



VOLUME 3 OF 3

THE CONTRACT

DEVELOPMENT BANK OF SOUTHERN AFRICA

TENDER NO. RFP268/2023

**APPOINTMENT OF FOR THE CONSTRUCTION OF DIKIDIKINI BRIDGE
IN THE EASTERN CAPE UNDER THE NTABANKULU LOCAL
MUNICIPALITY**

CIDB GRADING CLASS REQUIRED IS 7 CE OR HIGHER

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 Vusi Khumalo 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**

PART 1: 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	No of pages
C1.1	Form of Offer and Acceptance	4
C1.2	Contract Data	1
C1.2.1	Conditions of Contract	5
C1.2.2	Contract Specific Data	6
C1.3	Construction Guarantee	4
	Total number of pages	20

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: RFP268/2023– THE APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE PROPOSED 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

1.1 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

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Details

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2 Subject

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Details

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3 Subject

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Details

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4 Subject
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5 Subject
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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	No of pages
C1.2	Contract Data	1
C1.2.1	Conditions of Contract	5
C1.2.2	Contract Specific Data	6
C1.3	Construction Guarantee	4
	Total number of pages	16

C1.2.1 CONDITIONS OF CONTRACT

GENERAL CONDITIONS OF CONTRACT

The General Conditions of Contract for Construction Works, Third Edition 2015, published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and is obtainable from www.saice.org.za.

The GCC 2015 Principal Building Agreement 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 TO THE GENERAL CONDITIONS OF CONTRACT FOR CONSTRUCTION WORKS 2015

Clause Number	Clause
1.	GENERAL
1.1	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..."

1.1.0	Definitions
	Add the following definitions at the end of the clause:
1.1.1.36	<p>"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;</p>
1.1.1.37	<p>"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:</p> <ul style="list-style-type: none"> (i) the direct or indirect fixing of a purchase or selling price or any other trading condition; (ii) the division of markets by allocating customers, suppliers, territories, or specific types of goods or services; or (iii) collusive tendering;
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 (vi) a resolution is passed by: <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	Delivery of notices 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”
	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	<p>Severance</p> <p>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.</p>
1.3.9	<p>Entire Agreement & Amendments to Contract</p> <p>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.</p> <p>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.</p>
2.	<p>BASIS OF CONTRACT</p>
2.1.2	<p>Available data and information</p> <p>Obtaining information</p> <p>Add the following at the end of Clause 2.1.3:</p> <p><i>"The Contractor shall furthermore be deemed to have:</i></p> <ul style="list-style-type: none"> <i>(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</i> <i>(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</i>

	<i>completion of the Works..”</i>
2.2.4	<p>Adverse Physical Conditions</p> <p>Contractor’s right to claim</p> <p>Add the following at the end of Clause 2.2.4:</p> <p><i>“However, when determining the Contractor’s entitlement to such proven additional cost, the Employer’s Agent may:</i></p> <ul style="list-style-type: none"> <i>(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</i> <i>(ii) 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

C1.2.2 CONTRACT SPECIFIC DATA

Part One - Data provided by the Employer

Clause	Data
1.1.1.13	The Defects Liability period is three (3) years.
1.1.1.14	The time for achieving Practical Completion, from the Commencement Date is 10 calendar months.
1.1.1.15	The name of the Employer is Development Bank of Southern Africa Limited.
1.1.1.16	The name of the Employer's Agent: To be confirmed
1.1.1.26	<p>The Pricing Strategy is a re-measurement contract.</p> <ul style="list-style-type: none"> Any allowance for a contingency amount is solely at the discretion and use of the Bank. All prices must be quoted in Rand. Tenderers will be required to price the bill of quantities. <p>DBSA reserves the right to accept or reject any additional items proposed by the Tenderers.</p>
1.2.1.2	<p>The address of the Employer is:</p> <p>Address (physical): 1258 Lever Road, Headway Hill, Midrand, 1685</p> <p>Address (postal): P.O. Box 1234, Halfway House, Midrand, 1685</p> <p>Contact person:</p> <p>Telephone:</p> <p>Facsimile:</p> <p>e-mail:</p>
3.2.3	<p>The Employer's Agent shall obtain the specific approval of the Employer before carrying out any of his functions or duties according to the following Clauses of the General Conditions of Contract:</p> <p>a) Clause 6.3: Approval to authorise any variation of the form, quality or quantity of the Works, or any part thereof that may be necessary, or for any reason appropriate, which may incur expenditure in excess of the Tender Sum (Fixed Price) excluding the contingency amount.</p>

5.3.1	<p>The documentation required before commencement with Works execution are:</p> <ul style="list-style-type: none"> a) Health and Safety Plan (Refer to clause 4.3) b) Initial Programme (Refer to clause 5.6) c) Initial cash flow projection linked to the programme (Refer to clause 5.6.2.6) d) Security (Refer to clause 6.2) e) Insurance (refer to clause 8.6)
5.3.2	<p>The time to submit the documentation required before commencement with Works execution is 28 days.</p>
5.8.1	<p>The non-working days are Saturdays and Sundays.</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>
5.8.1	<p>Delete the words “sunrise and sunset” and replace with “07:00 and 17:00”.</p>

5.12.2.2 Clause to be read in conjunction with Clause 5.12.5 of the specific Conditions of Contract. Abnormal Climatic Conditions (Rain Delays) - The numbers of days per month, on which work is expected not to be possible as a result of rainfall, for which the Contractor shall make provision, is given in the table below. 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 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.

<u>Month</u>	<u>Days Lost</u>	<u>Average Rainfall</u>	<u>Month</u>	<u>Days Lost</u>	<u>Average Rainfall</u>
January	3	103.8	July	1	18.2
February	3	84.8	August	1	25.8
March	3	92.5	September	1	39.0
April	2	57.3	October	2	53.0
May	1	21.6	November	3	89.5
June	0	9.3	December	3	83.3
TOTAL	23	678.1	* = The number of working days lost allows for the annual statutory Construction holiday in December and January of each year.		

5.13.1 The penalty for failing to complete the Works at the Due Completion Date is R1, 650.00 per day.

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 the Due Completion Date.

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.

5.14.1	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.						
5.16.3	The latent defect period is 5 years.						
6.2.1	<p>Security (Performance Guarantee): Delete the word "selected" and replace it with "stated".</p> <p>The liability of the Performance Guarantee shall be as per the following table:</p> <table border="1"> <tr> <td>Value of Contract (incl. VAT)</td><td>Performance Guarantee Required</td></tr> <tr> <td>Less than or equal to R 1m</td><td>Nil</td></tr> <tr> <td>Greater than R 1m</td><td>10% of the Contract Sum</td></tr> </table>	Value of Contract (incl. VAT)	Performance Guarantee Required	Less than or equal to R 1m	Nil	Greater than R 1m	10% of the Contract Sum
Value of Contract (incl. VAT)	Performance Guarantee Required						
Less than or equal to R 1m	Nil						
Greater than R 1m	10% of the Contract Sum						
6.8.2	Contract Price Adjustment shall NOT BE APPLICABLE.						
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80%.						
6.10.3	<p>Retention Money: Delete the word "selected". The percentage retention on the amounts due to the Contractor is 10%.</p> <p>The limit of "retention money" is: no limit.</p> <p>Interest will not be paid on retention withheld by the employer.</p>						
8.6.1	The Contractor shall provide insurance of the works in terms of clause 8.6 of the GCC						
8.6.1.1.1	The Contract Sum plus 10%						
8.6.1.1.2	The value of plant and materials supplied by the Employer to be included in the insurance sum: Not Required						
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.						

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).
8.6.1.3	Liability insurance to the sum of a minimum of R1 million per claim , and unlimited claims to Completion
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.
8.6.1.5	<p>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 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 1,000,000. • 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 20,000 <p>Insurance of Works</p> <ul style="list-style-type: none"> • Minimum amount for additional removal of debris (no damage): Nil. • Minimum amount for temporary storage of materials off site, excluding Contractor's own premises : Nil • Minimum amount for transit of materials to site: Nil
8.6.5	<p>Approved by Employer: 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>
10.5.1	Dispute resolution shall be by adjudication. However, a standing Adjudication Board shall not be used.
10.5.2	Dispute resolution shall be by ad-hoc adjudication.

10.5.3	The number of Adjudication Board Members to be appointed is ONE (1).
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 CONTRACT DATA (Continued)

Part Two – Data provided by the Contractor

Clause	
1.1.1.9	The Contractor is
1.2.1	The Contractor's address for receipt of communications is: Physical address: Postal address: Fax: E-mail:
1.1.1.14	The time for completing the works is days

PART TWO: ADDITIONAL CLAUSE TO THE GENERAL CONDITIONS OF CONTRACT

1	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 20 th 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 R100.00 per report per day, until report is submitted and which shall not be reversible.
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 (200% of the Civil Engineering Industry minimum wage). • The duration of the appointment.

	<ul style="list-style-type: none"> • 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> <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.</p>
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 supplier 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</p>

	<p>thereto.</p> <p>2. The supplier 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 GCC Variable On Demand Performance Guarantee

To: The Development Bank of Southern Africa Limited

Dear Sirs

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

Performance Bond: *[Drafting Note: Name of Contractor to be inserted]*

Employer: Contract Reference - [●] *[Drafting Note: Contract reference number to be inserted]*

1. In this Guarantee

1.1 The following words and expressions have the following meanings:

- 1.1.1 “Guarantor” - means [●], [●] Branch, (Registration No. [●]); *[Drafting Note: Name of Guarantor to be inserted]* [●] **Financial Services Board Registration number**
- 1.1.2 “Guarantor’s Address” - means [●]; *[Drafting Note: Guarantor’s physical address to be inserted]*
- 1.1.3 “Contract” - means the written agreement entered into between the Employer and the Contractor on or about [●] [●] 201[●] (Contract Reference No. [●]), as amended, varied, restated, novated or substituted from time to time; *[Drafting Note: signature date and Contract reference number to be inserted]*
- 1.1.4 “Contractor” - means [●] a [●] registered in accordance with the laws of [●] with registration number [●]; *[Drafting Note: Name and details of Contractor to be inserted]*
- 1.1.5 “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;
- 1.1.6 “Expiry Date” - means the *date* when the certificate of final completion is issued for the last section ;
- 1.1.7 “this Guarantee” - means this document;
- 1.1.8 “This Guaranteed Sum” – means, subject to clause 4, the sum of [● - figure] ([● - words]) *[Drafting Note: Maximum aggregate Guarantee amount (not exceeding 10.0% of the total of the Prices as at the Contract Date) to be inserted]* which amount will reduce with 50% when the Practical Completion certificate is issued until Final Completion.

1.2 Words or expressions capitalised shall bear the same meaning as assigned to them under the Contract albeit that the Contract itself, and any terms as defined therein, are merely referenced for convenience and not to create an accessory obligation.

2. At the instance of the Contractor, the Guarantor hereby confirms that we hold the Guaranteed Sum at the disposal of the Employer, as security for the proper performance by the Contractor of all of his obligations in terms of and arising from the Contract, and hereby irrevocably and unconditionally both agree and undertake to pay to the Employer, on written demand from the Employer envisaged in paragraph 3 below and received prior to the Expiry Date, any amount or amounts as may be so demanded from time to time, subject to a maximum of the Guaranteed Sum in the aggregate.
3. A demand for payment under this Guarantee shall be made in writing at the Guarantor's address or by email to the following email [.....] and shall:
 - 3.1 state the amount claimed ("the Demand Amount");
 - 3.2 state that the Demand Amount is payable to the Employer in the circumstances contemplated in the Contract:
4. The Guaranteed Sum may be reduced from time to time upon receipt by the Guarantor of the Employer's written certificate certifying the amount of such reduction and the Contractor's entitlement thereto under the Contract.
5. Notwithstanding the reference herein to the Contract the Guarantor acknowledges that:
 - 5.1 the liability of the Guarantor in terms hereof is as principal and not as surety and the Guarantor's obligation/s to make payment:
 - 5.1.1 is and shall be absolute and unconditional in all circumstances; and
 - 5.1.2 is not, and shall not be construed to be, accessory or collateral on any basis whatsoever;
 - 5.2 the Employer shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting the Guarantor's liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Contract or termination of the Contract.
 - 5.3 should the Employer cede its rights against the Contractor to a third party where such cession is permitted under the Contract, then the Employer shall be entitled to cede to such third party the rights of the Employer under this Guarantee on written notification to the Guarantor of such cession.
6. The Guarantor's obligations in terms of this 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 Guarantor in terms hereof shall not be delayed, by the fact that a dispute may exist between the Employer and the Contractor.

7. This Guarantee:

- 7.1 shall expire on the Expiry Date until which time it is irrevocable;
- 7.2 is, save as provided for in 5.3 above, personal to the Employer and is neither negotiable nor transferable;
- 7.3 shall be returned to the Guarantor upon the earlier of payment of the full Guaranteed Sum or expiry hereof;
- 7.4 shall be regarded as a liquid document for, firstly, the purpose of demonstrating and/or determining the amount due by the Guarantor to the Employer and, secondly, obtaining any court order; and
- 7.5 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.

8. The Guarantor chooses the *domicilium citandi et executandi* for all purposes in connection with this Guarantee at the Guarantor's Address.

Signed at _____ Date _____

For and behalf of the Guarantor, which signatories by appending their signatures warrant that they are authorised to bind the Guarantor as above stated:

Guarantor Signatory 1: _____ Guarantor Signatory 2: _____

Name: _____ Name: _____

Capacity of Guarantor Capacity of Guarantor

Signatory 1: _____ Signatory 2: _____

Witness: _____ Witness: _____

(Printed Name of Witness) (Printed name of witness)

Guarantor's seal or stamp _____

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

PART 2: 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	No of pages
C2.1	Pricing Instructions	2
C2.2	Bill of Quantities	1
C.2.3	Amendments, Qualifications And Alternatives By Tenderer	1
	Total number of pages	4

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 DIKIDINI BRIDGE

MAIN SUMMARY PAGE

FINAL SUMMARY			
SECTION	DESCRIPTION		AMOUNT
1	PRELIMINARY AND GENERAL		R
2	EARTHWORKS		R
3	CONCRETE ABUTMENTS		R
4	GABIONS		R
5	PILING		R
6	PREFABRICATED BRIDGE (BUDGETORY ALLOWANCE)		R
7	ROADWORKS (PROVISIONAL)		R
8	CONTRACT PARTICIPATION GOALS		R
		SUB TOTAL A	R
	Allow 5% 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.		R
		SUB TOTAL B	R
	Allow 15% Value Added Tax (VAT)	15%	
TOTAL (INC. VAT) (SUBTOTAL B PLUS VAT)			R -

C2.3 AMENDMENTS, QUALIFICATIONS AND ALTERNATIVES BY TENDERER

Subject to condition stated in Tender Data:

Use this page as a cover page to the *Amendments, Qualifications and Alternatives by Tenderer*

PART 3: SCOPE OF WORK

Document reference	Title	No of pages
	This cover page	1
C3.1	Project Specifications	12
C3.2	Particular Specifications *	1
C3.3	Drawings(list of all drawings)	4
*	Refer to Addendum A & B for additional pages	
	Total number of pages	18

Contents

When the document is complete, insert a 'Table of Contents'. To do this go to: Insert, → Reference, → Index and tables → Table of Contents. Three levels and the title (but not the subtitle) may be shown if the formats used in this template are retained.

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1. DESCRIPTION OF THE WORKS	28
2. DRAWINGS	30
3. PROCUREMENT	31
4. CONSTRUCTION.....	31
5. MANAGEMENT	33

C3.1 PROJECT SPECIFICATIONS

1. DESCRIPTION OF THE WORKS

1.1. Employer's objectives

The Employer's objectives are:

- To provide residents of the Villages with safe 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 Tender comprise of:

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 caps 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,
- 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.

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, equating to approximately double the weight of a single 30-ton truck.

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 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.

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.

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. Extent of the works

The Works to be carried out by the Contractor under this Contract comprise mainly the following:

The works is located in the Ntabankulu Local Municipality in the Alfred Nzo District Municipal area in the Eastern Cape Province. Ntabankulu Town is located approximately 55kms west of Mount Frere and is accessible from the N2 between Mount Frere and Mount Ayliff on the DR08019, pass the villages of Mbombeza, Sipunda, Bakhuba and Mpisini.

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



The bridge shall connect two villages, namely the esiDikidikini village that is in the Ntabankulu LM area, and Ncembe village in the Ingquza Hill LM (Flagstaff) area. These villages are located on either side of the uMzintlava river. There is no formal road to any of these two villages.

The bridge needs to be constructed across the uMzintlava River to provide a link between esiDikidikini and Ncembe villages.

Temporary works shall include:

1. Compliance with Occupational Health and Safety Act of 1993 Edition 23 (latest edition) and Construction Regulations (2014) Code of Practice: Managing exposure to SARS-Cov-2 in the workplace
2. Compliance with compliance with NEMA (Act no. 107 of 1998) and ECA no 73 of 1989
3. Clearing site and surroundings to create accessible working areas as required
4. 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.

5. Temporary water connections, Contractor's offices, storage sheds, latrines, barricading of Works shall be located in an approved position and subject to the approval of all authorities concerned.
6. Safety and security of the Contractors' temporary works shall be at the Contractors' discretion, but always in accordance with stipulated Occupational Health and Safety requirements.
7. The camp shall be adequately guarded during and outside working hours.

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. 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, power approx. 100 kW	hour (hr)
(d) Front-end loader minimum power 90 kW	hour (hr)
(e) Tractor, loader, backhoe, 55-70 kW 0.5 m ³ 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 m ³	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/ 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 OHS Act 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 legal spoil areas of his own choice. 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 than 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 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 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 bidden 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 bidden 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. Sodds 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. Sodds 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 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.)

Although not bound in nor issued with this Document, the following Sections of the Standardized Specifications of SABS 1200 shall form part of this Contract:

Although not bound in nor issued with this document, the following SANS 1200 standardised specifications shall form part of the contract document.

SANS 2001: Construction Works, Part BE1	Earthworks (General)
SANS 2001: Construction Works, Part BS1	Site Clearance
SANS 2001: Construction Works, Part CC1	Concrete Works (Structural)
SANS 2001: Construction Works, Part CS1	Structural Steelwork
SANS 2001: Construction Works, Part DP5	Stormwater drainage
SANS 2001: Construction Works, Part DP6	Below ground water installations

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
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

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.

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."

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 non-perennial stream 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

In addition to the approved laboratories stated in Clause 7.2, a testing laboratory certified by the South African National Accreditation System (SANAS) in respect of the nature and type of testing to be undertaken for the purposes of the Contract, will also be regarded as an approved laboratory.

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 8.3.1.1 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:

One standard office table or desk;

Three chairs

Acceptable lighting.

d) A connection for electricity.

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

Office facilities.....Sum

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

All Occupational Health and Safety compliance time related costsSum

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

All Environmental Management Plan compliance time related costsSum

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

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.

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

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.

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.

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.

PSC-5.6 Conservation of Topsoil

Add the following to this clause;

All topsoil shall be conserved for later use by stockpiling clear of the working area. The location of stockpile must be agreed upon with the ECO prior to commencement of construction.

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.

PSD EARTHWORKS (SANS 1200 D)

PSD-2 INTERPRETATIONS

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 "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.

PSD-5 CONSTRUCTION

PSD-5.1 Precautions

PSD-5.1.1.3 Explosives

Replace with the following:

Blasting is not permitted for this contract.

PSD-5.2 Methods and Procedures

PSD-5.2.5 Transport for Earthworks

PSD-5.2.5.1 Freehaul

Replace sub-clause 5.2.5.1 (b) with the following:

All movement of materials from commercial sources, borrow pits selected by the Contractor, cut, fill, trench excavations and spoil materials will be regarded as freehaul.

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 Galvan 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.

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 3 Materials

PSDM 3.1 Classification for excavation purposes

Replace Clause 3.1 with:

“All cut to fill, cut to spoil, borrow to fill, and excavations for drains will be classified according to PSD 3.1”.

PSDM 5 Construction

PSDM 5.2 Methods and procedures

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 5.2.8 Transport

Notwithstanding Clause 5.2.8, Clause PSA 8.10 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

PSDM 7.3.2 ROUTINE INSPECTION TESTING

Notwithstanding Clause 7.3.2 and Table 2, no single test result which is below the specified density will be accepted.

PSDM 8 MEASUREMENT AND PAYMENT

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 8.3.4 (a) Cut to Fill, Borrow to Fill

Add to Clause 8.3.4 (1) the following:

“Where fill material is borrowed from trench excavations the rate shall include the selection from the sides of trenches, transporting, if necessary, stockpiling, preparing, processing, shaping (including forming side channels and benching if applicable), watering, mixing, compacting to the densities specified and finishing the slopes of fills”.

PSDM 8.3.12 OVERHAUL

Notwithstanding Clause 8.3.12, Clause PSA 8.10 shall apply.

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.

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

PSF PILING (SANS 1200 F)

PSF5 CONSTRUCTION

PSF5.1 GENERAL

In addition to clause 5.1.1:

PSF5.1.1.1 Pile Type

The piles shall be augured and cased as necessary to prevent collapse of ground into the pile shaft. The base of each pile shall be advanced to sufficient depth into bedrock as to ensure that the vertical deflection of the pile head when loaded to the specified capacity shall not exceed 5 mm.

PSF5.1.1.2 Pile Schedule and Supporting Documents

The pile 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 depth, diameter, load capacity and reinforcing for every pile listed. In compiling the schedule the Contractor shall have evaluated his proposed method of constructing the piles in relation to his experience of piling in similar conditions taking into account the site investigation data. The contractor shall have submitted with his tender the name and qualifications of the person responsible for determining the founding depths and representative calculations demonstrating the analytical methods and parameters that will be used in the determination.

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.

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 required for all piles shall be min 30MPa.

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

This test shall be done on a selected 25% of the piles by Cross Hole Sonic Logging and the remaining 75% by Frequency response Tests after a curing period of at least 7 days. The pile head is to be trimmed back by the piling contractor to a sound, horizontal concrete surface, but not necessarily to final trimmed level, before testing. The test results shall include a graphical representation of the response, normalised in relation to the excitation, interpreted by a suitably experienced professional engineer.

For a pile of 450mm and 750mm diameter, the required amount of tubes to be inserted for Cross hole Sonic Logging are 2 and 3 respectively. The methods and general information required for the integrity test are attached in the documents titled; Method Statement for Cross Hole Sonic Logging Test (CSL) and Pile Integrity Testing.

The interpretation is to include the professional engineer's evaluation of the physical integrity of the pile shaft.

The lifting and safety equipment used for cleaning and inspection the base of the boreholes drilled for piles shall be supplied by the contractor. This equipment is required to strictly comply with site safety requirements.

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

Delete Clause 5.10.1.2 and replace with:

PSF5.10.1.2 Cast in-situ piles shall be concreted to a level of at least 200 mm, but not exceeding 500 mm above the cut-off level.

PSF6 TOLERANCES

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 Working Piles:

One working pile for every hundred piles constructed, selected by the Engineer, are to be load tested. The first load test is to be carried out on the first installed pile and completed within 28 days of installing the relevant pile.

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.

Delete Clause 7.6 entirely and replace with:

PSF7.6 ACCEPTANCE CRITERIA

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 Abutments	40/19	0.50

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 Civil 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 "non-designated" 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 3.2.2 STORAGE

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

Only potable quality water from an approved source may be used for mixing concrete. Water from a river or stream may however be used for curing.

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 determined in accordance with SABS Method 840 must not exceed 30% by mass.

Grading:

Not less than 90% shall pass a 4750- µm sieve and between 5 and 25% shall pass 150- µm sieve.

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.

PSG 3.4.5 CONCRETE USING REACTIVE AGGREGATES *

The Contractor shall provide the Civil 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 (Na₂O + 0,658 K₂O). For cement it is expressed as a percentage to be adopted.

PSG 3.4.6 COURSE AGGREGATE

Grading:

The coarse aggregate shall all be retained on a screen with 4,75 mm nominal aperture size with the exception of dust content, which shall not exceed 0,5% by mass.

10% FACT value:

The minus -13.2-mm-plus-9.5-mm fraction shall be tested for the 10% fines aggregate crushing value. (ie. 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 1% by mass as defined under SABS1083:1994.

The 10% "FACT" minimum value for coarse aggregate must be the value for concrete subject to surface abrasion.

The content of chloride ion in the aggregates shall be determined and shall be within the limits specified in SABS 1083. Test results in this regard shall be submitted to the Engineer.

The use of plums will not be permitted in any of the strength concrete specified on the Works.

PSG 3.4.7 DOLOMITIC AGGREGATE

All coarse and fine aggregate used in the conservancy tank shall be dolomitic.

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 Civil 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.

When tested in accordance with the method specified in Appendix C of SABS 677, not more than 25% by mass of the dolomitic aggregate shall be insoluble in hydrochloric acid.

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 Civil 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 Civil 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 Civil 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 PLANT

PSG 4.4 MIXING PLANT AND VIBRATORS

Stand-by mixers and 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 mixers or 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: chafers 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 Civil 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 Civil Engineer, Where welding is approved the methods used shall be subject to the Civil Engineer's approval. Where called for, samples of typical reinforcement to be welded will be sent to a laboratory, designated by the Civil 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 Civil 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

The cover to reinforcing shall be as indicated on the bending schedules.

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 2 300 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 Civil Engineer, will be rejected and shall be removed from the Site.

PSG 5.1.4 Splicing

The position of splices in rebar have been as far as practicable placed at the position of least stress in the element.

Where practicable the position of splices in compression reinforcement have been staggered.

When, in the unlikely event, fastening connections have been adopted, length of connection area of lap joint should 1.3 times of lap length. Length of connection area is 55d (d is small diameter of longitudinal compressive rebar) and should not less than 500 when welding connection and mechanical connection has been adopted. Minimum areas of compression and tensile reinforcement must be in accordance with SANS 0100-1:2000, The structural use of concrete, Part 1: Design

Splice lengths for reinforcement shall not be less than 55 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

The requirements specified in Clause 5.2.5.2 for the removal of formwork in the case of Portland blast furnace cement shall apply for blast furnace slag concrete.

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 0.03

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

PSG 5.5.2 Batching

Batching of strength concrete shall be by mass.

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 5.5.1.7 Blinding

Provide 50mm unreinforced concrete blinding under all bases and ground beams.

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 w, or the manner in which, power floating is carried out.

If plastic shrinkage cracking occurs the cracks shall be closed up by re-vibrating the concrete with a poker vibrator, within about three hours of casting. Once the cracks have been closed, the concrete shall be kept thoroughly wet or covered with plastic sheeting for at least a further three hours.

PSG 5.5.7 Construction Joints

Unless construction joints between designated joints shown on the drawings are authorized by the Civil 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 are 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 Civil 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 Civil 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 re-screeding 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 5.5.14 Defects

All defects shall be repaired as soon as possible after the formwork has been removed and the Civil Engineer has inspected the concrete. A statement of the method to be used for each repair shall be submitted to the Civil 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.

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 Test certificate, which is traceable to batch number	Per batch delivered For every steel type up to 20 t of steel, i.e. for there will be 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	For every steel component

		all dimensional tolerances indicated in section 6 of SABS1200H	
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 m ² 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 hot dip galvanizers association.	For entire structure or entire structure as the structure is handed over.

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 as Annexures A, B, C, and D

PARTICULAR SPECIFICATION	PAGE NO.
C3.4.1 Construction Health and Safety Baseline Specification	Annexure A
C3.4.2 Baseline Risk Assessment	Annexure B
C3.4.3 SHEQ Policy	Annexure C
C3.4.4 ENVIRONMENTAL AUTHORISATION , WULA AND EMP	Annexure D

The above Annexures will be attached on the separate folder

C3.5 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.

DWG NO.	Drawing Title	Page Size	T01
DRAWINGS			
CIVILS			
(GA) General Arrangement Drawings			
A_GA20-01	Bridge Layout Plan	A0	2023-05-26
A_GA20-02	Bridge Layout Plan, Sections and Details (Sheet 1 of 3)	A0	2023-05-26
A_GA20-02	Bridge Layout Plan, Sections and Details (Sheet 2 of 3)	A0	2023-05-26
A_GA20-02	Bridge Layout Plan, Sections and Details (Sheet 3 of 3)	A0	2023-05-26
STRUCTURAL			
(GA) General Arrangement Drawings			
8547AP-STR-01	Pile Layout and Details	A0	2023-05-26
8547AP-STR-02	Base Layout and Details	A0	2023-05-26
8547AP-STR-03	Abutment Layout and Details	A0	2023-05-26
8547AP-STR-04	Plan on Bridge	A0	2023-05-26
8547AP-STR-05	Elevation on Bridge	A0	2023-05-26

PART C.4: SITE INFORMATION

Document reference	Title	No of pages
C4.1	Information & Map	136
C4.2	Geotechnical Report	137

C4.1 INFORMATION & MAP

The project area is located in the Ntabankulu Local Municipality in the Alfred Nzo District Municipal area in the Eastern Cape Province

Project Co-ordinates

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



C4.2 GEOTECHNICAL REPORT

The site-specific Geotechnical Investigation Report is attached as a separate folder