.1 of BS EN1008:2002
2	Detergents	Any foam should disappear within 2 minutes	In accordance with 6.1.1 of BS EN1008:2002
3	Colour	Water not from sources classified in 3.d: the colour shall be assessed qualitatively as pale yellow or paler	In accordance with 6.1.1 of BS EN1008:2002
4	Suspended Matter	Water recovered from processes in the concrete industry	In accordance with 6.1.1 of BS EN1008:2002

		Water from other sources – including underground or waterways – maximum 4ml sediment per 100ml	
5	Odour	Water recovered from processes in the concrete industry. No smell, except the odour allowed for potable water and a small smell of cement and where blastfurnance slag is present in the water, a slight smell of hydrogen sulphide.	In accordance with 6.1.1 of BS EN1008:2002
		Water from other sources. No smell except odour allowed for potable water. No smell of hydrogen sulphide after addition of hydrochloric acid.	In accordance with 6.1.1 of BS EN1008:2002
6	Acids	pH ≤4	In accordance with 6.1.1 of BS EN1008:2002
7	Humic Matter	The colour shall be assessed qualitatively as yellowish brown or paler after addition of NaOH.	In accordance with 6.1.1 of BS EN1008:2002

The following chemical properties of the mixing water need to be adhered to:

4.3.1 Chlorides

The maximum chloride content within the water must be limited to 500mg/l

4.3.2 Sulphates

The maximum sulphate content shall be limited to 1000mg/l tested in accordance with section 6.1.3 of BS EN 1008:2002 and EN 196-2.

4.3.3 Alkali

The equivalent sodium oxide content of the water shall not normally exceed 1 500 mg/l tested in accordance with BS EN 1008:2002 and EN 196-21.

4.3.4 Harmful contamination

In the first instance qualitative tests for sugars, phosphates, nitrates, lead and zinc may be carried out. If the qualitative tests show a positive result, either the quantity of the substance concerned shall be determined or tests for setting time and compressive strength shall be performed.

Limiting requirements for of harmful substances

Substance	Maximum Content (mg/l)	Test Procedure
Sugars	100	In accordance with 6.1.3 of BS EN1008:2002
Phosphates expressed as P205	100	In accordance with 6.1.3 of BS EN1008:2002
Nitrates expressed as NO3	500	ISO 7890-1
Lead expressed as Pb2+	100	In accordance with 6.1.3 of BS EN1008:2002
Zinc expressed as Zn2+	100	In accordance with 6.1.3 of BS EN1008:2002

4.4 Setting time and strength

When tested in accordance with 6.1.4 the initial setting time obtained on specimens made with the water shall be not less than 1 hour and not differ by more than 25 % from the initial setting time obtained on specimens made with distilled or de-ionised water. The final setting time shall not exceed 12 hours and not differ by more than 25 % from the final setting time obtained on specimens made with distilled or deionised water.

The mean compressive strength at 7 days of the concrete or mortar specimens, prepared with the water, shall be at least 90 % of the mean compressive strength of corresponding specimens prepared with distilled or de-ionised water.

PSG 3.4 AGGREGATES

The nominal stone size specified in the concrete grade (e.g. 40,mm) shall mean stone conforming to the grading specified in SABS 1083 for the nearest equivalent size, i.e. 40 mm means stone that complies with SABS 1083 for 37,5 mm size.

PSG 3.4.2 USE OF PLUMS

The use of plums will not be permitted in structural concrete.

PSG 3.4.4 FINE AGGREGATE *

Fine aggregate must be clean naturally occurring siliceous sand. The broken shell content must not exceed 5% by mass tested in accordance with SANS 5831:2006.

Grading:

The following grading limits are required for the fine aggregate to be used:

Sieve Size mm	Cumulative percentage passing by
4.75	90-100
2.36	75-100
0.18	60-90
0.60	40-60
0.30	20-40
0.15	10-20
0.075	Natural sand – 5-10% and 5-20% for crushed sand

Dust content:

The material passing a 75- µm sieve shall not exceed 5% (10% when the aggregate is derived from the mechanical crushing or milling rock) by mass.

Fineness modulus:

FM range for fine aggregate shall fall within the range 1.7 to 2.8. Where the FM is specified by the purchaser, the actual value shall not differ from the specified value by more than 0.1.

Chloride Content

The chloride content of the fine aggregate expressed as a per cent by mass shall not exceed 0.03%, tested in accordance with SANS test method 202:2006.

Soluble Deleterious impurities in Fine Aggregate

The sand shall contain no soluble deleterious impurities tested in accordance with SANS test method SANS 5834:2006

PSG 3.4.5 CONCRETE USING REACTIVE AGGREGATES *

The Contractor shall provide the Engineer with sufficient data to enable him to assess the degree of alkali-aggregate reactivity of the aggregates to be used for concrete.

Where reactive aggregates such as Malmesbury Group aggregates, and certain Table Mountain Formation and other quartzitic aggregates are used for concrete, the Contractor shall, in order to ensure that the concrete is not subject to alkali-aggregate reaction, design his mixes and/or use cement with a sufficiently low alkali content such that the total equivalent sodium oxide content of the cement is less than 1, 8 kg/m³.

(NOTE: The equivalent sodium oxide content (alkali content) is measured as ($\text{Na}_2\text{O} + 0,658 \text{ K}_2\text{O}$). For cement it is expressed as a percentage to be adopted.

PSG 3.4.6 COURSE AGGREGATE

Grading:

The following grading limits are required to be adhered to for the course aggregate used:

Nominal Aperture size of sieve, mm	Nominal size of aggregate, mm	
	26.5	19.0
75		
53		
37.5	100	
26.5	85-100	100
19	0-50	85-100
13.2	0-25	0-50
9.5	0-5	0-25
6.7		0-5
4.75		
Dust Content	Not exceed 2%	

10% FACT value:

The minus -13.2-mm-plus-9.5-mm fraction shall be tested for the 10% fines aggregate crushing value. (i.e. The load required to produce 10% of fines).

The loads in kN shall not be less than the following:

Stone for concrete subject to abrasion : Dry value: 110

Stone for concrete not subject to abrasion : Dry value: 70

Flakiness index:

As defined under SANS1083:2006, flakiness index must not be more than maximum value of 30% in the case of 26,5 mm aggregate size and 25% in the case of 19,0 mm aggregate size respectively.

Absorptivity:

The maximum water absorption of the coarse aggregate shall not exceed 0.5% by mass as defined under SABS1083:1994.

PSG 3.4.8 SAMPLE

At least one month before commencement of concrete work the Contractor shall supply at his own cost representative samples to the Engineer of the aggregates he intends using, together with certificates from an approved laboratory indicating that the aggregates comply with the specifications. Approximately 50 kg of each sample of aggregate shall be supplied.

After approval these samples shall be taken as standard for the agreed aggregates to be used in the Works. If at any time during the course of the Contract the Engineer considers that there has been any deviation from the approved standard the Contractor shall submit further tested samples of material to the civil Engineer for approval.

PSG 3.5.1 ADMIXTURES

The use of admixtures will be subject to the approval of the Engineer. The information listed in Clause 3.5.1 shall be provided.

PSG 3.5.2 Air-entraining Agents

The use of air-entraining agents will not be permitted.

PSG 3.6 Reinforcement

All reinforcement at the time of placing of concrete shall be free from rust, scale, oil and other coating that may reduce the bond between steel and surrounding concrete, or initiate corrosion of the reinforcement.

The following strengths rebar have been specified for the project.

High yield strength: $f_y = 450 \text{ MPa}$

Mild steel: $f_y = 250 \text{ MPa}$

PSG 3.9 CEMENTITIOUS MATERIAL FOR BLAST FURNACE SLAG CONCRETE *

The cementitious material for blast furnace slag concrete shall consist of not less than 50% by mass of Portland cement complying with SABS 471 and not more than 50% by mass of milled granulated blast furnace slag. The ratio of blast furnace slag to cement may be varied by the Engineer before or during the Contract.

Blast furnace slag shall be milled; granulated blast-furnace slag processed from an approved source and should be of a consistent quality. It shall be ground to a minimum fineness of 3 500. Blaine (square centimetre per gram). The percentage by mass retained on an 88 micrometre screen shall not exceed 10%.

The blast furnace slag and the ordinary Portland cement shall be added separately at the mixer where they shall be intimately mixed.

PSG 4.2 BATCHING PLANT

Add:

Stand-by mixers of adequate capacity and with independent power supply shall be maintained on site for immediate use in the event of breakdown of the regular mixer/s or failure of the power supply.

PSG 4.4 MIXING PLANT AND VIBRATORS

Add:

Stand-by vibrators of adequate capacity and with an independent power unit shall be maintained on site for immediate use in the event of breakdown of the regular vibrators or failure of the power supply.

PSG 4.5.3 Formwork ties

Ties, when cast in, shall have some form of positive anchorage to prevent any rotation when loosening formwork.

PSG 4.5.4 Formwork: chamfers and fillets*

All exposed external angles in concrete work shall have 20 mm x 20 mm chamfers unless otherwise specified or ordered, but the top edge of a slab that is to receive and applied finish shall not be chamfered.

Internal corners in concrete work need not have fillets unless such fillets have been specified on the drawings or ordered by the Engineer.

PSG 4.6 WATER-BATH *

A temperature-controlled water-bath with a capacity to cure 75 cubes shall be provided on site. The water-bath shall be located under cover.

PSG 5 CONSTRUCTION

PSG 5.1 REINFORCEMENT

PSG 5.1.2 Fixing

Fixing of reinforcing bars by welding will not be permitted without the prior approval of the Engineer. Where welding is approved the methods used shall be subject to the Engineer's approval. Where called for, samples of typical reinforcement to be welded will be sent to a laboratory, designated by the Engineer, for testing purposes. Under these circumstances the welding of samples shall be carried out on the site by the welder to be subsequently

employed on the job, and carried out under the conditions which will prevail during the actual site welding. Where welding is permitted by the Engineer it shall be carried out in strict accordance with the relevant and SABS Codes of Practice.

PSG 5.1.3 Cover

In Clause 5.1.3(a) amend the words "bar or stirrup" to read: "bar, secondary reinforcement, tie, stirrup, tying-wire knots or wire ends".

Add to Clause 5.1.3: "Tying wire may not encroach on the specified minimum cover by more than a single strand thickness".

The specified concrete cover shall be deemed to apply to main reinforcement bars, secondary reinforcement, tie stirrups, tying-wire knots and wire ends.

Minimum concrete cover to any reinforcing bar, including links, to be generally as tabulated below, however the cover requirements indicated on the bending schedules to take precedence.

Element	Minimum Cover to Reinforcement
Reinforced Bridge Pier Foundations	50mm
Bridge Piers	50mm

PSG 5.1.3.1 Spacers *

Spacers shall be purpose made precast mortar blocks.

The mortar blocks shall be properly shaped so as not to slip out of position and shall be made of the same mix as the mortar of the concrete in which they are to be placed. The mortar shall be well compacted by approved means into the moulds to result in blocks with a density of at least 2 400 kg/m³ and which are free from honeycombing. The mortar blocks shall be cured in water for at least 7 days. Blocks which have not been manufactured and cured strictly in accordance with these requirements or which are in any other way considered unsatisfactory by the Engineer, will be rejected and shall be removed from the Site.

PSG 5.1.4 Splicing

Add:

Splice lengths for reinforcement shall not be less than 50 times the bar diameter unless indicated otherwise on the drawings or bending schedules.

PSG 5.2 FORMWORK

PSG 5.2.1 Classification of Finishes

Formwork for formed concrete surfaces against which backfill will be placed shall be rough. Formwork for all other formed surfaces shall be smooth, except where otherwise specified.

All Smooth formwork is to be degree accuracy I and not II as detailed in SABS 1200 – G

PSG 5.2.5.2 Removal of Formwork for Blast Furnace Slag Concrete

Add:

The requirements specified in Clause 5.2.5.2 will apply as a minimum. Prior to the removal of any formwork approval shall be obtained from the engineer.

PGS 5.5 CONCRETE

PSG 5.5.5.1 General

The concrete mix design for strength concrete must be prepared in an approved laboratory and the results of actual test mixes must be submitted for approval together with 7-day and 28-day strength test results. Special attention is drawn to the fact that the concrete mix must provide a very dense and impervious concrete.

No concrete shall be cast until the mix designs have been approved by the civil Engineer: The Civil Engineer may call for revised mix designs at any stage during the Contract.

PSG 5.5.1.4 Chloride Content

The maximum chloride (as Cl, % (m/m)) in the concrete shall not exceed 0.20%.

The content of chloride ion in the aggregates shall be determined and shall be within the limits specified in SABS 1083. Test results shall be submitted to the Engineer.

Chloride content of fine aggregate expressed as per cent by mass of Cl⁻ shall not exceed the following limits:

Sand for normal reinforced concrete 0.3

PSG 5.5.1.7 Strength Concrete

With the exception of mixes weaker than 15 MPa, all concrete for the Works shall be considered to be strength concrete in terms of Clause 5.5.1.7

The engineer will specify the grade of the concrete and the position in the works, it will be remain the responsibility of the contractor to ensure that the specified performance of the concrete is attained, notwithstanding the requirements of this document.

Blinding

Provide a minimum 50mm unreinforced concrete blinding under all bases or greater if directed on the construction drawings.

PSG 5.5.2 Batching

Batching of strength concrete shall be by mass.

PSG 5.5.3.1 Mixing of Concrete at Construction Site

Add:

Where mixing of concrete is undertaken at the construction site the contractor shall ensure that the mixing plant is contained within a self contained facility that will meet all legislative requirements of the Republic of South Africa. It shall as a minimum ensure that the concrete is mixed within a self contained bunded area from which no material will be able to discharge into adjacent water courses, surrounding subsoils, or surrounding environment. All waste material including - waste water, hardened waste concrete, mortar or any material be it waste

or required for the production of concrete is retained on the site. All waste material and material used in the production of concrete (that is not formed into the permanent works) needs to be removed from site and disposed at an approved dump site.

PSG 5.5.3.2 Ready-mixed concrete

Concrete from a central Concrete production facility other than on the construction site will be permitted and, apart from test results in terms of 7.3.1, 7.3.2 and / or 7.3.3, test results obtained by such a production facility as part of its quality control system will be accepted for evaluation in terms of Clause 7.3.4, provided they are stored and cured on site.

PSG 5.5.5.10 Prevention and Repair of Plastic Shrinkage Cracks*

The Contractor shall take whatever measures are necessary to prevent plastic shrinkage cracking in the concrete. Particularly on dry windy days or hot sunny days the Contractor shall make provision for fine spraying of the concrete surface with water within one hour of casting or covering of the concrete with black plastic sheeting it may be necessary to change the aggregates or the concrete mix proportions. In order to combat shrinkage cracking it may also be necessary to change the time at, or the manner in which, power floating is carried out.

PSG 5.5.7 Construction Joints

Unless construction joints between designated joints shown on the drawings are authorized by the Engineer in writing, concrete shall be cast continuously between the designated joints shown on the drawings.

PSG 5.5.7.4 Formed Joints *

Formed joints will be considered to be designated joints as defined in Clause 2.4.3

Each joint shall be formed as shown on the drawings, complete with shear key rebates, waffle formwork, B-feature, waterstops, "Flexcell" or similar joint filler, dowel bars and their PVC tubes, etc, as indicated.

PSG 5.5.8 Curing and Protection

PSG 5.5.8.1 Horizontal surfaces *

Horizontal and near horizontal surfaces shall be wet cured for a minimum of seven days from date of casting, and treated in accordance with Clause 5.5.8 Other surfaces of the concrete shall be treated with a curing compound complying with PSG 5.5.8.3

PSG 5.5.8.2 Formed surfaces *

In order to improve the effectiveness of the curing treatment, the specified minimum time for the removal of the formwork shall be four days.

PSG 5.5.8.3 Curing compound *

The use of membrane curing compounds will be allowed on vertical faces or steeply inclined faces (i.e. steeper than 45° to the horizontal) of cast in situ members of the structures subject to the Contractor producing sufficient, satisfactory cube crushing strength test results where the crushing strength of cubes which have been cured with the proposed during membrane and left exposed to the elements are compared with those of an equal number of water cured

cubes. The crushing strength of cubes cured with the proposed membrane shall be at least 82% of the crushing strength of the water cured cubes.

Before any membrane curing compound is used, each batch should be tested on a trial surface to ensure that it forms a satisfactory membrane, and any compound which is unsatisfactory in the opinion of the Engineer, shall be rejected. Curing membranes will be disallowed if permanent discolouration of the concrete takes place. Surfaces where curing membranes are used shall be treated in such a manner that the final concrete texture and colour blends in with the rest of the concrete work. Furthermore, the Engineer shall, at his discretion require the Contractor immediately to adopt an effective alternative means of curing any area of the structure to which a membrane has been applied which in the opinion of the Engineer, is unsatisfactory. The curing compound used shall be to the approval of the Engineer. Wax based curing compounds will not be permitted.

The curing compound shall be applied immediately as formwork is progressively stripped or, in the case of unformed surfaces, when the concrete has taken its initial set. It shall preferably be applied by spraying and the rate of application shall be strictly in accordance with the manufacturer's recommendations. A method of monitoring the area to which curing compound has been applied and the application rate shall be as approved by the Engineer and rigidly applied by the Contractor.

Surfaces of joint rebates, where elastomeric sealant is to be applied, shall be protected from contamination by curing compound by the use of masking tape.

PSG 5.5.9.2 Hot Weather Conditions

No placing of concrete shall take place if the ambient temperature exceeds 32°C, or is likely to rise above 32°C during the casting period or within eight hours after casting is completed.

PSG 5.5.10 Concrete Surfaces

PSG 5.5.10.4 Screeded Finishes *

After placing and compacting, the concrete on a top (unformed) surface shall be struck off with a template to the designated grades and tamped with a tamping board to compact the surface thoroughly and to bring mortar to the surface, leaving the surface slightly ridged but generally at the required elevation. No mortar shall be added and noticeable surface irregularities caused by the displacement of coarse aggregate shall be made good by rescreeding after the interfering aggregate shall have been removed or tamped.

PSG 5.5.10.5 Wood-floated Finish *

Where wood-floating is ordered or scheduled, the surface shall first be given a finish specified in PSG 5.5.10.4 Clause 5.5.10.1 and, after the concrete has hardened sufficiently, it shall be wood-floated, either by hand or machine, only sufficiently to produce a uniform surface free from screeding marks.

PSG 5.5.10.6 Steel-floated Finish *

Where steel-floating is ordered or scheduled, the surface shall first be given a finish specified in PSG 5.5.10.4 except that, when the moisture film has disappeared and the Where wood-floating is ordered or scheduled, the surface shall first be given a finish specified has hardened

sufficiently to prevent laitance from being worked to the surface, the screeded surface shall be steel-trowelled under firm pressure to produce a dense, smooth, uniform surface free from trowel marks.

PSG 5.5.10.7 Power Floated Finish

After initial finishing the levelled concrete surface shall be power floated to provide a dense surface.

After the bleed water has disappeared and the concrete has hardened sufficiently the float blades shall be replaced with trowel blades.

The surface will be power trowelled with at least a double pass to provide a dense, smooth uniform surface free from irregularities.

PSG 5.5.10.10 Power Trowelled Finish

In addition to the procedure for the power floated floor the surface shall be continually burnished to provide a dense, smooth, high quality polished surface free from any irregularities.

PSG 5.5.10.11 Project Specific Finishes

The following project specific finishes are to be implemented on the project.

All approach roads – Power floated finish

Top of bridge piers – Steel floated finish

PSG 5.5.14 Defects

All defects shall be repaired as soon as possible after the formwork has been removed and the Engineer has inspected the concrete. A statement of the method to be used for each repair shall be submitted to the Engineer for his approval before any work is carried out. The Engineer may prohibit the further placing of concrete in the particular area concerned until he is satisfied that the repair has been satisfactorily executed.

Complete repair work and apply the curing compound and curing membrane over repair areas within 24 hours of stripping formwork.

PSG 6 TOLERANCE

PSG 6.2.3 PERMISSIBLE DEVIATIONS

The permissible deviation for cover to reinforcement shall be –0, +10 mm.

Reinforcing: Degree of Accuracy Category II as per SABS 1200G.

Only a nominal reduction of the minimum specified cover by a single strand thickness will be allowed for binding wire.

Concrete finishes to be as detailed in section 6.2.3 of SABS 1200G, with the following degrees of accuracy required.

Concrete Element	Degree Accuracy
Below ground concrete	II
Above ground Concrete	I

Provide all exposed external corners of walls, beams, slabs or any other concrete elements not covered by backfill with 20 x 20 mm chamfers, or as detailed on the drawings.

PSG 7 TESTING

Make, cure and test all test cubes in accordance with the requirements of

SABS methods 860:1994, 861-3:1994 and 863:1994

The slump of the concrete shall be tested in accordance with SABS Method 862-1:1994. If the slump needs to be measured, discharge 10% of the load before sampling concrete for the test. The load may be rejected if the slump is too high.

The Contractor is responsible to ensure that concrete testing is executed competently and accurately.

Concrete must be sampled from concrete being used for construction and in accordance with SABS Method 861-2:1994

Sampling to be taken from each days casting for each specific grade of concrete and from at least 30m³ of concrete for each grade placed.

Arrange the exact details of numbers of samples to be taken with the Engineer at commencement of construction. Make 150 x 150 x 150mm test cubes in all cases. Supply the necessary moulds and cubes under the supervision of the Engineer who has the right to reject any moulds which in his opinion will not give cubes which are true. Supply sufficient moulds to make the daily quota of cubes.

Make, cure and test all test cubes in accordance with the requirements of SABS methods 860:1994, 861-3:1994 and 863:1994 Cure test cubes in an approved curing tank provided (cubes cured under water at controlled temperatures) on the Site and deliver them to an independent laboratory as approved by the Engineer for testing not less than 24 hours in advance of the specified time for testing.

Subject to approval of each grade of strength concrete on this basis, concrete quality will be monitored for the balance of the Contract by statistical analyses carried out on the test results of concrete cubes for each grade of concrete according to the specified sampling range.

One sample shall consist of three concrete test cubes.

For each sample taken the position in the structure shall be recorded where the batch represented by that sample is placed.

Sampling of concrete of a particular grade shall be as specified in Clause 7.1.2.

PSG 7.1.2.2 TESTING

Delete: "At least one set of samples shall be taken from each day's casting and from at least every 50m³ of each concrete grade placed."

Add: "At least one set of samples shall be taken from each days casting

and from at least every 20m³ of each concrete grade placed."

PSH STRUCTURAL STEELWORK (SABS 1200H)

PSH 3.1 STRUCTURAL STEEL MATERIALS:

All Structural steel members are to be constructed using the following grades of steel:

Cold rolled steel members (purlins and girts only) – Grade S235J

Hot rolled steel members (Universal beams, Universal columns, channels, angles, plates, plate girders) – Grade S355J

PSH 3.6 BOLTS, NUTS AND WASHERS:

All bolts, nuts and washers of bolted connections to be Grade Class 8.8 unless otherwise specified, and to be hot dip galvanized unless otherwise specified.

All purlin & sheeting rail bolts, nuts and washers are to be Grade Class 4.8 M16 hot dip Galvanized unless otherwise specified.

ANCHOR BOLTS:

All anchor bolts to be class 4.6 anchor bolts (referred to as commercial grade steel). All nuts to be class 4.8 or better. Washer plates to be cut using Grade SJ355W or 350W or Mechanical properties of all steel to comply to SANS 1431. All bolts to be hot dip galvanized.

Anchor bolts for fixing equipment supplied by others, must be sized and installed in accordance with the equipment supplier's approved anchor bolt layout drawing.

PSH 5.1.2 PREPARATION OF FABRICATION DRAWINGS

Fabrication drawings will be produced for all structural steel elements to be produced.

The preparation of the drawings will be undertaken by a draftsman registered with the South African association of structural draftsmen or similar professional body.

Fabrication drawings will as a minimum include and detail the following, but not limited to:

Complete exact size of all members of element to be produced. i.e. plates rolled sections and gussets.

Exact position of holes, notches and other cut outs as required on the design drawings.

Member sizes,

Structural steel class and grade.

Weld sizes and strengths.

Corrosion protection to the steelwork.

All information required for accurate fabrication of structural s

PSH 5.3.4 WELDS :

All fillet welds to be 8mm continuous fillet welds unless otherwise noted.

WHERE SPLICES ARE NOT INDICATED ON THE CONSTRUCTION DRAWINGS MEMBERS NEED TO BE PRODUCED AS COMPLETE LENGTH MEMBERS. IF MEMBERS ARE NOT SUPPLIED IN FULL COMPLETE LENGTHS MEMBERS TO BE SPLICED USING FULL STRENGTH FULL PENETRATION WELDS.

For plate girders flanges to be welded to webs of plate girders using 8mm continuous welds.

Below is a list of weld strengths to be specified on the project.

When using electric arc welding (shielded metal arc welding) E7018 electrodes must be used produced in accordance with AWS A5.1

When using gas metal arc welding ER 70 C electrodes must be used.

Any other welding technique or weld electrode not listed above may only be used with the approval of the engineer.

PSH 5.4 SETTING OUT AND DEGREE OF ACCURACY:

All structural steelwork drawings are to be read in conjunction with relevant Architect's and other Consultant's drawings and specifications. Setting out of structural steel members must be done in accordance with the Structural Engineer's drawings.

Degree of Accuracy must be as per Category II of SABS 1200-H.

PSH 5.6 CAULKING OF BASE PLATES:

All base plates to be caulked with tightly rammed proprietary non-shrinking cement-sand grout.

PSH 6.1.1 VERIFICATION OF DIMENSIONS:

All dimensions are to be verified on site prior to fabrication.

PSH 7 TESTING

The contractor shall provide to the engineer a project quality control plan for approval prior to works commencing. It will be required that the contractor is ISO9001 certified.

As a minimum the quality control plan will need to contain the following:

Provide a scope of works which details the extent description of structure, location and purpose.

Describe the organizations quality policy, including ISO 9001 certification and proof thereof.

Describe audit processes undertaken past and future. Further the engineer may at his discretion request an audit by an independent technically competent person at the contractors cost.

Include all the latest specifications, data sheets and construction documentation relevant to the project.

Describe responsible parties for quality for the project in detail.

Schedule tools and equipment to be used for the project

Schedule works programme for the project.

An Inspection and Test Plan. The Inspection and test Plan must be set up in such a format that it includes the sequence of working for the project and must contain as a minimum the following parts:

Material procurement

Material acceptance control

Material identification

Raw material inspections

Fabrication/shop drawings

Pre welding fabricated Parts inspections

Holes and fasteners

Welding

Final fabricated parts inspections.

Pre - Assembly checks

Post Assembly checks.

Each of the above sections will detail as a minimum:

The reference specification and the relevant portion of the project specification that needs to be followed.

The verification document for the inspection of the steelwork, which includes, check sheets, test certificates and reports.

Involvement of relevant parties, including hold, review and verification of relevant parties.

Describe methods for dealing with defects, including non-conformance reports and the closing out thereof.

With respect to the inspection and test plan the following minimum tests or inspections will need to be undertaken.

Item	Description	Verification document	Quantity
a.	Material Procurement	Order and delivery number	
b.	Material acceptance control	Delivery note, indicating batch number i.e clear concise tractability between delivery and batch and test certificate	Per batch delivered For every steel type up to 20 t of steel, i.e. for there will be

		Test certificate, which is traceable to batch number	a minimum of 1 test certificate for every 20 tonnes of steel of each shape and grade.
c.	Material Identification	Stamp on steel members	For every steel part
d.	Raw material inspections	Approved checksheet including as a minimum all dimensional tolerances indicated in section 6 of SABS1200H	For every steel component.
e.	Fabrication drawings	Complete concise set of fabrication drawings produced in accordance with the Southern African Detailing Manual as produced by the South African Institute of Steel Construction.	
f and g	Pre-fabrication parts inspections and holes and fasteners.	Approved checksheet including as a minimum all dimensional tolerances indicated in section 6 of SABS1200H	For each part forming the final structural elements.
h.	Welding	Visual inspection - Checksheet Ultrasonic NDT testing – Certificate/report Magnetic Particle testing – Certificate/report	For every length of weld For all butt welds/full penetration welds 20% of all fillet welds
i.	Final fabricated parts inspections	Approved checksheet including as a minimum all dimensional tolerances indicated in section 6 of SABS1200H	For every steel component

j.	Pre-assembly checks	Survey presented in the form of a report, including position in the x,y and z direction of all holding down bolts, stub columns and any other already built members that will affect the erection of structural steel elements.	For all elements that will affect the position of structural steel elements.
h.	Post assembly checks	Survey and survey report for completed structural elements Defects List Completion certificate	For all completed structural elements of sufficient detail to cover the aspects detail aspects of the tolerances detailed in sections c through to h of SABS 1200H. A concise list for all completed elements For portions of work in agreement with the engineer or for the entire facility.

PSH PURLINS ACROSS MOVEMENT JOINTS:

Purlins are to have 35mm long slotted holes at movement joints and the nuts are to be finger tight with lock nuts. The slotted holes are to be on the side in which "movement joint" is written on the drawings. Movement joints to be provided only at positions indicated on the drawings.

PSHC CORROSION PROTECTION OF STRUCTURAL STEELWORK (SABS 1200 HC)

PSHC3.1 PACKAGING

Add - All Materials will be packaged as required in the manufacturers instructions.

PSHC3.3 STORAGE

Add - All materials will be stored in accordance with the manufacturers instructions.

PSHC5.4.1 GENERAL

Steelwork to be painted to be sandblasted to SA 2 ½. The compressed air used for blast cleaning shall be dry, clean and free from oil.

Further:

The water soluble salts shall not exceed 500mg/m² at any one point and the average on a 250 cm² area shall not exceed 100mg/m²

PSHC5.7 COATING SYSTEM

The finishing specification for hot rolled steelwork will be as follows:

All hot rolled steelwork will be hot dip galvanized in accordance with SANS121/ISO1461:1999.

All cold rolled lipped channels will be galvanized in accordance with SANS 121/ISO1461: 1999.

PSHC5.9 APPLICATION OF METAL COATINGS (HOT DIP GALVINIZING, METAL SPRAYING)

All cold rolled lipped channels will be galvanized in accordance with SANS 121/ISO1461: 1999.

The thicknesses of galvanizing required in accordance with the above and is indicated in table 3 of ISO 1461 provided below.

Article and its thickness	Local coating thickness (minimum) ^a μm	Local coating mass (minimum) ^b g/m ²	Mean coating thickness (minimum) ^c μm	Mean coating mass (minimum) ^b g/m ²
Steel > 6mm	70	505	85	610
Steel >3mm to ≤ 6mm	55	395	70	505
Steel ≥ 1.5mm to ≤ 3mm	45	325	50	395
Steel < 1.5mm	35	250	45	325
Castings ≥ 6mm	70	505	80	575
Castings < 6mm	60	430	70	505

PSHC 7 TESTING

The contractor shall provide to the engineer a project quality control plan for approval prior to works commencing. It will be required that the contractor is ISO9001 certified.

As a minimum the quality control plan will need to contain the following:

Provide a scope of works which details the extent description of structure, location and purpose.

Describe the organizations quality policy, including ISO 9001 certification and proof thereof.

Describe audit processes undertaken past and future. Further the engineer may at his discretion request an audit by an independent technically competent person at the contractors cost.

Include all the latest specifications, data sheets and construction documentation relevant to the project.

Describe responsible parties for quality for the project in detail.

Schedule tools and equipment to be used for the project

Schedule works programme for the project.

An Inspection and Test Plan. The Inspection and test Plan must be set up in such a format that it includes the sequence of working for the project and must contain as a minimum the following parts:

GALVINIZING

Removal of contaminants and corrosion on steel

Thickness testing

Visual coating inspection and uniformity.

Batch release certificate

Post erection checks for mechanical damages.

Final hand over certificate

Each of the above sections will detail as a minimum:

The reference specification and the relevant portion of the project specification that needs to be followed.

The verification document for the inspection of the steelwork, which includes, check sheets, test certificates and reports.

Involvement of relevant parties, including hold, review and verification of relevant parties.

Note the inspection and test plan for galvanizing needs to be reviewed and approved by the hot dip galvanizers association of South Africa.

With respect to the inspection and test plan the following minimum tests or inspections will need to be undertaken.

Item	Description	Verification document	Quantity
A	Thickness testing	Certificate/check sheet	3 per 30 m2 or, per element produced.
B	Visual coating inspection for uniformity	Check sheet	Per steel element produced.
C	Batch release certificate	Certificate, produced by inspector trained by and approved by the hot dip galvanizers association.	Per 100t of steelwork, prior to release.
d.	Post erection checks for mechanical damage	Check sheet/ defects list.	For entire structure or entire structure as the structure is handed over.
E	Final hand over certificate	Certificate, produced by inspector trained by and approved by the	For entire structure or entire structure as the structure is handed over.

		hot dip galvanizers association.	
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Describe methods for dealing with defects, including non-conformance reports and the closing out thereof.

PSME Subbase (SABS 1200ME)

PSME 5 CONSTRUCTION

PSME 5.7 Transport

Notwithstanding Clause 5.7, Clause PSA 8.10 shall apply.

PSMF Base (SABS 1200MF)

PSMF 5 CONSTRUCTION

PSMF 5.9 Transport

Notwithstanding Clause 5.9, Clause PSA 8.10 shall apply.

C3.4 PARTICULAR SPECIFICATIONS

In addition to the Standardized and Project Specifications the following Particular Specifications shall apply to this contract and are separately bound in hereafter:

Construction Health and Safety Baseline Specification	Annexure A
Baseline Risk Assessment	Annexure B
SHEQ Policy	Annexure C
Environmental Authorisation	Annexure D
Environmental Management Plan for Construction	Annexure E
WUL General Authorisation Letter	Annexure F
Environmental Management Specification	Annexure G
Construction Methodology	Annexure H
Geotechnical Report	Annexure I
Water Analysis	Annexure K
Bridge Performance Specifications	Annexure N

C3.5 ENGINEERING

DESIGN SERVICES AND ACTIVITY MATRIX

Works designed by, per design stage:

(a) Building Contract:

<i>Concept, feasibility and overall process</i>	<i>Engineer</i>
<i>Engineering and detail layout to tender stage</i>	<i>Engineer</i>
<i>Final design to approved for construction stage</i>	<i>Engineer</i>
<i>Temporary works</i>	<i>Contractor</i>
<i>Preparation of as-built drawings</i>	<i>Contractor</i>

(b) Piling Contract:

<i>Concept and Performance Specification</i>	<i>Engineer</i>
<i>Engineering and detail layout, specifications and design</i>	<i>Contractor</i>
<i>Final design to approved for construction stage</i>	<i>Contractor</i>
<i>Temporary works</i>	<i>Contractor</i>
<i>Preparation of as-built drawings</i>	<i>Contractor</i>

(c) Bridge Structure: Design, manufacture and delivery and off loading at site:

<i>Concept and Performance Specification</i>	<i>Engineer</i>
<i>Engineering and detail layout, specifications and design</i>	<i>Contractor</i>
<i>Final design to approved for construction stage</i>	<i>Contractor</i>
<i>Temporary works</i>	<i>Contractor</i>
<i>Preparation of as-built drawings</i>	<i>Contractor</i>

C3.6 DRAWINGS

The drawings issued to tenders as part of the tender documents must be regarded as provisional and preliminary for the tenderer's benefit to generally assess the scope of work.

The work shall be carried out in accordance with the latest available revision of the drawings approved for construction (AFC).

At commencement of the contract, the Engineer shall deliver to the Contractor copies of the AFC drawings and any instructions required for the commencement of the works. From time to time thereafter during the process of the works, the Engineer may issue further drawings for construction purposes as may be necessary for adequate construction, completion and defects correction of the works.

All drawings and specifications and copies thereof remain the property of the Employer, and the Contractor shall return all drawings and copies thereof to the Employer at the completion of the contract.

Drawing Number	Title
Civil Layout Plans and Details	
A_GA20-01	Bridge Layout Plan
A_GA20-02	Bridge Layout Plan, Sections and Details (Sheet 1 of 3)
A_GA20-03	Bridge Layout Plan, Sections and Details (Sheet 2 of 3)
A_GA20-04	Bridge Layout Plan, Sections and Details (Sheet 3 of 3)
Structural Layout Plans and Details	
A_GA30-01	Pile Layout and Details
A_GA30-02	Base Layout and Details
A_GA30-03	Abutment Layout and Details
A_GA30-04	Plan on Bridge
A_GA30-05	Elevation on Bridge

C4: SITE INFORMATION

Document reference	Title	Page
C4.1	Nature of Ground and Sub-soil Conditions	193
C4.2	Spoil sites	194
C4.3	Finishing Off of Site	194
C4.4	Locality Plan	195

C4.1 Nature of ground and subsoil conditions

A geotechnical investigation was undertaken by Outeniqua Geotechnical Services from November 2022 - January 2023. A copy of the investigation report is attached to this document as annexure I. An abstract from the investigation report can be found below.

The investigation included the following:

- Drilling of Four (4) number rotary core boreholes were drilled to depths of 15m
- Logging and photographing cores by qualified engineering geologist according to the SAICE Guidelines for Soil and Rock logging.
- Collecting and transport of soil/rock samples for testing at SANAS-accredited civil engineering laboratory.
- Analysis of results and preparation of a factual and interpretive report containing all information from the investigation. Including recommendations for the design of earthworks and foundations.

The drilling of the boreholes largely indicated similar substrata information.

The finding of the subsurface conditions can be summarized as follows:

- Coarse alluvium was encountered (cobbles and boulders in a sandy/gravelly matrix) to a depth of approximately 6-8m before the underlying bedrock was encountered.
- Relatively shallow water tables were encountered at approximately 1.5 to 2m below ground level.
- Core recoveries in the alluvium were low due to the extremely difficult drilling and most of the sandy matrix was lost in the process.
- The exact contact of the underlying rock was also difficult to determine due to the broken nature of the rock.
- Fracture frequency was typically high and the rock was soft to medium hard or hard with slight to moderate weathering.
- The rock was found to be hard to soft rock consisting of shale and dolerite type rock.

The following recommendations were made for founding of the bridge foundations:

- The bridge is to be founded on a piled system using ODEX permanently cased, rotary bored, reinforced concrete piles, socketed into the underlying bedrock.
- A minimum 1.5m rock socket and minimum pile length of 10m was envisaged for the piles.

Due to access restrictions to the western side of the bridge careful consideration for access to the western side of the river needs to be considered, with specific reference to pile rig size.

From an Earthworks and Roads perspective specific attention needs to be drawn to the following:

- For site clearance it is recommended that the top 150mm be removed.
- It is expected that soil from excavation will be suitable for re-use for backfilling purposes
- For deep temporary excavations exceeding 1m, trench sidewalls should be battered to a minimum safe angle of 35°.
- Erosion control measures, such as silt fences, etc. are highly recommended when working on or near the river embankments
- Excavations below a depth of ~1m on the river banks will most likely encounter a strong groundwater table associated with the river and will require lateral support and dewatering systems to maintain an open workspace.

C4.2 Spoil sites

The location of spoil stockpile sites shall be agreed upon by the ECO prior to the commencement of any operations that will generate spoil materials. No spoil material shall be dumped outside the defined site. The Contractor shall ensure that the material does not blow or wash away. If the spoil material is in danger of being washed or blown away, the Contractor shall cover it with a suitable material, such as hessian or plastic.

C4.3 Finishing-off of the Site

The Contractor must ensure that all temporary structures, materials, waste and facilities used for construction activities are removed within 30 days from completion date project.

The Engineer/Project Manager, ECO, and Contractor must agree on rehabilitation of areas. The Contractor shall be held responsible for the rehabilitation of all areas disturbed during construction. This includes, for example, site camp area, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for, or from, road construction has to be stored temporarily or otherwise within the road reserve, or at designated or instructed areas outside the construction reserve. This responsibility shall extend until expiry of the Defects Liability Period.

Upon completion of the construction period, the Contractor will ensure that the access roads are returned to a state no worse than prior to construction commencing.

The environment (temporary crossing, road diversion and aside of the bridge) must be rehabilitated with grass species that is representative of the local setting. Only indigenous plants which are able to establish easily and will need less maintenance because they have already adapted to the local conditions should be considered. Before final decisions about the choice of plant species are taken the ECO should be approached for their advice.

The Contractor may not use herbicides, pesticides, fertilisers or other poisonous substances for the rehabilitation process unless otherwise agreed with the Engineer.

The Contractor shall undertake to remove all alien vegetation re-establishing on the area and shall implement the necessary temporary or permanent measures to combat soil erosion.

The map displays the Ntabankulu Local Municipality in a light yellow color, bordered by a thick black line. To the west is the Quthing Local Municipality (light green), to the north is the Mthatha Local Municipality (light blue), and to the east is the Ingquzva Hill Local Municipality (light yellow). Major roads shown include the N2 running north-south and the R61 running east-west. The R604 is also visible in the north. Rivers depicted include the Molweni, Malmesbury, Tine, Isisa, Mankene, and Mankweni. Key locations marked with dots are Mount Frere, Mount Ayiff, Tabankulu, Flagstaff, Qumbu, Bizana, and Lusikisiki. A black dot marks the Dikidikini Bridge. A north arrow is located in the top right corner.