



NEC3 Engineering and Construction

Short Contract (ECSC3)

A contract between Eskom Holdings SOC Ltd (Reg No. 2002/015527/30)

and

for **Access Roads Maintenance at Palmiet Pumped Storage Scheme**

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C1 Agreements & Contract Data

C1.1 Form of Offer and Acceptance

Offer

The Employer, identified in the Acceptance page signature block on the next page, has solicited offers to enter into a contract for the procurement of:

Access Roads Maintenance at Palmiet Pumped Storage Scheme

The tenderer, identified in the signature block below, having examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the Contractor 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 exclusive of VAT is	R
Value Added Tax @ 15% is	R
The offered total of the Prices inclusive of VAT is	R
(in words)	

This Offer may be accepted by the Employer by signing the form of Acceptance overleaf and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the Contractor in the conditions of contract identified in the Contract Data.

Signature(s)

Name(s)

Capacity

**For the
tenderer:**

(Insert name and address of organisation)

Name &
signature of
witness

Date

Tenderer's CIDB registration number:

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 Contractor 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 1 Agreements and Contract Data, (which includes this Form of Offer and Acceptance)

Part 2 Pricing Data

Part 3 Scope of Work: Works Information

Part 4 Site Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

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 Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be signed by the duly authorised representative(s) for both parties.

The tenderer shall within one week of receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the Contract Data at, or just after, the date 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 and signed copy of this document, including the Schedule of Deviations (if any) together with all the terms of the contract as listed above.

Signature(s)

Name(s)

Capacity

**for the
Employer**

(Insert name and address of organisation)

Name &
signature of
witness

Date

Note: If a tenderer wishes to submit alternative tender offers, further copies of this document may be used for that purpose, duly endorsed, 'Alternative Tender No. _____'

Schedule of Deviations

Note:

1. To be completed by the Employer prior to award of contract. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. 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 Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
1		
2		
3		
4		
5		
6		
7		

By the duly authorised representatives signing this Schedule of Deviations below, the Employer and the tenderer agree to and accept this Schedule of Deviations as the only 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 confirmation, clarification or changes 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 Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the tenderer:

For the Employer

Signature

Name

Capacity

On behalf
of

(Insert name and address of organisation)

(Insert name and address of organisation)

Name &
signature
of witness

Date

C1.2 Contract Data**Data provided by the *Employer***

Clause	Statement	Data
General		
10.1	The <i>Employer</i> is (Name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state-owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
10.1 & 14.4	The <i>Employer's</i> representative to whom the <i>Employer</i> in terms of clause 14.4 delegates his actions ¹ is (Name):	TBC
	Address	
	Tel No.	
	Fax No.	
	E-mail address	
11.2(11)	The <i>works</i> are	Access Roads Maintenance at Palmiet Pumped Storage Scheme
11.2(13)	The Works Information is in	the document called 'Works Information' in Part 3 of this contract.
11.2(12)	The Site Information is in	the document called 'Site Information' in Part 4 of this contract.
11.2(12)	The <i>site</i> is	Palmiet Pumped Storage Scheme
30.1	The <i>starting date</i> is.	1st September 2025
11.2(2)	The <i>completion date</i> is.	31st March 2026
13.2	The <i>period for reply</i> is	1 weeks Immediately health and safety issue
40	The <i>defects date</i> is	16 weeks after Completion
41.3	The <i>defect correction period</i> is	2 weeks
50.1	The <i>assessment day</i> is the	25th of each month
50.5	The <i>delay damages</i> are	R500 per day up to a maximum of 10% of the Contract Value
50.6	The retention is	5% of Contract value (maximum 4 weeks after completion)
51.2	The interest rate on late payment is	0.%

¹ Except those actions which can only be done by the *Employer* as a Party to the contract.

80.1	The <i>Contractor</i> is not liable to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property in excess of	the amount of the deductibles relevant to the event described in the applicable "Format ECSC3" policy available on http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx
82.1	The <i>Employer</i> provides this insurance	as stated for "Format ECSC3" available on http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx (See Annexure A for basic guidance)
82.1	The minimum amount of cover for the third insurance stated in the Insurance Table is:	whatever the <i>Contractor</i> deems necessary in addition to that provided by the <i>Employer</i> .
82.1	The minimum amount of cover for the fourth insurance stated in the Insurance Table is:	As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 and the <i>Contractor's</i> common law liability for people falling outside the scope of the Act with a limit of Indemnity of not less than R500 000 (Five hundred thousand Rands)
	Does the United Kingdom Housing Grants, Construction and Regeneration Act (1996) apply?	No
93.1	The <i>Adjudicator</i> is	the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).
93.2(2)	The <i>Adjudicator nominating body</i> is:	the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body
93.4	The <i>tribunal</i> is:	arbitration.
	The <i>arbitration procedure</i> is	the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	South Africa

The person or organisation who will choose an arbitrator

- if the Parties cannot agree a choice or
 - if the arbitration procedure does not state who selects an arbitrator, is
- the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.**
-

The conditions of contract are the NEC3 Engineering and Construction Short Contract (April 2013)²³ and the following additional conditions Z1 to Z11 which always apply:

Z1 Cession delegation and assignment

- Z1.1 The *Contractor* does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer*.
- Z1.2 Notwithstanding the above, the *Employer* may on written notice to the *Contractor* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.

Z2 Change of Broad Based Black Economic Empowerment (B-BBEE) status

- Z2.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor's* B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.
- Z2.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Employer* within thirty days of the notification or as otherwise instructed by the *Employer*.
- Z2.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the *starting date* the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor's* obligation to Provide the Works.
- Z2.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are those stated in Clause 91.1 and the amount due on termination includes amounts listed in Clause 92.1 less a deduction of the forecast additional cost to the *Employer* of completing the *works*.

Z3 Confidentiality

- Z3.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to others except where required by this contract. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to others where required by this contract the *Contractor* ensures that the provisions of this clause are complied with by the recipient.
- Z3.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Employer*.

² If June 2005 Edition applies, delete April 2013 and insert June 2005

³ State whether attached as a 'PDF' file in terms of Eskom's licence, or to be obtained from Engineering Contract Strategies Tel 011 803 3008, Fax 086 539 1902 or www.ecs.co.za.

Z3.3 In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.

Z3.4 The taking of images (whether photographs, video footage or otherwise) of the *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Employer*. All rights in and to all such images vests exclusively in the *Employer*.

Z3.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z4 Waiver and estoppel: Add to clause 12.2:

Z4.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties or their delegates or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z5 Health, safety and the environment

Z5.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *works*. Without limitation the *Contractor*:

- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Site;
- warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of *works*; and
- undertakes, in and about the execution of the *works*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z5.2 The *Contractor*, in and about the execution of the *works*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z6 Provision of a Tax Invoice and interest. Add to clause 50

Z6.1 The *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer's* procedures stated in the Works Information, showing the correctly assessed amount due for payment.

Z6.2 If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms of clause 51.2 is then calculated from the delayed date by when payment is to be made.

Z6.3 The *Contractor* is required to comply with the requirements of the Value Added Tax Act, no 89

of 1991 (as amended) and to include the *Employer's* VAT number 4740101508 on each invoice he submits for payment.

Z7 Notifying compensation events

- Z7.1 Delete from the last sentence in clause 61.1, "unless the event arises from an instruction of the *Employer*."

Z8 *Employer's* limitation of liability; Add to clause 80.1

- Z8.1 The *Employer* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand).

Z9 Termination: Add to clause 90.2, after the words "or its equivalent":

- Z9.1 or had a business rescue order granted against it.

Z10 Addition to Clause 50.5

- Z10.1 If the amount due for the *Contractor's* payment of *delay damages* reaches the limits stated in this Contract Data (if any), the *Employer* may terminate the *Contractor's* obligation to Provide the Works.

If the *Employer* terminates in terms of this clause, the procedures on termination are those stated in Clause 91.1 and the amount due on termination includes amounts listed in Clause 92.1 less a deduction of the forecast additional cost to the *Employer* of completing the *works*.

Z11 Ethics

For the purposes of this Z-clause, the following definitions apply:

Affected Party	means, as the context requires, any party, irrespective of whether it is the <i>Contractor</i> or a third party, such party's employees, agents, or Subconsultants or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,
Coercive Action	means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,
Collusive Action	means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,
Committing Party	means, as the context requires, the <i>Contractor</i> , or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractors or the Subcontractor's employees,
Corrupt Action	means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,
Fraudulent Action	means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
Obstructive Action	means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and
Prohibited	means any one or more of a Coercive Action, Collusive Action Corrupt Action,

Action Fraudulent Action, or Obstructive Action.

- Z11.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.
- Z11.2 The *Employer* may terminate the *Contractor's* obligation to Provide the Services if a Committing Party has taken such Prohibited Action and the *Contractor* did not take timely and appropriate action to prevent or remedy the situation, without limiting any other rights or remedies the *Employer* has. It is not required that the Committing Party had to have been found guilty, in court or in any other similar process, of such Prohibited Action before the *Employer* can terminate the *Contractor's* obligation to Provide the Services for this reason.
- Z11.3 If the *Employer* terminates the *Contractor's* obligation to Provide the Services for this reason, the amounts due on termination are those intended in core clauses 92.1 and 92.2.
- Z11.4 A Committing Party co-operates fully with any investigation pursuant to alleged Prohibited Action. Where the *Employer* does not have a contractual bond with the Committing Party, the *Contractor* ensures that the Committing Party co-operates fully with an investigation.

Z12 Insurance**Z _12.1 Replace core clause 82 with the following:****Insurance cover 82**

- 82.1 When requested by a Party, the other Party provides certificates from his insurer or broker stating that the insurances required by this contract are in force.
- 82.2 The *Contractor* provides the insurances stated in the Insurance Table A, from the *starting date* until the earlier of Completion and the date of the termination certificate.

INSURANCE TABLE A

Insurance against	Minimum amount of cover or minimum limit of indemnity	Cover provided until
Loss of or damage to the works	<p>The replacement cost where not covered by the <i>Employer's</i> insurance</p> <p>The <i>Employer's</i> policy deductible as at contract date, where covered by the <i>Employer's</i> insurance</p>	The <i>Employer's</i> certificate of Completion has been issued
Loss of or damage to Equipment, Plant and Materials	<p>The replacement cost where not covered by the <i>Employer's</i> insurance</p> <p>The <i>Employer's</i> policy deductible as at contract date, where covered by the <i>Employer's</i></p>	The Defects Certificate has been issued

	insurance	
The <i>Contractor's</i> liability for loss of or damage to property (except the <i>works</i> , Plant and Materials and Equipment) and for bodily injury to or death of a person (not an employee of the <i>Contractor</i>) arising from or in connection with the <i>Contractor's</i> Providing the Works	<p><u>Loss of or damage to property</u></p> <p><u>Employer's property</u></p> <p>The replacement cost where not covered by the <i>Employer's</i> insurance</p> <p>The <i>Employer's</i> policy deductible as at contract date where covered by the <i>Employer's</i> insurance</p> <p><u>Other property</u></p> <p>The replacement cost</p> <p><u>Bodily injury to or death of a person</u></p> <p>The amount required by the applicable law</p>	
Liability for death of or bodily injury to employees of the <i>Contractor</i> arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law	

82.3 The *Employer* provides the insurances as stated in the Insurance Table B

INSURANCE TABLE B

Insurance against or name of policy	Minimum amount of cover or minimum of indemnity
Assets All Risk	Per the insurance policy document
Contract Works insurance	Per the insurance policy document
Environmental Liability	Per the insurance policy document
General and Public Liability	Per the insurance policy document
Transportation (Marine)	Per the insurance policy document
Motor Fleet and Mobile Plant	Per the insurance policy document
Terrorism	Per the insurance policy document
Cyber Liability	Per the insurance policy document
Nuclear Material Damage and Business Interruption	Per the insurance policy document

Nuclear Material Damage Terrorism	Per the insurance policy document
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Z13 Nuclear Liability

- Z13.1 The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.
- Z13.2 The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or resulting from nuclear damage, as defined in Act 47 of 1999, save to the extent that any liabilities are incurred due to the unlawful intent of the *Contractor* or any other person or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z13.3 Subject to clause Z13.4 below, the *Employer* waives all rights of recourse, arising from the aforesaid, save to the extent that any claims arise or liability is incurred due or attributable to the unlawful intent of the *Contractor* or any other person, or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z13.4 The *Employer* does not waive its rights provided for in section 30 (7) of Act 47 of 1999, or any replacement section dealing with the same subject matter.
- Z13.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

Z14 Asbestos

For the purposes of this Z-clause, the following definitions apply:

AAIA	means approved asbestos inspection authority.
ACM	means asbestos containing materials.
AL	means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
Ambient Air	means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means occupational exposure limit.
Parallel Measurements	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
Safe Levels	means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of

asbestos and asbestos containing material, equipment and articles.

Standard means the *Employer's* Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles.

SANAS means the South African National Accreditation System.

TWA means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4 hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA.

Z14.1 The *Employer* ensures that the Ambient Air in the area where the *Contractor* will Provide the Services conforms to the acceptable prescribed South African standard for asbestos, as per the regulations published in GNR 155 of 10 February 2002, under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) ("Asbestos Regulations"). The OEL for asbestos is 0.2 regulated asbestos fibres per millilitre of air as a 4-hour TWA, averaged over any continuous period of four hours, and the short term exposure limit of 0.6 regulated asbestos fibres per millilitre of air as a 10-minute TWA, averaged over any 10 minutes, measured in accordance with HSG248 and monitored according to HSG173 and OESSM.

Z14.2 Upon written request by the *Contractor*, the *Employer* certifies that these conditions prevail. All measurements and reporting are effected by an independent, competent, and certified occupational hygiene inspection body, i.e. a SANAS accredited and Department of Employment and Labour approved AAIA. The *Contractor* may perform Parallel Measurements and related control measures at the *Contractor's* expense. For the purposes of compliance the results generated from Parallel Measurements are evaluated only against South African statutory limits as detailed in clause Z14.1. Control measures conform to the requirements stipulated in the AAIA-approved asbestos work plan.

Z14.3 The *Employer* manages asbestos and ACM according to the Standard.

Z14.4 In the event that any asbestos is identified while Providing the Services, a risk assessment is conducted and if so required, with reference to possible exposure to an airborne concentration of above the AL for asbestos, immediate control measures are implemented and relevant air monitoring conducted in order to declare the area safe.

Z14.5 The *Contractor's* personnel are entitled to stop working and leave the contaminated area forthwith until such time that the area of concern is declared safe by either Compliance Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.

Z14.6 The *Contractor* continues to Provide the Services, without additional control measures presented, on presentation of Safe Levels. The contractually agreed dates to Provide the Services, including the Completion Date, are adjusted accordingly. The contractually agreed dates are extended by the notification periods required by regulations 3 and 21 of the Asbestos Regulations, 2001.

Z14.7 Any removal and disposal of asbestos, asbestos containing materials and waste, is done by a registered asbestos contractor, instructed by the *Employer* at the *Employer's* expense, and conducted in line with South African legislation.

Data provided by the Contractor (the Contractor's Offer)

The tendering contractor is advised to read both the NEC3 Engineering and Construction Short Contract (April 2013) and the relevant parts of its Guidance Notes (ECSC3-GN)⁴ in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on page 31 of the ECSC3 April 2013 Guidance Notes.

Completion of the data in full is essential to create a complete contract.

10.1	The <i>Contractor</i> is (Name):	[•]
	Address	[•]
	Tel No.	[•]
	Fax No.	[•]
	E-mail address	[•]
63.2	The percentage for overheads and profit added to the Defined Cost for people is	[•]%
63.2	The percentage for overheads and profit added to other Defined Cost is	[•]%
11.2(9)	The Price List is in	the document called 'Price List' in Part 2 of this contract.
11.2(10)	The offered total of the Prices is [Enter the total of the Prices from the Price List]:	R[•] excluding VAT [in words] [•] excluding VAT

⁴ Available from Engineering Contract Strategies Tel 011 803 3008, Fax 086 539 1902 or www.ecs.co.za.

C2 Pricing Data

C2.1 Pricing assumptions

All Prices are to be shown excluding VAT unless instructed otherwise by the *Employer* in Tender Data or in an instruction the *Employer* has given before the tenderer enters his Prices.

If there is insufficient space in the Price List which follows, state in which document the Price List is contained.

C2.2 Price List

The Price List is as follows

SCHEDULE A: PRELIMINARIES & GENERALS					
ITEM NO	DESCRIPTION	Unit	QTY	RATE	PRICE
1	<u>PRELIMINARY AND GENERAL</u>				
1.1	FIXED CHARGE ITEMS				
1.1.1	Contractual Requirements	Sum	1		
1.1.2	Contractor's obligation in respect of the Occupational Health and Safety Act and construction regulations. Health and Safety file preparation and submission taking cognisance of the Employer's health and safety specifications and/or requirements.	Sum	1		
1.1.3	Storeroom or Office Containers	Sum	1		
1.1.4	Portable toilets	Sum	1		
1.1.5	Site De-establishment	Sum	1		
1.1.6	Security of the Works	Sum	1		
1.1.7	Provisional amount for materials testing as instructed by the Engineer	Provisional Sum	1		
1.1.8	Cost of survey in terms of land surveying act	Sum	1		
2	<u>PLANT AND EQUIPMENT</u>				
	SUPPLY PLANT INCLUDING, OPERATOR FUEL, MAINTENANCE AND PERTINENT COST				
2.1	Tipper truck				
2.2	Grader	hr			Rate only
2.3	Front End Loader	hr	1		Rate only
2.4	Digger / Loader	hr	1		Rate only
2.5	Water Truck	hr	1		Rate only
2.6	Vibrating Roller	hr	1		Rate only
2.7	Other - Specify	hr	1		Rate only

3	<u>ACCOMMODATION OF TRAFFIC</u>				
3.1	Accommodation of traffic for access roads for the duration of contract. The contract rate includes standard traffic accommodation, signage, flagmen, safety signs, traffic safety equipment for the installation of rumble strips, road studs, painting of road markings, and road repairs.	Sum	1		
TOTAL CARRIED FORWARD TO SUMMARY					
SCHEDULE B: ROADWORKS – ACCESS ROADS					
ITEM NO	DESCRIPTION	Unit	QTY	RATE	PRICE
4	<u>CLEARING AND GRUBBING</u>				
4.1	Clearing with machines and hand labour where necessary. This includes removal of vegetation in the roadway and dispose off site.	ha	1.42		
5	<u>EXISTING ROAD PATCH REPAIR</u>				
5.1	The tendered rates includes full compensation for ripping/reworking of existing road material, placing, spreading the material, breaking down oversize material, shaping (survey for level control), scarifying, grader blading, watering, slush compaction, mixing of in situ material where required and compaction to 98% MOD AASHTO density, preparing surface to receive G4 base course and compact in layers not exceeding 100mm thick to a density of 98% MOD AASHTO 40mm below the existing road surface to receive new tack coat of 1L/m ² of 60% Anionic Bitumen emulsion and the void in the patch to be filled in with continuously graded asphalt wearing course to 5-10mm above the existing road surface. All joints between existing and newly laid asphalt to be sealed with a bitumen emulsion sealant and geosynthetic strip from a reputable supplier. The Contractor to allow for 200mm correction layer of base coarse obtained from commercial sources, tidying and finishing off the road within the road reserve. The rate includes all plant, equipment, operators, testing and resources to carry out the works including Modified AASHTO density tests and field compaction tests.	m ²	11		
5.2	The tendered rates includes full compensation for ripping/reworking of existing road material, placing, spreading the material,	m ²	375		

	breaking down oversize material, shaping (survey for level control), scarifying, grader blading, watering, slush compaction, mixing of in situ material where required, preparing surface to receive G5 subbase course compacted to 95% MOD AASHTO density and G4 base course compacted to 98% MOD AASHTO density compacted in layers not exceeding 100mm thick 40mm below the existing road surface to receive new tack coat of 1L/m2 of 60% Anionic Bitumen emulsion and the void in the patch to be filled in with continuously graded asphalt wearing course to 5-10mm above the existing road surface. All joints between existing and newly laid asphalt to be sealed with a bitumen emulsion sealant and geosynthetic strip from a reputable supplier. The Contractor to allow for 250mm correction layer of G5 subbase and 200mm correction layer of G4 base coarse obtained from commercial sources, tidying and finishing off the road within the road reserve. The rate includes all plant, equipment, operators, testing and resources to carry out the works. Modified AASHTO density tests and field compaction tests.				
5.3	The tendered rates includes full compensation for ripping/reworking of existing road material, placing, spreading the material, breaking down oversize material, shaping (survey for level control), scarifying, grader blading, watering, slush compaction, mixing of in situ material compacted to 93% MOD AASHTO density where required, preparing surface to receive G5 subbase course compacted to 95% MOD AASHTO density and G4 base course compacted to 98% MOD AASHTO density compacted in layers not exceeding 100mm thick 40mm below the existing road surface to receive new tack coat of 1L/m2 of 60% Anionic Bitumen emulsion and the void in the patch to be filled in with continuously graded asphalt wearing course to 5-10mm above the existing road surface. All joints between existing and newly laid asphalt to be sealed with a bitumen emulsion sealant and geosynthetic strip from a reputable supplier. The Contractor to allow for 550mm correction layer of G5 subbase and 200mm correction layer of G4 base coarse obtained from commercial sources, tidying and finishing off the road within the road reserve. The rate includes all plant, equipment, operators, testing and resources to carry out the works. Modified AASHTO density tests and field compaction tests.	m ²	100		
5.4	Break out previously casted soilcrete below road surface.	Sum	1		

6	<u>CRACK SEALING (<5mm WIDTH)</u>				
6.1	The tendered rates include full compensation for cleaning cracks with cold compressed air and removing all foreign and loose matter from the cracks, spraying an approved herbicide solution into the cracks, and allowing to dry, pre-treating cracks with a bitumen emulsion manufactured from 80/100 penetration grade bitumen. Contractor to note that a single application of crack sealant might not be sufficient, and that the application might have to be repeated. Road not to be opened and traffic to be accommodated until binder has hardened sufficiently. The rate includes all plant, equipment, operators, testing and resources to carry out the works.	km	25		
7	<u>CRACK SEALING (>5mmWIDTH)</u>				
7.1	The tendered rates include full compensation for cleaning cracks with cold compressed air and removing all foreign and loose matter from the cracks, spraying an approved herbicide solution into the cracks, and allowing to dry, pre-treating cracks with a polymer modified bitumen. Contractor to note that a single application of crack sealant might not be sufficient, and that the application might have to be repeated. Road not to be opened and traffic to be accommodated until binder has hardened sufficiently. The rate includes all plant, equipment, operators, testing and resources to carry out the works.	km	25		
8	<u>REPAIRING EDGE BREAKS</u>				
8.1	Cutting back the edges of the existing surfacing for the repairing of edge breaks with an average width of 500mm	m	10		
8.2	Tack coat 60% Anionic bitumen emulsion at rate of application 1L/m2	l	6		
8.3	Reconstructing edges using: (a) Continuously graded hot asphalt	t	0.35		
8.4	Sealing joints with bitumen emulsion and geosynthetic strips	m	10		
9	<u>TRAFFIC CALMING DEVICES</u>				

9.1	200mm wide asphalt rumble strips	m	331		
10	<u>ROAD MARKINGS & ROAD STUDS</u>				
10.1	Retro-reflective Road marking paint: (a) White lines broken or unbroken (100mm) (WM3 & solid) (b) Yellow lines broken or unbroken (100mm) (RM4.1 & RM4.2) (c) White lines broken or unbroken (500mm) (d) White lettering and symbols (STOP)	km km km m²	36 29 0.04 182		
10.2	Variations in rate of application: (a) White paint (b) Yellow paint (c) Retro-reflective beads	Litres (l) Litres (l) kg			Rates only Rates only Rates only
10.3	Roadstuds (Ferro Lynx A200 or similar approved) Bi-directional (a) Supply and installation of permanent roadstuds (Y/R) (b) Supply and installation of permanent roadstuds (W/W) (c) Supply and installation of permanent roadstuds (R/R) (d) Supply and installation of permanent roadstuds (R/W)	No No No No	1055 70 225 210		
11	<u>ROAD AND SIGNS</u>				
11.1	Supply and erect retro reflective road signs with 76.2 x 3mm diameter galvanised steel tubing (a) Stop sign (R1) (b) Gentle curve right sign (W202) (c) Rumble strip warning sign (d) Proceed left only sign (R105) (e) Wild animals ahead sign (W313)	No No No No No	4 1 8 1 4		
11.2	Supply and erect retro reflective road signs with 50 x 50 x 2mm galvanised square hollow section (a) Danger plate sign (W401) (b) Danger plate sign (W402)	No No	16 16		
12	<u>CONCRETE CHANNEL CONSTRUCTION</u>				
12.1	Install new C1 channels with 20mm silicone sealant and 20MPa concrete benching as per dwg. No. 18.48/25096	m	15		

13	<u>ROUTINE ROAD MAINTENANCE WITHIN THE SITE OF THE WORKS</u>				
13.1	Removing existing guardrails	m	15.25		
13.2	Erecting of guardrails at 3,81m spacing. (a) On timber posts	m	15.25		
13.3	Cleaning out culverts	No	82		
14	<u>FINISHING THE ROAD AND ROADS RESERVE</u>				
14.1	Single carriageway road	km	14.2		
TOTAL CARRIED FORWARD TO SUMMARY					
SCHEDULE C: SIDE CHANNELS – ACCESS ROAD					
ITEM NO	DESCRIPTION	Unit	QTY	RATE	PRICE
15.	<u>STONE PITCH DRAIN REPAIRS</u>				
15.1	Repair store pitched grout to a depth of 300mm	m ²	50		
16	<u>CONCRETE LINED V-DRAIN CHANNEL REPAIRS</u>				
16.1	Preparation and Concrete Repairs using Trowel Applied Mortar:				
16.1.1	High pressure waterjet, clean concrete surfaces and remove unsound concrete. Contractor shall apply patching product as per manufacturers requirements profiling the area to the shape of the previous undamaged structure. Sika Monotop 3020 ZA for 5mm thick application or similar approved to be used as per manufacturer's specifications. Rate includes compressive strength testing.	m ²	500		
16.1.2	High pressure waterjet, clean concrete surfaces and remove unsound concrete. Contractor shall apply patching product as per manufacturers requirements profiling the area to the shape of the previous undamaged structure. Sika Monotop 412 nfg in 50mm thick applications or similar approved to be used for a 80mm thick repair as per manufacturer's specifications. Rate includes compressive strength testing.	m ²	50		
16.2	Preparation and Concrete Repairs using Cast In-situ Concrete:				
16.2.1	Preparation of in-situ material for v-drain channel: (a) Rip, shape and compact to 93% MOD AASHTO in-situ materials (b) Excavate and box shape area to receive concrete channel	m ² m ³	300 10		
16.2.2	Cast in-situ reinforced concrete v-drain				

	channel: (a) Cast 120mm thick in-situ concrete V-drain channel, class 25/19 Mpa complete to detail	m ³	40		
16.2.3	Formwork to form open joints: (a) 12mm softboard on ends of 3m concrete V-drain channels	m ²	50		
16.2.4	Test Cubes: Making and testing 3 No. 150 x 150 x 150mm concrete strength test cubes (1 set) in accordance with SANS method 5861, 5862 and 5863	Set	4		
16.2.5	Joints: (a) Remove existing damaged sealants and remove all foreign and loose matter from the joints with cold compressed air. (b) Install joints with backing chord and sealant between concrete V-drain channels	m m	1500 1500		
17	<u>CONCRETE LINED V-DRAIN CONSTRUCTION</u>				
17.1	Preparation and Concrete Construction using Cast In-situ Concrete:				
17.1.1	Preparation of in-situ material for V-drain channel: (a) Excavate existing poor soil/mud in area to receive concrete channel. (b) Rip, shape and compact to 93% MOD AASHTO in-situ materials for material thickness of 150mm.	m ³ m ²	12 90		
17.1.2	Backfill and compaction: (a) Backfill G5 material compacted to 95% MOD AASHTO. (b) Box shape area to receive concrete channel.	m ³ m ²	13 90		
17.1.3	Waterproofing: 250 Micron Polyethylene sheet to underside of concrete lined V-drain channels	m ²	6		
17.1.4	Cast in-situ reinforced concrete v-drain channel: (a) Cast 120mm thick in-situ concrete v-drain channel, class 25/19 Mpa complete to detail (b) Wood float to Concrete lined V-drain channels	m ³ m ²	10 90		
17.1.5	Formwork to form open joints: 10mm softboard on ends of 3m concrete V-drain channels	m ²	20		
17.1.6	Joints: Expansion joints with jointex backing chord and 10 x 10mm sealant between concrete V-	m	26		

	drain channels				
17.1.7	Tests Cubes: Making and testing 3 No. 150 x 150 x 150mm concrete strength test cubes (1 set) in accordance with SANS method 5861, 5862 and 5863	Set	2		
18	<u>SIDE DRAINS</u>				
18.1	Clean side drains both concrete V-drains and stone pitched channels of all debris and unwanted vegetative growth	Lump sum	1		
SCHEDULE D: ROADWORKS FOR JEEP TRACK					
ITEM NO	DESCRIPTION	Unit	QTY	RATE	PRICE
19	<u>CLEARING AND GRUBBING</u>				
19.1	Clearing with machines and hand labour where necessary. Applicable to 500mm width adjacent to roadway on either side. This includes removal of vegetation in the roadway and dispose off site. Fall of area adjacent to roadway to be maintained after clearing has been executed.	km	0.7		
20	<u>CONSTRUCTION OF PAVEMENT LAYER</u>				
20.1	Jeep Track - Maintenance for full width of jeep track				
20.1.1	All Roadways. Type G5 Commercial Gravel (150mm x 2) compacted to 98% Mod AASHTO max density for jeep track	m ³	70		
20.1.2	The tendered rates includes full compensation for ripping/reworking of existing road material, placing 300mm thick layer of G5 gravel obtained from Palmiet quarry to be used for shortfall material where required, spreading the material, breaking down oversize material, shaping (survey for level control), scarifying, grader blading, watering, slush compaction, mixing of in situ material where required and compaction, preparing surface to receive G5 base course and compact in layers not exceeding 150mm thick to a density of 98% MOD AASHTO. Maintenance of existing drains and channels, tidying and finishing off the road within the road reserve. The rate includes all plant, equipment, operators, testing and resources to carry out the works including Modified AASHTO density tests and field compaction tests.	km	0.7		
TOTAL CARRIED FORWARD TO SUMMARY					
Grand-Total					

C3: Scope of Work

C3.1 Works Information

C 3.1.1 Description of the *works*

The *works* make provision for Road Maintenance *works* of existing access roads at Palmiet Pumped Storage Scheme. This includes the surface deterioration, cracks, and base failure. The works further makes provision for the installation of rumble strips, road studs, and remedial works to access road side drains.

C 3.1.1.1 Background

Palmiet Pumped Storage (PPSS) Scheme is located close to the town of Grabouw and falls within the Theewaterskloof Municipality, in the Western Cape, South Africa. The station is a part of the Eskom Peaking Generation Fleet and consists of two units with each unit capable of individually generating 200MW.

The site access roads are showing signs of distress and fatigue in the form of transverse cracks, pothole, localised edge breaks, and fading road markings. The existing roadside drains require remedial works to reinstate the design integrity. The existing pavement design (Refer to cross section drawing) and road description is as follows:

A jeep track leading to a manhole where monthly inspections and periodic maintenance is carried out requires urgent temporary remedial action which would allow for easy access of site personnel to the area requiring inspection and maintenance.

The existing pavement design (refer to cross section drawing) and road description is as follows:

Road Type	Access/ Class 4
Surface	Chip and Slurry surfacing
Basecourse	Crusher Run 150mm
Subbase	Cement Stabilised Subbase 200mm
Selected Subgrade	In-situ material SSG 150mm
Road Profile Shape	Approximately 3% Chamber/Crossfall
Road Width	8.2m
Side drains	Stone pitched drains / Concrete lined V-drains
Sidewalks	No formal sidewalk

The existing jeep track description is as follows:

Road Type	Jeep track
Surface	Unknown
Basecourse	Unknown
Subbase	Unknown
Selected Subgrade	Unknown
Road Profile Shape	Unknown
Road Width	Approximately 4.5m
Side drains	None
Sidewalks	No formal sidewalk

C 3.1.1.2 Employer's Objective and Purpose of the Works

The *Employer's* objective is for a competent Contractor to perform rehabilitation repairs to the access road network in order to:

- Ensure improved structural performance, integrity and system health of the access road network is preserved and reduce potential risks posed to personnel, operations, and damage to plant.
- Sustain the Power Station's design life cycle and increase the remaining useful life of the

access road network.

- Ensure safe working procedures that pose no threat to Eskom employees, Contractor's, and the environment.
- Ensure that the preservation of civil infrastructure is instituted to achieve the desired design life of the Power Station.
- The road maintenance work to improve riding quality, serviceability, and drainage properties.

C 3.1.2 Management and Start Up

C.3.1.2.1 Engineering quality assurance requirements

The Quality Plan manages the overall quality of the project's main activities and milestones. It lists detailed activities in order of execution where each activity is described and references the associated work packages or specifications with witness, hold and verification points.

- The QCP's make provision for signatures indicating Completion by the *Contractor* and acceptance by the *Employer* at the end of each activity.
- The *Contractor* complies with all quality requirements as set out in 240-105658000 Supplier Quality Management Specification.
- The *Contractor* complies with the latest version of the ISO 9001 Quality Management System.
- The quality requirements are as per Eskom Standard, 240-105658000 Supplier Quality Management Specification.
- The *Contractor* defines the level of QA/QC or inspection imposed on his Subcontractors and suppliers.
- The programming of inspections, hold and witness points are agreed between the *Employer* and the *Contractor* prior to undertaking any work or inspections.
- All technical design and implementation documentation and QCP are submitted to the *Employer* for Acceptance 4 weeks prior to the commencement of any *works* or inspections.
- The *Contractor* has the necessary equipment and qualified staff to carry out the quality control required to ensure compliance with the specification.
- Quality control to be carried out by a qualified inspector who is independent of the application activities. Quality control cannot be carried out by the site supervisor, or any member of staff involved in production and programming.
- The *Contractor* retains the following records:
 - Material batch records
 - Signed Product Data Sheets.
 - Technical records
- Records of dates and times of the application of each coat including repair coats.
 - Records of specific tests as required by the *Employer*
- Quality control plans will include, but is not limited to the following aspects of the works:
 - Road Works

C 3.1.3 Engineering and the Contractors Design

The existing design remains the same as per the drawings of the access road network. The *Contractor* is to construct as per the designs provided. See section 9 List of drawings. See section C3.2 list of drawings

C 3.1.3.1 Scope of work

The Scope must be read in conjunction with the specifications as stipulated in Section C3.3.1.1 to C3.3.1.4 Discrepancies or ambiguities are to be reported to the *Employer* prior to submission of tender. The *Contractor* must submit all work methods, procedures and specifications to the *Employer* for acceptance. The Scope of *Works* entails the provision of services to safely repair the road.

The *Works* comprises the following:

- Submission of all work methods and procedures to the Employer for acceptance.
- The *Contractor* to provide resources, equipment, and services in compliance with the OSH Act.

- The *Contractor* to supply and deliver all necessary materials, machinery, tools, and equipment required to perform the Works as stated in the Technical Specification.
- Repair of existing surface – pothole and patch repair of wearing course, base, and subbase failure (up to 200mm thick).
- Repair of existing surface – transverse and longitudinal cracks.
- Repair of existing surface – edge breaks.
- Install Transverse Rumble Strips as detailed in drawings, controlling of traffic, and erection of associated signage.
- Install Road Studs along main access roads.
- Re-paint Road markings along access roads using retro-reflective paint to match the existing layout.
- Cleaning of side drains and culvert inlet/outlets.
- Repair stone pitch drain mortar.
- Repair concrete defects of the concrete lined V drains.
- Replace damaged guardrail.
- Repair potholes along jeep track, watering and pavement layer compaction
- The pothole repairs along the jeep track includes importing 300mm (thickness, tight) G5 commercial Gravel Wearing Course.

The Contractor assesses the full scope of work at the site inspection meeting and submits tender accordingly. The Contractor shall check and verify the as built condition. The scope is read in conjunction with specifications and the pricelist.

C 3.2 Drawings

Drawing number	Revision	Title
0.48/20002	1	PALMIET PUMPED STORAGE SCHEME– SITE PLAN
0.48/20029	5a	POWER STATION ACCESS ROAD LAYOUT PLAN, SHEET 1
0.48/20030	3a	POWER STATION ACCESS ROAD LAYOUT PLAN, SHEET 2
0.48/20031	6	POWER STATION ACCESS ROAD LAYOUT PLAN (& PART OF KOGGELBERG ACCESS ROAD), SHEET 3
0.48/20039	3a	ROCKVIEW RESERVOIR ACCESS ROAD LAYOUT PLAN, SHEET 1
0.48/20040	2Z	ROCKVIEW RESERVOIR ACCESS ROAD LAYOUT PLAN, SHEET 2
0.48/20041	3Z	ROCKVIEW RESERVOIR ACCESS ROAD LAYOUT PLAN, SHEET 3
0.48/20306	0	POWER STATION SITE WORKS GENERAL LAYOUT PLAN
18.48/24771	0	CONCRETE LINED OPEN DRAIN CROSS SECTION
18.48/25096-1	0	ACCESS ROAD CROSS SECTION THROUGH RESURFACED ASPHALT
18.48/25096-2	0	TYPICAL RUMBLE STRIP
18.48/25096-3	0	ACCESS ROAD STUD POSITION DETAIL
18.48/25096-4	0	TYPICAL V-CHANNEL DETAIL
18.00/29	0	PALMIET POWER STATION – TYPICAL DETAIL ROAD SIGN
18.00/30	0	PALMIET POWER STATION – TYPICAL DETAIL ROAD SIGN W401/402

The drawings provided by the Employer are for reference and pricing only. The Contractor verifies the correctness of these drawings against the As Built condition prior to commencing with the works. Nothing in the drawings lessens the Contractor's obligations as detailed in any other documents forming part of the Contract.

The drawings are the *Employer's* as built drawings for rehabilitation purposes as per the Works Information.

C 3.3 Specifications

Reference number	Description	Tick if publicly available
General Specifications		
240-105658000	Contractor Contract Quality Requirements Specification	
240-53113953	Manage Engineering Accountability Procedure	
240-53114002	Engineering Change Management Procedure	
240-53113685	Design Review Procedure	
240-53665024	Engineering Quality Manual	
240-4332798	Engineering Policy	
36-681	Generation Plant Safety Regulations 36-681	
GGG 0315	Standard drawing practice	
GGG 0441	Drawing record system	
GGG 0462	Quality requirements for engineering and construction works	
32/421	Eskom Life Saving Rules	
OHASA (1993)	Occupational Health and Safety Act of South Africa, Act 85	
	The Compensation for Occupational Injuries and Diseases Act No.130 of 1993, amended by government notices to 30 April 2004 or Equivalent	
	National Environmental Management Act of 1988	
ISO 9001:2008	Quality Management Systems	
240-62196227	Eskom Life-saving Rules Directive 23-421	
	Local Authority By-laws	
Technical specifications		
Inspections and assessments must comply with the following specifications. The following SANS specifications for Civil Engineering is applicable to the work		
240-84418186	Road Specification Manual	
240-99527377	Inspection Manual for Civil Works at Eskom Power Station	
COTO - 2020	Committee of Transport Officials – Standard Specifications for Road and Bridge Works for South African Road Authorities – DS October 2020	✓
SANS 1200	1200 series specification for civil work	✓
SABS 1200 DK	Gabions and pitching	✓
SANS 1200M – 1996	Roads (General)	✓
SANS 1350	Guardrails for roads (W-section)	✓
SANS 1442	Roadstuds	✓
RTSM (3 rd Edition Volume 1)	Road Traffic Signs Manual	✓

TRH14	Guidelines for road construction materials.	✓
TRH 20	The Structural Design, Construction and Maintenance of Unpaved Roads	✓
SANS 5861	Concrete Tests	✓
SANS 5862	Concrete Tests – Consistence of freshly mixed concrete	✓
SANS 5863	Concrete Tests – Compressive strength of hardened concrete	✓

* Available on request

The revisions and amendments of the Specification documents that apply are the latest revisions and amendments in force at the time of the Contract authorisation. Nothing in the Specification documents lessens the *Contractor's* obligations as detailed in any other documents forming part of the Contract.

C 3.3.1 Particular specifications and Performance Requirements

- The *Contractor* to perform a detailed site inspection to note the existing features and as built condition. This includes performing a road construction survey (before and during construction) for level control to ensure the cross-sectional properties of the road is acceptable in terms of the crossfall, camber, vertical alignment, and horizontal alignment. The *Contractor* takes cognisance of the surroundings that may potentially affect the *works* during implementation.
- *Works* to be inclusive of maintenance ensuring proper functionality and maintenance of existing drains and channels.
- For the spot regravelling along the jeep track, the *Contractor* shall note that he will be required to use G5 gravel wearing course for execution of the *works*. The *Contractor* shall be required to obtain the necessary material from Afrimat quarry at Grabouw to match the in-situ material. The *Contractor* takes into account the location and distance of material to be imported and includes this into the price. The spot regravelling includes the addition of 2 layers of 150mm (tight/compacted) Gravel Layer, G5 Commercial Gravel shortfall material where required. Each gravel layer to be compacted using a hand rammer until the hole is filled. The construction is to be in accordance with TRH20 and COTO.
- The *Contractor* to carry out at his own cost the required process control testing as specified in terms of the Standard Specifications for Road and Bridge Works for South African Authorities (COTO), Draft Standard (DS), October 2020. The material specifications to meet the requirements of TRH 20 and material classification as per TRH 14.
- The *Contractor* provides Transport, Carting and Equipment (Plant) to perform the works this includes all that is necessary to perform the works. This would typically include, Tipper trucks, TLB (Tractor, Loader, Backhoe), Grader, Water Truck, Vibratory Rollers, etc. Plant and Equipment used must be fit for
- Purpose as per the standard guidelines for road maintenance (refer to Section 8.3).
- Degree of accuracy in the horizontal plane is degree of accuracy I, as per SANS 1200D.
- The *Contractor* supply plant including operator, fuel, maintenance and pertinent cost to perform the *works*.

C.3.3.1.1 Spot Regravelling – Potholes, Erosion, etc. (Jeep Track)

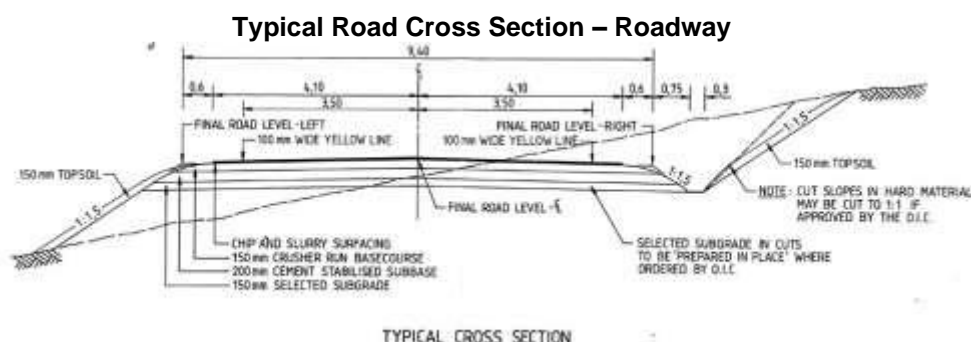
- The *Contractor* identifies areas that requires repair works by performing a survey along the entire length of the jeep track.
- Initially, the subgrade should be cleared of vegetation. All vegetable matter and organic soil to be removed. The roadbed should be ripped and mixed, sprayed with water and then be compacted to a density of at least 93% Mod AASHTO. Remove all loose material by means of sweeping and prepare surface to receive G5 imported material and compact G5 material in layers not exceeding 150mm thick.
- The *Contractor* to allow for 300mm infill material of G5 material obtained from Palmiet Afrimat Quarry.
- The repair must be finished to the best fit line and level, to tie in with the existing road camber or cross fall.

C 3.3.1.3 Repair of existing surface – Pothole and patch repair of wearing course and base failure (up to 200mm thick) (existing asphalt access road)

- Hack up and remove existing premix surface.
- Scarify and compact subbase to a density of 98% MOD AASHTO.
- Remove shortfall material and dust by means of sweeping and prepare surface to receive G4 base course and G4 base course and compact in layers not exceeding 100mm thick to a density of 98% MOD AASHTO 40mm below the existing road surface while taking care not to disturb the sub-base layer.
- Apply new tack coat of 1L/m² of 60% Anionic Bitumen emulsion.
- Void in the patch to be filled in with 40mm thick continuously graded asphalt wearing course to 5-10mm above the existing road surface.
- Seal all joints with a bitumen emulsion sealant and geosynthetic strip from a reputable supplier.
- The *Contractor* to allow for 200mm correction layer of G4 base course obtained from commercial sources.
- To be finished to existing road line, level and grade.

C 3.3.1.4 Repair of existing surface – Pothole and patch repair of wearing course, base and subbase failure (up to 250mm thick G5 and 200mm thick G4) (existing asphalt access road)

- Hack up and remove existing premix surface and base course layer while taking care not to disturb the sub-base layer.
- Notify engineer to inspect condition of undisturbed sub-base layer before continuing with work.
- Scarify and compact subbase to a density of 95% MOD AASHTO.
- Remove all loose material and dust by means of sweeping and prepare surface to receive G5 subbase course and compacted in layers not exceeding 100mm thick to a density of 95% MOD AASHTO and
- Prepare surface to receive G4 base course and compact in layers not exceeding 100mm thick to a density of 98% MOD AASHTO 40mm below the existing road surface.
- Apply new tack coat of 1L/m² of 60% Anionic Bitumen emulsion.
- Void in the patch to be filled in with 40mm thick continuously graded asphalt wearing course to 5-10mm above the existing road surface.
- Seal all joints with a bitumen emulsion sealant and geosynthetic strip from a reputable supplier.
- The *Contractor* to allow for 250mm correction layer of G5 subbase course and 200mm G4 base course obtained from commercial sources.
- To be finished to existing road line, level, and grade.
- V-channel to be constructed using 2 off C1 concrete channels placed back-to-back as per drawing no. 18.48/25096 to accommodate water run-off.
- V-channel to tie in with repaired road to allow for adequate water drainage.



C 3.3.1.5 Crack sealing (less than 5mm width)

- Blow clean the cracks with compressed air and remove all foreign and loose matter from the cracks.
- A supply of approved herbicide, diluted in accordance with the manufacturer's recommendations, shall be prepared. The solution shall be sprayed into the cracks on the road surface where required by means of rucksack type of sprayers and allowed to dry.

- Twenty-four hours after application of the herbicide, the cracks shall be penetrated with a suitable primer.
- Seal the cracks with bitumen crack sealant.
- The solution shall be sprayed into cracks through an applicator specifically for this purpose.
- The primer shall be a bitumen emulsion manufactured from 80/100 penetration grade bitumen obtained from a reputable supplier.
- The *Contractor* shall note that the single application of crack sealant is usually insufficient, and that the application will have to be repeated.
- The *Contractor* to note that crack sealing may not be done within 3 days after the rain.
- Crack sealing shall not take place when the conditions are excessively windy or dusty.
- Sealed cracks should be watertight, look neat and level with the existing road surface.
- The road shall not be opened to construction, or public traffic, until the binder has hardened sufficiently to prevent any pickup or damage of the sealant.

C 3.3.1.6 Crack sealing (more than 5mm width)

- Blow clean the cracks with compressed air and remove all foreign and loose matter from the cracks.
- A supply of approved herbicide, diluted in accordance with the manufacturer's recommendations, shall be prepared. The solution shall be sprayed into the cracks on the road surface where required by means of rucksack type of sprayers and allowed to dry.
- Twenty-four hours after application of the herbicide, the cracks shall be penetrated with a suitable primer.
- Seal the cracks with bitumen crack sealant.
- The solution shall be sprayed into cracks through an applicator specifically for this purpose.
- The crack sealant shall be a polymer modified bitumen obtained from a reputable supplier.
- The *Contractor* shall note that the single application of crack sealant is usually insufficient, and that the application will have to be repeated.
- The *Contractor* to note that crack sealing may not be done within 3 days after the rain.
- Crack sealing shall not take place when the conditions are excessively windy or dusty.
- Sealed cracks should be watertight, look neat and level with the existing road surface.
- The road shall not be opened to construction, or public traffic, until the binder has hardened sufficiently to prevent any pickup or damage of the sealant.

C 3.3.1.7 Edge breaks

- The damage zone to be removed should be marked out clearly along the edge of the road, measuring from the centre line to achieve a neat joint parallel to the road edge.
- Chip out damaged surfacing leaving vertical faces. Excavation should extend to a solid, sound substrate to a minimum depth of 60mm below the final road surface and a maximum depth of 150mm. Remove all loose material and dust by brooming to ensure a good bond and to receive G4 base course and compact in layers not exceeding 100mm thick to a density of 98% MOD AASHTO.
- Apply tack coat of 1L/m² of 60% Anionic Bitumen emulsion and the void in the patch to be filled in with 40mm thick continuously graded asphalt wearing course to 5-10mm above the existing road surface.
- Seal all joints with a bitumen emulsion sealant and geosynthetic strip from a reputable supplier.
- The road edge is reinstated to its original position and neither widened nor narrowed. The repair must be finished to the best fit line and level, to tie in with the existing road camber or cross fall. The gravel shoulder should be shaped so as to allow water to drain away from the road surface.
- All patching work to be carried out and completed on the same day.

C 3.3.1.8 Traverse rumble strips

- Aggregate for rumble strips to be between 9mm – 13.5mm.
- Rumble strips to be 200mm wide spaced at 200mm apart.

- The prime coat shall be Coleprime E as supplied by Colas, or similar approved, for the preparation of the asphalt surface.
- The tack coat shall be 30% stable-grade emulsion, 50/70 penetration grade bitumen.
- The *Contractor* to ensure that all necessary traffic signs and road markings are installed as specified in the South African Traffic Signs Manual and SANS 1200. The rumble strip warning sign to be placed 50 meters ahead of the rumble strips.

C 3.3.1.9 Road studs

- Road stud type and use is classified as RSA-2 (Road Stud Application) as per Table A11.7.5-1 within COTO – 2020 Chapter 11.
- Road studs shall be Ferro Lynx A200 or similar approved.
- Installation must be made on a dry surface that has been swept clean or blown with high-pressure air to remove dirt and dust.
- The road studs shall be fixed by means of an approved epoxy resin or other specified adhesive in accordance with the manufacturer's instructions.
- The studs shall be protected against impact until the adhesive has hardened.
- Where road studs are to be replaced after seal work, care must be taken that sufficient adhesive is used so that the road studs are well supported and bonded
- Road studs shall be fixed after the road marking of the road. Road marking over road studs shall not be accepted.
- Road studs shall be manufactured and installed fully in conformity with the latest Southern African Development Communities Roads Traffic Signs Manual (SADC R.T.S.M.) and SANS 1442-2008.
- The position of road studs shall not deviate from the true position by more than 100mm in the longitudinal and 20mm in the transverse direction.
- The *Contractor* shall replace at his own cost any road studs that have been damaged by constructional activities or that have been stained and cannot be cleaned entirely.
- Not more than 5% loss of road studs during the Defects Notification Period (where applicable) will be accepted. Failure to meet this requirement shall be rectified at the Contractor's expense.

C 3.3.1.10 Road markings to the roads

- Clean and prepare existing road markings for repainting. This includes white lines, yellow shoulder lines and stop signs.
- The access roads consist of white solid and broken centre lines, yellow shoulder lines on both sides of the road and stop signs and locations along the access roads.
- On completion of the patches, edge break repairs and crack sealing, clean and prepare existing road marking for re-painting.
- Road should be clear of debris and any contaminants before painting commences.
- Re-paint the road markings using retro-reflective paint to match the existing layout.
- Road markings shall be painted fully in conformity with the latest Southern African Development Communities Roads Traffic Signs Manual (SADC R.T.S.M) Volume 1, Chapter 7..

C 3.3.1.11 Road signs

- All road signs and traffic signals shall be in accordance with the SADC and the South African Road Traffic Signs Manual, except where otherwise indicated on the drawings or in the Contract Documentation, or as specified by the Engineer.
- Road signposts shall be 76.2 x 3mm nominal diameter galvanised steel tubing erected in the positions shown on the drawings or specified by the Engineer. Posts shall be a minimum of 2,1m above NGL (natural ground level). Applicable to regulatory signs, direction of movement signs, command signs, and symbolic signs.
- W401 & W402 Road signposts shall be 50 x 50 x 2mm SHS (square hollow section) galvanised steel erected in the positions shown on the drawings or specified by the Engineer. Posts shall be a minimum of 1,2m above NGL (natural ground level).
- After erection, the signboard shall be thoroughly cleaned with a cleaning agent approved by the retro-reflective material's manufacturer.

- All vegetation obstructing the new or replaced signboard shall be removed prior to installation and disposed of by the *Contractor* at no additional payment in order to provide clear visibility of the sign to road users.

C.3.3.1.12 Cleaning of side drains and culvert inlets/outlets

- All side drains and culvert inlets/outlets on the access road to the Power Station and access road to Rockview Dam are to be cleaned of debris and vegetation. To include rodding of 75mm weepholes within side walls of concrete lined v-drains. List of culverts along the Access Road to the Power Station as well as the Rockview Reservoir Access Road is attached as appendices. These are to be read in conjunction with drawings supplied. Culverts on the access road to Rockview Dam are also indicated on the drawings.

C.3.3.1.13 Repair stone pitch drain grout

- The grout shall consist of a mortar mix submitted by the contractor for approval.
- Partially damaged grout shall be thoroughly removed between stones.
- Before the grout is applied the surfaces of the stones shall be cleaned of any dirt and then moistened.
- Grout that has been mixed more than half an hour before the time of application shall not be used, and the manner of delivery of grout shall be subject to approval means.
- The minimum depth of penetration of the grout below the top of the pitching surface shall be 300mm.
- No workman or any other load shall be allowed on the grouted surface within the period of 48 hours after the grout has been placed in the voids. Grout spilt onto the exposed surfaces of the stones shall be removed while still soft and the joints between stones shall be neatly finished.
- The grouted surface shall be cured for at least 4 days by the use of an approved curing compound or other approved means.
- All works to be in accordance with SABS 1200DK: Gabions and pitching.

C.3.3.1.14 Repair of deteriorated concrete to v-drain channel using trowel applied mortar

Preparation of the Concrete Surface:

- Prior to breaking out of any concrete which has been identified for repair, the surface of the concrete at and around the repair is to be cleaned such that it is free of any dust, dirt, or deleterious material. This is to ensure that the repair area, once broken out, will not be contaminated.
- The equipment and methods used to break out the concrete are such that no reinforcing steel or other embedded items are loosened, damaged, or removed unless otherwise agreed by the *Employer*. Any damage is brought to the attention of the *Employer* and replaced by the *Contractor* at his own cost.
- The pockets broken out are profiled such that entrapment of air during the process of placing the repair material is avoided. The perimeter of the void is incised to a depth of at least 10mm causing good arises to be formed at the outer edges and so eliminate any occurrence of feather edging. Preferably, these edges should be undercut to form 'dovetailed' edges. Such undercutting should not however, result in acute angles which could weaken the edge.
- All exposed concrete surfaces to receive repair materials are to comprise sound concrete having a rough nature in which the aggregate is exposed. All saw/disc cut edges are to be lightly roughened. This preparation should result in a sound (i.e., no flaking or cracked concrete), exposed concrete substrate free of dust, loose particles, cement paste, laitance covering the aggregate and any deleterious matter or contaminants. Repairs are to be implemented immediately after the cleaning process.
- It is essential, during the break-out and repair phases that any standing water be removed and prevented from entering the broken-out pockets and that the surface be maintained in a dry condition after cleaning.
- No water seepage is expected from the lining. The *Contractor* is to take the necessary measurements of air and concrete temperature and relative humidity to ensure that the substrate temperature is above dew point, and that no condensation occurs on the surface prior to applying the repair material.

Mixing & Application:

- The mixing and application of the repair material(s) are to be performed in accordance with the recommendations of the manufacturer and as may be discussed and agreed with the *Employer* and the manufacturer on site.
- The repair material to be mixed and applied to the voids without delay. Any material not used within the specific pot life will be discarded and not paid for by the *Employer*. Where deep repairs are necessary, the repair material is applied in layers of specified thickness and any bond coats, as recommended by the manufacturer of the repair material, applied. Any such bond coats are to have a wet consistency when the next layer of repair material is applied to prevent the development of bond breakers forming between layers. The surface between layers should not be smooth.

Curing:

- The *Contractor* ensures that repaired areas are adequately cured and that no drying of the repair surface occurs. A minimum cure period is specified between the application of the repair and the re-commissioning of the channels. This minimum cure period must be taken into account by the *Contractor* in planning his repair activities.

Acceptance Tests:

- The sections of concrete broken out are inspected by the *Employer* prior to the application of the repair material.
- The *Contractor* ensures that, where necessary, access is provided to enable the undertaking of inspections and taking of samples for test purposes.
- The *Contractor* takes samples of the repair material and prepares 12 No. cubes for compression strength testing. These tests are conducted such that 4 No. samples are tested at 3, 7 and 28 days after crushing.

Repair Material Specification:

- Sika Monotop 3020 za, low shrinkage surfacing and finishing mortar (applied up to a maximum of 5mm total thickness to repaired area) or similar approved.
- Sika Monotop 412 nfg, low shrinkage repair mortar is applied to within 5mm of the finished surface (applied in 50mm increments up to a maximum of 80mm total thickness to repaired area) or similar approved.

C.3.3.1.15 Repair of deteriorated concrete lined V-drain channel using cast in-situ concrete

- Rip, shape and compact 150mm deep in-situ material to 93% MOD AASHTO density.
- Excavate, prepare, and box shape in-situ materials for concrete channel.
- Use mesh wire 193 for reinforcing.
- Cast approximately 120mm thick, class 25/19 MPa concrete strength, concrete lined V-drain channel to match existing.
- Cast concrete lined V-drain channels in alternative panels of 3m each, separated with 10mm expansion joint or similar approved.

C.3.3.1.16 Removal of existing severely damaged concrete lined V-drain channels

- All damaged concrete channels to be removed and transported to an approved spoil site as provided by the Contractor.
- All adjoining existing work which is to remain shall be protected against damage during such excavation. Any damage to such work shall be made good at the Contractor's cost.

C.3.3.1.17 Construction of new concrete lined V-drain channels

- All new work to match existing.
- Conduct survey and setting out to provide the guide on levels and alignment.
- Excavate and remove existing poor material in area where V-drain channels to be constructed.
- Once soil is sufficiently dry, rip, shape and compact 150mm in-situ material to a density of not less than 93% MOD AASHTO for concrete lined V-drain channels to be replaced.
- Remove all loose material and dust by means of sweeping and prepare surface to receive 150mm layer G5 base course and compacted in layers not exceeding 100mm thick to a density of 95% MOD AASHTO.

- Excavations shall be neatly trimmed to the lines and levels to permit the accurate construction of the linings.
- The surfaces on which the concrete lining is to be cast shall, after having been trimmed, be covered with 250 micron polyethylene sheeting and all joints in the sheeting shall be overlapped by at least 150mm.
- Lay 250 micron polyethylene sheeting on compacted material.
- Place 75mm PVC pipes to act as weepholes in the centre of each side wall panel before casting concrete.
- Cast ± 120 mm thick, class 25/19 MPa concrete strength, concrete lined v drain, to match existing.
- Cast concrete for concrete channels in alternative bay panels of 3m each in the following sequence, separated with jointex or similar approved as per figure below.
 - 1st Cast: Cast Bay 1; 3; 5; 7 and 9.
 - 2nd Cast: Cast Bay 2; 4; 6 and 8.

1 st Cast	Bay 1	Bay 2	Bay 3	Bay 4	Bay 5	Bay 6	Bay 7	Bay 8	Bay 9
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2 nd Cast	Bay 1	Bay 2	Bay 3	Bay 4	Bay 5	Bay 6	Bay 7	Bay 8	Bay 9
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- Before 2nd Cast, place jointex against already casted concrete channels.
- The concrete finish is to be a wood finish.
- 10mm x 10mm Polysulphide sealant to be placed once 2nd cast has been completed and cured adequately.
- Newly casted concrete channel should be swept / raked clean and made good.
- All rubble must be disposed of at an approved spoil site.
- Tolerances page 47.
- After initial curing of concrete has taken place, area to be backfilled to the upper levels of the channel.
- Backfill shall be placed in layers not exceeding 150mm and each layer should be thoroughly compacted. The backfill should be sloped towards the channel encouraging water to enter it.
- Care must be taken not to damage the constructed concrete lined V-drain channels.
- Please see attached drawings for typical details of the concrete lined V-drain channel.

C.3.3.1.18 Repair collapsed road area adjacent to severely damaged concrete V-drain channels

- The damaged zone to be removed should be marked out clearly along the edge of the road, measuring from the centre line to achieve a neat joint parallel to the road edge.
- Hack up and remove existing premix surface, base course, sub-base and previously placed soilcrete taking care not to disturb in-situ material below.
- The *Contractor* identifies areas that requires repair work by performing a survey. Initially the in-situ material should be cleared of vegetation. All vegetable matter and organic soil to be removed. The affected area should be ripped and mixed, sprayed with water to about Optimum Moisture Content (OMC) and then be compacted to a density of at least 93% Mod AASHTO maximum dry density up to the subgrade / subbase level.
- Remove all loose material and dust by means of sweeping and prepare surface to receive G5 subbase course and compacted in layers not exceeding 150mm thick to a density of 95% MOD AASHTO.
- Prepare surface to receive G4 base course and compact in layers not exceeding 150mm thick to a density of 98% MOD AASHTO 40mm below the existing road surface.
- Apply new tack coat of 1L/m² of 60% Anionic Bitumen emulsion.
- Void in the patch to be filled in with 40mm thick continuously graded asphalt wearing course to 5-10mm above the existing road surface.
- Seal all joints with a bitumen emulsion sealant and geosynthetic strip from a reputable supplier.
- The *Contractor* to allow for 550mm correction layer of G5 subbase course and 200mm G4 base course obtained from commercial sources.
- To be finished to existing road line, level, and grade.

C.3.3.1.19 Repair of damaged joints between concrete lined V-drain channels

- All new work to match existing.
- Remove existing sealant and clean joint removing all loose material.
- Install closed cell, polyethelene foam backing rods.
- Seal joint with an approved elastic joint sealant

C.3.3.1.20 Replace damaged guiderails

- The *Contractor* to carry out at his own cost the required process control testing as specified in terms of the Standard Specifications for Road and Bridge Works for South African Authorities (COTO), Draft Standard (DS), October 2020. The material classification as per TRH 14
- The *Contractor* shall replace damaged portion of vehicle restraint system with new guardrail, complete with post, spacer blocks, bolts, nuts, washers as required.
- The replaced guardrail shall have a neat appearance and shall not show any visible deviations from line and grade. Posts shall be straight and vertical. Longitudinal elements shall not be warped but shall be in a vertical plane parallel to the road centreline and tying into the existing guardrails.
- The galvanised surface on the guardrails shall be smooth and continuous and free from abrasions or scratches. Any damage to the surface shall be repaired or replaced at the *Contractor's* expense.
- The newly installed guardrails to comply with SANS 1350 – Guardrails for roads (W-section).

C.3.3.1.21 Acceptance Testing

- The *Contractor* to carry out at his own cost the required process control testing as specified in terms of the Standard Specifications for Road and Bridge Works for South African Authorities (COTO), Draft Standard (DS), October 2020. The material specifications to meet the requirements of TRH 20 and material classification as per TRH 14.

C 3.3.1.22 Quality Assurance (QC)

- The *Contractor* provides the necessary equipment and qualified staff to carry out the QC required to ensure compliance with the specification.
- QC to be carried out by a qualified inspector who is independent of the application activities. Quality control cannot be carried out by the site supervisor, or any member of staff involved in production and programming.
- The *Contractor* retains at least the following records:
 - Material batch records
 - Signed product data sheets and material specification
 - Records of surface preparation
 - Records activity application
 - Records of specific tests as required by the *Employer*
 - Mix design records
 - Material delivery notes
 - Survey records of works
- These records to be kept in a format that meets the approval of the *Employer*.
- The cost of QC shall be included in the *Contractor's* tender price.
- Before the commencement of the contract, the *Contractor* prepares the following:
 - A Quality Plan detailing each activity to be carried out during the execution of the works. Each activity shall be supported by a detailed Works Procedure/Method Statement for that activity. The Quality Plan will also detail the inspection requirements of each specific activity, listing whether it is a review, witness or hold point, and defining the responsibilities of the various parties at each stage of the works.
 - The Safety File.
 - The joint guarantee for coating manufacturer, materials, and workmanship.
- The *Contractor* provides the necessary documentation to be used during all quality control inspections. Such documentation is reviewed and approved by the *Employer* before work

commences.

- The *Contractor* produces evidence that he has copies of and understands all reference documents listed under the specification section.

C 3.3.1.23 Quality Surveillance

- The *Employer* may either carry out Quality Surveillance of the work or employ an independent technically qualified organisation to carry out Quality Surveillance of the work on his behalf. In the event of dispute, the decision of the *Employer* shall be final.
- For the purpose of carrying out quality surveillance, the *Employer* or his authorized representative to be granted access to any part of the *Contractor's* premises relevant to the work being carried out, at any reasonable time. The *Contractor* provides, at his own cost, any equipment or labour necessary to gain safe access to sections of the works to carry out surveillance.
- The *Employer* or his authorized representative may remove any reasonable samples of materials to be used. Rejection of the samples will place a hold on the use of material of the same batch number and may lead to rejection of all that batch of material and the reworking of any components that have already been done (example coating, grouting etc.) with rejected material.
- The *Employer* or his authorized representative may carry out reasonable destructive tests to ascertain compliance with the specification. Areas thus damaged are repaired by the *Contractor* to the satisfaction of the *Employer* at no additional cost.
- The *Contractor* notifies the *Employer* or his authorized representative in advance and timeously of the date on which the activities will be complete and ready for inspection.
- On completion of the contract a final inspection shall be carried out by the *Employer* or his authorized representative and a Contract Completion Certificate will be issued. Final payments will not be made until this Contract Completion Certificate has been issued. This final 'completion' inspection should be carried out just prior to handing over of works.

C 3.3.1.24 Records

- The site is kept and left in a clean and orderly condition as the work progresses and upon completion thereof.
- On completion of the works, the *Contractor* provides the *Employer* with a Data Book containing all the relevant Quality Control documents and records pertaining to the works.
- This data book contains, as a minimum, the following:
 - The Quality Plan.
 - Copies of all Batch Release Certificates from the manufacturers acquired during the course of the project.
 - Copies of the signed paint manufacturer's data sheets acquired during the course of the project.
 - All relevant QC Records.

C 3.3.1.25 Clean working conditions

The site is kept and left in a clean and orderly condition as the work progresses and upon completion thereof. The *Contractor* stores equipment, materials, and plant for which he is responsible in an orderly manner.

C 3.3.1.26 Procedure for submission and acceptance of *Contractor's* design.

The *Contractor* makes use of the *Employer's* design (As built drawings and specification). The *Contractor* is responsible for the complete works and design work based on the *Employer's* functional specification and that proposals are submitted to the *Employer* for acceptance prior to commencement with the manufacturing and construction phase. The *Contractor* is using the *Employer's* design as set out in the drawings list of this Technical Specification. The *Contractor* submits drawings and specifications to the *Employer* for acceptance before manufacturing commences.

C 3.3.1.27 Use of *Contractor's* design

The *Employer* may use and copy the *Contractor's* design for any purpose connected with construction, use, alteration or demolition of the works.

C 3.3.1.28 Design of equipment

The *Contractor* submits particulars of the design of an item of Equipment to the *Employer* for acceptance if the *Employer* instructs him to if needed.

C 3.3.1.27 Equipment required to be included in the works

The *Contractor* provides all mobile access, scaffolding, ladders, rope access and lifting/rigging to perform the *Works*. The *Contractor* provides and erects such scaffolds and rigging as may be required. All scaffolding and rigging complies with the requirements of the OHS Act. Temporary welded support elements are not permitted except where written approval has been granted by the *Employer*.

C 3.3.1.28 As built drawings, operating manuals and maintenance schedules

The *Contractor* submits marked up drawings, operating manuals, and maintenance schedules to the *Employer* for acceptance at completion of the works.

C 3.3.1.29 Procurement

The *Contractor* provides all labour, gear and tools, vehicles, temporary works/ scaffolding, consumables, bulk mixing plant, equipment and cleaning materials required to provide the *Works*. The *Contractor* supplies/procures all Plant and Material, fabrication, manufacturing, handling, storage, testing, delivery, off-loading and erection/construction, disposal of debris and finishing in every detail of *works*. The *Contractor* constructs any works that can be reasonably inferred from this *Employer's* specifications. During the erection period, the *Contractor* as a builder and/or user of machinery performs 'building work' in terms of OHS Act. The *Contractor*, before taking occupation on a Site, obtains a permit to work from the Employer. No unauthorised person(s) enters into any prohibited/restricted area. Daily dairies/logs/data books are kept and signed by the Contractor and are also signed off daily by the Supervisor.

The following is to be recorded (as a minimum) in the daily diaries:

- Manpower and Equipment used,
- Weather conditions,
- Description of any unique occurrences, incidents, or accidents,
- Delays and reasons for the delays,
- Industrial relations abnormalities,
- Description of activities to be performed,
- Recording of on-site tests, for example slump tests.

In addition to the afore mentioned, the Contractor adheres to the following:

- The Contractor is restricted to the Site.
- The Contractor is not to enter any other areas and ensures that his employees abide by the regulations.
- The Contractor's equipment does not impair the operation or access to the plant.
- The Contractor provides any temporary or expendable materials required for the storage of material.
- The Contractor safeguards and secures all items whilst in the Contractor's custody and control, until completion of the works.
- The adjacent plant and equipment are not modified without written permission from the Project Manager.

Modification in this sense includes, but is not limited to the following:

- Welding onto existing plant,
- Drilling into structural steel or concrete,
- Cutting or removing,
- Loading adjacent structures.

C 3.3.2 Plant and materials

C 3.3.2.1 Quality

- The quality requirements are as per Employer's Standard 240-105658000: Supplier Quality Management Specification.

- The *Contractor* establishes and implements a system that, as a minimum, meets the requirements of the ISO 9000 series for quality management systems.
- The main objectives of this series are to ensure that appropriate quality requirements are employed to comply with the services.
- The *Contractor* notifies the *Employer* of any proposed changes to the quality management system that will affect the contract quality requirements, prior to implementing such changes.
- The *Contractor* ensures that appropriate quality requirements are placed to comply with the services.
- The *Contractor* notifies the *Employer* of any proposed changes to the quality management system that will affect the contract quality requirements, prior to implementing such changes.
- Quality Control Plans (QCP's) to be presented by the *Contractor* for *Employer's* Acceptance.
- Corrosion protection to meet the quality requirements of 240-106365693 Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings.
- Civil Engineering works to meet the quality requirements of standards listed in Section 3.3.

C 3.3.2.2 Guarantee Inspection

- The form in which a bond or guarantee required by the conditions of contract (if any) is to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.
- The *Contractor* provides the construction guarantees for the complete Works. The *Contractor* provides the guarantees for their obligations in a letter format clearly stating the guarantees in relation to the scope of work.
- The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Employer* to receive and accept such bond or guarantee. Such withholding of payment due to the *Contractor* does not affect the *Employer's* right to termination stated in this contract.
- The bond/s or guarantee required is provided within 2 weeks of the Contract Date

C 3.3.2.3 Defects correction

- All new equipment, materials and systems shall be furnished with a written guarantee with a defects liability period as per the NEC Contract from date of completion of work. These guarantees shall be furnished in favour of the *Employer*. On Completion of the required and specified work the systems, installations and equipment shall be commissioned and handed over to the Supervisor for acceptance.
- On or before the completion date the *Contractor* has done everything required to Provide the works.
- The *Employer* cannot certify Completion until all the work except that listed below has been done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the works and Others from doing their work.
- After successful commissioning of the plant, the *Employer* takes over the works or section of the works by means of a Take-over certificate listing all defects that may still be outstanding from the works, however not hindering the successful operation of the plant.

C 3.3.2.4 Plant & Materials provided “free issue” by the *Employer*

No Plant and Materials is provided free issue by the *Employer*.

C 3.3.2.5 *Contractor's* procurement of Plant and Materials

- The *Contractor* procures all Plant and Material required for execution of the work.
- The *Contractor* ensures all Plant and Material supplied are adequately packaged and crated for transportation and delivered to Palmiet Pumped Storage Scheme.
- The *Contractor* ensures prior to construction that the Plant and Material delivered are not damaged during delivery to site.
- The Plant and Material is protected against any damages during storage, loading and transportation.

- Crates, containers, boxes etc. are clearly marked on the outside as to the specific contents.
- The *Contractor* is responsible to ensure that all his/her belongings are always stored safely and are not obstructing other operations in the power station.

C 3.3.2.6 *Contractor's* equipment (including temporary works)

- The *Contractor* ensures that any sophisticated or highly specialised Equipment that is required in order to complete the works is put forward on notice to the Employer.
- All other Plant and Materials are to be provided by the *Contractor*.
- Suitable lifting equipment is used for off-loading and loading of the Equipment and associated equipment at the works.
- The *Contractor* provides all the necessary tools, equipment, working at heights equipment, anchor points, mobile access etc. required to execute the Works. During construction, the *Contractor* provides photographs of the works specifically the areas that are above ground level.
- Transportation of equipment and materials is the responsibility of the *Contractor*.
- The *Contractor* supplies, installs, maintains, and removes all temporary construction facilities and utilities necessary to provide the Works. Additionally, the *Contractor's* Equipment does not impair the operation or access to the plant.

C 3.3.4 Construction

C 3.4.1 Temporary works, Site services & construction constrains

For all intents and purpose, temporary works for this contract shall be any work or infrastructure and or establishment which the *Contractor* requires in order to provide the *Works*, which includes inter alia his facilities, laboratories for control and acceptance testing, connection to existing water, sewer, electricity, etc. All such temporary works shall be adequately decommissioned, restoration to natural environment and the area made good on completion of the works; all to the acceptance of the *Employer*.

Method statements shall be prepared prior to commencement of any work for the acceptance of the Supervisor. All costs relative to this aspect shall be on account of the *Contractor*.

C 3.4.1.1 Contractor's equipment

The *Contractor* must provide sufficient Equipment and tools to carry out the work. The *Contractor* shall have all the necessary ancillary Equipment and hand tools available for the work.

C 3.4.1.2 Site services and facilities

a) Source of Power Supply

- The nearest electrical power supply will be indicated but it is the *Contractor's* responsibility to arrange for all such services required in the execution of the works. No warranty is offered or given by the *Employer* that the existing electrical supply availability will be adequate for the *Contractors* purposes nor is that supply in any way guaranteed. The distribution of electricity is carried out by the *Contractor* strictly in accordance with the applicable laws and regulation. The *Contractor* verifies extension lead requirements and provides extension leads to Provide the *Works*.
- The *Contractor* provides everything else necessary for providing the *works*.

b) Source of Water Supply

- The *Contractor* to source and supply his own water and it is the *Contractor's* responsibility to arrange for all such services required in the execution of the *Works*. No warranty is offered or given by the *Employer* that the existing water supply availability will be adequate for the *Contractor's* purpose nor is that such supply in any way guaranteed. All water for construction purposes are clean, free from undesirable concentrations of deleterious salts and other materials.
- The *Contractor* provides everything else necessary for providing the *Works*.

c) Ablution facilities

- *Contractor* to supply their ablution facilities
- The *Contractor* provides everything else necessary for providing the works.

d) Site Induction

- The *Employer* performs a Safety and Environmental induction on site.
- This will be arranged prior to commencement of the *works* on site.

e) Storage

- A suitable storage area to be indicated for the *Contractor's* materials to provide the *works*.
- The *Contractor* provides everything else necessary for providing the *works*.

C 3.4.1.3 Facilities provided by the Contractor

- The *Contractor* makes provision for accommodation, vehicles, kitchen space, office space (mobile container), Equipment etc.
- The *Contractor* removes all Equipment used during the installation and commissioning within 24 hours after commissioning.
- No spoil areas are provided on site and the *Contractor* makes arrangements for the disposal of waste. Construction waste to be disposed at a registered disposal facility.
- The *Contractor* arranges for his own telephone and internet facilities.

C 3.4.1.4 Existing premises, inspection of adjoining properties and checking work of Others

- The *Contractor* communicates disruptions and amount of time of the disruption to the *Employer* during the works.
- The *Contractor* is required to inspect the work and ensure that it is safe before execution. Because Palmiet Pumped Storage Scheme is a power generation plant, the *Contractor* ensures and communicates with the *Employer* regarding working times, construction methods, permits and down time requirements. No work commences pending the *Employer's* written instruction.

C 3.4.1.5 Survey control and setting out of the works

- *Contractor* to perform a survey before and during construction for design check, level control to ensure the cross-sectional properties of the road is acceptable In terms of the crossfall, camber, vertical alignment and horizontal alignment.

C 3.4.1.6 Underground services, other existing services, cable and pipe trenches and covers

- The *Contractor* is required to detect and locate hidden services within the site where necessary.
- The *Contractor* assesses the area to confirm the presence of services. Prior to commencement of any works, the *Contractor* ascertains from the relevant authorities the exact position, depth and level of all existing services in the area and makes provisions that is required by the services authorities concerned for the support, maintenance and protection of such services where required.

C 3.4.1.7 Sequences of construction or installation

- All activities are performed according to the approved construction programme. In the event that changes are necessary, the revised programme to be reviewed and approved by the *Employer*.

C 3.4.1.8 Hook ups to existing works

- The *Contractor* provides sufficient Equipment and tools to carry out the work with reference to hook ups and access. The *Contractor* has all the necessary ancillary Equipment and hand tools available for the work. The *Employer* to request reserve plant should there be any doubt as to the efficiency or capability of the Equipment provided.
- The *Contractor* supplies all tools and Equipment for the works including safety harnesses approved by the *Employer* and stepladders with their inspection records.
- The *Contractor* provides safe rope access to perform the works where required. This is done in strict accordance with the OSH Act and Eskom requirements.

C 3.4.2 Completion, Testing, Commissioning and Correction of Defects**C 3.4.2.1 Work to be done by the Completion Date**

- On or before the Completion Date *the Contractor* shall have done everything required to provide the works. The Project Manager cannot certify Completion until all the work has been done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the works and Others from doing their work.
- The site is cleared of all rubble and refuse due to the *Contractor* providing the works.

C 3.4.2.2 Use of the works before Completion has been certified

- Take-over of the works is after successful commissioning of the works and before Completion is certified.
- After successful commissioning of the plant, the *Employer* takes over the works or section of the works by means of a Take-over certificate listing all Defects that may still be outstanding from the works, however not hindering the successful operation of the plant.
- All roads are currently being used by Eskom employees, other contractors, and private land owners. The *Contractor* shall ensure unrestricted access of all road users at all times. Failure to do

so will result in all third-party claims being passed onto the *Contractor*.

C 3.4.2.3 Access given by the *Employer* for correction of Defects

Access is granted to the *Contractor* for defects correction. C.3.3.2.3 Operational maintenance after completion.

- The *Contractor* lists any specialised maintenance tasks that are required after completion of the *works*. This may comprise items such as waterproofing, fixity, material specifications, inspection frequency, corrosion proofing etc. This is handed over to the *Employer* for record purposes after completion.

C 3.3.5 Plant and Materials Standards and Workmanship

C 3.3.5.1 Investigation, Survey and Site Clearance

- The *Contractor* conducts a thorough survey of the road network where works are to be carried out.
- The *Contractor* conducts a thorough site investigation of existing facilities and the area around which he is to do his work before he commences with any part of the work as detailed in this contract.
- If the *Contractor* requires access to specific areas, this is arranged with the Project Manager and notifying in advance.
- The *Contractor* to dispose all waste generated from the works.
- The *Contractor* provides protection and does not damage existing plant, equipment and services.

C 3.4 Constraints on how the *Contractor* provides the *Works*

C.3.4.1 Access to Site

The *Employer* will provide access to the site for the *Contractor* to conduct repairs works. Palmiet Pumped Storage Scheme can be accessed via the N2 road. Working space may sometimes be restricted. General access to the power station complex is controlled and it is mandatory that the *Contractor* always adhere to all security regulations in force.

C.3.4.2 Notice Board

Signs

Specification data in terms of SANS 1921-1 clause 4.14.6: -

- Signs for access roads, as specified in, Environmental requirements.
- The *Contractor* erects notification signs on Site at public roads adjacent to Site and public crossings intervals, warning of the hazards around the construction site and the presence of heavy vehicles on site.
- The *Contractor* provides notice boards in construction camps as per, Environmental requirements.
- The *Contractor* erects warning signs indicating that the right of way belongs to the landowner, on Site at each private road crossing, 100 m either side of such a crossing.

Permits and Way leaves

The *Contractor* obtains the following:

- Written permission to use land/roads/facilities as per EMP requirements.
- Written permission from appropriate authorities to open temporary deviations.
- Permission to use water from landowners' water sources and written proofs that these water sources are legally registered.

C.3.4.3 Functional Requirements

The *Contractor* must provide sufficient Equipment and tools to carry out the work. The *Contractor* shall have all the necessary ancillary Equipment and hand tools available for the work. The Engineer shall be entitled to request reserve plant should there be any doubt as to the efficiency or capability of the Equipment provided.

It is mandatory that the *Contractor* be certified (in terms of the South African Occupational Health and Safety Act of 1993 and Construction Regulations 2014) and has the necessary skills to carry out the works as per the Works Information. The structures are safe for use and are structurally sound.

The *Contractor* shall provide detailed procedures to be employed, describing systematically how the *Contractor* performs the *works*.

The *Contractor* provides an organogram, specific to this particular scope of work, detailing all the positions and individuals responsible for technical expertise and logistic support. Curriculum Vitae of these key personnel (e.g., person leading the inspection team, rope access supervisor, corrosion applicators etc.), to be included with the Safety Plan. Suitably qualified technical backup or support, Quality Assurance and Quality Control personnel are considered key in the execution process. In this regard, details of the personnel number, qualification type, level and experience to be provided as part of the organogram.

C.3.4.4 Permits and other requirements

The *Contractor* supplies all his employees with clearly identifiable clothing, clearly marked with the *Contractor's* name.

The *Contractor* supplies all his employees with an ID card containing the employee's photo and identity document ID number and statement of employment with the *Contractor*. Employees must carry this document at all times. The *Contractor* manages the ID cards in such a way that persons no longer employed by him do not have these ID cards in their possession.

A security investigation done by the landowners and the *Project Manager*, requires the following additional measures: -

- All prospective employees of the Contractor must be screened for any past criminal involvement.
- Persons with criminal convictions should not be considered for employment purposes.
- Employees must in no way be hired at the Site but rather at the allocated areas/offices in town.
- Vehicles used on the project must have the name of the company or contract marked clearly in a conspicuous position.

All employees must undergo a security briefing before they will be allowed on the servitude.

C.3.4.5 Modifications

The *Contractor* does not modify any plant or materials unless accepted by the *Employer* prior to site execution.

C.3.4.6 Start of Works

A site inaugural meeting is held between the *Contractor* and the *Employer*, where details of the *Works* are discussed and clarified prior to site execution. The start of *Works* shall be as per the contract documentation.

C.3.4.7 Transporting of Employees

The *Contractor* is in all respects responsible for the housing and transporting of employees, and for the arrangement thereof, and no extension of time due to any delays resulting from this, will be granted.

C.3.4.8 Others

The *Contractor* notes that there may be other work taking place during the period when he is providing the *Works*. The *Contractor* liaises with *others* in this regard.

C.3.4.9 Subcontracting

The *Contractor* submits to the *Employer* for its acceptance the names of proposed sub-contractors.

The *Employer* is entitled to withhold acceptance of any proposed sub-contractor or to rescind acceptance of any sub-contractor with whom it may subsequently have reason to be dissatisfied in which case the connection of such sub-contractor with the *Works* shall cease and he is bound to withdraw immediately from the *Works*.

The consent of the *Employer* to the employment of any sub-contractor does not relieve the *Contractor* of his obligations under the contract or in any way affect the *Contractor's* direct responsibility to the *Employer* nor does it render the *Employer* in any way liable to such sub-contractor.

The *Contractor* employs at least one competent representative to supervise the carrying out of the *Works*.

The *Contractor* at all times during the progress of the *Works* provides all watchmen necessary for the protection of the site materials and plant.

The *Employer* is entitled to object to any representative or employee employed by the *Contractor* who, in the *Employer's* opinion, misconducts himself or is incompetent or negligent or otherwise unsatisfactory and the *Contractor* replaces the person so objected to upon receipt from the *Employer* of notice in writing requiring him to do so.

C.3.4.10 Debris

The *Contractor* must remove all debris generated from and transports it to a designated spoil site. All spoil material generated by the *Works*, is disposed of by the *Contractor* at the municipal designated dumping site and the *Contractor* must provide proof or certification thereof.

C.3.4.11 Medical facilities

No medical facilities are available on site.

C.3.4.12 Sanitation of the Works

The *Contractor* is responsible for providing all the required sanitary services necessary and ensuring that the toilets are clean, neat and in a hygienic condition. The *Contractor* arranges for the removal and disposal of sewage for duration of the *Works*. The sanitation of the *Works* is arranged and maintained by the *Contractor* to the satisfaction of the *Employer*. The *Contractor* is advised to visit the site to familiarize the nature and position of the site.

C.3.4.13 Security of Works

The *Contractor* is entirely responsible for the security of all the *Works*, materials, equipment and lighting and other precautions as necessary to ensure security against theft, loss or damage. The *Contractor* is advised to visit site to familiarize with the nature and position of the site.

C.3.4.14 Tool and Equipment

The *Contractor* supplies all tools and Equipment for the *Works* including safety harnesses approved by the *Employer* and step ladders with their inspection records.

C.3.4.15 Management meetings

The *Contractor* arranges and proposes meetings and workshops bi-weekly/monthly for:

Meeting	Frequency	Location	Attendance
Project kick-off meeting	Once	Palmiet Power Station	Employer Contractor Others as required
Daily toolbox talks and pre-job briefs	Daily	Palmiet Power Station	Employer Contractor
Progress meeting	Bi-weekly	Palmiet Power Station	Contractor Employer
SHEQ meeting	Monthly	Palmiet Power Station	Employer Contractor Others as required
Technical meeting	Weekly	Palmiet Power Station	Employer Contractor Others as required
Early warning/Risk reduction meeting	Weekly	Palmiet Power Station	Employer Contractor Others as required

All meetings are recorded using minutes or a register prepared and circulated by the person who convened the meeting. Records of these meetings shall be submitted to the *Employer* by the person convening the meeting within five days of the meeting.

Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out

such actions or instructions. Confirmation of contract communications during operational meetings will, however, be considered as formal acknowledgement of receipt of a contract communication.

C.3.4.16 Weekly Status Reports

A weekly status report is submitted by the *Contractor* to the *Employer*. This report is less formal than the monthly report and is used as a tool for the day-to-day management of the project. Contents of a weekly report may include the following items:

- The updated Primavera programme
- Programme summary narrative
- Progress and performance summaries
- Schedule rolling horizon
- Key Milestone status
- Monthly Progress Report

C.3.4.17 Contractor representation

- The *Contractor's* Site Supervisor is on site for the entire duration of the *Works*.

C.3.4.18 Facilities to be provided by the Contractor.

- If required, the *Contractor* is required to provide his own containers to be used as an office or for storage.
- The *Contractor* supplies all tools and Equipment for the *Works*.
- The *Contractor* provides sanitary facilities and potable water for personnel taken into account the duration of *Works*, location and surroundings.
- The *Contractor* is entirely responsible for the security of all the *Works* for 24-hour period.

C.3.4.19 Title to material

The *Contractor* has no title to plant and/or materials resulting from him carrying out the *Works*.

C.3.4.20 Design by the Contractor

The *Contractor* does not design any of the work.

C.3.4.21 Quality Management

The quality requirements are as per Eskom standard 240-105658000- Supplier Quality Management Specification. The *Contractor* utilizes the *Employer's* forms for requesting access, etc. These request forms are submitted to the supervisor at least one week prior to the requested date.

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 institute a quality control system and provide suitably qualified staff to ensure adequate supervision and positive control of the works at all times.

The programming of inspections, hold and witness points of the repairs is to be agreed between the *Employer* and the *Contractor* prior to undertaking any work.

The *Contractor's* attention is drawn to the provisions of the various Standardized Specifications regarding the minimum frequency of testing required. The *Contractor* shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

On completion and submission of every part of the work to the *Employer* for inspection, the *Contractor* shall furnish to the *Employer* the results of the relevant tests, measurements and levels to demonstrate the achievement of compliance with the specifications.

C.3.4.22 Clean working conditions

- Progressive and systematic finishing and tidying will form an essential part of this contract. The *Contractor* must undertake to dispose of the building rubble as there is no capacity on site to dispose. Materials of value belong to the *Employer* and not the *Contractor*.
- Under no circumstances shall materials, Equipment or unfinished operations be allowed to accumulate unnecessarily and in the event of this occurring the *Employer* shall have the right to withhold payment for as long as necessary in respect of the relevant works in the area(s) concerned.
- The *Contractor* is responsible for Clean Working Conditions, for the duration of the work, and uses the *Employer's* Standard Reference no 167A-139, as a minimum requirement.
- The *Contractor* is responsible to establish and maintain a protected environment around the work area. Only persons authorized by the *Employer* have access to the work area. Precautions are enforced by the *Contractor* to ensure that no foreign objects are lying around at any stage of the work.
- The *Contractor* stores materials and Equipment for which he is responsible in an orderly manner.
- The *Contractor* ensures that the working area remains clean for the duration of the works.

C.3.4.23 Health and Safety requirements

C.3.4.23.1 Health, safety, and the environment

The *Contractor* shall submit a detailed and comprehensive **Safety, Health and Environmental Plan** as required by amongst others the Construction Regulations, General Administration Regulations, General Safety Regulations of the Occupational Health and Safety Act 85 of 1993, Eskom's SHEQ Policy 32-727, Eskom's Permit to Work System, specifically the Plant Safety Regulations that addresses work in confined spaces, 32-418 - Work at Height, 167A/271: Health and Safety Requirements for Contractors, etc. which will include amongst others:

- A **valid and verified** Letter of Good Standing (**mandatory**):
- Risk Assessments including a Fall Protection Plan that must include a detailed fall rescue plan, especially since work at height will be required; mitigation of slip and fall hazards in the Surge Shaft or waterways; Personal Protective Equipment, etc.
- Appropriate statutory appointments specific to the risks of the tasks, e.g. a competent fall protection plan developer, competent risk assessment developer, rescuers, first aiders supervisor, etc.
- Medical Certificates of Fitness issued by a registered occupational health practitioner or occupational medicine practitioner;
- Method Statements/Procedures that specifically address the tasks and their hazards.
- Competencies specific to the tasks, e.g. training in fall arrest systems, maintenance of fall protection equipment, fall rescue, emergency management, risk assessment methods, supervisory skills, etc., issued by accredited safety training service providers;

The *Contractor* and his personnel will attend an induction meeting on site that will detail site health and safety requirements and expectations during the contract, e.g. actions required during an emergency, incident accident reporting, worker identification, security requirement, etc. *Contractor* employees will be required to sign the attendance sheet provided as proof of attendance.

The *Contractor* is responsible for the medical treatment of his/her personnel should it be required and must adhere strictly to the requirements of COID and the contract.

C.3.4.23.2 Safety and Occupational Health Management

- The *Contractor* must submit a detailed and comprehensive Safety Health and Environmental File that is aligned to SHE specifications as required by amongst others the Construction Regulations, Hazardous Chemical Substances Regulations, General Administration Regulations, General Safety Regulations of the Occupational Health and Safety Act 85 of 1993, Eskom's SHEQ Policy 32-727, 167A/271: Health and Safety Requirements for Contractors, etc. which will include amongst others:
- The safety file needs to be signed off by the client before any work can commence.
- Method statement for all the activities should be part of the safety file and plan.
- A letter of Good Standing (compulsory):
- Appropriate statutory appointments;
- Proof of competency
- Medical Certificate of Fitness issued by registered Occupational Health Practitioner.
- Method Statements/Procedures for all tasks as identified in the Risk Assessment
- The *Contractor* and his personnel will attend an induction meeting on site and sign the attendance sheet provided as proof of attendance.
- The *Contractor* shall ensure that adequate precautions are taken to avoid fire hazards, as required by the General Safety Regulations, Construction Regulations of the Act, and any Eskom requirements related to fire risks.

C.3.4.23.3 Environmental Management

The *Contractor's* attention is drawn to the fact that the Power Station is situated in a highly sensitive area with respect to the environment.

The *Contractor* shall adhere to the following:

- Minimise or mitigate any impacts that may cause harm or pollution to the environment.
- Obey the speed limits on site as abundant indigenous wildlife may be encountered throughout the site during the day and night such as small mammals, reptiles, avifauna (antelope, tortoises, birds and bats, snakes et al).
- Follow best practices for waste management, hydrocarbons / oil management and prevention of any spills, clean-up of the spill and report to Eskom for recording, especially leaks from vehicles, equipment and when fuel filling.
- Prevent off-track driving and limit the footprint area to only working areas.
- Smoking allowed only in designated smoking areas. Cigarette butts should under no circumstances be tossed in the field as this may cause a fire.

The *Contractor* acquaints himself with all statutory and local environment regulations and adheres to these without exception, especially the requirements of the National Environmental Act, Number 107 of 1998 and its Regulations.

Any waste that is generated shall be stored, labelled and disposed in the manner prescribed in the applicable legislation governing the management of waste.

The required SHE Plan must be submitted for evaluation **before** any work commences, and no contractor or his/her personnel will be allowed to conduct any work without a duly approved SHE Plan.

C.3.4.24 Emergency procedures

The *Contractor* to submit method statements covering the procedures for the following emergencies:

- **Fire**

The *Contractor* to advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor to ensure that his employees are aware of the procedure to be followed in the event of a fire.

- Leaks and spillages

The *Contractor* shall ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the *Project Manager* and the relevant authorities. The *Contractor* shall ensure that the necessary materials and equipment for dealing with spills and leaks are

available on site at all times. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the *Project Manager*. In the event of a hydrocarbon spill, the source of the spillage shall be isolated, and the spillage contained. The area shall be cordoned off and secured. The *Contractor* shall ensure that there is always a supply of absorbent material readily available to absorb/break down and where possible, the area is designed to encapsulate minor hydrocarbon spillage. The quantity of the absorbent materials shall be able to handle a minimum of 200 litres of hydrocarbon liquid spill.

C.3.4.25 Site Clearance

The *Contractor* removes all his Equipment, plant and waste generated during the *Works* on takeover of the *Works*.

C.3.4.26 Use of standard forms

Standard forms to be used by the *Contractor* in the administration of the contract, for example early warning and compensation event notifications.

C.3.4.27 Contractor Skills and Competency

The *Contractor* shall ensure that there are at all times sufficient suitably qualified, experienced and skilled staff to carry out and supervise all activities. The Skills and competencies is referenced to re-gravelling, blading, road construction, routine maintenance, drainage and ancillary works.

C.3.4.28 Financial records and Accounts

C.3.4.28.1 General

Payments to the *Contractor* are made in terms of the Conditions of contract.

Payments will be made for activities satisfactorily completed and for which acceptance has been received, signed by the responsible principle in the Contractor's organisation.

Before submission of the first invoice, the format is agreed upon with *Supervisor*. One original and two copies are required.

C.3.4.28.2 Forecast Rates of Invoicing

At each assessment interval, the *Contractor* submits to the *Employer* a forecast rate of invoicing that consists of all the expected payments to be made by the *Employer* to the *Contractor* on a month by month basis. Full details and back-up information is provided for the assessment.

Invoices are submitted following the agreement of the assessment by the *Supervisor*

The invoices from the *Contractor* contain the following information:

- The registered name of the company.
- The VAT registration number of the company.
- The *Employer's* contract or purchase order number.
- The invoice sequence number.
- The original contract or purchase order value.
- The amount paid to date.
- The value of the invoice split into the payments as indicated on the price list or activity schedule.

Financial Records and Accounts

Payment is by bank transfer within the period specified in the Contract Data.

The *Contractor* ensures that the *Employer* has his correct banking information to make the transfer. The *Contractor* assumes the risk of incorrect bank transfers arising from changes to the *Contractor's* banking information.

Bank charges in respect of telegraphic transfers levied by *Contractor's* bank are for *Contractor's* account. Bank charges in respect of telegraphic levied by *Employer's* bank are for the *Employer's* account.

All payments are provisional and subject to audit.

The *Contractor* retains its records for such a period as the Department of Internal Revenue may require. If different periods are prescribed, the longest period applies, but in any event, records are retained for not less than five years.

The *Employer* may deduct any amount owed by the *Contractor* to the *Employer* from any amount owed by the *Employer* to the *Contractor*, subject to prior written notification.

C 3.5 Requirements for the programme

The Contractor submits a chart programme in PDF format, detailing how the Works is executed within the stipulated dates. The programme must include the following:

- Lead time from Contract start date to Site Establishment
- Proposed time to complete each activity as per the scope of work.
- Resources needed per activity
- Links between activities indicating predecessors and successors.
- Site establishment and de-establishment duration
- Health, Safety and Environmental considerations including 2 hours for Induction training.
- Float per activity and terminal float for the full schedule.
- Quality verification and testing activities.
- Key deliverable dates.
- The programme revision status.

The programme will be subject to acceptance by the Employer and must be within the offered timeframes during tender stage.

The schedule needs to be updated on a daily basis and be available to the Employer when required. The updated schedule must be presented to the Employer by each Friday of each week during the execution phase of the Works.

The Contractor must stick to the agreed programme and any changes to it need to be approved by the Employer.

C 3.6 Services and other things provided by the Employer

Electrical Supply

- No electrical connections available. The Contractor provides the electrical supply to perform the works.
- Note: The Contractor provides his own extension leads and equipment needed to carry out the works where required.

Potable Water Supply

- All points of supply are provided in terms of availability and location.
- The Employer indicates which supply points may be used.
- Water for construction purposes is the responsibility of the contractor.

Lighting

- Contractor to provide own lighting where required.

- Designated smoking areas
- Personnel to smoke only at designated smoking areas.

Ablution facilities

There are no ablution facilities at the work area.

Telephones

No telephones will be provided.

The Contractor shall make arrangements for his own telephone facilities.

C 3.7 Requirements from the tenderer

The tenderer must submit the following information and documentation with his/her tender:

- Detailed qualifications of any deviation from the contents of this specification.
- Evidence of the tenderer's capability of undertaking that he has successfully completed similar contracts of like size and scope. Additionally provide certification proving competency.
- Provide protection and support to existing equipment where applicable.
- A Quality Control Plan (QCP).
- Method statements
- Protection plan to existing equipment while work is carried out.
- A guarantee of the installed/commissioned work for a period as specified in the specification from the date of issue of the Certificate of Completion.
- A quality assurance document which includes control and management procedures.
- A manual detailing installation care and maintenance procedures where applicable.
- Cleaning and protection during the progress of the works, the Contractor shall clean the work area as well as protect his/her work area in strict accordance with the particular standards for such works.
- A technical construction project programme.

C 3.8 Working Times

Working hours will be the as per the ministerial Determination granted by the Department of Labour and is as follows:

Monday –Thursday	07H00 to 16H15
Friday	07H00 to 12H00
Lunch:	12H00 to 12H30
Teatime (Monday –Thursday):	10H00 to 10H15
	15H00 to 15H15

Overtime will be paid in line with Labour Relation Act.

Time sheets must be completed and approved by the *Employer*

C4: Site Information

C4.1: Information about the *site* at time of tender which may affect the work in this contract

1. Access limitations

Access to the Power Station is restricted to authorized personnel only. All *Contractor's* staff will be required to be cleared by security. *Contractor* gives 24hrs notice to the *Employer* of his intention to enter security controlled areas. Police clearance is a requirement on-site.

All *Contractors* will be tested for the use of alcohol. Any persons found to be above Eskom's legal limit will not be allowed on site.

2. Ground conditions in areas affected by work in this contract

The *Contractor* is to assess the ground condition and work area at the site meeting.

3. Hidden and other services within the *site*

The *Contractor* is to assess the area to confirm the presents of services. Prior to commencement of any *works*, the *Contractor* shall ascertain from the relevant authorities the exact position, depth and level of all existing services in the work area and shall make whatever provisions may be required by the authority concerned for the support, maintenance and protection of such services.

4. Details of existing buildings / facilities which *Contractor* is required to work on

The *Contractor* will not be working on any building when there is the presence of pylons in the area, the *Contractor* is to take caution not to undermine or disturb its foundation in any way.