



AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED

TENDER REFERENCE NUMBER: CTIA 8255/2026/RFP

TITLE: REPLACEMENT OF MECHANICAL GATES AT KIMBERLEYAIRPORT FOR A PERIOD OF 36 MONTHS.

NEC 3: ENGINEERING AND CONSTRUCTION CONTRACT (ECC)

Between AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED

Applicable at: Kimberley Airport

(Registration Number: 1993/004149/30)

and _____

(Registration Number: _____)

for **DESIGN, SUPPLY, INSTALLATION, TEST AND COMMISSIONING OF MECHANICAL GATES AT KIMBERLEY AIRPORT FOR A PERIOD OF 36 MONTHS.**

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Part C1: Agreements and Contract Data

C1.1: Form of Offer and Acceptance

OFFER

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

The design, supply (inspection as may be necessary before dispatch), delivery at Kimberely Airport, installation, testing, commissioning of mechanical gates. The Contractor shall be responsible for the removal and disposal of the existing mechanical gates. Upon Practical Completion of the project, ACSA and the Contractor will enter into a separate 5 year maintenance contract. During the maintenance period, the Contractor will be responsible for all required maintenance, repair, servicing and inspections of the gate system.

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

By the representative of the tenderer, deemed to be duly 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 INCLUSIVE OF VAT IS:

.....

..... (in words).

(in figures) R.....

THE OFFERED PRICES ARE AS STATED IN THE PRICING SCHEDULE

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document 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
Bidder:**

Name &
signature of
witness

.....
(Insert name and address of
organisation)

.....
Date

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 and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
Part C2	Pricing Data
Part C3	Scope of Work: Works Information
Part C4	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 Returnable 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.

The tenderer shall within two weeks 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. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

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

for the Employer

Airports Company South Africa SOC Limited
Western Precinct, Aviation Park,
O.R. Tambo International Airport,
1 Jones Road, Kempton Park, 1632

Signature(s)	Date
Name(s)	
Capacity	
Name & signature of witness	Date

Schedule of Deviations

1 Subject .....	.....
Details .....	.....
.....	
.....	
.....	
2 Subject .....	.....
Details .....	.....
.....	
.....	
.....	
3 Subject .....	.....
Details .....	.....
.....	
.....	
.....	

By the duly authorised representatives signing this agreement, the Employer and the Tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the returnable 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 Agreement shall have any meaning or effect in the contract between the parties arising from this agreement.

	<u>For the Employer</u>	<u>For the Bidder</u>
Signature (s)	.....	.....
Name (s)	.....	.....
Capacity	.....	.....
Name and Address	Airports Company South Africa SOC Limited Kimberley Airport, Private Bag X9002 Kimberley 8300	
Name & Signature of witness	<i>(Insert name and address of organisation)</i>	<i>(Insert name and address of organisation)</i>
Date	.....	.....

C1.2 NEC ECC3 Contract Data

Part one - Data provided by the *Employer*

Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option	
	dispute resolution Option and secondary Options	A: Priced contract with Activity Schedule W1: Dispute resolution procedure X7: Delay damages X13: Performance Bond X15: Limitation of <i>Contractor's</i> liability for design to reasonable skill and care X16: Retention X18: Limitation of liability Z: <i>Additional conditions of contract</i> of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)
10.1	The <i>Employer</i> is (Name):	Airports Company South Africa SOC Limited (reg. no: 1993/004149/06),
	Address	Kimberley Airport, Private Bag X9002 Kimberley 8300
	Telephone	TBC
	Employer Project Manager	TBC
	Telephone	TBC
	e-mail	TBC
10.1	The Project Agent appointed by the Employer is:	Delta Built Environment Consultants Pty Ltd (reg. no: 2006/006896/07)

	Address	3 rd Floor Rynlal Building, 320 the Hillside Str Lynnwood Pretoria
	Tel	012 368 1850
10.1	Project Manager	TBC
	Tel	TBC
	e-mail	TBC
10.1	The <i>Supervisor</i> is: (Name)	TBC
	Tel No.	TBC
	e-mail	TBC
11.2(13)	The <i>works</i> are	Refer to Part C3: Description of the Works section in this contract.
11.2(14)	The following matters will be included in the Risk Register	• Unknown Services • Availability and accuracy of As Built information • Access to Site (approvals and permits, police clearance required) • Tie-in with existing infrastructure. • Security and guarantee approvals • Live Operational environment • Unavailability of the Hotel Taxiway access gate during construction for GA users. • Weather conditions • Statutory approvals and ACSA Approvals • Site Constraints and Constructability • The Method Statement • Notification of compensation events and ACSA approvals • Limited project budget • Payment delays • Procurement of material or sub-Contractors • Refer to Annexure C5.2 for more risks
11.2(15)	The <i>boundaries of the site</i> are	Kimberley Airport
11.2(16)	The Site Information is in	Part C4: Site Information
11.2(19)	The Works Information is in	Part C3: Scope of Work section of this contract.
12.2	The <i>law of the contract</i> is	the law of the Republic of South Africa
13.1	The <i>language of this contract</i> is	English
13.3	The <i>period for reply</i> is	Fourteen (14) working days
2	The Parties' main responsibilities	
20.1	<i>Access to any information</i>	Access date

To be confirmed upon tender award.

3 Time			
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> (excluding defects period and extended maintenance period) is	12 months after signing of the contract by ACSA.	
11.2(9)	The <i>key dates</i> and the <i>conditions</i> to be met are:	Condition to be met	key date
		1 Submission of Programme	2 weeks after PO issuance by ACSA.
		2 Completion of Concept Design.	4 weeks after PO issue by ACSA.
		3 Completion of Detail Designs	2 months after signing of the contract by ACSA.
		4 Approval of Health and Safety File by CHSA	2 weeks upon approval of the Detail Designs by Engineers & Acceptance thereof by ACSA
		5 Site Handover & Commencement of Works	Upon approval of Health and Safety File by CHSA & ACSA.
		6 Programme Updates	At intervals no longer than 4 weeks.
		7 Practical Completion	12 months after signing of the contract by ACSA.
30.1	The <i>access dates</i> are:	Part of the Site	Date
		1 Airside	Upon signing of the contract by ACSA
		2 Landside staging area	Upon signing of the contract by ACSA
31.1	(a) The Contractor submits a first (preliminary) programme for acceptance within	Two (2) weeks upon signing of the contract by ACSA	
31.2	The <i>starting date</i> is	Upon signing of the contract by ACSA	
32.2	The <i>Contractor</i> submits revised programmes at intervals no longer than	4 weeks.	

35.1	The <i>Employer</i> is not willing to take over the <i>works</i> before the Completion Date.																														
4	Testing and Defects																														
42.2	The <i>defects date</i> is	52 weeks (12 months) after Completion of the whole of the <i>works</i> .																													
43.2	The <i>defect correction period</i> is	4 (Four) weeks																													
47	The Contractor submits a quality plan for acceptance within:	Two (2) weeks Upon signing of the contract by ACSA																													
5	Payment																														
50.1	The <i>assessment interval</i> is	Between the 15 th and 22 nd day of each successive month.																													
51.1	The <i>currency of this contract</i> is the	South African Rand.																													
51.2	The period within which payments are made is	Four (4) weeks after the receipt of the tax invoice.																													
51.4	The <i>interest rate</i> is	The prime rate of interest (calculated on a 365-day year) charged from time to time by Nedbank Bank of South Africa for amounts due in Rands; and the exchange rate published by the South African Reserve Bank from time to time for amounts due in other currencies.																													
6	Compensation events																														
60.1(13)	The place where weather is to be recorded is: The <i>weather measurements</i> to be recorded for each calendar month are,	At the Construction Site Office and the records to be kept on site in a file clearly marked for this purpose. the cumulative rainfall (mm) the number of days with rainfall greater than 10 mm the number of days with minimum air temperature of less than 0 degrees Celsius.																													
60.1(13)	Assumed values for the ten-year return <i>weather data</i> for each <i>weather measurement</i> for each calendar month are:	<table><tr><td>Month</td><td>Days</td><td>Month</td><td>Days</td></tr><tr><td>January</td><td>1</td><td>July</td><td>4</td></tr><tr><td>February</td><td>1</td><td>August</td><td>3</td></tr><tr><td>March</td><td>2</td><td>September</td><td>2</td></tr><tr><td>April</td><td>2</td><td>October</td><td>2</td></tr><tr><td>May</td><td>3</td><td>November</td><td>1</td></tr><tr><td>June</td><td>4</td><td>December</td><td>1</td></tr></table>		Month	Days	Month	Days	January	1	July	4	February	1	August	3	March	2	September	2	April	2	October	2	May	3	November	1	June	4	December	1
Month	Days	Month	Days																												
January	1	July	4																												
February	1	August	3																												
March	2	September	2																												
April	2	October	2																												
May	3	November	1																												
June	4	December	1																												
7	Title																														
	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.																														
8	Risks and insurance																														
84.1	Contractor provides the insurance stated in	The Insurance Clauses which are attached separately as Annexure C5.7. The insurances are in the joint																													

	The minimum limit of indemnity for insurance in respect of death of or bodily injury to employees of the Contractor arising out of and in the course of their employment in connection with this contract for any one event is:	names of the Parties and provide cover for events which are at the Contractor's risk from the starting date until the Defects Certificate or a termination certificate has been issued. As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993
9	Termination	Applicable as per Section 9 of the NEC3 ECC (April 2013).
10	Data for main Option clause	
A	Priced contract with activity schedule	Refer to Part 2: Pricing Data section of this contract.
11	Data for Option W1	
W1.1	The <i>Adjudicator</i> is (Name)	The person selected from the panel of adjudicators listed in Annexure C1.A of this Contract Data, by the party intending to refer a dispute to him.
W1.2(3)	The <i>Adjudicator nominating body</i> is:	The Chairman of the Johannesburg Society of Advocates, or his successor or his nominee.
W1.4(2)	The <i>tribunal</i> is:	Arbitration.
W1.4(5)	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	In the city where the Site is located, within South Africa. be held is
	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.
12	Data for secondary Option clauses	
X7	Delay damages (but not if Option X5 is also used)	
X7.1	Delay damages for Completion of the whole of the <i>works</i> are	0.05% per day up to the maximum of 10% of the Contract value.
X13	Performance bond	
X13.1	The amount of the performance bond is	10% of the contract value. Pro-forma draft of a performance bond to be used is attached to the contract. Refer to Annexure C1.B.
X15	Limitation of the Contractor's liability for his design to reasonable skill & care	Applicable as per Secondary Clause X15

X16	Retention (not used with Option F)	
X16.1	The <i>retention percentage</i> is	5% of the Prices, 2.5% will be released at Completion of the works and the remaining 2.5% will be released after the Defects Period.
X18	Limitation of liability	
X18.1	The <i>Contractor's</i> liability to the <i>Employer</i> for indirect or consequential loss is limited to:	Nil – Neither Party is liable to the other for any consequential or indirect loss, including but not limited to loss of profit, loss of income or loss of revenue.
X18.2	For any one event, the <i>Contractor's</i> liability to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property is limited to:	Total of the losses incurred and/or repairs to the damages.
X18.3	The <i>Contractor's</i> liability for Defects due to his design which are not listed on the Defects Certificate is limited to	Total of the losses incurred and/or repairs to the damages
X18.4	The <i>Employer's</i> liability to the <i>Contractor</i> for indirect or consequential loss is limited to:	Nil – Neither Party is liable to the other for any consequential or indirect loss, including but not limited to loss of profit, loss of income or loss of revenue.
X18.5	The <i>Contractor's</i> total liability to the <i>Employer</i> for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	The total of the Prices other than for the additional excluded matters. The <i>Contractor's</i> total liability for the additional excluded matters is not limited. The additional excluded matters are amounts for which the <i>Contractor</i> is liable under this contract for • Defects due to his design which arise before the Defects Certificate is issued, • Defects due to off-site manufacture and fabrication, • loss of or damage to property (other than the <i>works</i>, Plant and Materials), • death of or injury to a person; • damage to third party property; and • infringement of an intellectual property right.
X18.6	The <i>end of liability date</i> is	As per the Prescription Act.
Z	The <i>Additional conditions of contract</i> a	
		Z1 to Z24 below.

AMENDMENTS TO THE CORE CLAUSES

Z1 Interpretation and the law

Z1.1 Add to core clause 12.3: Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Project Manager*, the *Supervisor*, 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.

Z1.2 Add the following as a new core clause 12.5:

Z1.2.1 In this contract:

- Z1.2.1.1** references to any Party to the Contract include its successors or permitted assigns;
- Z1.2.1.2** references to the Contractor include the obligations of its personnel;
- Z1.2.1.3** the references to the provisions of any law include such provisions as amended, re-enacted or consolidated from time to time in so far as such amendment, re-enactment or consolidation applies or can apply to any works under this Contract;
- Z1.2.1.4** references to this Contract and any deed, Contract or instrument are deemed to include references to this Contract or such other deed, agreement or instrument as amended, novated, supplemented, varied or replaced from time to time;
- Z1.2.1.5** references to a "person" include a natural person, company or any other artificial person or other corporate entity, a charity, trust, partnership, joint venture, syndicate, or any other association of persons;
- Z1.2.1.6** references to "month" means a calendar month;
- Z1.2.1.7** headings are for convenience only and are not taken into consideration in the interpretation of the Contract;
- Z1.2.1.8** where any number of days is prescribed, those days are reckoned exclusively of the first and inclusively of the last day unless the last day falls on a day that is not a working day, in which event the last day is the next succeeding working day;
- Z1.2.1.9** any provision in Contract that is or may become illegal, invalid or unenforceable in any jurisdiction is ineffective to the extent of such prohibition or unenforceability in such jurisdiction and is treated as severed from the balance of Contract in such jurisdiction, without invalidating the remaining provisions of Contract in such jurisdiction or affecting it in any other jurisdiction;
- Z1.2.1.10** references to any amount means that amount exclusive of VAT, unless the amount expressly includes VAT;
- Z1.2.1.11** the rule of construction that if general words or terms are used in association with specific words or terms that are a species of a particular genus or class, the meaning of the general words or terms shall be restricted to that same class shall not apply, and whenever the word "including" is used followed by specific examples, such examples shall not be interpreted so as to limit the meaning of any word or term to the same genus or class as the examples given;
- Z1.2.1.12** the rule of construction that the Contract is interpreted against or to the disadvantage of the party responsible for the drafting or preparation of Contract does not apply;
- Z1.2.1.13** words and abbreviations that have well known technical or trade meanings are used in the Contract in accordance with such recognized meanings;
- Z1.2.1.14** references to a "*subsidiary*" or a "*holding company*" is references to a direct or indirect subsidiary or holding company as defined in the law of the jurisdiction of the place of incorporation of the company that has a subsidiary or holding company and "*affiliate*" is any company that is under common control with such subsidiary or holding company;
- Z1.2.1.15** time is of the essence in the performance of the parties' respective obligations.
- Z2** **The Project Manager and Supervisor: add the following at the end of core clause 14.2:**
- Z2.1** The Project Manager and the Supervisor may take an action which they have delegated authority.
- Z3** **Early Warning: add the following at the end of core clause 16.2:**
- Z3.1** The Contractor ensures that a subcontractor attends risk reduction meetings if its attendance would assist in deciding the actions to be taken.
- Z4** **Providing the Works: Delete core clause 20.1 and replace with the following:**

- Z4.1** The *Contractor* provides the Works in accordance with the Works Information and warrants that the results of the Works, when complete, shall be fit for their intended purpose as stated in the Works Information, and if no such purposes is stated, the ordinary purpose of the Works.
- Z5 Subcontracting:**
- Z5.1** The following clause is added as a new core clause 26.4: “Within 5 days of request by the *Project Manager*, the *Contractor* provides proof to the *Project Manager* that the *Contractor*’s payment obligations towards its Subcontractors have been discharged. Failure by the *Contractor* to provide such proof to the satisfaction of the *Project Manager* entitles the *Employer* to instruct the *Project Manager* to certify payment directly to any such Subcontractor and the *Contractor* shall have no recourse to recover such amounts from the *Employer*. Such direct payment do not create privity of contract between the *Employer* and such Subcontractor. The *Employer* may recover such direct payment from the *Contractor*.”
- Z6 Other responsibilities: add the following at the end of core clause 27:**
- Z6.1** The *Contractor* has satisfied himself, prior to the Contract Date, as to the completeness, sufficiency and accuracy of all information and drawings provided to him as at the Contract Date.
- Z6.2** The *Contractor* is responsible for the correct setting out of the Works in accordance with the original points, lines and levels stated in the Works Information or notified by the *Project Manager*, *Supervisor* or the *Employer*. Any errors in the positioning of the Works are rectified by the *Contractor* at the *Contractor*’s own costs.
- Z7 Acceleration: add the following new provisions at the end of core clause 36:**
- Z7.1** The *Project Manager*’s reply is either:
- Z7.1.1** A notification that the quotation is accepted, in which case, the *Project Manager* changes the Prices, Completion Date and Key Dates and accepts the revised programme; or
- Z7.1.2** A notification that the quotation is not accepted and that the Prices, Completion Date and Key Dates are not changed.
- Z8 Extending the defects date: add the following as a new core clause 46:**
- Z8.1** If the *Employer* cannot use the works due to a Defect, which arises after Completion and before the defects date, the defects date is delayed by a period equal to that during which the *Employer*, due to a Defect, is unable to use the works.
- Z8.2** If part of the works is replaced due to a Defect arising after Completion and before the defects date, the defects date for the part of the works which is replaced is delayed by a period equal to that between Completion and the date by when the part has been replaced.
- Z8.3** The *Project Manager* notifies the *Contractor* of the change to a defect date when the delay occurs. The period between Completion and an extended defects date does not exceed twice the period between Completion and the defects date stated in the Contract Data.
- Z9 Quality Management System: add the following as a new core clause 47:**
- Z9.1** The *Contractor* implements and maintains a quality management system with the requirements stated in the Works Information.
- Z9.2** Within the period stated in the Contract Data, the *Contractor* provides the *Project Manager* with a quality plan for acceptance. A reason for not accepting the quality plan is that it does not allow for the *Contractor* to Provide the Works.
- Z9.3** If any changes are made to the quality plan, the *Contractor* provides the *Project Manager* with the changes quality plan for acceptance.
- Z9.4** The *Project Manager* may instruct the *Contractor* to correct a failure to comply with the quality plan. This instruction is not a compensation event.

- Z10 Assessing the amount due:**
- Z10.1 Delete the second bullet point of core clause 50.1 and replace with the following:** “within thirteen weeks of termination of this Contract”
- Z11 Final assessment: add the following as a new core clause 53:**
- Z11.1** The *Project Manager* makes a final assessment and certifies final payment in accordance with the Contract. The final payment is made within four weeks of the assessment.
- Z11.2** An assessment of the final amount due is conclusive evidence of the final amount due under or in connection with the Contract, unless a Party raises a dispute in relation to the assessment of the final amount due.
- Z11.3** The assessment of the final amount due is changed to include any agreement the Parties reached and/or a decision of the Adjudicator which has not been referred to the tribunal within four weeks of that decision. The changed assessment becomes conclusive evidence of the final amount due under or in connection with the Contract.
- Z12 Notifying compensation events:**
- Z12.1 Delete the last sentence in core clause 61.3 and replace with the following:** “If the *Contractor* does not notify a compensation event within four weeks of becoming aware of the event, he is not entitled to a change in the Prices, the Completion date or a Key Date and the *Employer* is absolved from all liability in relation to such event.”
- Z13 Assessing compensation events:**
- Z13.1 The following is added at the end of core clause 63.4:** “the *Contractor* shall only be entitled to changes to the Prices, the Completion Date and/or the Key Date if the compensation event affects the critical path.”
- Z14 Termination**
- Z14.1 Add the following to core clause 91.1, at the second main bullet, fifth sub-bullet point, after the words “assets or”:** “business rescue proceedings are initiated or steps are taken to initiate business rescue proceedings”.

AMENDMENTS TO THE SECONDARY OPTION CLAUSES

- Z15 Changes in Law: Add the following clause to secondary option X2 as X2.2:**
- Z15.1** A change in law is defined as:
- Z15.1.1** the adoption, enactment, promulgation, coming into effect, repeal, amendment, reinterpretation, change in application or other modification after the Contract Date of any law, excluding (i) the enactment of any bill inside the country, but only if such bill is enacted without any material changes being made to the contents of such bill from the form published in the Gazette (as defined in the Interpretation Act, 1957) as at the Contract Date, and (ii) any such modification in law relating to any taxes, charges, imposts, duties, levies or deductions that are assessed in relation to a person’s income
- Z15.1.2** any permit being terminated, withdrawn, amended, modified or replaced, other than (i) in accordance with the terms upon which it was originally granted, (ii) as a result of the failure by the *Contractor* to comply with any condition set out therein, or (iii) as a result of any act or omission of the *Contractor*, any Subcontractor or any affiliate to the *Contractor*.
- Z16. Delay damages: add the following to secondary Option X7 (if applicable in this contract)**
- Z16.1** If the amount due for the *Contractor’s* payment of delay damages reaches the limits stated in this Contract Data for Option X7, the *Employer* may, at its sole discretion, terminate the *Contractor’s* obligation to Provide the Works.

Z16.2 If the *Employer* terminates in terms of this clause, the procedures and payment on termination as those applied for reasons R1 to R15 or R18 stated in the Termination Table under core Clause 90.2.

Z17 Performance Bond

Z17.1 Amend the first sentence of clause X13.1 to read as follows: The *Contractor* gives the *Employer* an unconditional, on-demand performance bond, provided by a bank or insurer which the *Project Manager* and the *Employer* have accepted, for the amount stated in the Contract Data and in the form set out in Annexure C1.B of this Contract Data.

Z17.2 Add the following new clause as Option X13.2: The *Contractor ensures* that the performance bond is valid and enforceable until the end of the *contract period*. If the terms of the performance bond specify its expiry date and the end of the *contract period* does not coincide with such expiry date, four weeks prior to the said expiry date, the *Contractor* extends the validity of the performance bond until the end of the *contract period*. If the *Contractor* fails to so extend the validity of the performance bond, the *Employer* may claim the full amount of the performance bond and retain the proceeds as cash security

Z18 Limitation of liability: Insert the following new clause as Option X18.6:

Z18.1 The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (Nil).

Z18.2 Notwithstanding any other clause in this contract, any proceeds received from the security bonds and guarantees provided by the *Contractor* in terms of this Contract and any insurances or any proceeds which would have been received from any insurances but for the conduct of the *Contractor* shall be excluded from the calculation of the limitations of liability listed in the contract.

ADDITIONAL Z CLAUSES

Z19 Cession, delegation and assignment

Z19.1 The *Contractor* shall not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer*, which consent shall not be unreasonably withheld. This clause shall be binding on the liquidator/business rescue practitioner /trustee (whether provisional or not) of the *Contractor*.

Z19.2 The *Employer* may, on written notice to the *Contractor*, cede and delegate its rights and obligations under this contract to any person or entity.

Z20 Joint and several liability

Z20.1 If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons, these persons are deemed to be jointly and severally liable to the *Employer* for the performance of the Contract.

Z20.2 The *Contractor* shall, within 1 week of the Contract Date, notify the *Project Manager* and the *Employer* of the key person who has the authority to bind the *Contractor* on their behalf.

Z20.3 The *Contractor* does not materially alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without prior written consent of the *Employer*.

Z21 Ethics

Z21.1 The *Contractor* undertakes:

Z21.1.1 not to give any offer, payment, consideration, or benefit of any kind, which constitutes or could be construed as an illegal or corrupt practice, either directly or indirectly, as an inducement or reward for the award or in execution of this contract;

Z21.1.2 to comply with all laws, regulations or policies relating to the prevention and combating of bribery, corruption and money laundering to which it or the *Employer* is subject, including but not limited to the Prevention and Combating of Corrupt Activities Act, 12 of 2004.

- Z21.2** The *Contractor's* breach of this clause constitutes grounds for terminating the *Contractor's* obligation to Provide the Works or taking any other action as appropriate against the *Contractor* (including civil or criminal action). However, lawful inducements and rewards shall not constitute grounds for termination.
- Z21.3** If the *Contractor* is found guilty by a competent court, administrative or regulatory body of participating in illegal or corrupt practices, including but not limited to the making of offers (directly or indirectly), payments, gifts, gratuity, commission or benefits of any kind, which are in any way whatsoever in connection with the contract with the *Employer*, the *Employer* shall be entitled to terminate the contract in accordance with the procedures stated in core clause 92.2. The amount due on termination is A1.
- Z22 Confidentiality**
- Z22.1** All information obtained in terms of this contract or arising from the implementation of this contract shall be treated as confidential by the *Contractor* and shall not be used or divulged or published to any person not being a party to this contract, without the prior written consent of the *Project Manager* or the *Employer*, which consent shall not be unreasonably withheld.
- Z22.2** If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until otherwise notified by the *Project Manager*.
- Z22.3** This undertaking shall not apply to –
- Z22.3.1** Information disclosed to the employees of the *Contractor* for the purposes of the implementation of this agreement. The *Contractor* undertakes to procure that its employees are aware of the confidential nature of the information so disclosed and that they comply with the provisions of this clause;
- Z22.3.2** Information which the *Contractor* is required by law to disclose, provided that the *Contractor* notifies the *Employer* prior to disclosure so as to enable the *Employer* to take the appropriate action to protect such information. The *Contractor* may disclose such information only to the extent required by law and shall use reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed;
- Z22.3.3** 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);
- Z22.4** 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 *Project Manager*. All rights in and to all such images vests exclusively in the *Employer*.
- Z22.5** The *Contractor* ensures that all his Subcontractors abide by the undertakings in this clause.
- Z23 Liens and Encumbrances**
- Z23.1** The *Contractor* keeps the Equipment used to Provide the Services free of all liens and other encumbrances at all times. The *Contractor*, vis-a-vis the *Employer*, waives all and any liens which he may from time to time have, or become entitled to over such Equipment and any part thereof and procures that his Subcontractors similarly, vis-a-vis the *Employer*, waive all liens they may have or become entitled to over such Equipment from time to time.
- Z24 Intellectual Property**
- Z24.1** Intellectual Property ("IP") rights means all rights in and to any patent, design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works.
- Z24.2** IP rights remain vested in the originator and shall not be used for any reason whatsoever other than carrying out the *works*.
- Z24.3** The *Contractor* gives the *Employer* an irrevocable, transferrable, non-exclusive, royalty free licence to use and copy all IP related to the *works* for the purposes of constructing, repairing, demolishing, operating and maintaining the works.
- Z24.4** The written approval of the *Contractor* is to be obtained before the *Contractor's* IP made available to any third party which approval will not be unreasonably withheld or delayed. Prior to making any *Contractor's*

IP available to any third party the *Employer* shall obtain a written confidentiality undertaking from any such third party on terms no less onerous than the terms the *Employer* would use to protect its IP.

Z24.5 The *Contractor* shall indemnify and hold the *Employer* harmless against and from any claim alleging an infringement of IP rights (“**the claim**”), which arises out of or in relation to:

Z24.5.1 the *Contractor’s* design, manufacture, construction or execution of the Works;

Z24.5.2 the use of the *Contractor’s* Equipment, or

Z24.5.3 the proper use of the Works.

Z24.6 The *Employer* shall at the request and cost of the *Contractor*, assist in contesting the claim and the *Contractor* may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it.

Annexure C1.A: ACSA Panel of Adjudicators

One of the following adjudicators shall be selected by the referring party as and when a dispute arises. This panel is valid for a period of three years, commencing on 1 May 2020.

Potential Adjudicator	Email Address	Chamber
Adv. Mkhululi Duncan Stubbs	duncan.stubbs@gmail.com	Thulamela Chambers
Adv. Arzhar Bham SC	bhamae@law.co.za	Victoria Mxenge
Adv. Mohhamed Chohan SC	chohann@counsel.co.za	Group One
Adv. Benny Makola	benny.makola@gmail.com	Group 621
Adv. Vincent Maleka SC	ivmaleka@mweb.co.za	Thulamela Chambers
Adv. Chris Loxton SC	loxton@counsel.co.za	Group One

Annexure C1.B: Form of Guarantee (Pro forma Security Bonds and Guarantee)

Pro forma Performance Bond

For use with the NEC3 Engineering and Construction Contract (April 2013)

The Airports Company South Africa SOC Limited
Kimberley Airport,
Private Bag X9002
Kimberley
8300

Guarantor's reference No.

Date:

Dear Sirs,

Performance Bond – Demand Guarantee for [insert name of Contractor] required in terms of contract [insert Contractor's contract reference number or title]

1. In this Guarantee the following words and expressions shall have the following meanings:-

1.1	"Guarantor"	means [insert]
1.2	"Guarantor's Address"	means [insert]
1.3	"Contract" means	means the construction contract entered into between the Employer and the Contractor (Contract Reference No. _____ and such amendments or additions to the Contract as may be agreed in writing between the parties.
1.4	"Contractor"	means [insert]
1.5	"Employer"	means the Airports Company South Africa SOC Limited, a company registered in accordance with the laws of the South Africa
1.6	"Expiry Date"	means the earlier of - the date that the Bank receives a notice from the Employer stating that all amounts due from the Contractor as certified in terms of the contract have been received by the Employer and that the Contractor has fulfilled all his obligations under the Contract, or - the date that the Bank issues a replacement Bond for such lesser or higher amount as may be required by the Employer.
1.7	"Guaranteed Sum"	means [insert]
1.8	"Works"	means [insert]

2. The Guarantor's liability shall be limited to the Guaranteed Amount.

3. The Guarantor's period of liability shall be from and including the date of issue of this Guarantee and up to and including the Expiry Date or the date of payment in full of the Guaranteed Amount, whichever occurs

first. The Project Manager and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

4. The Guarantor hereby acknowledges that:
 - a. any reference in this Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship; and
 - b. its obligation under this Guarantee is restricted to the payment of money.
5. The Guarantor hereby undertakes to pay the Employer any sum or sums not exceeding the Guarantee Amount in total, upon receipt of a written demand delivered to the Guarantor's Address, stating that the Contractor is in breach of its obligations under the Contract (without being required to prove the nature of the breach and the amount claimed. The written demand shall be signed by the Employer and be accompanied by the original Guarantee.
6. Payment by the Guarantor, in terms of this Guarantee, shall be made within seven (7) calendar days upon receipt of the Employer's written demand to the Guarantor.
7. The obligations under this Guarantee constitute direct primary, irrevocable and unconditional obligations, do not require any previous notice to or claim against the Contractor, and shall not in any way be released or discharged or otherwise absolved of liability hereunder by reason of any arrangement or change in relationship made between the Contractor and the Employer and/or between the Guarantor and Contractor; nor any alteration in the obligations undertaken by the Contractor or in the terms of the Contract; nor any indulgence, failure, delay by the Employer as to any matter; nor any dissolution or liquidation or such other analogous event of the Contractor (whether or not the Guarantor has notice thereof).
8. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
9. All payments made by Guarantor shall be due and payable in the amount specified in any payment demand made in respect hereof by the Employer and shall be made free and clear of and without any deduction for or on account of any tax or future taxes, levies, imposts, duties, charges, fees, set off, counterclaims, deductions or withholdings of any nature whatsoever and by whomever imposed. All charges of the Guarantor related to the issuance or performance of this Guarantee (including, but not limited to, the negotiation, payment, extension or transfer hereof) shall be borne by the Contractor and under no circumstances shall be charged to the Employer by the Guarantor.
10. This Guarantee shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the High Court of the Republic of South Africa.
11. This Guarantee, with the required demand notice, shall be regarded as a liquid document for the purposes of obtaining a court order.

12. The Guarantor chooses as its *domicilium citandi et executandi* for all purposes in connection with this Guarantee at the Guarantor's Address.
13. If at any time any one or more of the provisions of this Guarantee is or becomes illegal, invalid or otherwise unenforceable in any respect neither the legality, validity or enforceability of the remaining provisions of this Guarantee, nor the legality, validity or enforceability of such provision, under the law shall in any way be affected or impaired as a result.

SIGNED at _____ on _____ Day of _____ 202__

For and on behalf of the **GUARANTOR**, duly authorised and warranting such authority

Full Name: _____

Capacity: _____

Witness: _____

[Insert Guarantor's stamp]

C1.2 Contract Data

Part two - Data provided by the *Contractor*

Notes to a tendering Contractor:

1. Please read both the NEC3 Engineering and Construction Contract (April 2013) and the relevant parts of its Guidance Notes (ECC3-GN)¹ 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 pages 152 to 154 of the ECC3 Guidance Notes.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data
3. Where a form field like this [] appears, data is required to be inserted relevant to the option selected. Click on the form field **once** and type in the data. Otherwise, complete by hand and in ink.

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

Clause	Statement	Data
10.1	The <i>Contractor</i> is (Name): Address Tel No. Fax No.	
11.2(8)	The <i>direct fee percentage</i> is The <i>subcontracted fee percentage</i> is	% %
11.2(18)	The <i>working areas</i> are the Site and	Refer to C4 'Site Information'
24.1	The <i>Contractor's</i> key persons are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job: Responsibilities: Qualifications: Experience:	Principal/ Lead Engineer: (Pr. Eng) Mechanical or Electrical Construction Manager/ Site Supervisor (Pr. CPM/ Pr. CM/ Pr. Eng/ Pr Tech Eng/ Pr. Techni Eng)

¹ Available from Engineering Contract Strategies Tel 011 803 3008, Fax 011 803 3009 or see www.ecs.co.za

	3 CV	CV's of key persons listed above, as well as CV's of further specialist persons are appended to Tender Schedule .		
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> (excluding Defects Period and 5 year Maintenance Period) is			
11.2(14)	The following matters will be included in the Risk Register			
11.2(19)	The Works Information for the <i>Contractor's</i> design is in:			
31.1	The programme identified in the Contract Data is			
A	Priced contract with Activity Schedule			
11.2(20)	The <i>activity schedule</i> is in			
11.2(31)	The tendered total of the Prices is	(in figures) (in words), excluding VAT		
	Data for Schedules of Cost Components	Note "SCC" means Schedule of Cost Components starting on page 60 of ECC3, and "SSCC" means Shorter Schedule of Cost Components starting on page 63 of ECC3.		
A	Priced contract with activity schedule	Data for the Shorter Schedule of Cost Components (attach separate sheet if necessary)		
41 in SSCC	The percentage for people overheads is:	%		
21 in SSCC	The published list of Equipment is the last edition of the list published by The percentage for adjustment for Equipment in the published list is	Minus %		
22 in SSCC	The rates of other Equipment are:	Equipment	Size or capacity	Rate
61 in SSCC	The hourly rates for Defined Cost of design outside the Working Areas are	Category of employee	Hourly rate	

	Note: Hourly rates are estimated 'cost to company of the employee' and not selling rates. Please insert another schedule if foreign resources may also be used	
62 in SSCC	The percentage for design overheads is	%
63 in SSCC	The categories of design employees whose travelling expenses to and from the Working Areas are included in Defined Cost are:	

PART C2: PRICING DATA

C2.1 PRICING INSTRUCTIONS

- 2.1 The Pricing/Activity Schedules form part of and must be read in conjunction with the entire bid document.
- 2.2 Prices must be quoted in South African Currency (Rands).
- 2.3 Prices must include for all costs (material, labour, transport etc).
- 2.4 Bidders must price in accordance with the pricing schedules in the contract document to enable ACSA to compare priced offers.
- 2.5 Failure to submit a priced offer using the prescribed schedules will make the bid liable for disqualification.
- 2.6 Do not leave any area blank in the pricing schedules (e.g. if not applicable (N/A) or included in cost elsewhere, indicate accordingly).
- 2.7 Corrections must be countersigned.
- 2.8 All Provisional Sums, Estimated Quantities and Contingency will be reimbursed against proven costs upon approval by ACSA representative. Tenderers are reminded that this amount is for illustrative purposes only and that ACSA will not be under any obligation to expend the full or any portion of this amount.
- 2.9 It is assumed that the Main Contractor will subcontract the items with provisional sums, although subcontracting is not compulsory for this tender. Should the Main Contractor opt not to subcontract any works, the mark-up allowance will not be applicable.
- 2.10 Should the Employer decide to instruct the Main Contractor not to proceed with the works related to items with provisional sums, the contractor will not be entitled to any claims related to these items.
- 2.11 Should there be any queries regarding the pricing schedule/s, same must be sent in writing via email by the Query Closure Date.
- 2.12 Permit costs:
 - Permit costs will need to be paid up front by the successful bidder and ACSA will reimburse against proof of payment.
 - No mark-up to be levied on Permit costs.
 - All employees will be checked for criminal records.
 - Cost for lost permits and new employees will not be reimbursed by ACSA.
 - Foreign Nationals will need to provide a valid working permit.
- 2.13 No cost/mark-up to be levied on items provided by ACSA (e.g. Electricity etc.)
- 2.14 3rd Party Procured Items/Services:
 - VAT shall not form part of mark-up calculations.
 - All Discounts to be deducted prior to mark-up
 - Price to include delivery to site
- 2.15 The Bid offer must be inclusive of VAT.
- 2.16 The VAT portion must be indicated separately
- 2.17 The professional fees will not be adjusted and are fixed.
- 2.18 Escalations will not be applicable to these projects.
- 2.19 The contingency & provisional sums as included in the contract amount, or any part thereof, are not claimable by the Contractor unless specifically instructed and approved by the Consulting Engineer in writing for additional works carried out.
- 2.20 Third-Party Service Providers where applicable, its key personnel to have the relevant professional registration in accordance with their discipline. For the appointment of subconsultants, the appointed consultant shall conduct a 3-quote system and submit a recommendation to award report for ACSA's approval.
- 2.21 It is the Contractor's responsibility to ensure that the Pricing Schedule is completed accurately and that all pricing calculations and totals are correct.

C2.1 Pricing assumptions: Option A

1. The conditions of contract

1.1 How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract, April 2013 (ECC3) Option A states:

Identified and defined terms	11 11.2	(20) The Activity Schedule is the <i>activity schedule</i> unless later changed in accordance with this contract.
		(22) Defined Cost is the cost of the components in the Shorter Schedule of Cost Components whether work is subcontracted or not excluding the cost of preparing quotations for compensation events.
		(27) The Price for Work Done to Date is the total of the Prices for - each group of completed activities and - each completed activity which is not in a group. A completed activity is one which is without Defects which would either delay or be covered by immediately following work.
		(30) The Prices are the lump sum prices for each of the activities on the Activity Schedule unless later changed in accordance with this contract.

Option A is a lump sum form of contract where the work is broken down into activities, each of which is priced by the tendering Contractor as a lump sum. Only completed activities are assessed for payment at each assessment date; no part payment is made if the activity is not completed by the assessment date.

1.2 Function of the Activity Schedule

Clause 54.1 in Option A states: "Information in the Activity Schedule is not Works Information or Site Information". This confirms that instructions to do work or how it is to be done are not included in the Activity Schedule but in the Works Information. This is further confirmed by Clause 20.1 which states, "The *Contractor* Provides the Works in accordance with the Works Information". Hence the *Contractor* does **not** Provide the Works in accordance with the Activity Schedule. The Activity Schedule is only a pricing document.

1.3 Link to the programme

Clause 31.4 states that "The *Contractor* provides information which shows how each activity on the Activity Schedule relates to the operations on each programme which he submits for acceptance". Hence when compiling the *activity schedule*, the tendering Contractor needs to show each activity on the programme he submits with his tender.

1.4 Preparing the *activity schedule*

The tendering Contractor prepares the *activity schedule* and should study the ECC3 Guidance Notes pages 19 and 20 before doing so. The *Employer* may have instructed the tendering Contractor to include particular activities which he has specified and requires the *Contractor* to identify them in his *activity schedule*.

- Generally, it is the Contractor who prepares the Activity Schedule as part of his tender by breaking down the work described within the Works Information into suitable activities which can be well defined, priced as a lump sum and shown on the programme. The Employer, in his Conditions of Tender or in a Tender Schedule, may have listed some items that he requires the Contractor to include in his activity schedule

and be priced accordingly.

- 2 The Prices are defined in clause 11.2(20) as the lump sum for each activity in the activity schedule and the Price for Work Done to Date (PWDD) (the amount due to the Contractor) is defined in clause 11.2(24) as the total of the Prices for each activity that has been completed. Hence activities in the activity schedule should be structured so as to provide an acceptable monthly cash flow as they are only assessed for payment on the assessment date if they have been completed.
- 3 As the Contractor has an obligation to correct Defects (core clause 43.1) and there is no compensation event for this unless the Defect was due to an Employer's risk, the lump sum Prices must also include for the correction of Defects.
- 4 If the Contractor has decided not to identify a particular activity, the cost to the *Contractor* of doing the work must be included in, or spread across, the other Prices in order to fulfil the obligation to complete the works for the tendered total of the Prices.
- 5 There is no adjustment to the lump sum activity schedule price if the amount, or quantity, of work within that activity later turns out to be different to that which the Contractor estimated at time of tender. The only basis for a change to the Prices is as a result of a compensation event. See Clause 60.1.
- 6 Hence the Prices tendered by the Contractor in the *activity schedule* are inclusive of everything necessary and incidental to Providing the Works in accordance with the Works Information, as it was at the time of tender, as well as correct any Defects not caused by an Employer's risk.
- 7 However, the Contractor does not have to allow in his Prices for matters that may arise as a result of a compensation event. It should be noted that the list of compensation events includes those arising as a result of an Employer's risk event listed in core clause 80.1.

C2.2 the *Contractor Activity Schedule (CAS)*

Refer to the below annexures attached separately.

Bidder to use the Excel file template “**PRICED SCHEDULE OF QUANTITIES**” for the pricing schedule.
Pricing to be done using the excel file.

Annexure C2.2a – KIM Mechanical Gates Contractor Activity Schedule

Note to tenderer: How to use the pricing schedule.

- Only Populate yellow cells for each respective fee % proposal.
- Bidders are to carry forward all totals for Schedules A to H to the respective Summary Schedule items.
- An Activity Schedule has been prepared for all pricing purposes for the construction Works.
- Bidders are to thoroughly read the description of each item to ensure adequate elemental rate production for estimation purposes.
- Bidders are to further refer to the Scope of Work section C3 of this contract for consistency in the understanding of the cost estimating requirements for the bidding process

Progress payment will be as per the following milestones:

The percentages in the table below are the proportion of the value of the Schedule in the costed CAS.

Use this page as a cover page to the *Contractor's Activity Schedule (CAS)*.

Primary Scope of Supply – MILESTONE PAYMENT SCHEDULE.

The following milestone payment schedule will be used for progress payments

A: P&G		CAS A
A1	Monthly	10%
B: Civil Works		CAS B
1	Design submitted and approved by the Project Manager	20%
2	Rails and reinforcement steel delivered to site	10%
3	Demolish and remove existing rail, foundations and pavement	15%
4	Foundation concrete work across taxiway	10%
5	Foundations and sleepers outside of taxiway	10%
6	Rail installed and aligned (with measurement results)	20%
7	VVIP Airside Gate rail installed and aligned (with measurable results)	5%
8	Main Security Gate vertical posts installed and aligned (with measurable results)	5%
9	Taxiway and shoulder pavement restored, infill and earth shaping (stormwater management) and landscaping (grassing) complete	5%
C: Mechanical Works		CAS C
1	Design submitted and approved by the Project Manager	20%
2	Trolleys and trolley components delivered to site (Note: Factory Acceptance Certificate required) 7% per Trolley	54%
3	Main Security Gate swing gates, hinges, sensors and mechanical system delivered to site	5%
4	VVIP Gate mechanical gate, wheels, bearing and motor delivered to site	5%
5	Trolley assembled, installed on rails, interconnected and acceptable rolling movement demonstrated. Main Security Gate and VVIP Airside Gate installed and operational.	16%
D: Mechanical Drive System		CAS D
1	Design submitted and approved by the Project Manager	20%
2	Motor Drive Units delivered to site (Note: Factory Acceptance Certificate required)	60%
3	Motor Drive Units installed including Trolley gate motor drive unit with chain Main Security Gate swing gate drive units VVIP Gate mechanical gate drive units	20%
E: Electrical Works – Gate Motor Control Cabinets		CAS E
1	Design submitted and approved by the Project Manager	20%
2	Bravo Taxiway Gate GMMC Cabinet delivered to site (Note: Factory Acceptance Certificate required)	55%
3	Cabinet installed complete with connection to main power source and Motor Drive Unit	15%
4	Main Security Gate mechanical system connected to electrical point and certificate of acceptance obtained.	5%
5	VVIP Airside Gate mechanical system connected to electrical point and certificate of acceptance obtained.	5%

F: PLC, Sensors and Instrumentation Works –		CAS F
1	Design submitted and approved by the Project Manager	20%
2	PLC, sensors and instrumentation delivered to site	40%
3	PLC Program demonstrated on PLC in the field, complete with interfacing to Motor Controller, sensors, lamps, GUI, remote control panel	20%
4	Taxiway Gate operational, ready for commissioning	15%
5	Main Security Gate and VVIP Gate operational, ready for commissioning	5
G: Commissioning		CAS G
1	Gate operational	20%
2	Taxiway Gate testing complete including • Performance • Exception Handling • Fault simulation and recovery • Emergency stop circuitry • Obstacle sensor robustness (including simulated failures)	70%
3	VVIP Airside Gate testing complete	5%
3	Main Security Gate testing complete	5%
H: As-Built and Close-out		CAS H
1	Delivery document set - final manuals, as-built drawings, documents	40%
2	Training Complete	20%
3	Delivery of spares	40%
I: Not Used		CAS I
J: VVIP		CAS J
1	Design	20%
2	Manufacture Gate Assembly	30%
3	Manufacture and deliver Gate Mechanical Drive Device	5%
4	Manufacture and deliver Gate Motor Control Board and UPS	5%
5	Manufacture and deliver PLC and Instrumentation	5%
6	Commission gate system	25%
7	Deliver Operator and Maintenance manuals	5%
8	Deliver Spares as described in Scope of Supply	5%
K: Main security Gate		CAS K
1	Design	20%
2	Manufacture Gate Assembly	30%
3	Manufacture and deliver Gate Mechanical Drive Device	5%
4	Manufacture and deliver Gate Motor Control Board and UPS	5%
5	Manufacture and deliver PLC and Instrumentation	5%
6	Commission gate system	25%
7	Deliver Operator and Maintenance manuals	5%
8	Deliver Spares as described in Scope of Supply	5%

PART C3: SCOPE OF WORK

Document reference	Title	
C3.1	GENERAL TENDER REQUIREMENTS & PROJECT SCOPE	
C3.2	MANAGEMENT OF THE WORKS	
C3.3	GENERAL REQUIREMENTS	
C3.4	LIST OF TENDER DRAWINGS	
	Total number of pages	

PART C3.1: GENERAL TENDER SPECIFICATION & DESCRIPTION OF WORKS

Refer to Annexure C3.1: General Project Specifications.

Note: The Specification provided for the project is provisional and must be validated and updated by the Contractor's appointed Civil, Mechanical and Electrical Engineers.

3.1.1 Project Background for the Replacement of the Bravo Taxiway Gate, main Security and VVIP Airside

Bravo Taxiway Gate

The Bravo Taxiway Gate at Kimberley Airport (KIM) is a 42-meter-wide sliding gate operating on a double track with a chain and sprocket system consisting of a 3-kW motor and gearbox. The gate is equipped with electrical sensors designed to inform the motor controller when the gate reaches the fully open or closed position. The gate is electrically operated from a local control panel, located approximately 45 meters from the security hut, requiring personnel to walk to the panel to open, close, or initiate an emergency stop. The gate stands approximately 2.4 meters high and is fitted with diamond wire mesh.

The Bravo Taxiway Gate currently experiences several operational and safety challenges, including:

- a) The control panel only allows local operation, which limits efficiency and response time
- b) Motion detection sensors are non-functional, reducing the gate's ability to detect obstacles such as aircraft or vehicles during closing.
- c) There is no back up motor for when the primary motor fails
- d) The current motor is not powerful enough to move the gate
- e) The bearings of the wheels sometime become the problem as they create friction



Figure 1: Bravo Taxiway Gate at Kimberley Airport

VVIP Airside Gate

The VVIP Airside Gate is a manual swing gate opening towards the airside, affixed with two hinges. The gate is covered with corrugated metal sheets to ensure the privacy of VVIP passengers. It is manually operated by security personnel when required. The VVIP Airside Gate has reached the end of its service life and will be replaced with an upgraded system.

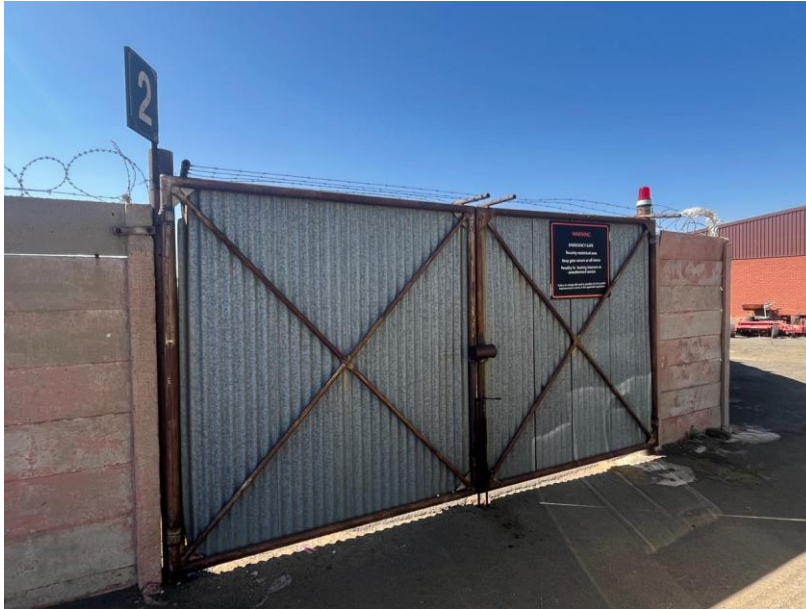


Figure 2: VVIP Airside Gate

Main Security Gate

The Main Security Gate, located next to the fire station and adjacent to cargo facilities, serves as the primary access point for personnel, contractors, and vehicles entering and exiting the airside. The gate consists of two independent swing gates, opening towards airside for entry and landside for exit. It is affixed to vertical beams of the main roof structure. The gate and adjoining fence are covered with menlath sheets, allowing visibility while maintaining a secure barrier. Wall spikes are installed along the top of the gates and fence to enhance security. The Main Security Gate has reached the end of its service life and requires replacement



Figure 3: Main Security Gate

3.1.2 Purpose of this Tender

ACSA invites suitably qualified and experienced Electromechanical Contractors to submit bids for the design, manufacture, installation, commissioning, and maintenance of the Bravo Taxiway Gate, VVIP Airside Gate, and Main Security Gate at Kimberley Airport.

The appointment will be on a Design-and-Build basis and the works shall be executed in a live airport environment, with minimal disruption to operations.

3.1.3 Project Scope of Work:

The Scope of Work is described under the following headings:

- 1) Modes of Operation
- 2) Immutable Technical Specifications:
 - a) The mandatory technical performance specifications are listed in this section
- 3) Civil works:
 - a) Temporary bypass access for traffic to the GA Apron
 - b) Rail system including foundation (sleepers)
 - c) Restoration of taxiway and shoulder paving removed to install new rail
 - d) Paving around rail outside of the taxiway area
 - e) Stormwater management
- 4) Mechanical – Trolley/ Gate Leaf:
 - a) Gate trolleys and gate leaves
 - b) Fencing on gate trolleys
 - c) Fixed fencing adjacent to gates

- 5) Mechanical Drive System:
 - a) Chain system
 - b) Chain drive
 - c) Gearbox
 - d) Brake with manual brake release
 - e) Motor

- 6) Electrical:
 - a) Variable speed motor drive
 - b) Switch Gear
 - c) Cabling
 - d) Lightning protection

- 7) Control, Instrumentation and automation:
 - a) Automation PLC and Gate motor controller
 - b) Gate speed and position sensors
 - c) Human/Machine interface
 - d) Safety / Security beam system (airside / landside barrier)
 - e) Remote gate operation (remote panel and communication link)
 - f) CCTV camera at gate
 - g) Security flood lights

- 8) Commissioning and Testing
 - a) Contractor commissioning and tests
 - b) Project Manager specified hand-over tests

DESCRIPTION OF WORKS

The Project Scope of Works comprises, inter-alia the following:

3.1.4 Modes of Operation

Bravo Taxiway Gate

The gate system shall have the following modes of operation (Mandatory).

Normal Operation

- Power: 3 phase power from main airport supply = available (supply from Utility or Airport Generators)
- Gate fully functional
- Gate movement initiated from remote panel or from local panel

UPS Operation

- Power: 3 phase power from main airport supply is not available
- Gate fully functional, but operation limited to a single open cycle
- UPS power provided to controller, network, sensors, motor servo for 12 hours
- UPS power not provided to lights (traffic lights, warning lights, area lights)
- Gate opening movement initiated from remote panel or from local panel

Maintenance Operation

- Power: 3 phase power from main airport supply is available (supply from Utility or Airport Generators)
- Gate movement initiated from keyboard on in Gate Main Control Cabinet (GMCC)
- Remote panel from local panel are disabled
- Maintenance personnel can override interlocks and calibrate sensors

Manual Operation

- Power: 3 phase power from main airport supply = not available (supply from Utility or Airport Generators)
or
Faulty GMCC, motor servo drive, motor, gearbox, pinions, chain
- Gate motorised operation is not available
- Gate movement requires manual intervention
- Remote panel from local panel are disabled
- Maintenance personnel can override interlocks and calibrate sensors

VVIP Airside Gate

The gate system shall have the following modes of operation (Mandatory).

Normal Operation

- Power: power supply directly from nearest DB
- Gate fully functional
- Gate movement initiated from remote panel or from local panel

UPS Operation

- Gate fully functional, but operation limited to a single open cycle and close cycle
- UPS power provided to controller, network, sensors, motor servo for 12 hours
- UPS power not provided to lights (traffic lights, warning lights, area lights)
- Gate opening movement initiated from remote panel or from local panel

Main Security Gate

The gate system shall have the following modes of operation (Mandatory).

Normal Operation

- Power: power supply directly from nearest DB
- Gate fully functional
- Gate movement initiated from remote panel or from local panel

UPS Operation

- Gate fully functional, but operation limited to a single open cycle and close cycle
- UPS power provided to controller, network, sensors, motor servo for 12 hours
- UPS power not provided to lights (traffic lights, warning lights, area lights)

3.1.5 Immutable Technical Features, Dimensions and Performance Specifications of the KIM Taxiway gate, VVIP and Security Gate Systems

The following technical features, dimensions and specifications are all mandatory.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS TO BE COMPLIED WITH
1	Basic dimensions and performance specification of mechanical gates	
1.1	Bravo Taxiway Gate	
1.1.1	System: Width of clear obstacle free gap across the taxiway when the gate is fully open	42m. 21m from centre line to both sides
1.1.2	System: Total gate length to close the taxiway opening (combining trolleys linked into a single train)	Minimum 46 m
1.1.3	System: The existing fixed fence at the gate shall be modified so that the gap between the existing fixed fence and the fence on the gate is::	100 mm or less, in the closed positions.
1.1.4	System Average full speed of gate to be attained after acceleration and before deceleration Measured over a 12 m length (two trolley lengths)	0.8 m/s
1.1.5	System: Acceleration of gate – Gate to reach nominal travelling speed within	5 s
1.1.6	System: The gate shall be capable of safe operation in headwind or crosswind conditions of	At least 30 m/s
1.1.7	Civil: Rail spacing – spacing between rail tracks	At least 1.6m
1.1.8	Trolley Anti toppling mechanism capable of resisting side-winds of	Up to 150km/h
1.1.9	Trolley Number of Trolleys	Minimum 9
1.1.10	Trolley: Minimum height of each gate fence panel (ground to top of fence)	3.2 m
1.1.11	Trolley: Height of razor wire coil on top of gate panel	0.3m
1.1.12	Trolley: Total height of gate from ground to top of razor wire	3.5 m
1.1.13	Trolley: Ground clearance in the closed position	100 mm or less
1.1.14	Trolley: The gap between fence frames between two adjacent trolleys in the closed position	75 mm or less.
1.1.15	Mechanical Drive: Single Link Chain ISO 16B-1 (DIN8187) along the length of the gate (60m) carried in a U-Channel. The U-Channel to have holes at regular intervals to allow drainage of rainwater. Supplier to confirm in the design document that the chain has adequate strength and durability.	Pitch 25.4mm inner width 17.02mm

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS TO BE COMPLIED WITH
1.1.16	Mechanical Drive: Chain Tension adjustment at either end of the train with turnbuckle adjustable tensioning device	2 x 300mm adjustment
1.1.17	Mechanical Drive: Chain drive	3 pulley configurations (see typical drawing in Annexure C.5.12)
1.1.18	Mechanical Drive: Brake to be engaged when gate is stationary	Withstand 1000 N Force on gate in direction of motion
1.1.19	Mechanical Drive: Mechanism to disable brake to allow for manual movement of the gate to be provided.	Lockable Clutch
1.1.20	Mechanical Drive A reliable and simple mechanism shall be provided to <u>manually</u> open or close the gate once the mechanical brake has been disengaged. Note: Auxiliary input shaft on motor/gearbox set for manual hand crank is not recommended, unless hand crank fitted with appropriate gearbox to match crank input torque and manual rotation speed. Auxiliary input shaft for chuck of a battery-operated drilling machine is not recommended, as it places unnecessary burden on Maintenance Department to ensure that drill and batteries are always ready for manual operation. The mechanical drive shall be a last resort to open/close the gate	- Fixed installation of a winch and 60m cable at either side (for opening and closing). Winch to be hand-crank (mandatory). In addition winch may be motorised, with power feed from gate UPS. - Manual pushing of gate by 2 persons, no more than 600 Newtons force. - Safe pushing / pulling of gate with a vehicle. Vehicle to be equipped with safe attachment point (with shear pin)
1.1.21	Electrical UPS shall provide uninterrupted power - to the GMCC (PLC, sensors) for 12 hours - to the motor servo drive for one complete gate opening movement, plus motor servo drive in idle mode for 12 hours. - Status to remote panels The primary intention of the UPS is to ensure that the Gate System maintains the gate status (primarily position) and provides for the completion of a gate opening cycle.	PLC and sensors – 12 hours Motor server and control in idle mode 12 hours Motor server and control for a single gate opening event
1.1.22	Electrical The Gate Motor Control Cabinet will be fitted with an external supply socket so that a portable generator can be plugged in in the event of extended power outage.	Extended power outage is greater than 12 hours
1.1.23	Factory inspection and testing. The Contractor shall invite the Project Manager to inspect and witness factory acceptance tests of all equipment prior to shipping to site.	Attendance of the Project Manager at these tests is mandatory.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS TO BE COMPLIED WITH
1.1.24	Labelling and signage	Signage on the gate: - visible sign informing the pilot of the radio frequency to call to open the gate - warning signs and hazard chevrons -SANS compliant information and safety signage and labelling of electrical and mechanical components Copy of circuit diagrams in the GMCC distribution cabinet. Copy of circuit diagrams in the GMCC distribution cabinet.
1.2	VVIP Airside Gate	
1.2.1	Structure: Width of clear obstacle free gap across when the gate is fully open (gate and gate post to gate and gate post)	At least 4600 mm (2300mm + 2300mm)
1.2.2	Gate leaf dimensions to be symmetrical	
1.2.3	Structure: The gap between the boundary wall and gate post is:	20 mm or less, in the closed positions.
1.2.4	Structure: Head wind and cross wind speed to be allowed for when the gate is in operation	Up to 20 m/s
	Structure: Anti toppling mechanism for side-winds.	Floor guide and reinforced hinges
1.2.5	Structure: Minimum height gate (ground to top of fence)	3.2 m
1.2.6	Structure: Height of razor wire coil on top of gate	0.3 m
1.2.7	Structure: Total height of gate from ground to top of razor wire	3.5 m
1.2.8	Ground clearance in the closed position	50 mm
1.2.9	The gap between gate leaves in the closed position	15 mm
1.2.10	Electrical: Electricity connection point	The electrical feed cable shall have a direct connection to the DB closest to the gate
1.2.11	Electrical: Battery capacity when electricity feed is off	The gate shall have battery capacity for one open and one close movement should the electrical feed to the motor controller be lost.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS TO BE COMPLIED WITH
1.2.12	Factory inspection and testing. The Contractor shall invite the Project Manager to inspect and witness factory acceptance tests of all equipment prior to shipping to site.	Attendance of the Project Manager at these tests is mandatory.
1.2.13	Mode of operation: Modes of operation: Mode 1 = Electric servo motor Mode 2 = Manual operation A reliable and simple mechanism shall be provided to <u>manually</u> open or close the gate once the mechanical brake has been disengaged. The mechanical drive shall be considered a last resort for opening or closing the gate during power or electrical failure. Acceptable manual drive options include:	Electric Handwheel or Lever or Manual crank
1.2.14	Labelling and signage	Signage on the gate: - visible sign highlighting access rules and gate operation protocol
1.3	Main Security Gate	
1.3.1	Structure: Width of clear obstacle free gap across when the gate is fully open (gate post to gate post)	At least 4600 mm (2300mm + 2300mm)
1.3.2	Gate leaf dimensions to be symmetrical	
1.3.3	Structure: The gap between gate post and gate frame is:	20 mm
1.3.4	Structure: Head wind and cross wind speed to be allowed for when the gate is in operation	At least 30m/s
1.3.5	Structure: Anti toppling mechanism for side-winds.	Reinforced hinges
1.3.6	Structure: Minimum height of gate (ground to top of fence)	3.2 m
1.3.7	System: Time to fully open or close	Less than 10 seconds
1.3.8	Ground clearance in the closed position	50 mm
1.3.9	The gap between gate leaves in the closed position	15 mm
1.3.10	Electrical: Electricity connection point	The electrical feed cable shall have a direct connection to the DB closest to the gate
1.3.11	Electrical: Battery capacity when electricity feed is off	The gate shall have battery capacity for one open and one close movement should the electrical feed to the motors be cut.
1.3.12	Factory inspection and testing. The Contractor shall invite the Project Manager to inspect and witness factory acceptance tests of all equipment prior to shipping to site.	Attendance of the Project Manager at these tests is mandatory.
1.3.13	Modes of operation:	

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS TO BE COMPLIED WITH
	Mode 1 = Electric servo motor Mode 2 = Manual operation A reliable and simple mechanism shall be provided to manually open or close the gate once the mechanical brake has been disengaged. The mechanical drive shall be considered a last resort for opening or closing the gate during power or electrical failure. Acceptable manual drive options include:	Electric Handwheel or Lever or Manual crank
1.3.14	Labelling and signage	Signage on the gate: - A clearly visible sign shall be installed to indicate that stopping in front of the gate is strictly prohibited

3.1.6 Guideline Technical Features, Dimensions and Performance Specifications of the Gate System

These dimensions are for guideline and estimations only.

The successful bidder to offer solutions with equivalent functionality and confirm performance and dimensions during the design process. These are to be presented to the Project Manager for review and acceptance.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
2	Civil operational and technical features	
2.1	Bravo Taxiway Gate	
2.1.1	Civil: Rail system to be installed	Dual parallel rails to be installed comprising two parallel 30 kg/m rail tracks
2.1.2	Civil: Rail sleeper interval	Rail sleeper intervals Centre to Centre 1300mm
2.1.3	Civil: Rail clamp to concrete slab or sleeper intervals	Rail sleeper clamp intervals 1300mm
2.1.4	Civil: Plinth for GMCC	Plinth for the GMCC shall be provided
2.1.5	Civil: Taxiway and shoulder paving shall be reinstated after installation of the rail.	The Taxiway pavement shall comply with ICAO Annex 14 parameters, additionally: - The step between pavement surface and top of rail shall not exceed 10mm over the entire length of the rail crossing the taxiway - Longitudinal slopes of the Taxiway pavement shall be less than 1.5% - Change in longitudinal slope shall be less than 1% per 30m - Traverse slopes of the Taxiway pavement shall be less than 1.5%
2.1.6	Civil Temporary bypass access to the GA apron	Provide temporary access to the Apron, including - Design pavement and geometry for safe taxiing of design aircraft - Remove fence - Provide temporary paving across the fence line gap between taxiway and apron - Provide temporary shelter (hut) for Employer guard (no utilities – power, water, sewer) - Remove temporary pavement and reinstate fence

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
2.2	VVIP Airside Gate	
2.2.1	Civil: Excavate and construct reinforced concrete gate pillars to support swing gate with steel reinforcement as per structural design. Pillars must resist wind load and repeated mechanical operation. Pillars to be	- plumb - aligned with gate swing path -
2.2.2	Civil: Backfill excavations around gate pillars with approved material in layers	- Concrete grade minimum C30/37 - layers not exceeding 150 mm - compacted to 95% standard proctor density.
2.2.3	Civil: Reconstruct surrounding service roads, if gate installation affects them.	- surface levels to match existing road profile (± 10 mm typical tolerance).
2.2.4	Civil: Ensure proper drainage around gate pillars to prevent corrosion or settlement	- drain layer of 100-150 mm gravel
2.2.5	Civil: Plinth for GMCC	- Plinth for the GMCC shall be provided
2	Main Security Gate	
2.3.1	Civil: Excavate and construct reinforced concrete gate pillars to support swing gate with steel reinforcement as per structural design. Pillars must resist wind load and repeated mechanical operation. Pillars to be	- plumb - aligned with gate swing path
2.3.2	Civil: Backfill excavations around gate pillars with approved material in layers	- Concrete grade minimum C30/37 - layers not exceeding 150 mm compacted to 95% standard proctor density.
2.3.3	Civil: Reconstruct surrounding service roads, if gate installation affects them.	surface levels to match existing road profile (± 10 mm typical tolerance).
2.3.4	Civil: Ensure proper drainage around gate pillars to prevent corrosion or settlement	drain layer of 100-150 mm gravel
2.3.5	Civil: Plinth for GMCC	Plinth for the GMCC shall be provided
3	Mechanical Works	
3.1	Bravo Taxiway Gate	
3.1.1	Trolley: Estimated mass of each gate trolley	600 kg
3.1.2	Trolley: Wheel surface diameter of support wheels	350 mm
3.1.3	Trolley: Outer diameter of the side flanges of the support wheels	410 mm

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
3.1.4	Trolley Each trolley shall be fitted with only one axle and two wheels. Only one of the end trolleys will be fitted with two axles each with two wheels.	One axle with two wheels per trolley
3.1.5	Trolley: Recommended length of each trolley and fence panel	6 m
3.2	VVIP Airside Gate	
3.2.1	Gate Leaf: Estimated mass of each gate leaf	100 kg
3.3	Main Security Gate	
3.3.1	Gate Leaf: Estimated mass of each gate leaf	100 kg
4	Mechanical Drive System - operational and technical features	
4.1	Bravo Taxiway Gate	
4.1.1	Drive Mechanism The Drive Mechanism shall be a single solidly welded steel support frame with base support plates and overhang cantilever frame for mounting the following components:	Electrical motor. Gearbox Output shaft mounted on the pedestal bearings and linked to the drive sprocket. Mounting plate and shafts for securing the two idler sprockets. Cover plate with bent peripheral edges and fitted over the drive and idler sprockets to cover them at the top and sides.
4.1.2	Drive Mechanism Rating of electrical motor to allow for acceleration also during the specified condition of wind load fitted complete with disc brake.	Typically 15 kW
4.1.3	Drive Mechanism Approximate diameter of drive sprocket fitted on the output shaft	310 mm Fitted with key and keyway mounted on the output drive shaft.
4.1.4	Drive Mechanism Approximate diameter of two idler sprockets	310 mm Each fitted with two sealed ball bearings and mounted on solid shafts secured to the mounting plate adjacent to the drive sprocket.
4.1.5	Drive Mechanism Coupling between gate panels	Each coupling between gate panels shall consist of two specially manufactured couplings unit fitted with bushes and a link pin.
4.1.6	Stopper blocks mounted on the concrete base at the open and closed position of the gate.	Two stopper blocks must be installed to prevent any over-run of the gate at the open and closed position should any emergency control system fail.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
4.3	VVIP Airside Gate	
4.3.1	Drive Mechanism The Drive Mechanism shall be a single solidly welded steel support frame with base support plates and mechanism to swing the gates horizontally:	Electrical motor. Gearbox Swing arms to move the gate.
4.3.2	Drive Mechanism Rating of electrical motor to allow for acceleration also during the specified condition of wind load fitted complete with disc brake.	Typically 100 W
4.3.3	Drive Mechanism Gearbox output shaft drives the rotating linkage	
4.3.4	Not used	
4.3.5	Not used	
4.3.6	Stopper blocks mounted on the concrete base at the open and closed position of the gate.	Two stopper blocks must be installed to prevent any over-run of the gate at the open and closed position should any emergency control system fail.
4.2	Main Security Gate	
4.2.1	Drive Mechanism The Drive Mechanism shall be a single solidly welded steel support frame with base support plates and mechanism to swing the gates horizontally:	Electrical motor. Gearbox Swing arms to move the gate.
4.2.2	Drive Mechanism Rating of electrical motor to allow for acceleration also during the specified condition of wind load fitted complete with disc brake.	Typically 100 W
4.2.3	Drive Mechanism Gearbox output shaft drives the rotating linkage	Sprocket diameter to match rack pitch
4.2.4	Not used	
4.2.5	Not used	
4.2.6	Stopper blocks mounted on the concrete base at the open and closed position of the gate.	Two stopper blocks must be installed to prevent any over-run of the gate at the open and closed position should any emergency control system fail.
5	Electrical System - operational and technical features	
5.1	Bravo Taxiway Gate	
5.1.1	Electrical: Main power supply system	At the main distribution board the existing 60 A three phase circuit breaker currently supplying power to the two existing gates shall be re-used as power connection to the Gate Main Controller Cabinet (GMCC). A new label shall be fitted for this circuit breaker. This power supply shall be from the Emergency Airport Supply (augmented by Generator)

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
5.1.2	Electrical: Gate Main Control Cabinet ((GMCC)) and Distribution Board	A weatherproof cabinet to be installed at the drive system of the gate. The cabinet to house: all electrical / motor servo controller / electronic control equipment and supervisory control equipment. GMCC shall be on the Airside side of the gate (not accessible from Landside when gate is closed)
5.1.3	Electrical The Gate Main Controller Cabinet (GMCC)	The GMCC shall contain: 1. Section for incoming power circuitry, and power distribution to Motor controller, PLC and floodlights 2. Section for Motor controller 3. Section for PLC and instrumentation 4. UPS
5.1.4	Electrical Motor servo drive	A full four quadrant speed control system, with adjustable acceleration and deceleration control features shall be provided.
5.1.5	Electrical: Motor servo drive – decelerated regenerated energy	A resistive load dump shall be provided to absorb regenerated power during deceleration
5.1.6	Electrical: UPS or battery back-up for the control supply system and instrumentation	The UPS shall provide power to 1. all pre-programmed PLC control units used with the speed control and stopping functions of the control system. 2. Associated instrumentation, network and sensors 3. Motor servo controller (standby power mode) 4. Motor servo controller (for a single gate open command)
5.1.7	Electrical: Power to be provided for controller to ensure seamless operation during brown-out	5 minute battery UPS
5.1.8	Electrical: Protection to be provided for controller to ensure seamless operation during over-voltage	Surge/over-voltage protection at the GMCC and motor drives
5.2	VVIP Airside Gate	
5.2.1	Electrical: Main power supply system	A new 20A single phase circuit breaker will be installed at a suitable distribution board as power connection to the VVIP gate drive unit. A new label shall be fitted for this circuit breaker. This power supply shall preferably be from the Emergency Airport Supply (augmented by Generator)

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
5.2.2	Electrical: Gate Main Control	The gate main controller shall be housed within the Mechanical Drive unit
5.2.3	Not used	
5.2.4	Not used	
5.2.5	Not used	
5.2.6	Electrical: UPS or battery back-up for the control supply system and instrumentation	The UPS shall provide power to the gate servo drive for at least 5 open and close movements after a power outage.
5.2.7	Not used	
5.2.8	Electrical: Protection to be provided for controller to ensure seamless operation during over-voltage	Surge/over-voltage protection at the GMCC and motor drives
5.3	Main Security Gate	
5.3.1	Electrical: Main power supply system	A new 20A single phase circuit breaker will be installed at a suitable distribution board as power connection to the VVIP gate drive unit. A new label shall be fitted for this circuit breaker. This power supply shall preferably be from the Emergency Airport Supply (augmented by Generator)
5.3.2	Electrical: Gate Main Control	The gate main controller shall be housed within the Mechanical Drive unit
5.3.3	Not used	
5.3.4	Not used	
5.3.5	Not used	
5.3.6	Electrical: UPS or battery back-up for the control supply system and instrumentation	The UPS shall provide power to the gate servo drive for at least 5 open and close movements after a power outage.
5.3.7	Not used	
5.3.8	Electrical: Protection to be provided for controller to ensure seamless operation during over-voltage	Surge/over-voltage protection at the GMCC and motor drives
6	Control, Instrumentation and automation - operational and technical features	
6.1	Bravo Taxiway Gate	
6.1.1	Control: Speed and position sensing of the drive. The position of the gate will be measured by counting the number of rotations (partial rotations) of the motor shaft. The position of the gate may not be calculated by integrating the analogue speed output of the motor servo drive.	Measure (estimate) position Measure (estimate) speed Both measurements carried out continuously

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
	The speed of the gate will be estimated from the position measurement. The analogue speed output of the motor servo may be used.	
6.1.2	Control: Control Console	Installed in the office of the supervisor to house the main control and supervisory equipment at this remote-control station of the gate
6.1.3	Control: Curtain type sensor devices across the taxiway. If curtain-type sensors have inadequate range, the alternative (3 x single beam sensors as described in 6.4 below shall be implemented)	Vertical curtain type sensors to be installed: These shall be ± 2000 mm high sensors and must be installed on the air side and aircraft parking side of the gate. (Installed on both sides of the gate.) This may entail a transmitter receiver feature, the transmitters installed on the north side of the taxiway and the receivers installed on the south side of the taxiway.
6.1.4	Control: Electronic single beam type sensor devices. (Alternative to Curtain)	Three single beam type sensors to be installed on either side (Air side and aircraft parking side) of the gate 5 m from the centre line of the gate. This may entail a transmitter receiver feature, the transmitters installed on the north side of the taxiway and the receivers installed on the south side of the taxiway. The height of the beams as above nominal ground level be: - 500mm - 1500mm - 3000mm -
6.1.5	Control: Interlocking and monitoring systems including interconnection cabling leading from Main Control Cabinet	Limit switches of the roller cam operating type must be installed on the airside side of the taxiway to monitor and control the following functions: 1 - Retardation limit switch to initiate the retardation function for both open and close position of the gate. 2 - Stop limit switches for both the stop open and close positions of the gate. 3 - Ultimate stop limit switches for both the stop open and close positions of the gate. (These to act as emergency stop should the main control systems fail).

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
6.1.6	Control: Sirens and rotating beacon	Two red flashing lights having a high intensity illumination shall be installed at either end of the gate opening and be activated (flashing) when the gate movement is either for opening or closing of the taxiway. A siren shall be installed at the GMCC and shall sound when the gate movement is either for opening or closing of the taxiway.
6.1.7	Control: Robot type warning lights	Two pairs of traffic lights shall be mounted on either side of the gate opening (similar to vehicular robots) having a high intensity illumination. be activated when the gate movement is either for opening or closing of the taxiway. Two units must be installed facing the air side and two units must be installed facing the aircraft parking side of the taxiway. The lights shall: - Flash red when the gate is in motion - Continuous red when the gate is closed - Continuous green when the gate is fully open.
6.1.8	Obstacle light	A low intensity red obstacle light powered by photo-voltaic panel and battery shall be mounted on the top of the gate. The position of the light shall be above the taxiway centre line when the gate is open.
6.1.9	CCTV camera at gate	CCTV camera at gate shall relay images of the taxiway at the gate to the central CCTV control room. The CCTV shall use the airport IP network.
6.1.10	Control: Flood lighting	This lighting in the form of floodlighting shall be installed such that lighting illuminates the taxiway gate movement area. The battery supported light fitting shall be installed on each side of the gate opening.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
		These two units must be installed on the guide masts to be installed adjacent to the taxiway. The level of illumination must be sufficient at night so that the movement of the gate and the area adjacent to the gate track over the full width of the taxiway can be clearly observed The lights shall be angled and oriented to prevent glare to pilots.
6.1.11	Control: Connectivity	Interface electrical cable links (Network Fibre) shall be installed to the supervisor's control room and the power supply. This shall be used for remote gate movement control and CCTV images. Length of the fibre cable and trenching shall be as per the CAS.
6.1.12	Control: Modes of Operation	1. Automatic - remote control 2. Automatic – local control 3. Maintenance – local control 4. UPS operation 5. Mechanical emergency mode
6.1.13	Control User Interfaces – Automatic - remote	Button to open (green) • Press to start opening • Backlight flashes while gate in motion • Backlight on continuously when gate is open Button to close (Yellow/Orange) • Press to start closing • Backlight flashes while gate in motion • Backlight on continuously when gate is closed Emergency stop button
6.1.14	Control User Interfaces – Automatic – Local Mounted in enclosure attached to the side of the GMCC panel . The enclosure shall be lockable (key).	Button to open (green) • Press to start opening • Backlight flashes while gate in motion • Backlight on continuously when gate is open Button to close (Yellow/Orange) • Press to start closing • Backlight flashes while gate in motion • Backlight on continuously when gate is closed Emergency stop button
6.1.15	Control User Interface Maintenance Mode	A user interface shall be provided that allows the Maintenance Engineer to operate the gate in maintenance mode.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
	This mode shall be available to the Maintenance Engineer only. This interface shall be behind the GMCC panel door that is opened by a mechanical maintenance key.	In this mode, the Maintenance Engineer shall be able to override safety and control sensors. The proposed solution shall be presented to the project Engineer for review and acceptance prior to implementation.
6.1.16	Control Emergency Stop button	Four clearly marked, large Emergency Stop Buttons shall be positioned at both sides of the taxiway within 2m of the centreline of the rail. Left of Taxiway – Airside Right of Taxiway – Airside Left of Taxiway – Landside Left of Taxiway – Landside
6.2	VVIP Airside Gate	
6.2.1	Control: Control Console	Open and Close movements shall be initiated by the local and must not be an automatic close function
6.2.2	Control: Sensor devices	2 photocell beams
6.2.3	CCTV camera at gate	CCTV camera at gate shall relay images to the central CCTV control room. The CCTV shall use the airport IP network.
6.2.4	Control: Flood lighting	Ensure adequate lighting around the gate
6.2.5	Control: Connectivity	Gate open and close operations shall be controlled locally. A remote option will not be provided.
6.2.6	Control: Modes of Operation	1. Automatic – local control 2. UPS operation 3. Mechanical emergency mode
6.2.7	Not used	
6.23.8	Not used	
6.3.9	Not used	
6.3	Main Security Gate	
6.3.1	Control: Control Console	Open and Close movements shall be initiated by the local and must not be an automatic close function
6.3.2	Control: Sensor devices	2 photocell beams
6.3.3	CCTV camera at gate	CCTV camera at gate shall relay images to the central CCTV control room. The CCTV shall use the airport IP network.
6.3.4	Control: Flood lighting	Ensure adequate lighting around the gate
6.3.5	Control: Connectivity	Gate open and close operations shall be controlled locally. A remote option will not be provided.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
6.3.6	Control: Modes of Operation	1. Automatic – local control 2. UPS operation 3. Mechanical emergency mode
6.3.7	Control: Control Console	1. Open and Close movements shall be initiated by the local and must not be an automatic close function
6.3.8	Control: Sensor devices	2 photocell beams
6.3.9	CCTV camera at gate	CCTV camera at gate shall relay images to the central CCTV control room. The CCTV shall use the airport IP network.
7	Commission and Test	
7.1	Bravo Taxiway Gate	
7.1.1	Contractor commission and test	The Contractor shall invite the Project Manager to witness Contractors tests. Attendance of the Project Manager at these tests is optional to both parties. It is recognised that attendance by the Project Manager may expedite final hand-over.
7.1.2	Acceptance Test Method and Results Sheets	The Contractor shall provide the Project Manager with draft Acceptance Test Procedures and Acceptance Test Result templates 2 months prior to commencement of hand-over acceptance tests. The Contractor shall provide the Project Manager with final Acceptance Test Procedures and Acceptance Test Result templates 2 weeks prior to commencement of hand-over acceptance tests.
7.1.3	Hand-over tests	The Contractor shall give the Employer 2 weeks' notice of the commencement of final acceptance testing.
7.1.4	Delivery of	Operation and Maintenance Manuals Spares Special Tools and Equipment
7.2	VVIP Airside Gate	
7.2.1	Contractor commission and test	The Contractor shall invite the Project Manager to witness Contractors tests. Attendance of the Project Manager at these tests is optional to both parties. It is recognised that attendance by the Project Manager may expedite final hand-over.

ITEM	FEATURES AND OPERATIONAL REQUIREMENTS	PARAMETERS
7.2.2	Acceptance Test Method and Results Sheets	The Contractor shall provide the Project Manager with draft Acceptance Test Procedures and Acceptance Test Result templates 2 months prior to commencement of hand-over acceptance tests. The Contractor shall provide the Project Manager with final Acceptance Test Procedures and Acceptance Test Result templates 2 weeks prior to commencement of hand-over acceptance tests.
7.2.3	Hand-over tests	The Contractor shall give the Employer 2 weeks' notice of the commencement of final acceptance testing
7.2.4	Delivery of	Operation and Maintenance Manuals Spares Special Tools and Equipment
7.3	Main Security Gate	
7.3.1	Contractor commission and test	The Contractor shall invite the Project Manager to witness Contractors tests. Attendance of the Project Manager at these tests is optional to both parties. It is recognised that attendance by the Project Manager may expedite final hand-over.
7.3.2	Acceptance Test Method and Results Sheets	The Contractor shall provide the Project Manager with draft Acceptance Test Procedures and Acceptance Test Result templates 2 months prior to commencement of hand-over acceptance tests. The Contractor shall provide the Project Manager with final Acceptance Test Procedures and Acceptance Test Result templates 2 weeks prior to commencement of hand-over acceptance tests.
7.3.3	Hand-over tests	The Contractor shall give the Employer 2 weeks' notice of the commencement of final acceptance testing
7.3.4	Delivery of	Operation and Maintenance Manuals Spares Special Tools and Equipment

3.1.7 Detail Specifications

Bravo Taxiway Gate

CIVIL WORKS

- 1) The trenches to bury the conductors shall be approximately 600 mm deep. A minimum of two interlinking conductors of the same sectional area shall be installed to link the radial conductors underground at a position one meter from the concrete base of the drive unit.
- 2) All pavements shall be designed for
 - a. temporary pavements 50 daily design aircraft movements for 2 year design life.
 - b. Permanent pavements 50 daily design aircraft movements for 20 year design life.

MECHANICAL - TROLLEY:

- 1) The trolley with fence shall withstand crosswinds without lifting the wheel from the rail.

MECHANICAL DRIVE SYSTEM:

- 1) The steel base frame is to be welded as an all-welded frame and shall be manufactured to the general detail shown on the design drawings and to the detail to support the equipment as supplied by the Contractor for the main drive system of the gate.
- 2) The steel base frame shall be galvanised as per the Galvanising Specification elsewhere in this document.
- 3) All securing holes shall be pre-drilled for securing each of the components of the drive assembly as mentioned. Once all the necessary fitting and machining has been completed in the factory, the drive units shall be removed and the steel frame fully hot-dipped galvanised. Great care shall be taken to prevent any part of the framework being warped during this process.
- 4) The steel machine base shall be provided with aligned mechanism so that frame can be adjusted to the moving gate so that the drive transmission chain secured to the gate accurately engages with the drive sprocket of the drive unit
- 5) Once completed all drive units shall be re-fitted on the frame, test-run in the factory, and then transported to site and off loaded and secured to the concrete base
- 6) The drive unit shall be a three-phase AC electrical motor.
- 7) The electrical motor shall be fitted with the primary disc brake and the two encoders on the non-drive end of the motor. (Speed and position encoders) For this purpose the motor shaft on the non-drive end of the electrical motor may have to be an extended unit to fit the disc of the disc brake the cooling fan of the motor and the two encoders.
- 8) The encoders shall be fitted at the extreme shaft end on the non drive-end of the motor. The encoders shall be of the digital type to provide the input and controlling reference signal to the electronic digital control drive system of the motor. The units shall be fitted on a flexible type support bracket and couplings to eliminate any stress on the shaft of the encoders.
- 9) The motor and brake shall be connected to the electrical control system of the gate by means of PVC insulated armoured cables connected directly from the Gate Motor Control Cabinet.
- 10) Separate screened encoder cables suitably installed and protected in UV resistant flexible conduit shall be installed and connected from the encoders to the Gate Motor Control Cabinet.
- 11) Manual gate operation:
All the necessary tools and equipment shall be provided for the selected manual gate operation option:

- a. Auxiliary input shaft, for manual hand crank, including
 - i. Crank Handle
- b. Fixed installation of two winches and 60m cable at either side (one for opening and one for closing), including:
 - i. Crank handle manual operation
 - ii. Motor with power supplied from MGCC power (UPS). for 2 gate open/close movements
 - iii. Alternative power feed from a maintenance vehicle. Contractor shall fit one airport maintenance vehicle with the necessary power outlet socket and cable
- c. Manual pushing of gate by 2 persons, no more than 1000 Newtons force. If this option is selected, it must be demonstrated that two persons can complete one opening and one closing operation within 5 minutes.
- d. Safe pushing / pulling of gate with a vehicle. Vehicle to be equipped with safe attachment point (with shear pin).

The necessary modifications to the airport maintenance vehicle as well as the link to the gate must be provided.

ELECTRICAL:

- 1) The motor servo electronics shall be a variable speed drive device. The maximum over/under speed setting of the variable speed drive during nominal gate movement speed shall be +/- 10%.
- 2) The Gate Motor Control Cubicle (GMCC) shall be manufactured of an all steel weatherproof (IP 65 rating) enclosure to comply with the general requirements as specified in elsewhere in this specification.
- 3) The GMCC shall be manufactured as a fully weatherproof pedestal type cabinet. Once the metal work of the GMCC has been manufactured, all steel components shall be fully hot-dipped galvanised, and then painted according to the general requirements specified elsewhere in this specification
- 4) The GMCC shall be mounted on the steel frame pedestal with the footing of the frame mounted on a concrete base. This frame shall also be hot-dipped galvanised, and care shall be taken that the frame does not warp in the process.
- 5) All power cables connecting to the GMCC shall be PVC insulated wire armoured cables.
- 6) All signal cables shall be double screened in UV resistant flexible or rigid conduit. Conduit above ground shall be galvanised and underground PVC.
- 7) All the cabling and interconnections to the remote panel in the supervisor's office shall be PVC insulated armoured cables in PVC conduits.
- 8) The main incoming electrical power supply cable shall be connected to a main circuit breaker installed on the GMCC.
- 9) All cable connections to the GMCC shall be made from below and for this purpose cables shall be installed to comply with the requirements specified in the General specification elsewhere in this specification.
- 10) All connections to the GMCC shall have lightning and surge protection devices to protect the complete control system from surges in the supply network which could be induced in the network as a result of lightning or by switching transients in the power supply network.
- 11) The Contractor shall install an earthing grid at the GMCC, designed by a suitably qualified lightning protection specialist.

CONTROL, INSTRUMENTATION AND AUTOMATION:

- 1) The control system shall consist of a variable speed control unit with rectifier, DC link and inverter control features to control the speed of the AC motor during acceleration, deceleration and final stop positions for the gate to be driven from the open to the closed position and vice versa.
- 2) The control system shall thus provide a full four-quadrant forward / reverse control of the hauling chain driven by the output sprocket of the drive unit.
- 3) The electronic drive unit shall be of a well-known commercial product generally available and supported by local agents in South Africa and extensively used in the industry.
- 4) During the starting and stopping sequence of the gate, the motor shall be controlled to ensure gradual acceleration and deceleration of the gate to optimize the movement of the gate while the sensor monitoring devices are actively switched on to meet the specified criteria for the gate to operate safely over the taxiway, and preclude any mishap with the aircraft using the taxiway
- 5) The regenerated energy from the deceleration of the gate shall be dumped into a resistor bank in the GMCC.
- 6) The rating of the resistors shall be such to allow for the full control features of the drive system to be operational on a continuous operational sequence for the forward reverse operation of the gate,
- 7) Adequate ventilation of the GMCC shall be provided to prevent overheating from the resistor bank and motor servo equipment.
- 8) All interlocking and control systems shall be done by means of a PLC system correctly planned and programmed to comply with all the specified control, interlocking and safety features of the gate drive system
- 9) The GMCC shall thus house all the ancillary control equipment to operate, control and provide all supervisory and monitoring features of the gate.
- 10) The control system shall also include "start, stop" and "emergency stop" push buttons on the GMCC, to enable the operator to locally control the gate.
- 11) A local/remote conventional key switch shall be installed so that when switched to the remote position the gate control can be done by means of the equipment on the control panel installed in the Supervisor's office.
- 12) The GMCC shall on the front panel (behind the door to render it weatherproof) be provided with a key switch to switch the control system power on/off. This key switch shall be of the "Castell" type, so that the key can be removed when the clutch is engaged for manual operation of the gate. In addition, an interlock from the clutch will activate the emergency stop circuit.
- 13) The Motor Controller shall enter Emergency Stop in the event of faulty conditions such as:
 - a. Gate over speed
 - b. Gate under speed
 - c. Gate in mechanical limits
- 14) The Motor Controller shall engage the Mechanical Brake in the event of Emergency Stop fault conditions.
- 15) Limit switches shall be installed on a specially made galvanised steel frame to monitor and control all the specified operational functions of the gate.
- 16) For both the open position and the closed position of the gate the following adjustable control features shall be incorporated:
 - a. Limit switch to initiate retardation of the gate when reaching the near open position.
 - b. Limit switch to stop the operation of the gate when reaching final stop position.

- c. Ultimate limit switch to stop the operation of the gate during and emergency over-run should
- 17) The limit switches should be of the rocker arm operated type, the rocker arm being activated by means of steel guide shoes mounted on the side framework of the gate. Separate guide shoes shall be installed for both the open and closed control of the gate. The steel guide shoe mounting brackets and all steel components shall also be hot-dipped galvanised, and clamed by means of CR 12 type bolts and nuts to the gate framework.
The Contractor may suggest alternative sensing technology (magnetic, optic) by demonstrating that the alternative is robust, reliable and weatherproof.
- 18) At the position where these limit switches are installed, a weatherproof cover shall be installed so that the limit switches will not be exposed to direct and wind-swept rain.
- 19) At the air side of the gate and at the aircraft parking side of the gate infrared detection sensors of the curtain beam type shall be installed to act as a barrier across the taxiway to curtail the operation of the gate once an aircraft moving into the gate vicinity area is detected.
If the range of curtain beam type sensors is insufficient, an acceptable alternative is to the curtain is three individual horizontal beams.
- 20) The transmitter and receiver units for the curtain beam type sensors shall each be installed in vertical rectangular protection funnels, which shall be completely weatherproof to ensure that the units are not subjected to damage.
- 21) All sensors shall be installed with protective housings / enclosures to prevent damage.
- 22) If any of the sensors detects movement of a large object (person, vehicle, aircraft) over the taxiway, the gate shall stop, and reverse motion to the open position.
- 23) After a 30 second delay after the obstacle is no longer detected by the sensors, the gate close operation can be reinitiated.
- 24) While the gate is moving a siren, rotating beacon and robot lights shall be activated as an additional warning feature to a pilot moving with his airplane close to the taxiway gate area. The siren, rotating beacon and robot lights shall be sounded and switched on while the gate is in operation both during the opening and closing movement of the gate.
- a. Siren shall sound continuously during gate movements
- b. Beacon light shall flash continuously during gate movements
- c. Traffic light shall flash red during gate movements
- d. Traffic light shall show continuous red when gate is closed
- e. Traffic light shall show continuous green when gate is open
- 25) Flood lights shall be installed on 3m poles on either side of the gate opening illuminating the taxiway opening.
The floodlight shall be angled down to prevent pilot glare.
The floodlights shall switch on after dark with day/night switches.

VVIP Airside Gate

CIVIL WORKS

- 1) Foundations, plinths and gate posts shall be designed to accommodate gate loads, actuator forces, wind loads and operational fatigue in an airside environment.
- 2) Underground services and conduits shall be installed at a minimum depth of 600 mm and coordinated with the earthing and lightning protection system.
- 3) Pavements within the gate swing and vehicle overrun area shall be designed for airside service vehicles and occasional aircraft blast loading.

MECHANICAL – GATE LEAF

- 1) The swing gate leaf and support posts shall be of welded steel construction, hot dip galvanised for corrosion protection.
- 2) The gate shall withstand operational wind loads without permanent deformation or uncontrolled movement.
- 3) Hinges shall be heavy-duty, sealed and maintenance-free, designed for continuous airside operation.

MECHANICAL DRIVE SYSTEM

- 1) The gate shall be operated by an electromechanical swing gate actuator suitable for airside duty.
- 2) Drive units shall be mounted on galvanised steel brackets securely anchored to concrete foundations.
- 3) Motors shall be single-phase AC motors with integral reduction gearing and mechanical locking capability.
- 4) The drive system shall allow smooth acceleration and deceleration to prevent structural shock loads.
- 5) Manual override shall be provided, allowing safe manual opening and closing in the event of power failure.

ELECTRICAL

- 1) Power supply cables shall be PVC insulated, armoured, and installed in compliant conduits.
- 2) All electrical components shall be rated for outdoor airside conditions (minimum IP65).
- 3) Surge and lightning protection shall be provided for all incoming power and control circuits.
- 4) An earthing system shall be installed in accordance with airport and aviation authority requirements.

CONTROL, INSTRUMENTATION AND SAFETY

- 1) The gate shall be controlled via a PLC-based or dedicated gate controller with local operation capability only.
- 2) Open, closed and intermediate position monitoring shall be provided via limit switches or approved alternative sensing technology.
- 3) Obstacle detection (infrared, pressure or equivalent) shall stop and reverse the gate upon detection of persons or vehicles.
- 4) Emergency stop functionality shall be provided locally and integrated into the control system.
- 5) Interlocking with airside operational systems shall be provided where required to prevent unsafe gate operation.
- 6) Open/Close function shall be initiated by a security guard with a button on a local dongle

Main Security Gate

CIVIL WORKS

- 1) Foundations, plinths and gate posts shall be designed to accommodate gate loads, actuator forces, wind loads and operational fatigue in an airside environment.
- 2) Underground services and conduits shall be installed at a minimum depth of 600 mm and coordinated with the earthing and lightning protection system.
- 3) Pavements within the gate swing and vehicle overrun area shall be designed for airside service vehicles and occasional aircraft blast loading.

MECHANICAL – GATE LEAF

- 1) The swing gate leaf and support posts shall be of welded steel construction, hot dip galvanised for corrosion protection.
- 2) The gate shall withstand operational wind loads without permanent deformation or uncontrolled movement.
- 3) Hinges shall be heavy-duty, sealed and maintenance-free, designed for continuous airside operation.

MECHANICAL DRIVE SYSTEM

- 1) The gate shall be operated by an electromechanical swing gate actuator suitable for airside duty.
- 2) Drive units shall be mounted on galvanised steel brackets securely anchored to concrete foundations.
- 3) Motors shall be single-phase AC motors with integral reduction gearing and mechanical locking capability.
- 4) The drive system shall allow smooth acceleration and deceleration to prevent structural shock loads.
- 5) Manual override shall be provided, allowing safe manual opening and closing in the event of power failure.

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- 1) Power supply cables shall be PVC insulated, armoured, and installed in compliant conduits.
- 2) All electrical components shall be rated for outdoor airside conditions (minimum IP65).
- 3) Surge and lightning protection shall be provided for all incoming power and control circuits.
- 4) An earthing system shall be installed in accordance with airport and aviation authority requirements.

CONTROL, INSTRUMENTATION AND SAFETY

- 1) The gate shall be controlled via a PLC-based or dedicated gate controller with local operation capability only.
- 2) Open, closed and intermediate position monitoring shall be provided via limit switches or approved alternative sensing technology.
- 3) Obstacle detection (infrared, pressure or equivalent) shall stop and reverse the gate upon detection of persons or vehicles.
- 4) Emergency stop functionality shall be provided locally and integrated into the control system.
- 5) Interlocking with airside operational systems shall be provided where required to prevent unsafe gate operation.
- 6) Open/Close function shall be initiated by a security guard with a button on a local dongle.

PART C3.2: MANAGEMENT OF THE WORKS

1. Works co-ordination and work progress meetings – monthly

- a) Airports Company South Africa Limited will convene monthly project progress meetings at which representatives of the Contractor and Airports Company South Africa Limited must be present. The Employer's representative will record the minutes of the monthly site meetings, and the Contractor will record the minutes of the daily and weekly meetings. The monthly site meetings will be held at the Employer's site, and the venue will be communicated at least a week in advance. The daily and weekly meetings will be held at the site offices. The monthly minutes to be distributed to all parties within seven working days after the meeting was held. Daily and weekly meeting minutes will be shared a day after the meeting was held.

2. Health and safety risk management

- a) The Contractor will be required to submit the progress report on the project, and highlighting any risk that may hamper or delay the progress.
- b) The Contractor shall comply and accept the health and safety requirements contained the section for Contract Data: C5.2: OCCUPATIONAL HEALTH AND SAFETY AGREEMENT.
- c) Within 7 days of the tender award, the Contractor shall submit a safety file for approval by the ACSA Safety Department. This file will be applicable to the Scope of Work detailing all relevant safety documentation, procedures and risk assessments – prior to the commencement of work.

3. Format of Communications

- a) All instructions or requests need to be confirmed in writing through:
 - Site instructions
 - Requests for inspections

4. Testing, Completion, Commissioning and Correction of Defects

- a) The Contractor's procedures for testing, completion, commissioning and correction of defects will be reviewed and approved by the Project Manager / Supervisor on site.

5. Procedures

- b) Any work interfering with operations must be carried out after hours in accordance with the airports operational hours and must be priced accordingly.
- c) The procedures indicated are guidelines only. The Contractor must liaise with the Employer and the engineer to prepare a detailed program of the shutdowns required after hours to ensure that the work is carried out without affecting the operations of the airport.
- d) Sufficient labour must be allowed for during the shutdown to limit the time required for the shutdowns.
- e) All switching and earthing to be done in strict compliance with regulations. The required Health and Safety procedures are to be in place and the correct personal protection equipment is to be used. Switching schedules and safe working procedures is to be submitted for approval before any work can be carried out. Safe working permits will also be required.

6. Variations to Contract Price

- a) All costs for variations to the contract shall be done in accordance with the rates that shall be completed by the Contractor in the pricing section of this document.
- b) Any items or variations for which rates have not been included in the Schedules shall be priced as non-scheduled items.
- c) All instructions, directions or explanations to the subcontractor(s) shall be given in writing by the principal Contractor. The Contractor shall not accept oral instructions from any party whatsoever.

7. Environmental constraints and management

- a) The Contractor to ensure that the design and his associated activities (installation, disposal of waste, noise, pollution etc.) complies with ACSA environmental policy. The Contractor is required to report monthly on any environmental issues that affect the project or affected by project.

8. Disposal of Waste Material

- a) All waste material as result of the works including the demolished trees, brush, rubbish, fences and all other objectionable material will be removed and disposed of at a legal site.

9. Quality assurance requirements

- a) Within the period stated in the Contact Data, the Contractor submits his complete quality control and assurance system (with all quality control and assurance procedures and manuals) for review and acceptance by the Employer. The manual includes pro-forma checklists for all requirements of the Contractor's quality control and assurance program and those called for in the Scope.
- b) Acceptance by the Employer of the Contractor's quality assurance programme, quality plans and/or inspection and/or test plans, or of those of his Subcontractors will not relieve the Contractor of his obligation to provide services which meet the requirements of the Contract.

10. Finishing and Tidying

- a) In view of the intense concentration of construction activities likely to be experienced during the construction period, progressive and systematic finishing and tidying will form an essential part of this contract. At no time may spoil rubble, materials, equipment of unfinished operations be allowed to accumulate in such a manner as to unnecessarily impede the activities of others and in the event of this occurring, the employer shall have the right to withhold payment for as long as may be necessary in respect of the relevant works in the area concerned without prejudicing the rights of others to institute claims against the Contractor on the ground of unnecessary obstruction.
- b) Finishing and tidying must not simply be left to the end of the contract. All finishing and tidying shall be carried out to the best advantage of the project as a whole and in the close co-operation with others.

11. Programming of the works

- a) The programming as per Tender Submission. The Contractor will be required to submit the revised programme within two weeks after the start date. The Contractor needs to factor the risks such as lead times, working on the live environment etc.
- b) The Employer and the Employer Manager: Maintenance Engineering, the Project Manager and Supervisor must approve the programme of the works. The programme of the works must be compiled to ensure minimum disruption to airport operations. The works can be carried out during operational hours. All intrusive works must be scheduled outside of airport operational hours.
- c) The non-working days are Sundays.
- d) The special non-working days are Statutory Public holidays and the year-end break as defined by SAFCEC.

11.1 Kimberley Airport Operating Hours

Kimberly Airport
Monday - Friday (inclusive of Public Holidays): 06h30 -18h300
Saturday: 07h00 – 14h30
Sunday: 09h00 – 18h30

12. The Contractor's Personnel

- a) The Contractor's personnel as per Tender Submission. Contractor to submit the organogram in conjunction with the subcontractor personnel.
- b) Construction Manager/ Site Supervisor:
 - i. The Construction Manager must have experience in completed projects comprising of/ related to automated Aircraft Gates/ General Aviation/ Prison/ Military access gates/ Mechanical drive systems (drive motors, gearboxes, couplings). The construction (refurbishment/ replacement) value of each completed project must be R2 Million or more (excl. Vat). The Key personnel must have at least completed two projects. Contactable References will be required prior to appointment of the resource.
- c) Any change in personnel need to be approved by Employer's Project Manager.

13. Daily records

- a) The Contractor must keep daily records of resources (people and equipment employed) and site diaries in respect of work performed on the site. A copy of the previous day's daily record must be provided to the Project Manager/ Supervisor on a daily basis.

14. Recording of Weather

- a) The Contractor shall provide a rain gauge and maximum/minimum thermometer. He shall erect them according to the requirements of the weather bureau. The Contractor shall record and keep a record of the daily rainfall and maximum/minimum temperatures and supply the data to the Project Manager/ Supervisor on a daily basis.
- b) The Contractor shall also record wind speed measurements on site as agreed with the Project Manager's Representative. Data can also be obtained from the local weather bureau but has to be recorded on site on a daily basis.
- c) The cost of complying with these requirements is deemed to be covered by the tendered rates for the Contractor's General Obligations.

15. Insurance provided by the Employer

- a) Refer to the insurance causes contained in Annexure C5.7 of the Contract.

16. Provision of bonds and guarantees

- a) Original copies of the bonds and guarantees must be lodged at the office of ACSA, and one copy of each must be kept on site with the Project Manager's representative. On release, the bond and guarantees can be collected from ACSA offices.

17. Training Workshops and Technology Transfer

- a) The Contractor shall provide a training programme with detailed information on items that will be covered and length of the training programme, for the Project Manager's approval.
 - i. The training shall prepare the Kimberley Airport' maintenance team to adequately maintain and operate the installation. The training shall include hard and soft copies of the training material to be handed over to the employer.

18. Engineering and design of the works

- a) *Employer's Requirements*
 - i. All work shall conform to all relevant SANS standards, OHS ACT regulations and all other legislation that might be relevant to this Contract and the execution thereof.
- b) Design responsibility
 - i. The design responsibility of the installation, general layout, arrangement and the functionality of the works is the Contractor's responsibility.
- c) Parts of the *works* which the *Contractor* is to design.
 - i. Contractor's design and installation plan which is to be submitted to the Project Manager for his acceptance and for the As-built drawings to be prepared by the Contractor.
- d) Procedure for submission and acceptance of *Contractor's* design
 - i. The Contractor's design as well as Employer specification and installation requirements as per tender submission will be used for this project. The As-built drawings to be prepared by the Contractor and submitted to the Project Manager for acceptance.
- e) Use of *Contractor's* design
 - i. The Contractor to ensure adherence to the specification as per tender documents and build the final product for purpose that is intended for.
- f) Equipment required to be included in the *works*.
 - i. The Contractor may use any electrical equipment or tool to ensure the proper completion of works. The list of all tools to be used onsite to be presented as the part of safety file including the safe operating procedures for those tools.
- g) As-built drawings, operating manuals and maintenance schedules
 - i. The Contractor to provide As-built drawings, operating manuals and maintenance as stated in the Bill of Quantities as the part of the hand-over documentation.

19. Changes to Scope of Work

- a) It is a condition of this contract that the employer reserves the right to limit the total expenditure on the Works due to possible budget constraints. Should the tender sum exceed the budgeted amount, the scope of the works may be reduced at any time before or during the contract period to ensure that the final contract amount does not exceed the budgeted amount.

20. Procurement

- a) Personnel: Minimum requirements of people employed on the Site
 - i. As per the Contractor's requirements to complete the Works.
 - o No criminal Record
 - ii. The Contractor shall provide a complete list of staff that will execute works on site as all personnel needs to be security screened and be issued a permit for works.
- b) Subcontracting: Preferred subcontractors
 - i. No preferred subcontractor or supplier by Employer
- c) Limitations on subcontracting
 - i. Except where otherwise provided in the Contract, the Contractor shall not subcontract any part of the Contract without the prior written consent of the Employer's Agent, which consent shall not be unreasonably withheld."
- d) Plant and Materials
 - i. Plant & Materials storage and safeguard is the responsibility of the Contractor.
 - ii. The Contractor to clearly state the lead times on Contractor's procurement of Plant and Materials.
 - iii. The employer will provide water and electricity to the Contractor. These items will be metered and the cost recovered from the Contractor.
- e) Contractor's procurement of Plant and Materials
 - i. Contractor to ensure that the material procured are compliant with the specification on the tender document, where possible the procurement preference should be given to Black people suppliers.
- f) Tests and inspections before delivery
 - i. The Contractor shall ensure that the electrical supply equipment will have undergone all applicable factory acceptance and quality tests prior to delivery. Certification to be provided to the Employer accordingly.
- g) Contractor's Equipment (including temporary works)
 - i. The Contractor shall ensure that all equipment is clearly marked and to be safely secured at all times when not in use.
- h) Construction
 - i. Temporary works, Site services & construction constraints
 - o It will be the Contractor's responsibility to provide a secure environment for their equipment. The Contractor's personnel will be restricted to the Contractor's own established site and the agreed area of work. The Contractor's personnel will not be

permitted at the Airside/restricted areas without the necessary permits and reflective jackets.

- ii. Employer's Site entry and security control, permits, and Site regulations.
 - o An induction course must be attended by the Contractor and all personnel who would be involved on site. The Contractor will need to make own arrangements for staff full medicals, and schedule with the ACSA's project manager for the induction course. Security arrangements would be discussed at the induction meeting and should be strictly adhered to. It should be noted that ACSA premises subscribe to National Key Point Regulations, every person who conduct works at the Airport will be subjected to security vetting. ACSA will not be held liable should one of the Contractor member fail SAPS vetting process.
 - o All airside services are in restricted areas and access-controlled areas, accordingly it is crucial for the Contractor to note that Kimberley Airport is a National Key Point and governed as such.
 - o The Contractor shall be compensated for costs relating to Employer required permits.
 - o The Contractor must ensure that he/she is, at all times, familiar with the Employer's safety and security requirements relating to permits in order for no services to be delayed as a result thereof. This includes the permit application process (available to the Contractor upon request).
 - o The Contractor shall have no claim against the Employer in the event that a permit request is refused for reasons not attributable to the Employer.
 - o The following table is not all inclusive, but is provided for illustration purposes:

Permit	Required by/for	Department
AVOP – Airside Vehicle Operator permit	All drivers of vehicles on airside	ACSA Safety
Airside Vehicle Permit	All vehicles that enter airside	ACSA Safety
Basement Parking permit	All vehicles allowed to enter the delivery basement	ACSA Parking
Personal permit	All persons employed on the airport	ACSA Security
Cell phone permit	All persons taking cell phones to airside	ACSA Security
Lap top permit	All persons taking lap top computers to airside	ACSA Security
Camera permit	All persons taking cameras or camera equipment to airside	ACSA Security
Hot Works Permit	All welding and/metal cutting services	ACSA Safety / Fire & Rescue

- iii. Proof of having attended the airside induction training course is required for all personal permit applications. Persons applying for an AVOP must provide proof of having attended an AVOP course. Fees are levied for these courses. Fees are further levied for all permit renewals and refresher courses - where applicable.
- iv. Use of cell phones on airside is not permitted unless the user is in possession of an appropriate Airport permit for the device. Cell phone permit issuing authority lies with the ACSA Security department.
- v. The Contractor shall not be allowed to use two-way radios at on the Employer's Premises unless these radios are of the type as approved by the ACSA IT department and are intrinsically safe.

21. Airport Training Courses

- a) AIT (Airside Induction Training)
Initial – R 570.00 Excl. VAT
Refresher – R 416.00 Excl. VAT
- b) AVOP (Airside Vehicle Operator Permit)- Required for driving on Airside.
Initial – R 596.00 Excl. VAT
Refresher – R 416.00 Excl. VAT
- c) General Security Awareness Training – R741 (Excl. Vat)

ACSA PERMIT PRICES - 2021		
Permit Type	Duration	Current Price
PERSONAL PERMITS		
Personal permanent permits	6days-2years	270
Per Icon		70
Personal temporary permits	2-5 days	270
Personal visitors permit	1 day	270
VEHICLE PERMITS		
Vehicle permanent permits	1 year	1141
Vehicle add-on fee	1 year	5105
Vehicle temporary permits	1 - 3mths	300
Prorated add-on fee	1 - 3mths	1452
Vehicle temporary permits	3 -6mths	595
Prorated add-on fee	3 - 6mths	2900
Vehicle temporary permits	1-3 days	138
Vehicle temporary permits	4-30 days	300
Reprint of Vehicle Disc		138
Change of Registration		138
Contractors Vehicles 1- 3 Months		520
Contractors Vehicles 4 - 6 Months		1035
Permanent Contractors Vehicle Permit	1 year	1975
PARKING PERMITS		
Staff Parking	1 year	95
Taxi Parking	1year	95

22. Site Work

- a) Restrictions to access on Site, roads, walkways and barricades
 - i. The Contractor shall protect the site properly and shall so arrange his operations that the minimum danger and inconvenience is caused to airport operations. For this purpose, he shall, inter alia, provide and maintain sufficient signs, lights, barricades, fencing and guarding as may be necessary or required by Airports Company South Africa Limited or by any act, regulation or statutory authorities. add project-specific requirements in this section.
- b) People restrictions on Site; hours of work, conduct and records.
 - ii. It is expected that Contractors wear visible company uniform or reflector jackets with Contractor name there-on when entering the premises as a form of identification. Permits to be displayed at all times whilst on site.
 - iii. Proper inspections to be conducted daily on completion of day's work to ensure no Foreign Object Debris (FOD) e.g. screws, nut, wires, papers, insulation taps etc. are left on the tarmac or any manoeuvring area. Any damages or fatalities resulted due to Contractor's negligence on FOD management, the Contractor will be held liable for such action.
- c) Contractor's Equipment
 - i. Contractor to keep record of equipment onsite, service history etc. and keep a file onsite.
- d) Equipment provided by the Employer.
 - i. None.
- e) Site services and facilities provided by the *Employer*.
 - i. The Contractor shall be entitled to use such supplies of electricity and water as may be available on the Site for the purpose of the Works and at his own expense, shall provide any apparatus necessary for such use. The Contractor shall notify ACSA of any equipment or facility, which will be a consumer of electricity and water. The Contractor shall provide everything else necessary for Providing the Works".
- f) Facilities provided by the *Contractor*
 - i. Facilities e.g. storage, site offices, vehicle, equipment provided by the Contractor should be safeguarded by the Contractor during the construction and be removed off site upon the completion of the contract.
 - ii. The Contractor shall not erect any housing or other accommodation facilities on the site in urban areas and shall make all the necessary arrangements for accommodation of his personnel and site staff off the site, unless otherwise stated in the Contract Documentation.
 - iii. The Contractor shall not erect any housing or other accommodation facilities on the site before he has obtained the written permission of the Employer and, where applicable, the landowner and has complied fully with all applicable legislative and regulatory requirements.
- g) Contractor's ablution facilities
 - i. The Contractor shall provide sufficient portable chemical latrine units at the work sites. The latrine units shall be serviced daily and kept in a hygienic and orderly state to the approval of the Project Manager. No separate payment shall be made for this requirement and the costs thereof shall be deemed to be included in the rates tendered for the Contractor's time-related obligations.
- h) Existing premises, inspection of adjoining properties and checking work of Others

- i. All operations required in connection with the Agreement shall, as far as the provisions of the Agreement permit, not unnecessarily or in an improper manner encroach upon the use of airport facilities.
 - ii. The Contractor is to take cognizance that the airport is used by others and other Contractors may be on site for unrelated projects/services.
- i) Setting out of the *works*
 - i. Safety measures to be adhered to according OHS Act. Adhere to ACSA airside safety requirements regarding equipment, vehicles, and personnel operating on the airside.
 - ii. Full risk analysis on working on height, next to aircraft and airside and mitigation thereof to be considered as part of safety file requirements.
 - iii. Contractor to ensure that other Underground services, other existing services, cable and pipe trenches and covers are identified to prevent any disruption to these services due to Contractor's activities.
 - iv. Contractor to take necessary steps to control noise, dust, water and waste during his/her activities onsite.
- j) Construction requirements
 - i. The ACSA electrical team will facilitate the tie-in connection with reference to the notification of works to relevant stakeholders and the switching procedures.
- k) Completion, testing, commissioning and correction of Defects (Work to be done by the Completion Date)
 - i. All work to be done by the Contractor shall be completed by the Completion Date.
 - ii. The Project Manager cannot certify Completion until all the work has been completed 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.
- l) Use of the works before Completion has been certified
 - i. The Employer may use any part of the works before Completion has been certified but if he does so he takes over the part of the works. Any defect must be attended to as stipulated in the defect clause.
- m) Materials facilities and samples for tests and inspections
 - i. Not applicable
- n) Commissioning
 - i. The Contractor to submit the commissioning procedures and plan to the Project Manager for approval. The commissioning procedure and plans will be adhered to during commissioning.
- o) Start-up procedures required to put the *works* into operation
 - i. The Contractor to ensure that he complies with all ACSA security, safety, environmental and operational requirements prior to the commencement of works complete accordingly.
- p) Take over procedures
 - i. The works will be handed over partially or fully once commissioned and certified by Project Manager. The commissioning should be witnessed by both ACSA representative and the Contractor representative.
- q) Access given by the *Employer* for correction of Defects

- i. The Project Manager arranges for the Employer to allow the Contractor access to and use of a part of the works which has been taken over if needed to correct a Defect. After the works have been put into operation, the Employer may require the Contractor to undertake certain procedures before such access can be granted.
- r) Performance tests after Completion
 - i. The works performance will be checked against the design parameters for the duration stipulated in the warranty period. Any deviation to the performance will be rectified by the Contractor at their own costs.
- s) Operational maintenance after Completion
 - i. Maintenance manuals and training will be provided by the Contractor on completion of works.
 - A separate agreement (NEC3 Term Service Contract) will be entered into between ACSA and the Contractor for the maintenance of the equipment for a period of 36 months, effective upon final completion of the works. Refer to the NEC3 TSC with maintenance scope and pricing.

23. Plant and Materials standards and workmanship

- a) Investigation, survey and Site clearance
 - Contractor to ensure that a thorough inspection and clearance is conducted prior commencement of work of any other services that might be impacted by Contractor's activities.
- b) Building works
 - Product specification and installation standard to be compliant with National Building Regulations and local authority requirements including ICAO or FAA standards.
- c) Civil engineering and structural works
 - SANS
- d) Electrical & mechanical engineering works.
 - *All parts and installations should comply with the relevant:*
 - SANS standards
 - OSH Act,
 - ICAO: Annexure 14
 - ICAO: Aerodrome Design Manual,
 - Federal Aviation Administration (FAA)
- e) Process control and IT works
 - Applicable standards

PART C3.3: LIST OF TENDER DRAWINGS

See Annexure C5.12: Drawings – Indicative details

Part C4: Site Information

Document reference	Title	No of pages
C4	Site Information	2
	Total number of pages	2

Part C4: Site Information

The sites are situated at Kimberley Airport. The works will be carried out on airside, requiring hands-on management of the construction work, with consideration of the safety and security. The airside is a restricted area with stringent access control measures put in place.

The Contractor is reminded that this is a National Key Point and as such must adhere to all airport's rules and regulations regarding health and safety, environmental, security, fire and access control. The below are aerial images of the airports.



Figure C4.2: KIM Gate Locations - Aerial View

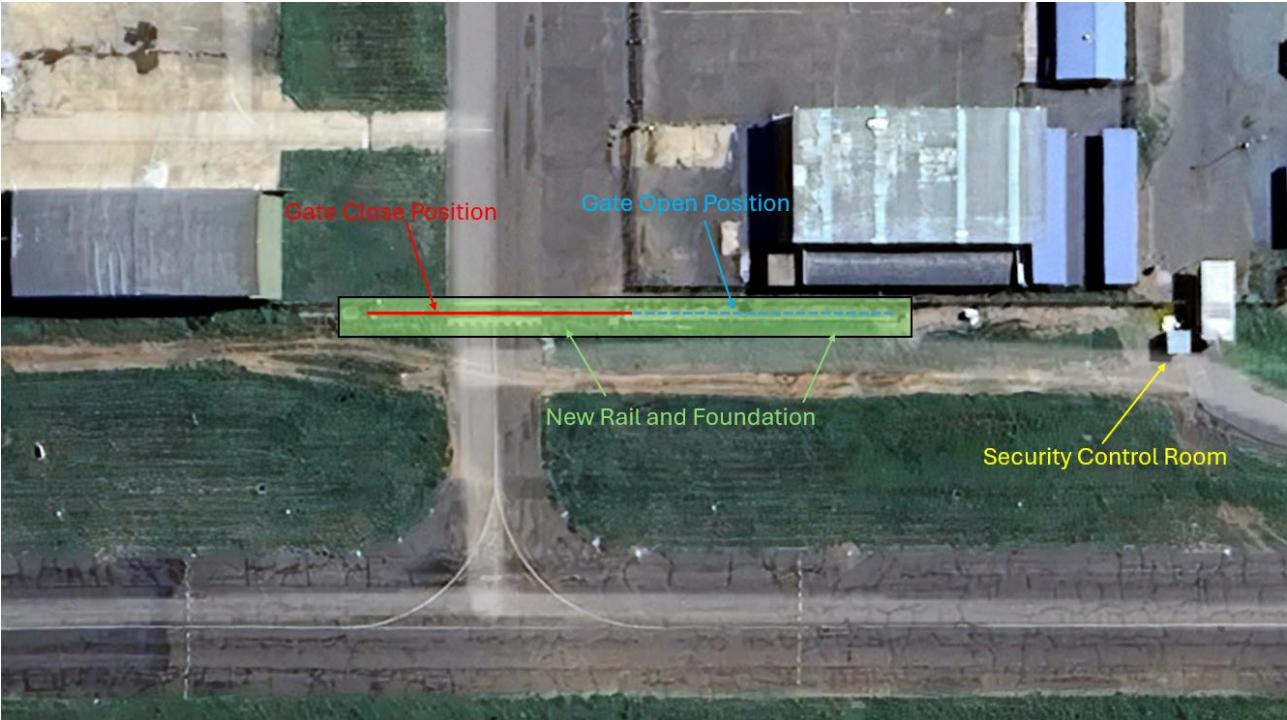


Figure C4.3: KIM Bravo Taxiway Gate Construction Site - Aerial View

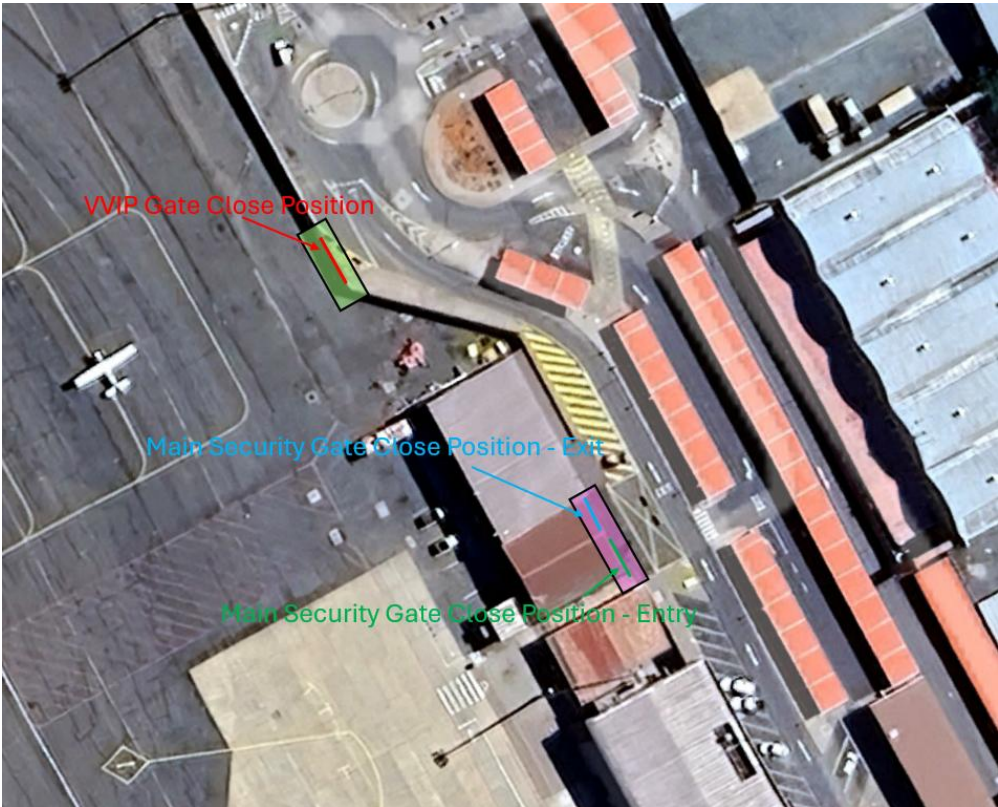


Figure C4.4: KIM Mechanical Gates Construction Sites - Aerial View

Part C5: Annexures

Annexure	Description	Comments
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Annexure C5.2	Occupational Health and Safety Mandatary Agreement	
Annexure C5.3	ACSA Baseline Hazard identification risk assessment (HIRA)	
Annexure C5.4	Environmental Terms and Conditions to Commence Work	
Annexure C5.5	ACSA Generic Construction Environmental Management Plan	
Annexure C5.6	POPI Act Agreement	
Annexure C5.7	ACSA Insurance Clauses	
Annexure C5.8	ECSA Gazetted Guidelines, March 2021	
Annexure C5.9	ACSA CAD Drawing Standards	
Annexure C5.10	Generic Project Specification	
Annexure C5.11	Annexure C5.12: Drawings – Indicative details	

Annexure C5.1: ACSA Generic Occupational Health and Safety Specifications

Project: THE REPLACEMENT OF MECHANICAL GATES AT KIMBERLEY AIRPORT.

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INTRODUCTION

In terms of the Construction Regulation 5(1) b the Employer, is required to compile a Health & Safety specification for any intended project and provide such specification to any prospective Contractor and designers. The Contractor, on appointment shall submit a Health & Safety plan which shall address the requirements of this specification.

This specification objective is to ensure that the Contractor(s) entering into a contract with ACSA achieve an acceptable level of OH&S performance. This document forms an integral part of Project Information and the contract. Principle and other Contractors should make it part of any contract that they may have with their Contractors and /or suppliers.

Compliance with this document does not absolve the Employer from complying with minimum legal requirements and the Employer remains responsible for the health & safety of his employees and those of his mandatories. ACSA reserves the right to audit, monitor and where necessary regulate the site work activities of any principal Contractor or appointed subcontractor as per Construction Regulation 5(1) (o) and section 5 of this document.

1. SCOPE

This Specification is intended for all ACSA Service Providers.

2. DEFINITIONS

The definitions as listed in the OHS Act and Construction Regulations 84 of 7 February 2014 shall apply. Therefore, all references to the old Construction Regulations will change to the new Construction Regulations.

Client: means any person for whom construction work is being performed.

For the purposes of this NEC3 appointment to “**REPLACEMENT OF MECHANICAL GATES AT KIMBERLEY AIRPORT**”, the Client is ACSA and shall be referred to “The Employer”.

Principal Contractor: means an employer appointed by the client to perform construction work

Contractor: means an employer who performs construction work;

Construction work: means any work in connection with,

- the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
- the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work;

Competent person: means a person who,

- a) has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and
- b) is familiar with the Act and with the applicable regulations made under the Act;

Designer: means

- a) competent person who
 - i. prepares a design;
 - ii. checks and approves a design; or
 - iii. arranges for any person at work under his or her control to prepare a design
 - iv. including an employee of that person where he/she is the employer or
 - v. designs temporary work, including its components,

- b) an architect or engineer contributing to, or having overall responsibility for a design;
- c) a building services engineer designing details for fixed plant;
- d) a surveyor specifying articles or drawing up specifications;
- e) A Contractor carrying out design work as part of a design and building project; or
- f) an interior designer, shop-fitter or landscape architect;

Fall prevention equipment: means equipment used to prevent persons from falling from a fall risk position, including personal equipment, a body harness, lanyards, lifelines or physical equipment such as guardrails, screens, barricades, anchorages or similar equipment;

Fall arrest equipment: means equipment used to arrest a person in a fall, including personal equipment such as body harness, lanyards, deceleration devices, lifelines or similar equipment.

Hazard: means a source of or exposure to danger

Hazard identification: means the identification and documenting of existing or expected hazards to the health and safety of persons, which are normally associated with the type of construction work being executed or to be executed

Risk assessment: means the process contemplated in paragraph 10 of the specifications.

Excavation work: means the making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping;

Ergonomics: means the application of scientific information concerning humans to the design of objects, systems and the environment for human use in order to optimise human well-being and overall system performance;

3. NOTIFICATION OF CONSTRUCTION

(Construction Regulation 4)

The Principal Contractor who intends to carry out any construction work must at least 7 days before that work is to be carried out notify the provincial director in writing in a form similar to Annexure 2 if the intended construction work will—

- (a) include excavation work;
- (b) include working at a height where there is risk of falling;
- (c) include the demolition of a structure; or
- (d) Include the use of explosives to perform construction work.

4. DUTIES OF THE PRINCIPAL CONTRACTOR AND CONTRACTOR

(Construction Regulation 7)

The Principal Contractor must:

- (a) Provide and demonstrate to the client a suitable, sufficiently documented and coherent site specific health and safety plan, based on the client's documented health and safety specifications. The plan must be applied from the date of commencement of and for the

duration of the construction work and which must be reviewed and updated by the Principal Contractor as work progresses;

- (b) Open and keep on site a health and safety file, which must include all documentation required in terms of the Act and this specification, which must be made available on request to an inspector, the client, the client's agent or Contractor; and
- (c) On appointing any other Contractor, in order to ensure compliance with the provisions of the Act—
 - i. Provide Contractors who are tendering to perform construction work for the Principal Contractor, with the relevant sections of the health and safety specifications pertaining to the construction work which has to be performed;
 - ii. Ensure that potential Contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;
 - iii. Ensure that no Contractor is appointed to perform construction work unless the Principal Contractor is reasonably satisfied that the Contractor that he/she intends to appoint, has the necessary competencies and resources to perform the construction work safely;
 - iv. Ensure prior to work commencing on the site that every Contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993;
 - v. Appoint each Contractor in writing for the part of the project on the construction site;
 - vi. Take reasonable steps to ensure that each Contractor's health and safety plan is implemented and maintained on the construction site;
 - vii. Ensure that the periodic site audits and document verification are conducted at intervals mutually agreed upon between the Contractor and Principal Contractor, but at least once every 30 days;
 - viii. Stop any Contractor from executing construction work which is not in accordance with the client's health and safety specifications and the Principal Contractor's health and safety plan or which poses a threat to the health and safety of persons;
 - ix. Where changes are brought about to the design and construction, make available sufficient health and safety information and appropriate resources to the Contractor to execute the work safely; and
 - x. Discuss and negotiate with the Contractor the contents of the health and safety plan and must thereafter finally approve that plan for implementation;
- (d) Ensure that a copy of his or her health and safety plan, as well as the Contractor's health and safety plan is available on request to an employee, an Inspector, a Contractor, the Client or the Client's Agent;
- (e) Hand over a consolidated health and safety file to the client upon completion of the construction work and must, in addition to the documentation include a record of all drawings, designs, materials used and other similar information concerning the completed structure;
- (f) In addition to the documentation required in the health and safety file, include and make available a comprehensive and updated list of all the Contractors on site accountable to the Principal Contractor, the agreements between the parties and the type of work being done; and

- (g) Ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3.

The Principal Contractor must take reasonable steps to ensure co-operation between all Contractors appointed by the Principal Contractor to enable each of those Contractors to comply with this specification.

No Contractor may allow or permit any employee or visitor to enter the site, unless that employee or visitor has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry and must ensure all have the necessary personal protective equipment.

The Contractor must prior to performing any construction work:

- (a) Provide and demonstrate to the Principal Contractor a suitable and sufficiently documented health and safety plan, based on the relevant sections of the client's health and safety specification. The aforementioned plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the Contractor as work progresses;
- (b) Open and keep on site a health and safety file, which must include all documentation required in terms of the Act and this specification, and which must be made available on request to an Inspector, the Client, the Client's Agent or the Principal Contractor;
- (c) Before appointing another Contractor to perform construction work, be reasonably satisfied that the Contractor that he/she intends to appoint has the necessary competencies and resources to perform the construction work safely;
- (d) Co-operate with the Principal Contractor as far as is necessary ensuring all comply with the provisions of the Act; and
- (e) As far as is reasonably practicable, promptly provide the Contractor with any information which might affect the health and safety of any person at work carrying out construction work on the site, any person who might be affected by the work of such a person at work, or which might justify a review of the health and safety plan.

Where the Contractor appoints another Contractor to perform construction work, the duties determined in **section 5** of this document applies to the Contractor as if he/she were the Principal Contractor.

A Contractor must at all times keep records of the health and safety induction training and such records must be made available on request to an inspector, the client, the client's agent or the principal Contractor.

A Contractor must ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3.

5. MANAGEMENT AND SUPERVISION OF CONSTRUCTION WORK

(Construction Regulation 8)

The Principal Contractor must in writing appoint one full-time competent person as the Construction Manager with the duty of managing all the construction work on a single site, including the duty of ensuring Occupational Health and Safety compliance, and in the absence of the Construction Manager an alternate must be appointed by the Principal Contractor.

The Principal Contractor must upon having considered the size of the project, in writing appoint one or more assistant Construction Managers for different sections thereof: Provided that the designation of any such person does not relieve the Construction Manager of any personal accountability for failing in his or her management duties in terms of this regulation.

No Construction Manager appointed under paragraph 6 above may manage any construction work on or in any construction site other than the site in respect of which he/she has been appointed.

A Contractor must, after consultation with the client and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time construction health and safety officer in writing to assist in the control of all health and safety related aspects on the site.

No Contractor may appoint a Construction Health and Safety Officer to assist in the control of health and safety related aspects on the site unless he/she is reasonably satisfied that the construction health and safety officer that he/she intends to appoint has necessary competencies and resources to assist the Principal Contractor

A Construction Manager must in writing appoint Construction Supervisors responsible for construction activities and ensuring Occupational Health and Safety compliance on the construction site.

A Contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the Construction Supervisor contemplated in **paragraph 6** above, and every such employee has, to the extent clearly defined by the Principal Contractor in the letter of appointment, the same duties as the Construction Supervisor: Provided that the designation of any such employee does not relieve the Construction Supervisor of any personal accountability for failing in his or her supervisory duties in terms of this section in the specification..

No Construction Supervisor appointed under paragraph 6 above may supervise any construction work on or in any construction site other than the site in respect of which he/she has been appointed: Provided that if a sufficient number of competent employees have been appropriately designated on all the relevant construction sites, the appointed Construction Supervisor may supervise more than one site.

6. REGISTRATION WITH THE WORKMEN'S COMPENSATION OR LICENSED INSURER

The Principal Contractor(s) must ensure that ACSA is provided with a valid letter of good standing, including a registration number with the Compensation for Occupational Injury and Diseases Fund or an alternative scheme approved in writing by the Commissioner to the COID Fund, at least 10 days prior commencement of construction work. It must remain the Principal Contractor's responsibility to furnish ACSA with a valid letter of good standing or keep a copy available for perusal by a Client, Client Representatives or any other person authorised thereto.

7. MANDATARY AGREEMENT

A duly signed mandatar form also referred to as 'OHS Act section 37.2' must be obtained from ACSA Safety Department. It must be signed and returned to ACSA by the Principal Contractor at least 10 days prior to commencement of construction work. The Principal Contractor must ensure that all its Contractors have completed a similar document and a proof of such signed documents is submitted to ACSA for reference purposes.

8. ASSIGNED PERSON IN TERMS OF OCCUPATIONAL HEALTH & SAFETY ACT OF 1993 & APPLICABLE REGULATIONS

A written letter of appointment must be forwarded to ACSA duly signed by responsible persons at least 3 days prior commencement of construction work for the following duties: **(Further appointments could become necessary as the project progresses and as per the requirements of OHS Act 85/1993)**

- (a) Person assigned duties in terms of the 16.2 appointees of the Act
- (b) Construction Manager CR8(1)
- (c) Assistant Construction Manager CR8(2) - *where applicable*
- (d) Full-time or part-time Construction Safety Officer CR8(5)
- (e) Construction Supervisor CR8(7))
- (f) Assistant Construction Supervisor CR8(8) - *where applicable*
- (g) Risk Assessor CR9(1)
- (h) Fall Protection Developer/Planner CR10(1) - *where applicable*
- (i) Temporary Works Designer CR11(1) - *where applicable*
- (j) Temporary Works Supervisor CR11(2) - *where applicable*
- (k) Excavation Supervisor CR13(1)a) - *where applicable*
- (l) Demolition Work Supervisor and Controller CR14(1) - *where applicable*
- (m) Scaffolding Supervisor CR16(1) - *where applicable*
- (n) Scaffolding Team leader CR16(1) - *where applicable*
- (o) Scaffolding Inspector CR16(1) - *where applicable*
- (p) Scaffolding Erector CR16(1) - *where applicable*
- (q) Suspended Platforms Supervisor CR17(1) - *where applicable*
- (r) Rope Access Supervisor CR18(1)a) - *where applicable*
- (s) Rope Access Fall Protection Plan Developed (R18(2)b) - *where applicable*
- (t) Material Hoist Inspector CR19(8)a) - *where applicable*
- (u) Bulk Mixing Plant Supervisor CR20(1) - *where applicable*
- (v) Explosive Actuated Fastening Device Operator CR21(2)b) - *where applicable*
- (w) Explosive Actuated Fastening Device Controller CR21(2)g(i) - *where applicable*
- (x) Construction Vehicles and Mobile Plant Operator CR23(1)d(i) - *where applicable*
- (y) Temporary Electrical Installations Controller CR24(c) - *where applicable*
- (z) Portable Electrical Equipment Supervisor CR24(d) - *where applicable*
- (aa) Fire Equipment Inspector CR29(h) - *where applicable*
- (bb) First Aider GSR3(4) -- *where applicable*
- (cc) Stacking Supervisor (CR28(a)) (GSR2(a))

- (dd) Competent Person in Confined Space Entry GSR5(1) - *where applicable*
- (ee) Gas Cutting/Welding Supervisor (GSR9(a) - *where applicable*
- (ff) Ladder Supervisor and Inspector (GSR13(a) - *where applicable*
- (gg) Lifting Machine Inspector (DMR18(7) - *where applicable*
- (hh) Lifting Tackle Inspector (DMR18(10)e) - *where applicable*
- (ii) Lifting Machine Supervisor (DMR18(11) - *where applicable*
- (jj) Supervisor of Machinery (GMR1) - *where applicable*
- (kk) Safety Representatives (OHS Act Sec.17 - *where applicable*
- (ll) Hazardous Chemical Substances Controller/Co-ordinator HCSR10 - *where applicable*
- (mm) Incident Investigator (GAR9(2)
- (nn) Blasting Supervisor (Supervision Of Explosives Workplace ER12) - *where applicable*

9. HEALTH AND SAFETY DOCUMENTATION

The Principal Contractor must provide and demonstrate to ACSA a suitable, sufficiently documented and coherent site specific health and safety plan, based on ACSA's documented health and safety specifications. The health and safety plan must include but not limited to the following during tendering process, before commencement of construction work and during construction:

Principal Contractor's Health & Safety Policy

The Principal Contractor must provide a health & safety policy signed by the Chief Executive Officer (CEO) which outlines Principal Contractor's commitment towards health and safety

Health and Safety Organogram

The Principal Contractor must provide a health & safety organogram which outlines related appointments in terms of the OHS Act and applicable Regulations. Contact numbers should also be provided for easy reference.

10. RISK ASSESSMENT

(Construction Regulation 9)

A Contractor must, before the commencement of any construction work and during such construction work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on the site, and must include—

- (a) the identification of the risks and hazards to which persons may be exposed to;
- (b) an analysis and evaluation of the risks and hazards identified based on a documented method;
- (c) a documented plan and applicable safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
- (d) a monitoring plan; and
- (e) a review plan.

A Contractor must ensure that:

- (f) as far as is reasonably practicable, ergonomic related hazards are analysed, evaluated and addressed in the risk assessment
- (g) that all employees under his or her control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures and or control measures before any work commences, and thereafter at the times determined in the risk assessment monitoring and review plan of the relevant site
- (h) Principal Contractor must ensure that all Contractors are informed regarding any hazard that is stipulated in the risk assessment before any work commences, and thereafter at the times that may be determined in the risk assessment monitoring and review plan of the relevant site
- (i) consult with the health and safety committee or, if no health and safety committee exists, with a representative trade union or representative group of employees, on the monitoring and review of the risk assessments of the relevant site
- (j) copies of the risk assessments of the relevant site are available on site for inspection by an inspector, the client, the client's agent, any Principal Contractor, any employee, a representative trade union, a health and safety representative or any member of the health and safety committee
- (k) review the relevant risk assessment—
 - i. where changes are effected to the design and or construction that result in a change to the risk profile; or
 - ii. when an incident has occurred.

11. FALL PROTECTION PLAN

(Construction Regulation 10)

A Contractor must

- (a) designate a competent person to be responsible for the preparation of a fall protection plan;
- (b) ensure that the fall protection plan contemplated above is implemented, amended where and when necessary and maintained as required; and
- (c) take steps to ensure continued adherence to the fall protection plan.

The Fall Protection Plan must include

- (a) a risk assessment of all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location;
- (b) the processes for the evaluation of the employees' medical fitness necessary to work at a fall risk position and the records thereof;
- (c) a programme for the training of employees working from a fall risk position and the records thereof;
- (d) the procedure addressing the inspection, testing and maintenance of all fall protection equipment; and
- (e) a rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.

A Contractor must ensure that:

- (a) **The Construction Manager** appointed under **Construction Regulation 8(1)** is in possession of the most recently updated version of the fall protection plan.
- (b) all unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;
- (c) no person is required to work in a fall risk position, unless such work is performed safely as contemplated in above;
- (d) fall prevention and fall arrest equipment are
 - i. approved as suitable and of sufficient strength for the purpose for which they are being used, having regard to the work being carried out and the load, including any person, they are intended to bear; and
 - ii. securely attached to a structure or plant, and the structure or plant and the means of attachment thereto are suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and any person who could fall; and
- (e) fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.

Where roof work is being performed on a construction site, the Contractor must ensure that, in addition to the requirements set out above, it is indicated in the fall protection plan that:

- (a) the roof work has been properly planned;
- (b) the roof erectors are competent to carry out the work;
- (c) no employee is permitted to work on roofs during inclement weather conditions or if any conditions are hazardous to the health and safety of the employee;
- (d) all covers to openings and fragile material are of sufficient strength to withstand any imposed loads;
- (e) suitable and sufficient platforms, coverings or other similar means of support have been provided to be used in such a way that the weight of any person passing across or working on or from fragile material is supported; and
- (f) suitable and sufficient guard-rails, barriers and toe-boards or other similar means of protection prevent, as far as is reasonably practicable, the fall of any person, material or equipment.

Principal Contractor / Contractor - Competency Assessment

(Construction Regulation 7)

The Principal Contractor must be reasonably satisfied that the sub-Contractors he intends to appoint also have the necessary competencies and resources to safely conduct the work they will be appointed for. This must be established at tender stage and before appointments are made.

In order to ensure this, the Principal Contractor must demonstrate to the Client that it has a suitable and sufficiently.

12. ADMINISTRATIVE CONTROLS AND THE OCCUPATIONAL HEALTH & SAFETY FILE

(Construction Regulation 7)

The Occupational Health and Safety File

The Principal Contractor will keep an Occupational Health and Safety File on site containing the following documents (where applicable) as a minimum:

- Accident/Incident Register. (Annexure 1 of the General Admin Regulations)
- Health and safety Representatives Inspections Register.
- Construction Vehicles & Mobile Plant Inspection.
- Daily Inspection of Vehicles.
- Plant and other Equipment by the Operator/Driver/User.
- Demolition Inspection Register.
- Electrical Installations, Equipment & Appliances. (including Portable Electrical Tools)
- Excavations Inspection.
- Explosive Powered Tool Inspection/Maintenance/Issue>Returns Register. (incl. cartridges & nails)
- Fall Protection Inspection Register.
- First Aid Box Contents.
- Fire Equipment Inspection & Maintenance.
- False work Inspections.
- Hazardous Chemical Substances Record.
- Ladder Inspections.
- Lifting Equipment Register.
- Machinery Safety Inspection Register. (incl. machine guards, lock-outs etc.)
- Scaffolding Inspections.
- Stacking & Storage Inspection.
- Inspection of Structures.
- Inspection of Pressure Equipment.
- Welding Equipment Inspections.
- All other applicable records.
- An equipment inventory register, detailing all major items of equipment such as Construction Vehicles and Mobile Plant etc...

If any work is to be performed on Airside. The Contractor must performing such work must provide ACSA with an airside safety plan.

On completion of the project or on completion of the Contractors work each Contractor must surrender the completed OHS file to the Principal Contractor for consolidation into one "Master File". **A Principal Contractor must** hand over a consolidated health and safety file to ACSA upon completion of the construction work and must, in addition to the documentation referred to in **paragraph 5** of this document include a record

of all drawings, designs, materials used and other similar information concerning the completed structure. (These records will then be archived by ACSA for future reference purposes)

13. HEALTH AND SAFETY REPRESENTATIVES

The Principal Contractor must ensure that Health and Safety Representative(s) is/are elected and delegated in writing and necessary training has been provided by a competent person where there are more than 20 employees at the workplace. A proof of training certificate must be provided to ACSA.

Health and Safety Representatives must conduct monthly inspections by completing a checklist developed by the Principal Contractor. Safety defects noted must be recorded and reported to the supervisor for remedial action. Health and Safety Representative Inspection findings must be made available to ACSA for reference for audits purposes.

Health and Safety Representatives and their reports must form part of the safety committee which must meet on a monthly bases.

The Principal Contractor must hold health and safety committee meetings on site. Minutes of such meetings and action taken by management must be kept on file and made available to ACSA for reference purposes. Members of the committee must receive proper training and a proof of such training must be made available.

The Committee must consider, at least, the Following Agenda:

- Opening & Welcome
- Present/ Apologies/ Absent
- Minutes of previous Meeting
- Matters Arising from the previous Minutes
- OH&S Reps Reports
- Incident Reports & Investigations
- Incident /Injury Statistics
- Other Matters
- Endorsement of Registers and other statutory documents by a representative of the Principal Contractor
- Close/Next Meeting

The Principal Contractor must ensure that ACSA Safety Department is invited to such meetings. These meetings do not substitute for Principal Contractor's Site meetings.

14. HEALTH & SAFETY TRAINING

Environmental Health and Safety Induction

The Principal Contractor must conduct an induction training session prior commencement of construction work. An attendance register must be kept in the Principal Contractor's health and safety file.

For any construction work to be conducted on the Airside, Airside Induction training (AIT) must be attended by all persons entering who are to enter Airside and a course fee determined by ACSA must be paid by the Principal Contractor. A security permit to access airside must be issued on production of proof of attendance.

Induction Conducted by the Principal Contractor and Competent Person

A manual /copy of such training must be provided to ACSA for reference purposes. As determined by the risk assessment. The Principal Contractor must ensure that all employees under his/her control are trained by a competent person and a proof of such training is kept on file for reference.

Toolbox Talks

The Principal Contractor must ensure that employees attend a formal Toolbox Talk to be held at least once a week. Toolbox Talks must cover a wide variety of topics related to health and safety. An attendance register must be completed by employees who attended such talks. The register must indicate the topic covered presenter, date and signatures of employees attended. Records for Toolbox Talks must be kept in a health and safety file and be made available to ACSA for perusal.

First Aid Training

The Principal Contractor must appoint competent First Aider(s) in writing where more than 10 employees are employed. A letter of appointment must be kept on file for reference made available to ACSA Safety. Duly designated First Aider(s) must have attended training at an accredited institution prior commencement of construction work and a proof of certificate be submitted to ACSA for reference.

The Principal Contractor must ensure that the first aid box(s) is/are controlled by qualified First Aider(s) and kept fully stocked with necessary first aid contents related to the hazards and risks identified. A first aid box(s) must be accessible and location of such box(s) is clearly displayed on site.

15. FIRE PREVENTION AND PROTECTION

The Principal Contractor must ensure that adequate fire equipment is provided in strategic places (that is, where there is a mobile distribution board, flammable liquids, pressure equipment, confined spaces, hot work). The Principal Contractor must ensure that such equipment is inspected by a competent person on a monthly basis and such inspections are recorded on a register. The Principal Contractor must ensure that all fire equipment is serviceable and person(s) have been professionally trained on how to use the equipment. A proof of such training must be provided prior commencement of construction work.

16. EMERGENCY PREPAREDNESS

The Principal Contractor must provide ACSA with an emergency plan and procedure which will include, but not limited to emergencies such as fire, bomb threat, civil unrest, medical treatment, environmental incidents, accidents to employees and other persons other than their employees.

Emergency procedure must be communicated to employees and a proof of such training must be kept on file for reference. A list of emergency contact numbers must be conspicuously displayed on site for ease reference. An evacuation plan must be displayed in strategic places.

In case of medical and/or fire emergency contact ACSA Fire & Rescue Services:

(021) 937 1200

The Principal Contractor must provide ACSA Safety with a full record of any incidents which may occur on site.

17. INCIDENTS/ACCIDENTS REPORTING AND INVESTIGATION

The Principal Contractor must ensure that all incidents/accidents (this includes near miss, first aid cases and section 24 cases) are reported by employees immediately to the Construction Manager for further investigation and remedial action. The Principal Contractor must ensure that all OHS Act section 24 incidents/accidents are reported to the Department of Labour immediately and preliminary investigation is conducted by a competent person within seven days. If construction work will be finished within 3 days after occurrence, an investigation

must be conducted before such construction work is completed. Proof of such investigation must be submitted to ACSA immediately or within 24 hours after investigation.

18. PERSONAL PROTECTIVE CLOTHING/EQUIPMENT

The Principal Contractor must ensure that personal protective equipment or clothing needs analysis is conducted and incorporated into the risk assessment. Records must be provided by the Principal Contractor prior to the commencement of construction work. The Principal Contractor must ensure that SABS approved personal protective equipment or clothing is provided to personnel. The Principal Contractor must ensure that no personnel are allowed to work on site without necessary personal protective equipment or clothing. The Principal Contractor must ensure that PPE or Clothing is kept in good working order and clearly stipulate procedures to be followed when PPE or Clothing is lost or stolen, worn or damaged. ACSA will remove any person from the construction site who is working without necessary personal protective equipment and/or clothing. Worn or tattered personal protective clothing will not be permitted on airport premises.

19. FALL PROTECTION (WORKING IN ELEVATED POSITIONS)

(Construction Regulation 10)

A pre-emptive Risk Assessment will be required for any work to be carried out above two metres from the ground or any floor level and will be classified as "Work in Elevated Positions".

As far as is practicable, any person working in an elevated position will work from a platform, ladder or other device that is at least as safe as if he/she is working at ground level and whilst working in this position be wearing and using a full body harness that will be worn to prevent the person falling from the platform, ladder or other device utilised.

This safety harness will be, as far as is possible, secured to a point away from the edge over which the person might fall and the double lanyard must be of such a length that the person will not be able to move over the edge.

In addition, any platform, slab, deck or surface forming an edge over which a person may fall must be fitted with guard rails at two different heights as prescribed in SABS 085' Code of Practice for the Design, Erection, Use and Inspection of Access Scaffolding

Workers working in elevated positions must be trained to do this safely and without risk. Proof of training must be maintained on the Contractors site safety file. Medical certificates of fitness for all employees working in elevated positions must be available on site. This must be issued by an Occupational Health Practitioner.

Where work on roofs is carried out, the Risk Assessment must take into account the possibility of persons falling through fragile material, skylights, soffits and openings in the roof, steel support work trusses and purlins so designed as to support the roof structure.

The Risk Assessments shall place specific emphasis on the placing and handling of roofing materials such as Inverted Box Rib Sheeting (IBR sheeting) or similar materials, (including contingency safety measures), which when exposed to windy conditions represents a serious safety hazard.

20. RISK ASSESSMENT FOR CONSTRUCTION WORK

(Construction Regulation 9)

Every Contractor performing Construction work shall, before the commencement of any construction work and during such work, have a Risk Assessment performed by a competent person, appointed in writing, and the Risk Assessment shall form part of the OH&S Plan.

Each activity must define individual tasks associated with that identified activity. These and all associated hazards must be identified and listed in the risk assessment. This ensures that critical tasks and associated hazards are not missed.

The Risk Assessment must include:

- The identification of the risks and hazards to which persons may be exposed to
- The analysis and evaluation of the risks and hazards identified
- A documented plan and applicable safe work procedures (SWP) to mitigate, reduce or control the risks and hazards that have been identified
- A monitoring plan and
- A review plan

A Contractor must ensure that:

- As far as is reasonably practicable ergonomic related hazards are analysed, evaluated and addressed.
- All employees under his/her control are informed, instructed and trained by a competent person regarding any hazards.
- A Principal Contractor must ensure all Contractors are informed regarding any hazard as stipulated in the risk assessment before any work commences.
- Consult with health and safety committee on monitoring and review risk assessment on site.
- Ensure a copy of risk assessments is available for inspection.
- Review relevant risk assessments where changes are affected to the design or construction that result in a change to the risk profile or when an incident occurred.

N.B. A risk assessment will be performed for all unplanned work and submitted to ACSA for approval prior to work commencing.

21. STRUCTURES

(Construction Regulation 11)

The Contractor will ensure that in terms of Construction Regulation 11 the following is adhered to:

- That the structure on/in which works are to be performed has been inspected by a certified structural engineer declaring the structure to be safe for construction/demolition/renovations work processes.
- Steps are taken to ensure that no structure becomes unstable or poses a threat of collapse due to demolition and construction work being performed on it, or in the vicinity of it.
- No structure is overloaded to the extent where it becomes unsafe; if uncertainty arises then the structural engineer is to be consulted.
- He/she has received from the designer the following information:

- Information on known or anticipated hazards relating to the construction/demolition work and the relevant information required for the safe execution of the construction/demolition work.
- A geo-scientific report (where applicable).
- The loading the structure is designed to bear.
- The methods and sequence of the construction/demolition process.
- All drawings pertaining to the design are on site and available for inspection.

The structural engineer shall carry out inspections at appropriate and sufficient intervals of the construction work involving the design of the relevant structure to ensure compliance with the design and record the results of these inspections in writing.

22. TEMPORARY WORK

(Construction Regulation 12)

Temporary work must be carried out under the supervision of a competent person designated in writing.

Temporary works structures must be so designed, erected, supported, braced and maintained such that it will be able to support any vertical or lateral loads that may be applied.

No load is to be imposed onto the structure that the structure is not designed to carry.

Temporary works must be erected in accordance with the structural design drawings for that temporary works and, if there is any uncertainty, the designer must be consulted before proceeding with the erection/use of the temporary works.

All design drawings pertaining to the temporary works must be kept available on site.

All equipment used in the erection of temporary works must be checked by a competent person before use.

The foundation or base upon which temporary works is erected must be able to bear the weight and keep the structure stable.

Employees erecting temporary works must be trained in the safe work procedures for the erection, moving and dismantling of temporary works.

Safe access/egress (and emergency escape) must be provided for workers.

A competent person must inspect temporary works structures that have been erected before, during and after pouring of concrete or the placing of any other load and thereafter daily until the temporary works is stripped.

The results of all inspections must be recorded in a register kept on site.

The temporary works must be left in place until the concrete has reached sufficient strength to bear its own weight plus any additional weight that may be imposed upon it and not until the designated competent person has authorised its stripping in writing.

Any damaged temporary works must be repaired/rectified immediately Deck panels must be secured against displacement.

The Contractor must ensure that no employee is exposed, or required to work on slippery and dangerous surfaces.

Person's health must be protected when use is made of solvents, oils or other similar substances.

Ensuring that the OEL (Occupational Exposure Limit) for any substances that they may be exposed to does not exceed the legal limits and that the necessary PPE is used.

23. EXCAVATIONS

(Construction Regulation 13)

The Principal Contractor must ensure excavation work is conducted under supervision of a competent person who has been appointed in writing. A letter of appointment must be provided to ACSA Safety prior commencement of work. A risk assessment outlining safe work procedures to be adhered to if excavation is more than 1.0m deep must be provided to ACSA prior commencement of work. The Principal Contractor must ensure that no person works in an excavation which is not adequately braced or shored.

The Principal Contractor must ensure that every excavation including bracing and shoring are inspected daily prior each shift starts and such records are kept on site for reference.

The Principal Contractor must ensure that all precautionary measure as stipulated for confined spaces as stated in the General Safety Regulation of OHS Act 85/1993 are complied with when entering any excavation. The Principal Contractor must ensure that warning signs are conspicuously displayed where excavation work involves the use of explosives and a method statement developed by a competent person is provided to ACSA prior commencement.

The Principal Contractor must ensure that safe and convenient means of access is provided to every excavation when required. Such access must not be further than 6m from the point where any worker within the excavation is working.

The Principal Contractor must communicate, train and enforce safe work procedures pertaining to excavation work to his/her employees.

24. DEMOLITION WORK

(Construction Regulation 13)

The Principal Contractor must ensure that a detailed structural engineering survey is conducted by a competent person and a method statement on the procedure to be followed is provided to ACSA Safety. The Principal Contractor must ensure that demolition work is conducted under the supervision of a competent person appointed in writing.

The Principal Contractor must ensure that safety precautionary measures stipulated in Asbestos Regulations is adhered to if demolition work involves asbestos material and that asbestos work is conducted under the supervision of a registered Asbestos Principal Contractor.

25. SCAFFOLDING

(Construction Regulation 16)

Access Scaffolding must be erected, used, and maintained safely in accordance with Construction Regulation 16 and SA Bureau of Standards Code of Practice, SANS 10085/1 entitled, "The Design, Erection, and Use & Inspection of Access Scaffolding.

Detailed consideration must be given to all scaffolding to ensure that it is properly planned to meet the working requirements, designed to carry the necessary loadings and maintained in a sound condition. It must also be ensured that there is sufficient material available to erect the scaffolding properly.

Scaffolding may only be erected, altered or dismantled by a person who has the appropriate training and experience in this type of work or under the supervision of such a person

Specific attention must be given to the appointment of Scaffolding Inspectors and Scaffolding Erectors who shall not be the same person. The continuous inspection of scaffolding structures must be recorded on the applicable Scaffold register.

Tagging/Signs reflecting the status of the scaffold must be always used and fixed to the structure. (Safe to use / Scaffold not Safe)

On completion of the erection, the Supplier will inspect the structure and will ensure it is in sound working order and complies with all statutory regulations. The Supplier will then issue a Handover Certificate, Drawings, design, and specifications shall be signed by a registered professional engineer.

An inspection of the completed scaffold shall also be inspected by the registered professional engineer for approval prior to use. Should any additional load i.e., a hoist or advertising banners be added to the scaffold at a later stage, the professional engineer must approve the modification.

26. SUSPENDED PLATFORMS

(Construction Regulation 17)

The Contractor to design, erect, use and maintain suspended platforms in accordance with the requirements of Construction Regulation 17.

27. EXPLOSIVE ACTUATED FASTENING DEVICES

(Construction Regulation 21)

Every Explosive Powered Tools (EPT) must be:

- Provided with a guard around the muzzle to confine flying fragments or particles
- A firing mechanism that will prevent the EPT from firing unless it is pushed against the surface and at a right angle (where the EPT is fitted with an intermediate piston between the charge and the nail this requirement is waived)
 - The Contractor or user must ensure that:
 - Only the correct type of cartridge is used (product specific)
 - The EPT is cleaned and inspected daily before use by an appointed competent person who maintains a register with the findings of his inspection and the details of cleaning, service and repairs
 - The safety devices are in good working order before the EPT is used
 - When the EPT is not being used it is stored in an unloaded condition together with the cartridges in a safe/secure place inaccessible to unauthorised persons
 - A warning notice is displayed at the point where the EPT is in use
 - The issue and return of cartridges must be controlled by maintaining the issue/returns register signed by both issuer and user and empty cartridge cases must be returned with unspent cartridges.
 - Users/operators of the EPT have received the necessary training and have been authorised as being competent to use/operate the EPT
 - Users/operators must wear the prescribed PPE whilst using/operating the tool.

28. CRANES

(Construction Regulation 22)

A Crane permit must be obtained from ACSA and submitted before erection of crane.

A Contractor must, in addition to compliance with the Driven Machinery Regulations, 1988 ensure that where tower cranes are used—

- (a) they are designed and erected under the supervision of a competent person;
- (b) a relevant risk assessment and method statement are developed and applied;
- (c) the effects of wind forces on the crane are taken into consideration and that a wind speed device is fitted that provides the operator with an audible warning when the wind speed exceeds the design engineer's specification;
- (d) the bases for the tower cranes and tracks for rail-mounted tower cranes are firm, level and secured;
- (e) the tower crane operators are competent to carry out the work safely; and
- (f) the tower crane operators have a medical certificate of fitness to work in such an environment, issued by an occupational health practitioner in the form of Annexure 3.

29. LIFTING EQUIPMENT, TACKLE, MATERIAL HOIST AND CRANES

The Principal Contractor must ensure that all lifting equipment and tackle are inspected before use and a monthly register is completed by a competent person. Proof of such inspections must be recorded and kept on file for reference. The Principal Contractor must ensure that a safe working load is conspicuously displayed on lifting equipment and tackle and service certificate is provided prior commencement of work. The Principal Contractor must ensure operators are properly trained on how to operate the above-mentioned equipment and a proof of competency is provided prior commencement of work.

The Principal Contractor must provide information on procedures to be followed in the case of:

- (a) Malfunctioning of equipment; and
- (b) Discovery of a suspected defect in the equipment

The Principal Contractor must ensure that safety measures stipulated in Driven Machinery Regulation and Construction Regulation with regard to above equipment are adhered to at all times.

30. CONSTRUCTION VEHICLES & MOBILE PLANT

(Construction Regulation 13)

Construction Vehicles and Mobile Plant may be inspected by ACSA prior to being allowed on a project site and suppliers of hired vehicles, plant and equipment will be required to comply with this specification as well as the OHS Act and Regulations.

Construction Vehicles and Mobile Plant (CV & MP) to be:

- of acceptable design and construction
- maintained in good working order
- used in accordance with their design and intention for which they were designed

- Operated/driven by trained, licensed competent and authorised operators/drivers. No unauthorised persons to be allowed to drive or operate CV & MP
- Operators and drivers of CV & MP must be in possession of a valid medical certificate declaring the operator/driver physically and psychologically fit to operate or drive CV & MP.
- fitted with adequate signalling devices to make movement safe including reversing
- excavations and other openings must be provided with sufficient barriers to prevent CV & MP from falling into same
- Provided with roll-over protection, appropriate seat fitted which shall be used during CV & MP operations.
- inspected daily before start-up by the driver/operator/user and the findings recorded in a register/logbook.
- CV & MP to be fitted with two head and two taillights whilst operating under poor visibility conditions, in addition they shall be equipped with 'hazard warning' lights, which must be used whenever the CV & MP is on site.
- No loose tools, material etc. is allowed in the driver/operators compartment/cabin nor in the compartment in which any other persons are transported
- CV & MP used for transporting persons must have seats firmly secured and sufficient for the number of persons being transported
- Operators to be issued with Personal Protective Equipment as required and identified by the Risk Assessments
- Only licensed and road worthy vehicles will be allowed on the public roads

No person may ride on a CV & MP except in a safe place provided by the manufacturer for this purpose

The construction site must be organized to facilitate the movement of CV & MP so that pedestrians and other vehicles are not endangered. Traffic routes are to be suitable, sufficient in number and adequately demarcated.

CV & MP left unattended after hours adjacent to roads and areas where there is traffic movement must be fitted with lights reflectors or barricades to prevent moving traffic coming into contact with the parked CV & MP.

In addition, CV & MP left unattended after hours must be parked with all buckets, booms etc. fully lowered, the emergency brakes engaged and, where necessary, the wheels chocked, the transmission in neutral and the motor switched off and the ignition key removed and stored safely

Workers employed adjacent to, or on public roads must wear reflective safety vests

All CV & MP inspection records must be kept in the OH&S File.

31. ELECTRICAL INSTALLATIONS AND MACHINERY ON CONSTRUCTION SITES

(Construction Regulation 24)

The Principal Contractor must, in addition to compliance with the Electrical Installation Regulations, 2009, and the Electrical Machinery Regulations, 1988, promulgated by Government Notice No. R. 1593 of 12 August 1988, ensure that—

- (a) before construction commences and during the progress thereof, adequate steps are taken to ascertain the presence of and guard against danger to workers from any electrical cable or apparatus which is under, over or on the site;
- (b) all parts of electrical installations and machinery are of adequate strength to withstand the working conditions on construction sites;
- (c) the control of all temporary electrical installations on the construction site is designated to a competent person who has been appointed in writing for that purpose;
- (d) all temporary electrical installations used by the Contractor are inspected at least once a week by a competent person and the inspection findings are recorded in a register kept on the construction site; and
- (e) all electrical machinery is inspected by the authorized operator or user on a daily basis using a relevant checklist prior to use and the inspection findings are recorded in a register kept on the construction site.

The Principal Contractor must ensure that prior notice is given to ACSA Electrical Department of any work involving electrical installation. A lock-out certificate must be issued to the relevant Principal Contractor. The Principal Contractor must ensure that a lock-out procedure is adhered to by his/her employees whenever required. The Principal Contractor must ensure that safety measures stipulated in the Electrical Installation Regulations, Machinery Regulations, General Machinery Regulations and Construction Regulations are adhered to at all times.

32. USE AND TEMPORARY STORAGE OF FLAMMABLE LIQUIDS ON CONSTRUCTION SITES

(Construction Regulation 25)

The Principal Contractor to ensure that:

- No person is required or permitted to work in a place where there is the danger of fire or an explosion due to flammable vapours being present.
- No flammable substance is used or applied e.g. in spray painting, unless in a room or cabinet or other enclosure specially designed and constructed for that purpose, unless due to imposed controls that the ventilation provided is sufficient to ensure that the Lower Explosive Limit and Lower Fire Limit are not exceeded. Furthermore, that the risk assessments are reviewed to ensure that all the related hazards have been addressed and that adequate P.P.E. is provided.
- The workplace is effectively ventilated. Where this cannot be achieved:
- Employees must wear suitable respiratory equipment
- No smoking or other sources of ignition is allowed into the area
- The area is conspicuously demarcated as "flammable materials"
- Flammables stored on a construction site are stored in a well-ventilated, reasonably fire-resistant container approved by the local Fire Department, cage or room that is kept locked with access control measures in place and sufficient firefighting equipment installed and fire prevention methods practised e.g. proper housekeeping
- Flammables stored in a permanent flammables store are stored so that no fire or explosion is caused i.e.: stored in a locked well-ventilated reasonably fire-resistant container, cage or room conspicuously demarcated as "Flammable Store -No Smoking or Naked Lights"

- Adequate and suitable firefighting equipment installed around the flammables store and marked with the prescribed signs
- All electrical switches and fittings to be of a flameproof design, or where necessary, intrinsically safe.
- Any work done with tools in a flammables store or work areas to be of a non-sparking nature
- No Class A combustibles such as paper, cardboard, wood, plastic, straw etc. to be stored together with Flammables
- The flammable store to be designed and constructed so that in the event of spillage of liquids in the store, it will contain the full quantity + 10% of the amount liquid stored.
- Where the use of Bulk Storage facilities is contemplated, the Contractor must ensure compliance to the local Authority bylaws.
- A sign indicating the capacity of the store to be displayed on the door
- Containers (including empty containers) to be kept closed to prevent fumes/vapours from escaping and accumulating in low lying areas
- Metal containers to be bonded to earth whilst decanting to prevent build-up of static electricity
- Welding and other flammable gases to be stored and segregated as to type of gas and empty and full cylinders
- All permanently installed storage facilities to comply with SANS 10089.

33. HOUSEKEEPING AND GENERAL SAFEGUARDING ON CONSTRUCTION SITES

(Construction Regulation 27)

The Principal Contractor must ensure that suitable housekeeping is continuously implemented on each construction site, including—

- (a) the proper storage of materials and equipment;
- (b) the removal of scrap, waste and debris at appropriate intervals;
- (c) ensuring that materials required for use, are not placed on the site so as to obstruct means of access to and egress from workplaces and passageways;
- (d) ensuring that materials which are no longer required for use, do not accumulate on and are removed from the site at appropriate intervals;
- (e) ensuring that construction sites in built-up areas adjacent to a public way are suitably and sufficiently fenced off and provided with controlled access points to prevent the entry of unauthorized persons; and
- (f) ensuring that a catch platform or net is erected above an entrance or passageway or above a place where persons work or pass under, or fencing off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe in the case of danger or possibility of persons being struck by falling objects.

The Principal Contractor must ensure that safety precautionary measures stipulated in Environmental Regulations for Workplaces and Construction Regulations and Construction Environmental Specification are adhered to at all times.

34. STACKING AND STORAGE ON CONSTRUCTION SITES

(Construction Regulation 28)

The Principal Contractor must ensure Contractor must ensure that:

- (a) a competent person is appointed in writing with the duty of supervising all stacking and storage on a construction site;
- (b) adequate storage areas are provided;
- (c) there are demarcated storage areas; and
- (d) storage areas are kept neat and under control a competent person is appointed in writing with a duty of supervising all stacking and storage on a construction work or site. A proof of such appointment must be provided prior commencement of construction work. The Principal Contractor must ensure that stacking is conducted under supervision and good housekeeping is maintained at all times.

35. FIRE PRECAUTIONS ON CONSTRUCTION SITES

(Construction Regulation 29)

The Principal Contractor must ensure that:

- (a) all appropriate measures are taken to avoid the risk of fire;
- (b) sufficient and suitable storage is provided for flammable liquids, solids and gases;
- (c) smoking is prohibited and notices in this regard are prominently displayed in all places containing readily combustible or flammable materials;
- (d) in confined spaces and other places in which flammable gases, vapours or dust can cause danger—
 - (i) only suitably protected electrical installations and equipment, including portable lights, are used;
 - (ii) there are no flames or similar means of ignition;
 - (iii) there are conspicuous notices prohibiting smoking;
- (iv) oily rags, waste and other substances liable to ignite are without delay removed to a safe place; and
- (v) adequate ventilation is provided;
- (e) combustible materials do not accumulate on the construction site;
- (f) welding, flame cutting and other hot work are done only after appropriate precautions have been taken to reduce the risk of fire;
- (g) suitable and sufficient fire-extinguishing equipment is placed at strategic locations or as may be recommended by the Fire Chief or local authority concerned, and that such equipment is maintained in a good working order;
- (h) the fire equipment contemplated in paragraph (g) is inspected by a competent person, who has been appointed in writing for that purpose, in the manner indicated by the manufacturer thereof;
- (i) a sufficient number of workers are trained in the use of fire- extinguishing equipment;

- (j) where appropriate, suitable visual signs are provided to clearly indicate the escape routes in the case of a fire;
- (k) the means of escape is kept clear at all times;
- (l) there is an effective evacuation plan providing for all—
 - (i) persons to be evacuated speedily without panic;
 - (ii) persons to be accounted for; and
 - (iii) plant and processes to be shut down; and
- (m) a siren is installed and sounded in the event of a fire.

36. CONSTRUCTION EMPLOYEES' FACILITIES

(Construction Regulation 30)

A Contractor must provide at or within reasonable access of every construction site, the following clean, hygienic and maintained facilities:

- (a) Shower facilities after consultation with the employees or employees' representatives, or at least one shower facility for every 15 persons;
- (b) at least one sanitary facility for each sex and for every 30 workers;
- (c) changing facilities for each sex; and
- (d) sheltered eating areas.

A Contractor must provide reasonable and suitable living accommodation for the workers at construction sites who are far removed from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

37. LADDERS

The Principal Contractor must ensure that all ladders are numbered, inspected before use and monthly inspections are recorded in a register. The Principal Contractor must ensure that a competent person who carries the above inspections is appointed in writing.

38. PRESSURE EQUIPMENT

The Principal Contractor must ensure that pressure equipment is identified, numbered and entered in a register. Furthermore he/she must ensure that inspections are carried out and certificates of testing are available and kept on file as per the Regulations.

39. EMPLOYEES EXPOSED TO EXCESSIVE NOISE

The Principal Contractor must ensure that all employees exposed to excessive noise, equal or above 85 dB(A), have undergone a baseline audiometric test prior commencement of construction work and SABS approved ear protection is provided and worn at all times.

40. PUBLIC SAFETY AND SECURITY

The Principal Contractor must ensure that notices and signs are conspicuously displayed at the entrance and along the perimeter fence indicating "No Unauthorized Entry", "Visitors to report to office", "helmet and safety shoes" etc.

Health and safety signage must be well maintained throughout the project. This must entail cleaning, inspection and replacement of missing or damaged signage.

Furthermore, the Principal Contractor must ensure that:

- a) Nets, canopies, fans etc. are provided to protect the public passing or entering the site
- b) A security guard is provided where necessary and provided with a way of communication and an access control measures or register is in place
- c) All visitors to a construction site undergo health and safety induction pertaining to the hazards prevalent on the site.

41. NIGHT WORK

The Principal Contractor must ensure that necessary arrangements have been made with ACSA before conducting any night work and that there is adequate lighting for any work to be conducted and failure to do so will result in work being stopped.

42. HOT WORK

The Principal Contractor must ensure that ACSA Fire & Rescue Department is notified of any hot work to be conducted during construction work. A hot work permit accompanied with a gas free certificate must be issued to the relevant Principal Contractor by ACSA Fire & Rescue Department when satisfied that the area is safe and that the Principal Contractor understands the procedure. The Principal Contractor must ensure that a hot work procedure is adhered to at all times by his/her employees.

43. HIRED PLANT AND MACHINERY

The Principal Contractor must ensure that any hired plant and/or machinery brought to site is inspected by a competent person before use and records confirming that it is safe for use are provided prior usage of such equipment. Such plant or machinery complies at all times with the requirements of the Occupational Health & Safety Act.

The Principal Contractor must ensure that hired operators receive induction prior commencement of work and that said hired operators have proof of competency.

The Principal Contractor must provide information on procedures to be followed in the case of:

- (a) Malfunctioning of equipment; and
- (b) Discovery of a suspected defect in the equipment

44. ROAD CONSTRUCTION WORK

The Principal Contractor must ensure that construction work conducted on the public road all necessary caution signage, cones, flag man etc. are provided as stipulated in the Road Traffic Ordinance is adhered to. The caution signage to be conspicuously displayed to warn the drivers of any construction work ahead must be provided at least at 75 m away from the cones; flag man; actual construction work etc.

45. EDGE PROTECTION AND PENETRATION

The Principal Contractor must ensure that all exposed edges and floor openings are guarded and demarcated at all times until permanent protection has been erected. Guardrails used for edge protection must be 500mm and 900mm apart (double railing) above the platform/ floor surface.

The Principal Contractors fall protection plan must include the procedure to be followed regarding the management of edge protection and penetration.

46. BATCH PLANTS

Should a batch plant be used, it must conform to the requirements as set out on Construction Regulation (February 2014) of OHS Act 85/93. These must include but not limited to appointment of a competent person to operate and supervise batch plant operations.

47. CONFINED SPACE ENTRY

The Principal Contractor must ensure that all necessary health and safety provisions prescribed in the General Safety Regulations are complied with when entering confined spaces.

48. LIQUOR, DRUGS, DANGEROUS WEAPONS, FIREARMS

The Principal Contractor must ensure that no person is allowed on site that appears to be under the influence of intoxicating liquor or drugs.

The Principal Contractor must encourage his/her workforce to disclose the medication that poses a health and safety threat towards his/her fellow employees. No person must be allowed to enter the site and work if the side effects of such medication do constitute a threat to the health or safety of the person concerned or others at such workplace.

No dangerous weapons or firearms allowed on the construction site.

49. INTERNAL/EXTERNAL AUDITS

The Principal Contractor must conduct monthly safety, health and environment audits and such records must be kept on site. The Principal Contractor must ensure that corrective measures are taken to ensure compliance.

ACSA must conduct monthly audits and defects noted must be reported to the relevant Principal Contractor for remedial action. Inspections must be conducted by ACSA and non-conformances noted must be recorded and provided to the relevant Principal Contractor for remedial action. ACSA must stop any Principal Contractor from executing any construction work which is not in accordance with the health and safety plan.

The Principal Contractor must ensure that all necessary documents stipulated in this document are kept on the health and safety file and made available when requested.

50. PENALTIES

Penalties will be imposed by ACSA on Principal Contractors who are found to be infringing these specifications, legislation and safety plans.

The Principal Contractor will be advised in writing of the nature of the infringement and the amount therefor. The Principal Contractor must determine how to recover the fine from the relevant employee and/or sub-Contractor. The Principal Contractor must also take the necessary steps (e.g. training) to prevent a recurrence of the infringement and must advise ACSA accordingly. The Principal Contractor is also advised that the imposition of penalties does not replace any legal proceedings.

Penalties will be between R200 and R20 000, depending upon the severity of the infringement. The decision on how much to impose will be made by the ACSA SHE Representative, and will be final. In addition to the penalties, the Principal Contractor must be required to make good any damage caused as a result of the infringement at his/her own expense.

The preliminary list below outlines typical infringements against which ACSA may raise penalties; however, this list must not be construed as final:

- Failure to keep a copy of OHSACT on site.

- Failure to maintain an up-to-date letter of good standing with the Compensation Commissioner / FEM.
- Working on site without attending Safety Induction Training.
- Failure to conduct Safety Induction for personnel and visitors on site.
- Failure to issue and wear Personal Protective Clothing and Equipment.
- Failure to fully stock first aid box in accordance to the risks identified.
- Failure to disclose or report first aid cases and /or minor/major/fatalities as prescribed by the OHSACT.
- Failure to adhere to written safe work procedure as stipulated in the Hazard Identification and Risk Assessment and safety plan.
- Failure to maintain records and registers as per the OHS Act of 1993 and its regulations.
- Failure to conduct audits and inspections as required by legislation.
- Keeping un-serviced fire equipment on site.
- Failure to make use of ablution facilities.
- Failure to remove personnel on site who appears to be under the influence of intoxicating liquor or drugs.
- Failure to close out previously raised non-conformances.
- Failure to make and update legislative appointments.
- Failure to adhere to the OHS Act of 1993 and its regulations.

I, _____ (name & surname) of

_____ (company) Upon receipt of this specification, agree and acknowledge ACSA's right to impose penalties should I or any of my employees or Contractors fail to comply with these conditions.

Signed: _____

On this date: _____ (dd/mm/yyyy)

At: _____ (Airport Name)

Annexure C5.2: OCCUPATIONAL HEALTH AND SAFETY MANDATARY AGREEMENT

AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH & SAFETY ACT (ACT 85 OF 1993), AS AMENDED & CONSTRUCTION REGULATION 5.1(k)

OBJECTIVES

To assist Airport Company South Africa (ACSA) in order to comply with the requirements of:

1. The Occupational Health & Safety (Act 85 of 1993), as amended and its regulations and
2. The Compensation for Occupational Injuries & Diseases Act (Act 130 of 1993) also known as the (COID Act).
3. Construction Regulations 2014

To this end an Agreement must be concluded before any Contractor/ subcontracted work may commence

The parties to this Agreement are:

Name of Organisation: AIRPORTS COMPANY SOUTH AFRICA "ACSA"
Physical Address: Airport Company South Africa Kimberley Airport, Private Bag X9002 Kimberley 8300

Hereinafter referred to as "Client"

Name of organisation:
Physical Address

Hereinafter referred to as "the Mandatary/ Principal Contractor"

MANDATARY'S MAIN SCOPE OF WORK

1. Definitions

- 1.1 "Mandatary" is defined as an agent, a principal Contractor or a Contractor for work, or service provider appointed by the Client to execute a scope of work on its behalf, but WITHOUT DEROGATING FROM HIS/HER STATUS IN HIS/HER RIGHT AS AN EMPLOYER or user of the plant.
- 1.2 "Client" refers to ACSA as "the Employer";

- 1.3 "Parties" means ACSA and the Contractor, and "Party" shall mean either one of them, as the context indicates;
- 1.4 "Services" means the services provided by the Contractor or Stakeholder to ACSA;
- 1.5 "Stakeholder" refers to companies conducting business at ACSA premises or within close proximity where there is an interface with ACSA operations;
- 1.6 "The OHS Act" refers to Occupational Health and Safety Act 85 of 1993, as amended;
- "The COID Act" refers to Compensation for Occupational Injuries and Diseases Act 61 of 1997, as amended; and
- 1.7 "SHE" means Safety, Health and Environment.

GENERAL INFORMATION FORMING PART OF THIS AGREEMENT

- a) The Occupational Health & Safety Act comprises of SECTION 1-50 and all unrepealed REGULATIONS promulgated in terms of the former Machinery and Occupational Safety Act No.6 of 1983 as amended as well as other REGULATIONS which may be promulgated in terms of the Act and other relevant Acts pertaining to the job in hand.
- b) Section 37 of the Occupational Health & Safety Act potentially punishes Employers for unlawful acts or omissions of Mandatories where a Written Agreement between the parties has not been concluded containing arrangements and procedures to ensure compliance with the said Act BY THE MANDATORY.
- c) All documents attached or refer to in the above Agreement form an integral part of the Agreement.
- d) To perform in terms of this agreement Mandatories must be familiar and conversant with the relevant provisions of the Occupational Health & Safety Act 85 of 1993 (OHS Act) and applicable Regulations.
- e) Mandatories who utilise the services of other Contractors must conclude a similar Written Agreement with those companies.
- f) Be advised that this Agreement places the onus on the Mandatory to contact the Client in the event of inability to perform as per this Agreement.
- g) This Agreement shall be binding for all work the Mandatory undertakes for the Client and remains in force for the duration of the contracted period as per Main Contract signed by both parties.
- h) The Contractor shall submit all necessary documentation as per SHE File Index to the Client seven days prior to starting with any work,.

THE UNDERTAKING

The Mandatory undertakes to comply with:

2. REPORTING

The Mandatory and/or his / her designated person shall report to the Client prior to commencing any work at the airports as well as when the activities change from the original scope of work.

3. WARRANTY OF COMPLIANCE

- 3.1 In terms of this agreement the Mandatory warrants that he / she agrees to the arrangements and procedures as prescribed by the Client and as provided for in terms of Section 37(2) of the OHS Act for the purposes of compliance with the Act.
- 3.2 The Mandatory further warrants that he / she and / or his / her employees undertake to maintain such compliance with the OHS Act. Without derogating from the generality of the above, or from

the provisions of the said agreement, the Mandatary shall ensure that the clauses as hereunder described are at all times adhered to by himself / herself and his / her employees.

- 3.3 The Mandatary hereby undertakes to ensure that the health and safety of any other person on the premises is not endangered by the conduct of his / her activities and that of his / her employees.

4. SHE Risk Management

- 4.1 The Mandatary shall ensure that a baseline risk assessment is performed by a competent person before commencement of any work in the Client's premises. A baseline risk assessment document will include identification of hazards and risk, analysis and evaluation of the risks and hazards identified, a documented plan and safe work procedures to mitigate, reduce or control the risks identified, and a monitoring and review plan of the risks and hazards.
- 4.2 The Mandatary shall review the risk registers as and when the scope of work changes and keep the latest version on the SHE File.

5. MEDICAL EMERGENCY RESPONSE

The Mandatary shall submit a detailed emergency response procedure to the Client OHS Department as part of the SHE File prior to start of work. The procedure shall stipulate how the Mandatary intends to attend to medical emergencies. In the sites where the Client has onsite clinic services, the medical staff can provide first line response and stabilise the patient however the Mandatary shall then activate its own medical response procedure and transport the patient to the medical facilities for further medical attention.

6. APPOINTMENTS AND TRAINING

- 6.1 The Mandatary shall appoint competent persons as per Section 16(2) of the OHS Act. Any such appointed person shall be trained on any occupational health and safety matter and the OHS Act provisions pertinent to the work that is to be performed under his / her responsibility. Copies of any appointments and certificates made by the Mandatary shall immediately be provided to the Client.
- 6.2 The Mandatary shall at the beginning of the project or activities where there are 5 people and more people working appoint a full time dedicated Health and Safety resource whom will be dedicated to the project to ensure that Safety, Health and Environmental Requirements are met at all times. The allocated resource shall be based where the project is undertaken for the duration of the project or scope of work execution. The resource shall be trained and qualified on Occupational Health and Safety matters and the OHS Act provisions pertinent to the work that is to be carried out.
- 6.3 The Mandatary shall further ensure that all his / her employees are trained on the health and safety aspects relating to the work and that they understand the hazards associated with such work being carried out on the airports. Without derogating from the foregoing, the Mandatary shall, in particular, ensure that all his / her users or operators of any materials, machinery or equipment are properly trained in the use of such materials, machinery or equipment.
- 6.4 Notwithstanding the provisions of the above, the Mandatary shall ensure that he / she, his / her appointed responsible persons and his / her employees are at all times familiar with the provisions of the OHS Act, and that they comply with the provisions of the Act.
- 6.5 The Mandatary shall at all material times be responsible for all costs associated with the performance of its own obligations and compliance with the terms of this Agreement, unless otherwise expressly agreed by the Parties in writing.

7. SUPERVISION, DISCIPLINE AND REPORTING

- 7.1 The Mandatary shall ensure that all work performed on the Clients premises is done under strict

supervision and that no unsafe or unhealthy work practices are permitted. Discipline regarding health and safety matters shall be strictly enforced against any of his / her employees regarding non-compliance by such employee with any health and safety matters.

- 7.2 The Mandatary shall further ensure that his / her employees report to him / her all unsafe or unhealthy work situations immediately after they become aware of the same and that he / she in turn immediately reports these to the Client within 48 hours with the action taken to mitigate the risk.
- 7.3 Where the hazard or risk identified is the responsibility of the Client to action, the Mandatary shall notify the Client OHS and Safety Department within 24 hours of becoming aware of the hazard or risk for prompt action to mitigate.

8. COOPERATION

- 8.1 The Mandatary and his/her employees shall provide full co-operation and information if and when the Client or his / her representative enquires into occupational health and safety issues concerning the Mandatary. It is hereby recorded that the Client and his / her representative shall at all times be entitled to make such an inquiry.
- 8.2 Without derogating from the generality of the above, the Mandatary and his / her responsible persons shall make available to the Client and his / her representative, on request, all and any checklists and inspection registers required to be kept by him / her in respect of any of his / her materials, machinery or equipment and facilities.

9. WORK PROCEDURES

- 9.1 The Mandatary shall, after having established the dangers associated with the work performed, develop and implement mitigation measures to minimize or eliminate such dangers for the purpose of ensuring a healthy and safe working environment.
- 9.2 The Mandatary shall then ensure that his / her responsible persons and employees are familiar with such mitigation measures. This includes the lock out tag out processes relating to the use of machinery.
- 9.3 The Mandatary shall implement any other safe work practices as prescribed by the Employer and shall ensure that his / her responsible persons and employees are made conversant with and adhere to such safe work practices.
- 9.4 The Mandatary shall ensure that work for which a permit is required by the Employer or any statute is not performed by his / her employees prior to the obtaining of such a permit.

10. HEALTH AND SAFETY MEETINGS

- 10.1 OHS Act requires that Health and Safety Committees be established in case where employee count exceeds 20 onsite, however due to the duration and the nature of the scope of work executed by the Contractors and stakeholders enforces that regardless of employees at the airports. The Mandatary shall establish his / her own health and safety committee(s) and ensure that his / her employees, being the committee members, hold health and safety representatives to attend the Employer's health and safety committee meetings on monthly basis or quarterly whichever is applicable as per Contractor requirement.
- 10.2 The Mandatary Section 16(2) appointed and SHE resource shall attend the Client SHE meetings as per the schedule communicated. In cases where the Mandatary delegated resources are not able to attend the meeting, an apology shall be submitted to the Client OHS Manager 24 hours before the meeting. An alternative representative shall be deployed to attend the meeting on the half of the Mandatary.

10.3 The Mandatary appointed Section 16(2) and SHE resource shall not skip more than three SHE Committee meetings a year.

11. COMPENSATION REGISTRATION/INSURANCE

11.1 The Mandatary warrants that all their employees and/or their Contractor's employees if any are covered in terms of the COIDA Act, which shall remain in force whilst any such employees are present on the Client's premises. A letter is required prior commencing any work on site confirming that the Principal Contractor or Contractor or stakeholder is in good standing with the Compensation Fund or Licensed Insurer.

11.2 The Mandatary warrants that they are in possession of the following insurance cover, which cover shall remain in force whilst they and /or their employees are present on the Client's premises, or which shall remain in force for that duration of their contractual relationship with the Client, whichever period is the longest.

11.3 The Mandatary shall provide the Client with Public Liability Insurance Cover as required by the Main Contract

11.4 Any other Insurance cover that will adequately makes provision for any possible losses and/or claims arising from their and /or their Subcontractors and/or their respective employee's acts and/or omissions on the Client's premises.

11.5 The Mandatary shall send updated Letter of Good Standing to the Client as and when the Mandatary receives it to ensure that the most valid version is available.

12. MEDICAL EXAMINATIONS

12.1 The Mandatary shall ensure that all his / her employees undergo routine medical examinations and that they are medically fit for the purposes of the work they are to perform.

12.2 Copies of such medical fitness certificates shall be made available to Client as part of the SHE file for review to ensure that they have been conducted by a reputable Occupational Health Practitioner registered with Health Professions Council of South Africa (HPCSA) as a doctor and specialist Occupational Medical Practitioner. Any other additional medical assessment shall be conducted in line with risk exposures.

12.3 Standard (Basic) medical tests shall constitute the following assessments as minimum:

- Individual's history of general and previous occupational health
- Comprehensive physical examination for evaluation of systemic function
- Blood Pressure Measurement
- Weight, Height and Body Mass Index
- Urine screening
- Drug screening
- Audio screening
- Lung Function Test
- Keystone eye test
- Work at Height Questionnaire
- Muscular skeletal questionnaire

13. INCIDENT REPORTING AND INVESTIGATION

13.1 All Safety, Health and Environmental Incidents shall be reported to the Client OHS and Safety Department within two hours from the time of occurrence via a phone call, sms or email or before end of shift. This shall be followed by a formal report in a form of a preliminary report within forty eight (48) hours.

13.2 All incidents referred to in Section 24 of the OHS Act shall be reported by the Mandatary to the Department of Labour and copies of such reporting to be sent to the Client. The Mandatary shall further be provide with copies of any written documentation and medical reports relating to any incident.

13.3 The Client retains an interest in the reporting of any incident as described above as well as in any formal investigation and/or inquiry conducted in terms of section 32 of the OHS-Act into such incident.

13.4 The Client reserves a right to hold its own investigation into any incident where it deems it is not satisfied with the incident investigation or where the severity of the incident is fatal or damage beyond a value of R1 million and above.

14. SUBCONTRACTORS

14.1 The Mandatary shall notify the Client of any subcontractor he / she may wish to source to perform work on his / her behalf on the Client premises. It is hereby recorded that all the terms and provisions contained in this clause shall be equally binding upon the subcontractor prior to the subcontractor commencing with the work. Without derogating from the generality of this paragraph:

14.2 The Mandatary shall ensure that the sub Contractor meets all the requirements and is competent for the scope of work contracted for. This includes that approval of the SHE file, SHE Plans associated with the work.

15. SECURITY AND ACCESS

The Mandatary shall request and familiarise its employees with the Client security rules which is not included in this agreement.

16. FIRE PRECAUTIONS AND FACILITIES

16.1 The Mandatary shall ensure that all his / her employees are familiar with fire precautions at the site(s), which includes fire-alarm signals and emergency exits, and that such precautions are adhered to.

16.2 This includes participating on planned and unplanned emergency drills organised the Client.

17. FACILITIES

The Mandatary shall have a program to upkeep and maintain the facilities leased out to it by the Client as stipulated on lease agreement.

18. HYGIENE AND CLEANLINESS

The Mandatary shall ensure that the work site, ablution, offices and surround area is at all times maintained to the reasonably practicable level of hygiene and cleanliness. In this regard, no loose materials shall be left lying about unnecessarily and the work site shall be cleared of waste material regularly and on completion of the work.

19. INTOXICATION AND SUBSTANCE ABUSE

19.1 Entry to the airside is subjected to Aviation Safety Requirements in line with Client Substance Abuse Policy. No intoxicating substance of any form shall be allowed on site where airside or land side. Any person suspected of being intoxicated shall not be allowed on the site. Any person required to take medication shall notify the relevant responsible person thereof, as well as the potential side effects of the medication.

- 19.2 The Client reserves a right to do substance abuse testing and main entry points for the Mandatory employees.
- 19.3 Intoxication limits shall be adhered to as stipulated on Client Substance Abuse Policy.
- 19.4 Records of substance abuse testing shall be filed on the SHE File and made available to the Employer on request.

20. PERSONAL PROTECTIVE EQUIPMENT

- 20.1 The Mandatory shall ensure that his / her responsible persons and employees are provided with adequate personal protective equipment (PPE) for the work they may perform and in accordance with the requirements of General Safety Regulation 2 (1) of the OHS Act. The Mandatory shall further ensure that his / her responsible persons and employees wear the PPE issued to them at all times.
- 20.2 The Mandatory shall monitor compliance to PPE of his/her own employees at all times, The Client can at its discretion conduct random PPE compliance inspections and these can be recorded officially on the Client non-conformance reporting tool.
- 20.3 The Mandatory shall keep records PPE Control cards of each employee those shall be kept on SHE File.

21. PLANT, MACHINERY AND EQUIPMENT

- 21.1 The Mandatory shall ensure that all the plant, machinery, equipment and/or vehicles he / she may wish to utilize on the Client premises is/are at all times of sound order and fit for the purpose for which it/they is/are attended to, and that it/they complies/comply with the requirements of Section 10 of the OHS Act.
- 21.2 Where the Mandatory's equipment interfaces to the Client's equipment's, a joint risk assessment shall be conducted by the Mandatory and the Client OHS department in order for the risks to be mitigated prior to the use of such equipment's. It is the responsibility of the Mandatory to notify the Client OHS department of such equipment's and machinery.
- 21.3 In accordance with the provisions of Section 10(4) of the OHS Act, the Mandatory hereby assumes the liability for taking the necessary steps to ensure that any article or substance that it erects or installs at the sites, or manufactures, sells or supplies to or for the Client, complies with all the prescribed requirements and will be safe and without risks to health and safety when properly used.

22. USAGE OF THE CLIENT'S EQUIPMENT

- 22.1 The Mandatory hereby acknowledge that his / her employees are not permitted to use any materials, machinery or equipment of the Employer unless the prior written consent of the Client has been obtained, in which case the Mandatory shall ensure that only those persons authorized to make use of same, have access thereto.
- 22.2 The Client shall ensure that it isolates and apply LOTO on any equipment's and machinery where there is an unexpected start up or flow of energy. The Mandatory has a responsibility to apply its own LOTO procedures before starting with work and post the use of the equipment and machinery.

23. PERMIT MANAGEMENT

- 23.1 The Mandatory shall ensure that work for which the issuing of permit to work is required shall not be performed prior to the obtaining of a duly completed approved permit by the Client or relevant Authority.
- 23.2 In the context of the Client, the following activities are regarded as high risk activities and a permit to work shall be obtained prior to starting with the activities at any site:

- Cold Works Permit
- Hot Work Permit
- Confined Space Entry Permit
- Work At Heights Permit

24. TRANSPORTATION

24.1 The Mandatary shall ensure that all road vehicles used on the sites are in a roadworthy condition and are licensed and insured. All drivers shall have relevant and valid driving licenses and vehicle shall carry passengers unless it is specifically designed to do so. All drivers shall adhere to the speed limits and road signs on the premises at all times.

24.2 No employees on premises permitted in back of LDV (bakkie) and in front of LDV each driver and passenger must have a separate seat belt.

24.3 In the event that any hazardous substances are to be transported on the premises, the Mandatary shall ensure that the requirements of the Hazardous Substances Act 15 of 1973 are complied with fully all times.

25. CLARIFICATION

In the event that the Mandatary requires clarification of any of the terms or provisions of this agreement, he / she should contact the Client OHS Department.

26. DURATION OF AGREEMENT

This agreement shall remain in force for the duration of the work to be performed by the Mandatary and/or while any of the Mandatary's employees are present on the Client site.

27. NON COMPLIANCE WITH THE AGREEMENT

If Mandatary fails to comply with any provisions of this agreement, the Client shall be entitled to give the Fourteen (14) days' notice in writing to remedy such non compliance and if the Mandatary fails to comply with such notice, then the Client shall forthwith be entitled but not obliged, without prejudice to any other rights or remedies which the Mandatary may have in law,

- ❖ Apply penalties as stipulated on the matrix below; or
- ❖ to claim immediate performance and/or payment of such obligations.
- ❖ Should Mandatary continue to breach the contract on three occasions for the same deviation, then the Client is authorised to suspend the main contract without complying with the condition stated in clause above.

28. INDEMNITY

The Mandatary hereby indemnifies the Client against any liability, loss, claims or proceedings whatsoever, whether arising in Common Law or by Statute; consequent personal injuries or the death of any person whomsoever (including claims by employees of the Mandatary and their dependents); or consequent loss of or damage to any moveable or immoveable property arising out of or caused by or in connection with the execution of the Mandatary's contract with the Client, unless such liabilities, losses, claims or proceedings whatsoever are attributable to the Client's faults. The Mandatary or his/her employees is liable to prove without reasonable doubt that the loss is due to the Client's fault or negligence.

ACT 85 OF 1993

The Mandatary undertakes to ensure that they and/or their subcontractors if any and/or their respective employees will at all times comply with the following conditions:

- a) All work performed by the Mandatary on the Client's premises must be performed under the close supervision of the Mandatary's employees who are to be trained to understand the hazards associated with any work that the Mandatary performs on the Client's premises.
- b) The Mandatary shall be assigned the responsibility in terms of Section 16(1) of the OHS Act 85 of 1993, if the Mandatary assigns any duty in terms of Section 16(2), a copy of such written assignment shall immediately be forwarded to the Client.
- c) The Mandatary shall ensure that he/she familiarise himself/herself with the requirements of the OHS Act 85 of 1993 and that s/he and his/her employees and any of his subcontractors comply with the requirements.

29. FURTHER UNDERTAKING

Only a duly authorised representative appointed in terms of Section 16.2 of the OHS Act is eligible to sign this agreement on behalf of the Mandatary. The signing power of this representative must be designated in writing by the Chief Executive Officer of the Mandatary. A copy of this letter must be made available to the Client.

ACCEPTANCE BY MANDATARY

In terms of section 37(2) of the Occupational Health & Safety Act 85 of 1993 and section 5.1(k) of the Construction Regulations 2014,

Ia duly authorised 16.2 Appointee acting for and on behalf of(company name) undertake to ensure that the requirements and the provision of the OHS Act 85 of 1993 and its regulations are complied with.

Mandatary – WCA/ Federated Employers Mutual No.....

Expiry date

SIGNATURE ON BEHALF OF MANDATARY
(Warrant his authority to sign)

DATE

Witnesses:

1. _____ 2. _____

SIGNATURE ON BEHALF OF THE CLIENT
AIRPORT COMPANY SOUTH AFRICA

DATE

Witnesses:

3. _____ 4. _____

Annexure C5.3: ACSA Baseline Hazard identification risk assessment (HIRA)

Baseline Risk Assessment	
Project Name	THE REPLACEMENT OF MECHANICAL GATES AT KIMBERLEY AIRPORT.
Document Number: HIRA 1	Revision Number: 001

1. Risk assessment of the Project

Risk Severity Definition	Description: Consequences (can lead to)...	Examples of what to look out for...
Category A Catastrophic	One or more multiple deaths and complete loss or destruction of equipment	A major accident
Category B Hazardous	Serious injuries or minor equipment damage	Large reduction in safety margins, a reduction in the ability of the operators cannot be relied upon to perform their tasks accurately or completely
Category C Major	Minor injuries or minor equipment damage	A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of conditions impairing their efficiency.
Category D Minor	Incidents	Operating limitations are breached. Procedures are not used correctly.
Category E Negligible	Negligible or inconvenience	Few consequences, No safety consequences. Nuisance

2. Generic Hazard Assessment of the Project

Likelihood Probability	Description	Examples of what to look out for...
Category 1	Extremely Improbable (Rare)	Almost inconceivable that the event shall occur
Category 2	Improbable (Seldom)	Very unlikely that the event shall occur. It is not known that it has ever occurred before
Category 3	Remote (Unlikely)	Unlikely but could possibly occur. Has occurred rarely.
Category 4	Occasional	Likely to occur sometimes. Has occurred infrequently.
Category 5	Frequent	Likely to occur many times or regularly. Has occurred frequently or regularly

		Catas-trophic	Hazardous	Major	Minor	Negligible
		A	B	C	D	E
Frequent	5	5A	5B	5C	5D	5E
Occasional	4	4A	4B	4C	4D	4E
Remote	3	3A	3B	3C	3D	3E
Improbable	2	2A	2B	2C	2D	2E
Extremely Improbable	1	1A	1B	1C	1D	1E

Required to Complete a Generic Hazard Assessment of the Project

Generic Hazard	Specific component of Hazard	Hazard related consequence	Existing defences to control risk	Safety Risk Index
Site establishment	Delivering of containers and materials; increased vehicle movements and location of services	Operational disruptions, incidents and service disruptions	Site plan location requires prior approval, services to be identified by ACSA representatives and drivers to be competent and vigilant of other road users. Vehicle inspections are to be conducted daily	2D
Site Access	Access is to be controlled and movement of vehicles and staff are to be monitored to reduce impact on operations	Injuries to Airport users, traffic build up, operational delays, vehicle incidents	Site is to be access controlled. All visitors to site are to report to the site office. Entrance to site camp is to be kept clean, swept after truck deliveries to minimize impact to operations.	2D
Persons on airside	Accidents and injuries	Injury to persons/Fatality	All staff wishing to work on the Airside are to go for Airside induction training. These staff members are to have valid Permits with them at all times. Personal protective equipment required for Airside includes but is not limited to high visibility jackets (as per the procedure, hearing protection, safety shoes & hard hats (if required). An airside safety plan must be submitted before commencement of work.	3A

Generic Hazard	Specific component of Hazard	Hazard related consequence	Existing defences to control risk	Safety Risk Index
Vehicles on airside	Accidents and injuries	Damage to aircraft/vehicles/property/persons	All vehicles operating on the Airside are to be fitted with a strobe light, appropriate signage in the form of a prefix, have the necessary vehicle permit in place, to be fitted with a fire extinguisher and is to be serviceable. Vehicles are to be checked by Airside Safety prior to be granted Airside access	4A
Driving on airside	Incidents	Damage to aircraft/vehicles/property/ persons	Airside induction is required for all persons entering the Airside. For persons wishing to drive on the Airside Service Road an AVOP 2 permit is required. Where work is to be conducted on the Airfield, then Contractors are required to be under escorts or have undergone Radio Licence training and be in the possession of an AVOP 3 permit The speed limit on the Apron Service Roads is 30km/h, 15km/h at the back of stand and 60km/h on the Perimeter Road. During period of Low Visibility (LVP) will be effected and no vehicular movements are allowed on the Airfield. Low visibility procedures will be in place	4A

Generic Hazard	Specific component of Hazard	Hazard related consequence	Existing defences to control risk	Safety Risk Index
Driving on runways and taxiways without permission	Incursion (include definition)	Collision with aircraft/property damage or fatality/ies	Runway and taxiway markings are indicated as per ICAO Annex 14. Permission is required from Air Traffic Control when crossing runways and taxiways. Signage indicating movement areas are painted on the ground or by means of illuminated signage boxes. Only persons in possession of a valid Airside Vehicle Operators Permit with the necessary radio licence (Partac training) will be permitted to drive in restricted areas. Vehicles under escort must follow at reasonable distance.	3A
Noise	Health Risks	Noise induced hearing loss	Baseline and annual audiograms are to be conducted. Contractors are to implement a hearing conservation programme and issue staff with hearing protection and provide the necessary training in this regard. Contractors to identify noisy operations in passenger areas and are to conduct noise generating operations at off peak times were possible or if unavoidable with ACSA's Project Leaders written permission.	3B

Generic Hazard	Specific component of Hazard	Hazard related consequence	Existing defences to control risk	Safety Risk Index
Jet blast	Potential injuries and property	Damage to vehicles/property/persons	Signage warning against jetblast is installed at high-risk areas. Risks associated with jetblast are covered during Airside Induction Training. Caution to be taken around aircraft when the anti-collision lights are activated in the Apron bays. 75 meter clearance behind aircraft to be observed to prevent jetblast. Contractors to be aware of aircraft movements	4C
Perimeter fence breach	Security risk	National Key Point Violation	Access and egress points are strictly enforced. Contractors are only to use the entry points as provided by the ACSA Project Leader. No materials are to be stored within 3meter of the perimeter fence.	3B
Crane operations	Height of crane	Flight path obstruction/collision with aircraft	30 meter height restriction procedure – refer to Airfield Operation Department for further information	2A
Weather	Adverse weather conditions	Damage to aircraft/vehicles/equipment	Weather warnings are issued by the Airside Safety Department as and when required. All equipment on the Airside is to be secured	4A
Construction works	Foreign Object Debris (FOD)	Ingestion into aircraft engine	Airside induction is required for all staff working on the Airside, FOD bins are to be used for any FOD found lying on the ground. All waste to be secured to prevent it from becoming airborne (refer to Environmental Terms and Conditions)	4B
Construction works	Working at Height	Injury /fatality	Fall protection plan to be devised by the Contractors in line with the Construction Regulations 2014. Rescue plans are to be included	3A

Generic Hazard	Specific component of Hazard	Hazard related consequence	Existing defences to control risk	Safety Risk Index
Construction works	Storage of hazardous chemicals substances	Contamination/fire/ injury to persons/ environmental impact	ACSA's Environmental terms and conditions are to be adhered to. All relevant legislation and bylaws are to be adhered to. All necessary permits are to be applied for by the Contractor such as transport permits, possession permits and flammable certificates. ACSA Environment and Fire and Rescue to be notified where a spill occurs.	4B
Construction works	Waste	Attracts rodents and birds which leads to bird strikes and adds to FOD	Waste management to be implemented in line with ACSA's Environmental Terms and Conditions	4B
Construction works	Spillages (fuels/oils/hydraulics/chemicals/human waste)	Contamination/Pollution/injury to persons/adverse health effects	ACSA's Environmental terms and conditions and applicable legislative controls are to be adhered to. ACSA Environment and Fire and Rescue to be notified where a spill occurs	4B
Construction works	Dust	Damage to aircraft//injury to persons/adverse health effects/	Dust suppression measures are to be implemented and PPE used where required	4A
Construction works/ Trenching	Damage to underground services. Interruption of critical services	Electrocution, loss of critical services, damage to property, major injuries, aircraft diversions	Consult as-built plans. Scan area before trenching. Trenching to be done under competent supervision.	4A

Generic Hazard	Specific component of Hazard	Hazard related consequence	Existing defences to control risk	Safety Risk Index
Delivery of materials	Falling materials or stones or sand	Vehicle/pedestrian accidents	Materials are to be delivered within specified time frames, flagman to be utilised during deliveries, load limitations to be observed, netting is to be used, Contractors to clean road after deliveries	4E
Lack of signage – warning signs	Injuries and accidents	Injuries and accidents	Contractors to install sufficient demarcations around construction sites along with the necessary warning signs and beacon lights (refer to Construction Regulations and Traffic Act) No signs are to be removed without prior permission and notification. Temporary way finding signage is required if signage has been disturbed	2D
Road crossing Central Boulevard	Not using the tunnel for crossing	Vehicle and pedestrian accidents	Contractor staff are to cross the Boulevard via the North or South tunnels	4B
Waste management	Environmental impact	Illegal dumping	Temporary laydown areas to be identified and no illegal dumping is permitted.	3C
Trolleys	Damaging trolleys through misuse	Injuries and property damage	Contractors to provide their own trolleys. ACSA's trolleys are for passenger use only	5D
Golf carts	Misuse of golf carts	Injuries and property damage	Contractor staff to be aware of golf cart movements on the Landside. Golf cart use for airport users only and not for Contractor use for transporting materials. Golf cart operate in predetermined routes – Contractors to be aware thereof	3D
Fire equipment	Use and abuse of fire equipment	Injuries and property damage	Fire equipment is only to be used during emergencies. Contractors to provide their own fire equipment. No materials to be stored in ACSA fire cabinets. Emergency exits are to be kept clear at all times	2B

Generic Hazard	Specific component of Hazard	Hazard related consequence	Existing defences to control risk	Safety Risk Index
Unattended bags	Security risk	injuries/fatality to Airport users/stakeholders/ACSA employees. Bomb threat-damage to property, vehicle. Operational disruptions	Contractors are not permitted to leave bags unattended as they will be removed and will be handed to SAPS	5C
Speed limits	Car accidents	Injuries and vehicle damage	Speed limits on the Central Boulevard and Elevated Road are 40km/h, exiting the road networks is 50km/h, Tower Road is 50km/h and Freight Road is 50km/h. Speed humps are installed along Tower Road and Freight Road to reduce speeding	3C
Deliveries	Elevated Road	Disrupt traffic flow and passenger movements	No trucks allowed, deliveries to be done via North or South Delivery Yards, delivery notes are required and delivery times are to be specified.	2C
Overhead works	Falling items	Injuries, vehicles, property damage	Fall protection plan required as per the Construction Regulations 2014.	5C
General housekeeping	Damage to escalators	Injuries, property damages	Escalators are not to be used to transport heavy items in the Parkade	4C

Annexure 5.4: Environmental Terms and Conditions to Commence Work (EMS 048)

The following Environmental Terms and Conditions shall be strictly adhered to by all Contractors when conducting works for Airports Company South Africa SOC Limited. The Company shall audit Contractor activities, products and services on an ad hoc basis to ensure compliance to these environmental conditions. Any pollution clean-up costs shall be borne by the Contractor.

ISSUE	REQUIREMENT
Environmental Policy	Environmental Policy shall be communicated, comprehended and implemented by all appointed Contractor staff (refer to Environmental Management Policy T010 001P).
Stormwater, Soil and Groundwater Pollution	- No solid or liquid material may be permitted to contaminate or potentially contaminate stormwater, soil or groundwater resources. - Any pollution that risks contamination of these resources must be cleaned-up immediately. Spills must be reported to the Company immediately. Contractors shall supply their own suitable clean-up materials where required. - Washing, maintenance and refuelling of equipment shall only be allowed in designated service areas on Company property. It is the Contractor's responsibility to determine the location of these areas. - No leaking equipment or vehicles shall be permitted on the airport.
Air Pollution	- Dust: Dust resulting from work activities that could cause a nuisance to employees or the public shall be kept to a minimum. - Odours and emissions: All practical measures shall be taken to reduce unpleasant odours and emissions generated from work related activities. - Fires: No open fires shall be permitted on site.
Noise Pollution	- All reasonable measures shall be taken to minimise noise generated on site as a result of work operations. - The Contractor shall comply with the applicable regulations with regard to noise.
Waste Management	- Waste shall be separated as general or hazardous waste. - General and hazardous waste shall be disposed of appropriately at a permitted landfill site should recycling or re-use of waste not be feasible. - Under no circumstances shall solid or liquid waste be dumped, buried or burnt. - Contractors shall always maintain a tidy, litter free environment in their work area. - Contractors must keep on file: - The name of the contracting waste company - Waste disposal site used - Monthly reports on quantities – separated into general, hazardous and recycled - Maintained file of all Waste Manifest Documents and Certificates of Safe Disposal - Copy of waste permit for disposal site This information must be available during audits and inspections.
Handling & Storage of Hazardous Chemical Substances (HCS)	- All HCS shall be clearly labelled, stored and handled in accordance to Materials Safety Data Sheets. - Materials Safety Data Sheets shall be stored with all HCS. - All spillages of HCS must be cleaned-up immediately and disposed of as hazardous waste. (HCS spillages must be reported to the Company immediately). - All Contractors shall be adequately informed with regards to the handling and storage of hazardous substances.

ISSUE	REQUIREMENT
	Contractors shall comply with all relevant national, regional and local legislation with regard to the transport, storage, use and disposal of hazardous substances.
Water and Energy Consumption	The Company promotes the conservation of water and energy resources. The Contractor shall identify and manage those work activities that may result in water and energy wastage.
TRAINING & Awareness	The conditions outlined in this permit shall be communicated to all Contractors and their employees prior to commencing works at the airport.

Penalties

Penalties shall be imposed by the Company on Contractors who are found to be infringing these requirements and/or legislation. The Contractor shall be advised in writing of the nature of the infringement and the amount of the penalty. The Contractor shall take the necessary steps (e.g. training/remediation) to prevent a recurrence of the infringement and shall advise the Company accordingly.

The Contractor is also advised that the imposition of penalties does not replace any legal proceedings, the Council, authorities, land owners and/or members of the public may institute against the Contractor.

Penalties shall be between R200 and R20 000, depending upon the severity of the infringement. The decision on how much to impose will be made by Environmental Management Representative in consultation with the Airport Manager or his/her designate and will be final. In addition to the penalty, the Contractor shall be required to make good any damage caused as a result of the infringement at his/her own expense.

I, _____ (name & surname) of _____ (company)

agree to the above conditions and acknowledge Airports Company South Africa SOC Limited's right to impose penalties should I or any of my employees or sub-Contractors fail to comply with these conditions.

Signed: _____ on this date: _____ (dd/mm/yyyy)

at: _____ (airport name).

Annexure C5.5 ACSA Construction Environmental Management Plan – EMS 050

1. Background

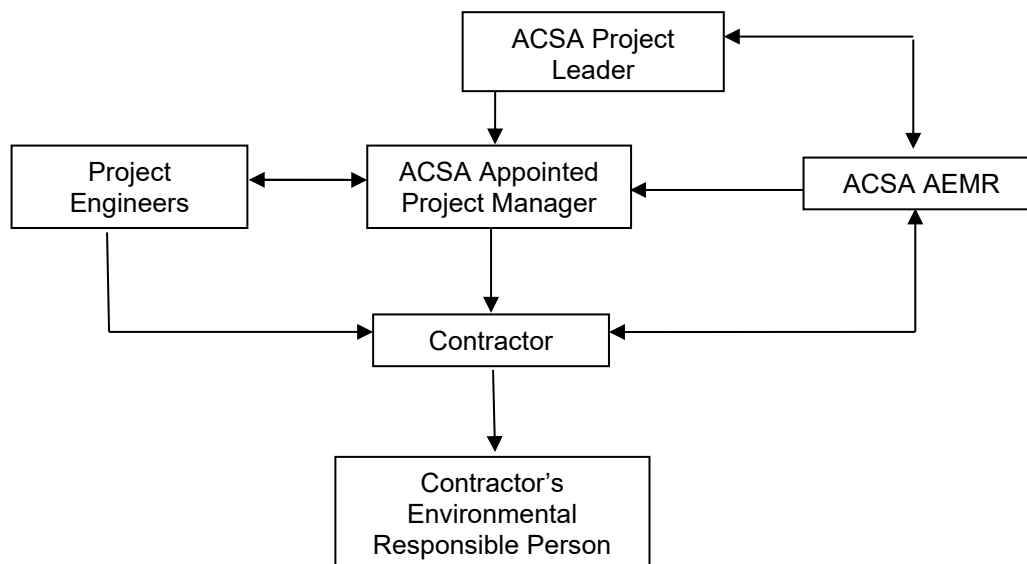
The purpose of this Environmental Management Plan (EMP) is to co-ordinate mitigation, rehabilitation, and monitoring measures of construction projects at ACSA airports such that environmental pollution and risks are minimized as far as possible.

This EMP is provided to Contractors at the tender stage to ensure all costs associated with this EMP can be appropriately costed.

2. Organisational Structure

It is essential that an organisational structure is established early in the construction phase of the project and that all parties concerned accept the structure. This identifies the responsibilities and the authority of the ACSA Project Leader, design team, Project Manager (PM), consulting engineers and the numerous Contractors and sub-Contractors.

Responsibility for the application of the construction phase EMP for the project starts with ACSA's Project Leader. The ACSA Project Leader will devolve this responsibility to the designated and appointed Project Manager to assume this task within his or her portfolio, who will in turn issue conformance instructions to the Contractor(s). The Contractor(s) will appoint an Environmental Responsible Person who will ensure that the requirements of the EMP are implemented by monitoring and auditing the performance of the Contractor. ACSA's AEMR (Airport Environmental Management Representative) shall play an oversight role and report on overall EMP compliance to the ACSA Project Leader.



2.1 ACSA Project Leader

This is an ACSA employee ultimately responsible for the overall success of a project. This person could be within the Commercial, Maintenance & Engineering, Projects or Airport Planning Department.

2.2 Project Manager (PM)

The PM is responsible for ensuring that on-site activities are undertaken in accordance with the requirements of the EMP. The PM will thus need to ensure that:

- This EMP is included in the contracted agreements issued to the Contractor(s)
- Environmental Method statements requested by ACSA's AEMR are provided prior to construction
- Corrective action is implemented as required
- Appropriate records and information regarding compliance with the EMP requirements are maintained and made available to the AEMR
- Instructions as required by the AEMR are issued to the relevant Contractor

2.3 Contractor

- The Contractor shall ensure that all employees, sub-contractors, suppliers, etc. are fully aware of and comply with the environmental issues and requirements detailed in this EMP
- The Contractor shall liaise closely with their Environmental Responsible Person and PM and will ensure that works on site are conducted in accordance with this EMP
- The Contractor is to have a copy of the EMP on site and be familiar with its contents
- The Contractor must ensure that all employees (permanent and temporary) and all sub-contractors that work on the site for longer than two days, receive Environmental Awareness Training prior to commencing work on site
- The Contractor shall appoint an Environmental Responsible Person in writing, and will forward this appointment to ACSA's AEMR
- Prior to construction commencement, the Contractor shall draft and submit written environmental method statements to ACSA's AEMR for approval, covering those activities which are identified (in this document and/or by the AEMR), as being potentially harmful to the environment

Environmental Method Statements indicate how compliance shall be achieved and environmental risk will be mitigated. The environmental method statement shall state clearly:

- Timing of activities
- Materials to be used
- Equipment and staffing requirements
- The proposed construction procedure designed to implement the relevant environmental specifications
- The system to be implemented to ensure compliance with the above; and
- Other information deemed necessary by the AEMR and Environmental Responsible Person.

Method statements shall be submitted at least five working days prior to expected commencement of work on an activity, to allow the AEMR time to study and approve the method statement. The Contractor shall not commence work on that activity until such time as the method statement has been approved in writing by the AEMR.

Due to changing circumstances, it may be necessary to modify method statements. In such cases, the proposed modifications must be indicated and agreed upon in writing between the AEMR and Environmental Responsible Person. The AEMR and Environmental Responsible Person must retain records of any amendments and ensure that the most current version of any method statement is being used.

2.4 Contractor's Environmental Responsible Person

The Contractor shall appoint / designate an environmental responsible person to liaise with ACSA's AEMR and ensure that the requirements set out in this EMP are implemented. The Environmental Responsible Person shall:

- Develop a system to ensure that the EMP and Environmental Method Statements are effectively implemented;
- Audit this system so that he/she can demonstrate to the AEMR that the EMP and Environmental Method Statements are being effectively implemented;
- Ensure that Contractors staff, sub-contractors, suppliers etc. are aware of their requirements in terms of the EMP and that they adhere to the EMP.
- Ensure that responsible persons for sub-contractors or sub-sub contractors are designated to carry out the requirements of the EMP and Environmental Method Statements;
- Have sufficient authority to issue site instructions to the Contractors staff on their site.
- Ensure that the Contractor and his Subcontractors and his employees have received the appropriate environmental awareness training before commencing on site.
- Meet with the Contractor to discuss the implementation of and non-conformances with this document.
- Identify appropriate corrective action if non-compliance occurs or unforeseen environmental issues arise that require environmental management action.
- Keep a register of major incidents (spills, injuries, complaints, legal transgressions, etc) and other documentation related to the EMP.
- Issue stop orders when required.
- Report to ACSA's AEMR any problems (or complaints) related to conformance with this document which cannot first be resolved in co-operation with the Contractor and/or his Subcontractors.
- Assist in finding environmentally acceptable solutions to construction problems.

2.5 ACSA's AEMR shall:

- Request, review and approve environmental method statements from the Contractor.
- Undertake regular inspections (at least monthly, and more frequently at the AEMR's discretion) of the site in order to check for compliance with method statements as well as specifications outlined in this EMP.
- Provide an audit report to the ACSA Project Leader.

3. Environmental Specifications

3.1 Location of camp and depot

The Contractor's Camp and Materials Storage Area shall be located at a position approved by the AEMR. No site staff other than security personnel shall be housed on site.

The Contractor shall provide water and/or washing facilities at the Contractor's Camp for personnel.

The Contractor's Camp and Materials Storage Area shall be kept neat and tidy and free of litter.

3.2 Demarcation of the site & access

It is important that activities are conducted within a limited area to facilitate control and to minimise the impact on the existing natural environment, existing tenants, and other construction activities in the vicinity and public thoroughfares.

The Contractor shall demarcate the boundaries of the site in order to restrict his construction activities to the site. The Contractor shall ensure that all his plant, labour and materials remain within the boundaries of the site. Failure to do so may result in the Contractor being required to fence the boundaries of the site at his own expense to the satisfaction of the AEMR.

Security and access to the site must be controlled at all times.

3.3 Traffic control & safety

Traffic control and safety shall be done in accordance with the South African Traffic Safety Manual, with the relevant signs, flagmen, barriers, etc being provided at the various access points. Traffic control shall be done in co-operation with local traffic officials. All laws and regulations applicable on the public road system are enforceable on the construction site. Due to the activities involved in the construction phase, trucks and other related vehicles will be using the roads leading to the site. These vehicles will need to be roadworthy and abide by the speed limits. The Environmental Management Plan for the construction phase should monitor the impact on current traffic by additional construction vehicles to ensure noise, safety and dust issues are kept to a minimum.

3.4 Ablution facilities

The Contractor shall provide the necessary ablution facilities for all his personnel.

Chemical toilets shall be provided, with a minimum of one toilet per 15 persons. Toilets shall be easily accessible and shall be transportable. The toilets shall be secured to prevent them from blowing over, and shall be provided with an external closing mechanism to prevent toilet paper from being blown out. Toilet paper dispensers shall be provided in all toilets. Toilets shall be cleaned and serviced regularly by a reputable toilet servicing company. Toilets shall be emptied before long weekends and builders' holidays.

The Contractor shall ensure that chemicals and/or waste from toilet cleaning operations are not spilled on the ground at any time. Should there be repeated spillage of chemicals and/or waste (i.e. more than three incidents), the Contractor shall be required to place the toilets on a solid base with a sump at his own expense. Accumulations of chemicals and waste will have to be removed from the site and disposed at an approved waste disposal site or sewage plant.

Abluting anywhere other than in the toilets shall not be permitted. Repeated use of the veld or other areas for ablution purposes (i.e. more than three incidents) may result in the guilty party being given a spot fine. The Contractor shall also be responsible for cleaning up any waste deposited by his personnel.

3.5 Domestic waste water

Wastewater from any other ablution or kitchen facilities on site shall be discharged into a suitable conservancy tank. The Contractor shall be responsible for ensuring that the system continues to operate effectively throughout the project and that the conservancy tank is emptied as required during the project. The Contractor shall employ a suitable qualified sub-Contractor or the local authority to empty the conservancy tank.

3.6 Environmental training

According to the National Environmental Management Act (107 of 1998), any costs incurred to remedy environmental damage shall be borne by the person responsible for that damage; it is therefore critical that the Contractors read and understand the requirements of this document and any succeeding documents pertaining to environmental requirements before construction commences. It is a requirement of the act that everyone takes reasonable measures to ensure that they do not pollute the environment. Reasonable measures include informing and educating employees about the environmental risks of their work and training them to operate in an environmentally acceptable manner.

Training is fundamental to the successful implementation of the EMP. All personnel whose work may result in an impact on the environment must receive appropriate training in the environmental procedures to be followed. In this regard, the following must be fulfilled:

- All personnel working on the construction site must attend an environmental awareness training workshop conducted by the Environmental Responsible Person prior to commencing work on site. The purpose of the workshop is to provide staff with the information they require to enable them to meet the

requirements of the EMP. The Environmental Responsible Person may call upon the services of a specialist environmental education translator should this be required. Contractors, sub contractors and all their staff must attend.

- The Environmental Responsible Person shall keep a register of all personnel attending the environmental awareness training workshops; attendance records must be filed and available on site.
- All staff must be trained in emergency response procedures; attendance records must be filed and available on site.
- Environmental awareness posters are to be displayed on site. Environmental 'do's and don'ts' must be clearly illustrated. The posters shall use pictures to convey the intended message and any explanatory text will be in English and the local dialect.

3.7 Solid waste management

Solid waste includes construction debris (e.g. packaging materials, timber, cans etc.) waste and surplus food, food packaging etc.

The Contractor shall institute an on-site waste management system that is acceptable to the AEMR in order to prevent the spread of refuse within and beyond the site. The Contractor is reminded that wind velocities on the construction site can be extremely high.

All waste shall be collected and contained immediately. The Contractor shall institute a weekly clean up of the site. This daily/weekly clean up shall be for the Contractor's account.

The Contractor shall not dispose of any waste and/or construction debris by burning or burying. The use of waste bins and skips is essential. The bins shall be provided with lids and an external closing mechanism to prevent their contents from blowing out. The Contractor shall ensure that all waste is deposited by his employees in the waste bins for removal by the Contractor. Bins shall not be used for any purposes other than waste collection and shall be emptied on a regular basis. All waste shall be disposed of off site at approved landfill sites.

Waste generated at the construction camps shall be separated into recyclable and non-recyclable waste, and shall be separated as follows:

- Hazardous waste (including used oil, diesel, petrol tins, paint, bitumen, etc.);
- Recyclable waste (paper, tins, glass);
- General waste; and
- Reusable construction material

Recyclable waste shall be deposited in separate skips/bins and removed off site for recycling. The Contractor may wish to enter into an agreement with the surrounding communities and/or his staff with regard to the collection and sale of recyclable and reusable materials.

Hazardous waste, including waste oil and other chemicals (e.g. paints, solvents) shall be stored in (an) enclosed area(s), and shall be clearly marked. If deemed necessary by the Environmental Responsible Person, the Contractor shall obtain the advice of a specialist waste expert concerning the storage of hazardous waste. Such waste shall be disposed of off site by a specialist waste Contractor, at a licensed hazardous waste disposal site.

The Contractor shall keep documentary proof of the safe disposal of all waste, which will be available for audit at all times and will also include the waste type and volume.

The Contractor is advised that spot fines for littering have been included in this document. Offenders found littering will be liable for the spot fine.

3.8 Protection of fauna and flora

All fauna and flora (unless alien) within and around the site shall be protected. Birds and animals shall not be caught or killed by any means, including poisoning, trapping, shooting or setting of snares.

3.9 Protection of archaeological and palaeontological sites

If any possible palaeontological/archaeological material is found during excavations, the Contractor shall stop work immediately and inform the AEMR. The AEMR will inform the South African Heritage Resource Agency (SAHRA) and arrange for a palaeontologist/archaeologist to inspect, and if necessary excavate, the material, subject to acquiring the requisite permits.

3.10 Water pollution prevention & management

The Contractor shall prevent pollution of surface or underground water and shall comply with the Water Act, 36 of 1998, and any other national, provincial and local legislation regarding the prevention of water pollution, including the pollution of groundwater and any wetland on site.

The Contractor must ensure that all reasonable precautions are taken to prevent the pollution of the ground and water resources as a result of site activities. Ground contamination may hinder or prevent the re-establishment of natural vegetation. The Contractor shall keep the necessary materials and equipment on site to deal with ground spills of any of the materials used or stored on site.

The Contractor shall ensure that no oil, petrol, diesel, etc is discharged onto the ground. Pumps and other machinery requiring oil, diesel, etc that is to remain in one position for longer than two days shall be placed on drip trays. The drip trays shall be emptied regularly and the contaminated water disposed of off site at a facility capable of handling such wastewater. Drip trays shall be cleaned before any possible rain events that may result in the drip trays overflowing, and before long week ends and holidays.

Stormwater and/or groundwater may accumulate on site during the construction period and there is the potential for this water to be contaminated as a result of construction procedures. The Contractor shall ensure that this water does not become contaminated. Contaminated water (eg cement washings, waste water from ablution or kitchen facilities etc) shall be collected in a conservancy tank, removed from the site and disposed of in a manner approved by the AEMR.

3.11 Stormwater control

Contractors shall take reasonable measures to prevent erosion resulting from a diversion, restriction or increase in the flow of stormwater caused by the presence of their works, operations and activities. Any stormwater collected in bunded areas

containing oils, fuels, chemicals or other potentially polluting substances shall be pumped out of the bund, collected in a suitable container and removed from the site for appropriate disposal.

Contractors shall provide adequate control measures to prevent stormwater damage and erosion during construction. Control measures should include the control by sumps and adequate pumping of water ingress into trenches below the water table. Stormwater should also be directed into attenuation ponds wherever possible. All methods of stormwater control during the construction phase are to be agreed and approved by the AEMR.

Berms and existing stormwater drainage systems shall be used to prevent surface run-off from entering site excavations.

3.12 Water resource management

Water is a scarce resource and shall be conserved wherever possible. The Contractor shall not waste water (e.g. water areas excessively etc). All leaking water pipes are to be repaired or replaced immediately. The Contractor shall provide all drinking water and water for construction purposes. Water shall not be used unnecessarily.

3.13 Pollution prevention and remediation

The Contractor must ensure that all reasonable precautions are taken to prevent the pollution of the ground and water resources as a result of site activities. Pollution could result from the release, accidental or otherwise, of contaminated runoff from construction camps, discharge of contaminated construction water, chemicals, oils, fuels, sewage, run off from stockpiles, solid waste, litter, etc.

The first activity to be undertaken once a spill occurs is to terminate the source of the spill and contain the polluted area.

All fuel, oil or hydraulic fluid spills are to be reported to the Project Manager/ Engineer, Environmental Responsible Person and AEMR so that appropriate clean-up measures can be implemented.

The Contractor shall keep the necessary materials and equipment on site to deal with ground spills of any of the materials used or stored on site. Sufficient quantities of suitable hydrocarbon absorbent or remediation materials must be present on site at all times. Absorbent "spill-mop-up" products need to be on hand – Enretech, Spillsorb or Drizit type products should be investigated for these purposes.

Concrete-mixing equipment (mixers and the like) shall not be discharged overland. Such water shall be collected in a conservancy tank, removed from the site and disposed of in the correct manner. The Contractor may consider reusing such water for washing other concrete equipment to minimise the amount required to be removed off site.

The Contractor is advised that cement and concrete are regarded as highly hazardous to the natural environment on account of the very high pH of the material, and the chemicals contained therein. Therefore the Contractor shall ensure that:

- concrete is mixed on mortar boards, and not directly on the ground;

- the visible remains of concrete, either solid, or from washings, are physically removed immediately and disposed of as waste. Washing the visible signs into the ground is not acceptable; and
- all aggregate is also removed.

Trucks delivering concrete shall not wash the trucks or the chutes on the site. All washing operations shall take place off site at a location where wastewater can be disposed of in the correct manner.

3.14 Servicing/fuelling of construction equipment

Servicing and fuelling should preferably occur off site.

However, if these activities occur on site, the Contractor shall ensure that all servicing of vehicles and equipment takes place in designated areas agreed upon by the AEMR. All waste shall be collected and disposed of off site at an appropriately licensed landfill site. All equipment that leaks onto the ground shall be repaired immediately or removed.

Similarly, no vehicles or machines shall be refuelled on site except at designated refuelling locations, unless otherwise agreed with the AEMR. The Contractor shall not change oil or lubricants anywhere on site except at designated locations, except if there is a breakdown or an emergency repair. In such instances, the Contractor shall ensure that he has Drizit pads (or equivalent) and/or drip trays available to collect any oil, fluid, etc.

3.15 Fuels and Chemicals

The Contractor shall take all reasonable precautions to prevent the pollution of the ground and/or water resources by fuels and chemicals as a result of his activities.

The Contractor shall keep the necessary materials and equipment on site to deal with ground spills of any of the materials used or stored on site.

The Contractor shall ensure that no oil, petrol, diesel, etc. is discharged onto the ground. Pumps and other machinery requiring oil, diesel, etc. that is to remain in one position for longer than two days shall be placed on drip trays. The drip trays shall be emptied regularly and the contaminated water disposed of offsite at a facility capable of handling such wastewater. Drip trays shall be cleaned before any possible rain events that may result in the drip trays overflowing, and before long weekends and holidays.

The Contractor shall remove all oil-, petrol-, and diesel-soaked sand immediately and shall dispose of it as hazardous waste.

Should the Environmental Responsible Person/AEMR and/or the relevant authorities deem it necessary to institute a programme for the removal of contaminated ground resulting from the non-compliance of the controls detailed above, these costs will be for the Contractor's account. Remedial action shall be approved by the AEMR and relevant authorities, if appropriate.

3.16 Fuel & Hazardous Materials Storage

Contractors shall identify fuels and hazardous substances to be stored on the site and shall ensure that they know the effects of these substances on their staff and the

environment. The Environmental Responsible Person shall keep a copy of a fuels and hazardous substance inventory which shall be available on site.

Contractors shall ensure that the quantities of fuels and chemicals on site are appropriate to the requirements and are stored and handled so as to avoid the risk of spillage. All fuels, oils and chemicals shall be confined to a specific and secured area. These materials shall be stored in an area with a concrete or other impervious base, which is adequately bunded. The volume of the bund shall be two times the volume of the containers stored. Gas and fuel should not be stored in the same storage area, and any generators used on the site should also be placed on a bunded surface.

The Contractor shall be responsible for securing any permits / certificates that may be required in respect of fuel storage from the local authorities.

In addition, the following must be implemented:

- All fuel stores must be equipped with a fire extinguisher;
- Materials Safety Data Sheets must be available on site and filed accordingly.
- No vehicle servicing may take place on the site. Servicing of equipment that uses hydrocarbon fuels, oils, lubricants and other hazardous chemicals may only take place in the site camp under conditions approved by the AEMR;
- All fuels are to be stored within a lined / demarcated area in the Site Camp. No refuelling is to take place outside of this demarcated area unless authorised by the Environmental Responsible Person. Note that filling machinery in the field (on site) from canisters should be cleared with the Environmental Responsible Person and both a "no leak" funnel / pump and one of the above mentioned absorption products must be on hand in the event of such refuelling taking place.

3.17 Dust control

The Contractor shall be responsible for the continued control of dust arising from his operations, through measures including, but not limited to, spraying of water on bare areas, rotovating straw bales into the soil surface and the scheduling of dust-generating activities to times when wind velocity is low. Overhead sprayers shall not be used in windy conditions, because too much water will be lost to evaporation. The use of water carts is preferred.

3.18 Noise control

The Contractor shall take all reasonable precautions to minimise noise generated on site as a result of his operations, especially when working in areas or on activities that may impact on neighbouring land users.

The Contractor shall comply with the applicable regulations with regard to noise.

The Environmental Responsible Person and/or AEMR may inform adjacent land users, tenants and communities about the possibility of noise pollution and the approximate duration of the problem.

3.19 Emergency procedures

The Contractor shall ensure that emergency procedures are set up prior to commencing work. Emergency procedures shall include, but are not limited to, fire, spills, contamination of the ground, accidents to employees, use of hazardous substances, etc. Emergency procedures, including responsible personnel, contact details of emergency services, etc. shall be made available to all the relevant personnel and shall be clearly demarcated at the relevant locations around the site.

The Environmental Responsible Person shall advise the Contractor, PM and AEMR of any emergencies on site, together with a record of action taken.

3.19.1 Fires

The Contractor shall take all the necessary precautions to ensure that fires are not started as a result of his activities on site, and shall also comply with the requirements of the Occupational Health and Safety Act 85 of 1993.

No open fires shall be permitted on or off site. Closed fires or stoves shall only be permitted at designated safe sites in the construction camps. Fires shall also not be permitted near any potential sources of combustion, such as fuel stores, stockpiles of plant material etc.

The Contractor is advised that sparks generated during welding, cutting of metal or gas cutting can cause fires. Every possible precaution shall therefore be taken when working with this equipment near potential sources of combustion. Such precautions include having an approved fire extinguisher immediately available at the site of any such activities.

The Contractor shall be liable for any expenses incurred by any organisations called to assist with fighting fires, and for any costs relating to the rehabilitation of burnt areas.

No smoking will be permitted on the site except for within a designated area in the site camp. Suitable fire fighting equipment must be readily available in this area.

The Contractor must ensure that the contact details of the nearest Fire Department are displayed on site (together with other emergency services) and that all persons involved with the project know the location of these numbers on site.

4. SITE CLEARANCE & REHABILITATION

4.1 Removal of topsoil

Following removal of vegetation from the site, all topsoil shall be removed (up to a maximum of 30 cm depth) and stockpiled for re-use in subsequent rehabilitation and landscaping activities. The stockpiles shall not be higher than 2 m in order to minimise composting. The stockpiles of topsoil shall be located in an area agreed with the AEMR.

4.2 Stabilisation of steep slopes

The disturbance of steep slopes, for example by the removal of vegetation, may result in slope instability and erosion by rain and surface run off. The Contractor shall ensure that slopes that are disturbed during construction are stabilised to prevent erosion occurring. Any erosion that does occur must be reinstated at the Contractor's cost.

4.3 Rehabilitation

The Contractor shall be responsible for rehabilitating any areas cleared or disturbed for construction purposes that are to be incorporated into open space or buffer zones, as well as all spoiling. The Contractor shall revegetate such areas in accordance with the specification provided below.

The Contractor shall stabilise, by straw rotovation or other, any areas that are cleared or disturbed for construction purposes which are not going to be incorporated into open space or buffer zones (i.e. areas that will be subsequently developed by another party).

All construction equipment and excess aggregate, gravel, stone, concrete, bricks, temporary fencing and the like shall be removed from the site upon completion of the work. No discarded materials of whatsoever nature shall be buried on the site or on any other land not owned by ACSA.

4.4 Landscaping and preparation for re-vegetation

Areas that require reshaping shall be cut, filled and compacted so as to follow the contours of the surrounding landscape. Topsoil removed from the area initially shall be replaced. Care must be taken not to mix the topsoil with the subsoil during shaping operations. Should a crust form on the soil before revegetation is commenced, the Contractor shall, at his own cost, loosen the crust by scarifying to a depth of 150 mm.

5. MANAGEMENT AND MONITORING

This section focuses on the systems and procedures required to ensure that the environmental specifications are effectively implemented. Emphasis is on monitoring and penalties, aimed at ensuring compliance with this document.

5.1 General inspection monitoring and reporting

The Environmental Responsible Person shall:

- Inspect the site on a daily basis to ensure that the environmental specifications are adhered to.
- Maintain a record of major incidents (spills, impacts, complaints, legal transgressions etc) as well as corrective and preventive actions taken.
- Conduct regular internal audits (at least weekly) to ensure that the system for implementation of the EMP is operating effectively and keep records of these audits.
- Conduct monthly meetings for the duration of the project. These will be attended by the Environmental Responsible Person, Contractors Resident Engineers and sub-contractor representatives, and will be minuted and available for audit. The

agenda will cover compliance with the EMP and environmental method statements, results of audits, non-compliances and corrective and preventative actions with agreed dates, and environmental queries.

5.2 Penalties

Penalties may be imposed by the AEMR on Contractors who are found to be infringing these specifications. The Contractor shall be advised in writing of the nature of the infringement and the amount of the penalty. The Contractor shall determine how to recover the fine from the relevant employee and/or sub-contractor. The Contractor shall also take the necessary steps (e.g. training) to prevent a recurrence of the infringement and shall advise the AEMR accordingly.

The Contractor is also advised that the imposition of penalties does not replace any legal proceedings the Council, authorities, landowners and/or members of the public may institute against the Contractor.

Penalties may range between R200.00 and R20, 000.00, depending upon the severity of the infringement. The decision on how much to impose will be made by the AEMR, and will be final. In addition to the penalty, the Contractor shall be required to make good any damage caused as a result of the infringement at his own expense.

A preliminary list of infringements for which penalties will be imposed is as follows:

- Moving outside the demarcated site boundaries;
- Littering of the site and surrounds;
- Burying waste on site and surrounds;
- Smoking in the vicinity of fuel storage and filling areas and in any other areas where flammable materials are stored/used;
- Making fires outside designated areas;
- Defacement of natural features;
- Spillage onto the ground of oil, diesel, etc;
- Picking/damaging plant material;
- Damaging/killing wild animals; and
- Additional fines as determined by the AEMR and added to this list.

The AEMR may also order the Contractor via the ACSA Project Leader to suspend part or all the works if the Contractor repeatedly causes damage to the environment by not adhering to the EMP. The suspension will be enforced until the offending actions, procedure or equipment is corrected. No extension of time will be granted for such delays and all costs will be borne by the Contractor.

ANNEXURE C5.6: POPIA AGREEMENT

CONFIDENTIALITY AND DATA PROTECTION

Save as provided in this clause (*Confidentiality and Data Protection*), each Party shall, and shall procure that its Affiliate and their respective officers, directors, employees, agents, auditors and advisors shall, treat as confidential all information relating to the other Party or its Affiliates thereof or relating to their respective businesses that is of a confidential nature and which is obtained by that Party in terms of, or arising from the implementation of this Agreement, which may become known to it by virtue of being a Party, and shall not reveal, disclose or authorise the disclosure of any such information to any third party or use such information for its own purpose or for any purposes other than those related to the implementation of this Agreement.

The obligations of confidentiality in this clause shall not apply in respect of the disclosure or use of such information in the following circumstances:

in respect of any information which is previously known by such Party (other than as a result of any breach or default by any Party or other person of any agreement by which such Confidential Information was obtained by such Party);

in respect of any information which is in the public domain (other than as a result of any breach or default by either Party);

any disclosure to either Party's professional advisors, executive staff, board of directors or similar governing body who (i) such Party believes have a need to know such information, and (ii) are notified of the confidential nature of such information and are bound by a general duty of confidentiality in respect thereof materially similar to that set out herein;

any disclosure required by law or by any court of competent jurisdiction or by any regulatory authority or by the rules or regulations of any stock exchange;

any disclosure made by a Party made in accordance with that Party's pursuit of any legal remedy;

any disclosure by a Party to its shareholders or members pursuant to any reporting obligations that Party may have to its shareholders or members, provided that each such shareholder or member is notified of the confidential nature of such information and is bound by a general duty of confidentiality in

respect thereof materially similar to that set out herein;

In the event that a Party is required to disclose confidential information as contemplated in this clause, such Party will:

advise any Party/ies in respect of whom such information relates (the "**Relevant Party/ies**") in writing prior to disclosure, if possible;

take such steps to limit the disclosure to the minimum extent required to satisfy such requirement and to the extent that it lawfully and reasonably can;

afford the Relevant Party/ies a reasonable opportunity, if possible, to intervene in the proceedings;

comply with the Relevant Party/ies' reasonable requests as to the manner and terms of such disclosure; and

notify the Relevant Party/ies of the recipient of, and the form and extent of, any such disclosure or announcement immediately after it was made.

Either Party may, by notice in writing, be entitled to demand the prompt return of the whole or any part of any confidential information supplied by it to the other Party, and each Party hereby undertakes to comply promptly with any such demand.

In line with the provisions of Protection of Personal Information Act, No 4 of 2013 (POPIA), particularly section 20 and 21, the service provider (referred to as Operator in POPIA) shall observe the following principles when processing personal information on behalf of the Company (referred to as Responsible Party in POPIA):

the Service Provider shall only act on the Company's documented instructions, unless required by law to act without such instructions;

the Service Provider shall ensure that its representatives processing the information are subject to a duty of confidence;

the Service Provider shall take appropriate measures to ensure the security of processing. The Service Provider shall ensure and hereby warrants that they have minimum IT and or physical security safeguard to protect personal information;

the Service Provider shall notify the Company immediately where there are reasonable grounds to believe that the personal information of a data subject has been accessed or acquired by any unauthorised person;

the Service Provider shall only engage a sub-operator with the Company's prior authorisation and under a written contract;

the Service Provider shall take appropriate measures to help the Company respond to requests from data subjects to exercise their rights;

taking into account the nature of processing and the information available, the Service Provider shall assist the Company in meeting its POPIA obligations in relation to the security of processing, the notification of personal information breaches and data protection impact assessments;

the Service Provider shall delete or return all personal information to the Company (at the Company's choice) at the end of the contract, and the service provider shall also delete existing personal information unless the law requires its storage; and

the Service Provider shall submit to audits and inspections. The Service Provider shall also give the Company whatever information it needs to ensure that the Parties meet their Section 20(1) obligations.

1. SIGNATURES

FOR AIRPORTS COMPANY SOUTH AFRICA

THUS DONE AND SIGNED AT _____ ON THIS _____ DAY OF _____ 2026.

FOR SERVICE PROVIDER

THUS DONE AND SIGNED AT _____ ON THIS _____ DAY OF _____ 2026.

AUTHORIZED SIGNATORY _____

Annexure C5.7: ACSA Insurance Clauses

For OPEX projects and non-construction CAPEX projects on the **landside (includes entire terminal building)**:

The successful bidder must source the following insurance cover, which is the deductible in the ACSA insurance cover:

- Aviation liability insurance cover for an indemnity limit not less than R100 000 (one hundred thousand rands).
- Submit proof of insurance to ACSA before the work starts, and annually for the duration of the project.

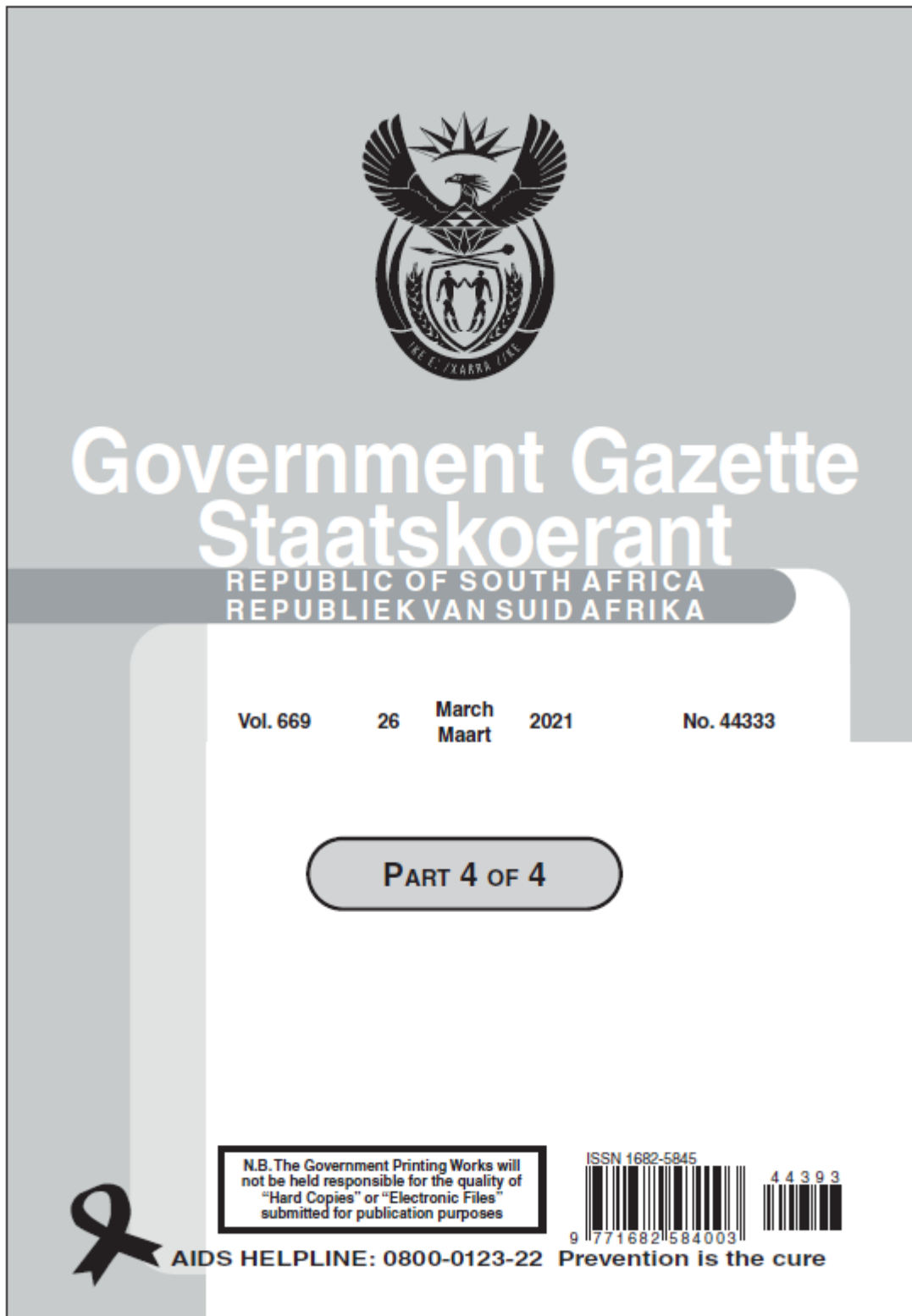
For OPEX projects and non-construction CAPEX projects on the **airside (Manoeuvring area, runways, aprons)**:

The successful bidder must source the following insurance cover, which is the deductible in the ACSA insurance cover:

- Aviation liability insurance cover for an indemnity limit not less than R300 000 (three hundred thousand rands).

Submit proof of insurance to ACSA before the work starts, and annually for the duration of the project.

Annexure C5.8: ECSA Gazetted Guidelines, March 2021



Annexure C5.9: ACSA CAD Drawing Standards

C5.10.1 CAD Specification

SUMMARY OF MAIN REQUIREMENTS

During setting up of CAD model for design		Detail
1	Draft CAD <i>models</i> in model space or viewport view and compile CAD final <i>drawing layouts</i> with frames in CAD paper space or layout view. No frames to be drawn in model space.	3.1
2	Draft CAD plan <i>models</i> in the correct geographically coordinated location. If this is not possible, as a minimum, <i>drawing layouts</i> shall include a labelled coordinate grid or reference points to allow for geo-referencing.	3.2
3	Layer structure used shall split features into logical and airport specific layers as recommended in this document. See full list in 3.2. In addition hatching, text and tables shall be on different layers to the drawing elements.	3.3
4	All polygon features to be properly closed shapes and all line features to join at a point with no gap or overlaps. Hatched areas to include polygon boundary line.	3.4
5	If symbols are used to indicate point type features, e.g. valves, joints, poles etc. these shall be on separate layers. If possible, a point shall be placed on the corresponding main layer indicating the exact position or centre of these features.	3.5
6	Lines joining at these point type features shall not stop at the start and end of symbols, but shall continue to meet at the point in the centre of the feature. In addition, lines passing through multiple points shall be separate line segments starting and ending at each point, irrespective if they are all in a continuous straight line.	3.5
7	All text to be on a single layer as far as possible. Any text associated with a feature to be placed as close to the feature as possible. E.g. stormwater pipe diameters as close as possible to the line representing the stormwater pipe – avoid using arrows or lead lines as much as possible	3.6
During compiling <i>drawing layouts</i> in paper space / layout view		Detail
8	All <i>drawing layouts</i> to be contained within a neat and appropriate drawing frame.	4.1
9	Frame to include a Company logo and the Company project name.	4.1
10	Frame to include a logical drawing number complete with a revision number.	4.1
11	Frame to include a date.	4.1
12	Frame to include full details of consultant – Logo, name, address, telephone number.	4.1
13	Frame to note details of applicable coordinate system and other survey info.	4.1
14	Frame to indicate status of drawing e.g. For information, For tender purposes, For construction, As-Built.	4.1
15	Frame to include the name of the CAD drawing that contains the model	4.1
Submission to the Company		Detail
16	Drawings to be submitted to the Company at the end of each stage of design and construction cycle E.g. Planning and architectural design complete, engineering design complete, construction complete with as-built corrections.	5.1

17	Submission shall be made per project on a single or set of CDs or DVDs.	5.1
18	PDF electronic hard copy of every drawing to be submitted. Size of PDF not to exceed 500kB. Filename of electronic hard copy to be the Consultants drawing number plus the revision number. Egg. P0921-ACSA-PIER-001_REV0.pdf	5.2
19	The Company Drawing Submission Form to be completed and submitted with drawings. See 5.2 for pro-forma. To be submitted as Microsoft Excel as far as possible.	5.3
20	CDs/DVDs labels to include airport name, project name, project stage, consultant name, submission date, total number of disks in set and number of each disk within set as a minimum. Labels to appear directly on the media and not on the media cover.	5.4
21	CAD drawings to be submitted in an approved CAD file format. Approved formats include .dxf, .dwg, .dgn. CAD drawings to be submitted without reference files. Reference files to be merged into the master drawing and clipped as required.	5.5

DETAIL – SETTING UP OF THE CAD MODEL

Most modern CAD packages employ the concept of model space in which a CAD model is set up and paper or layout space in which views of this model are extracted, framed and set up as individual drawings. The drawing below illustrates this. Setting up drawings in this manner is efficient as many drawings can be contained with a single CAD file.

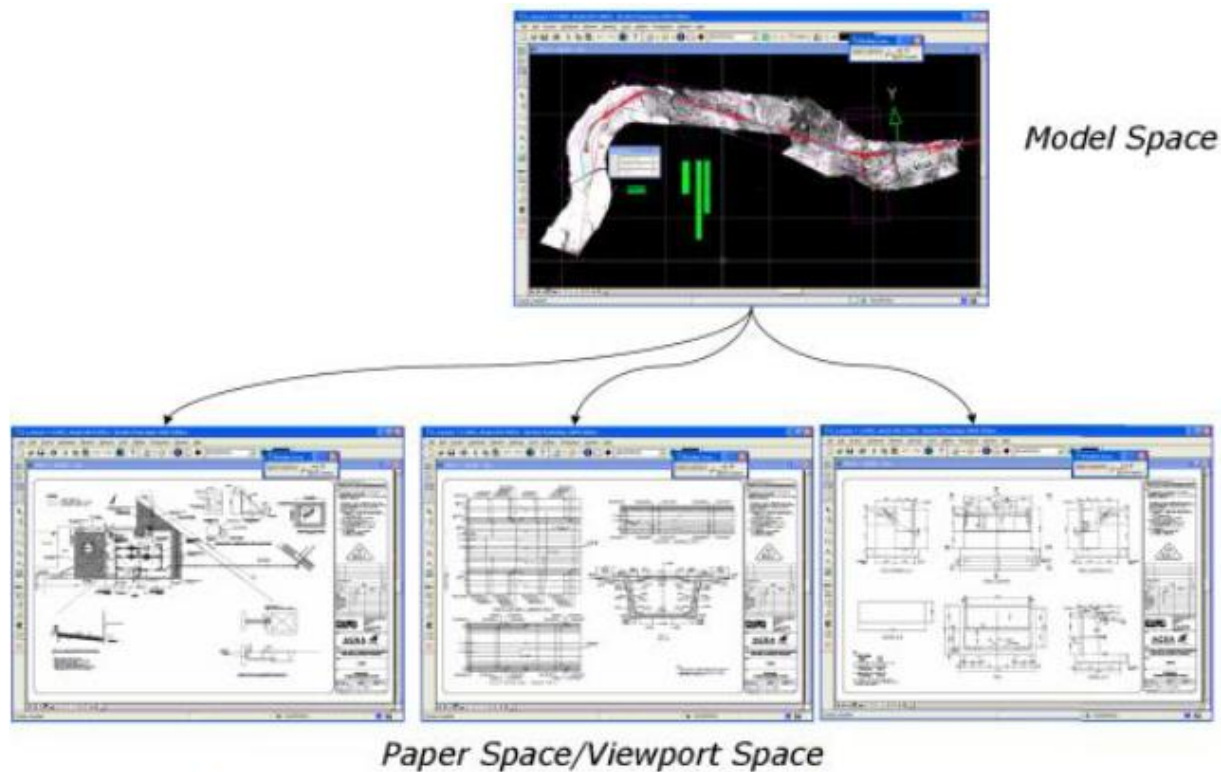


Figure 1 – Layout showing model and paper/viewport space

NOTE: - If CAD detailing is done directly in paper/viewport space, the data is often not visible to GIS software, which vastly complicates the inclusion of data into the Company GIS. It is therefore imperative that CAD models or designs are detailed in model space as per the recommendation above.

The terminology above differs from one CAD package to another and the manner in which they operate may differ somewhat, but the general concepts remain the same. The notes below refer to the two main CAD packages used in South Africa.

AutoCAD DWG - Is made up of two parts: Model space and Paper space. The Model space is where you draw your design. The paper space is where you reference in your drawing border and create what are called view ports. A view port punches a hole in the paper space, to look through to the design in the model space. Each viewport you create can zoom into a part, or whole, of the design at different scales. A DWG can only have one model space but can have multiple Paper spaces.

Models in correct geographic space / coordinate grid

It is a requirement that all CAD drawings in plan are detailed in the correct geographic space such that a coordinate point on the drawing shall correspond to its actual coordinate point on the ground. It is common for coordinates on older drawings to be adjusted by having a constant value subtracted from the actual coordinate. Modern CAD packages can handle the larger values of the actual coordinates and thus the practise of removing the constant shall be discouraged.

In addition, it is vital that all drawings set up in paper or viewport space note the applicable coordinate reference systems, datums and other relevant survey information.

If, for some reason, the drawing cannot be drawn in the correct geographic space, as a bare minimum, a labelled coordinate grid shall be provided over each drawing to allow the drawing to be geo-referenced into the correct position.

Even if the drawing is in the correct geographic space it is good practise to include this grid. The figure below illustrates this.

CAD Specification

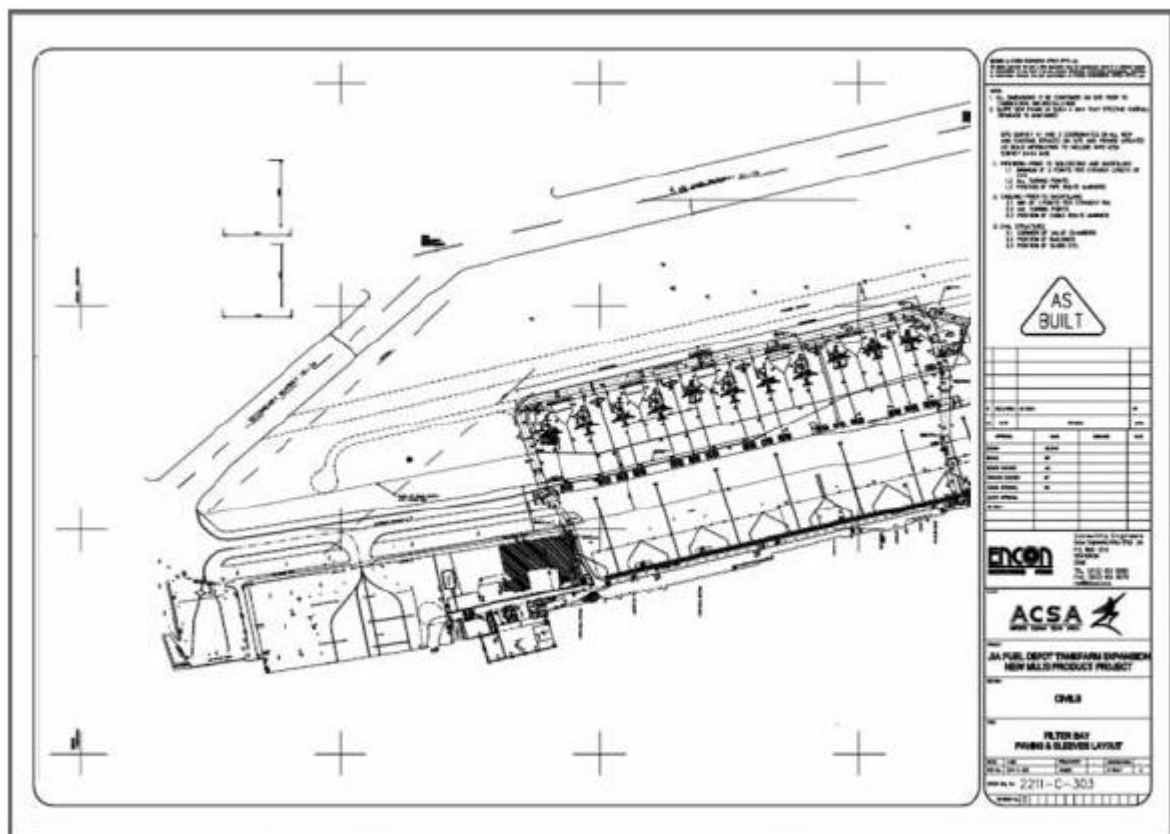


Figure 2 – Drawing showing coordinate grid

Logical layer structure

The layer list below is the required breakdown of layers to be used for CAD detailing by consultants working on Company projects. The list is mainly relevant to plan drawings, as these shall largely contain information that shall be added to the Company GIS. Adopting these layers during CAD detailing shall assist the Company in populating their GIS with this information as efficiently as possible.

The list is not exhaustive and shall be added to as required to accommodate any content on the drawing that is not included in the list.

Layers used shall be logical and shall contain only single type of feature or a set of features that can be logically grouped. E.g. All stormwater pipes and culverts shall be on a single layer; electrical cables shall be on a separate layer etc.

Hatching, text and tables shall be included on separate layers. There are two suggested ways in doing this.

- Placing hatching, text and tables pertaining to a specific drawing layer on their own individual layers. E.g. Drawing layer=Airside_surfaces; Hatching layer=Airside_surfaces_hatch; Text layer=Airside_surfaces_text etc.
- Placing all hatching, text and tables each on a single layer E.g. Hatching layer= Hatch_All, Text layer=Text_All etc.

Access_points	Lighting
Airside_surfaces	Networkcomcables
Airside_surface_markings	Noise_contours
Buildings	Obstacle_surfaces
Cadastral	Obstacles
Control_cables	Parking
Conveyors	Retaining_walls
Ducts	Roads_bridges
Electrical_cables	Road_markings
Electrical_substations	Security_cables
Fences_Walls	Servitudes
Flood_lines	Sewer_pipes
Floor_plans	Sewer_tanks
Fuel_lines	Signs
Fuel_tanks	Survey_control_points
Landuse	Stormwater_pipes_culverts
Landside_surfaces	Water_main_pipes
Lifts	Water_tanks

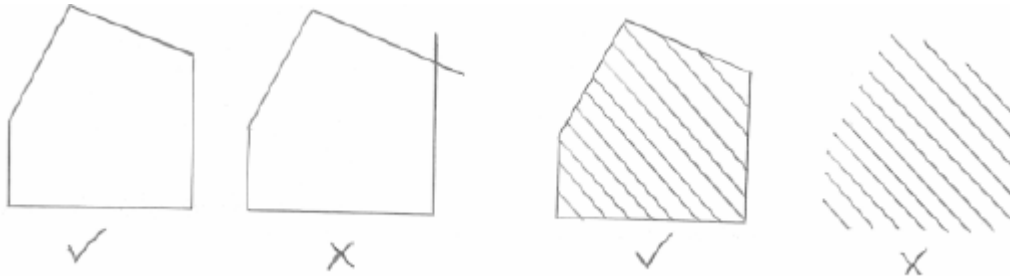
Table 1 – ASCA List for Layering

Clean polygon and line features

Area or polygon features such as erven boundaries; building footprints etc. shall be clean polygons and shall be properly closed off.

If hatching is to be used to demarcate an area this shall include a polygon feature enclosing the hatching and shall not only be the hatching itself.

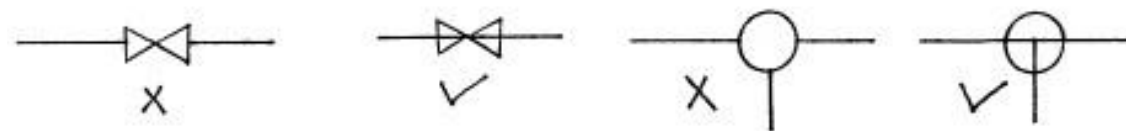
Examples of these are shown in the sketches below



CAD operators and designers can continue using their own standard symbols for features such as poles, manholes, signs etc, as these are not imported into the GIS. However, it is beneficial if a point is placed at the centre or origin of the symbol. This point is imported into the GIS and used as the origin for a symbol placed by the GIS. If a feature falls on a line e.g. a manhole on a pipe, a valve on a pipe, a pole on a cable etc, it is important that the point lies exactly on the line as shown in the figure below.



As far as possible, single lines shall be used to denote linear features such as pipes, kerb lines etc. Lines shall be continuous i.e. they shall meet at the centre of a manhole and not stop at the perimeter as illustrated below.



Where possible, separate lines shall be drawn between features such as valves, tees, crosses, manholes etc even if these features are on a straight line.

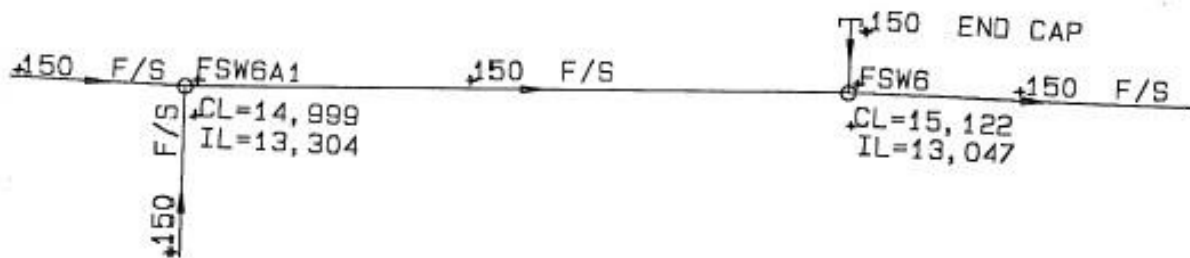
Text on layers and text in tables

Typically text information extends to items such as manhole numbers; manhole levels; valve types; pipe diameters; cable types; road centreline levels, finishing details etc.

Any text placed on a CAD drawing shall be placed as close as possible to the object to which it refers. The practise of placing text at some distance from the object and using arrows to indicate the object shall be avoided as far as possible. This practise shall assist the GIS conversion processes by easing the population of the GIS attribute database with the text on the CAD drawing.

Should text consist of more than one line, it shall be input as a single text entity with line breaks rather than multiple text entries and thus shall only have single placement point.

The figure below illustrates good practise when placing layers on a water main CAD drawing



If tables are used to place text on a drawing these shall be well referenced to the features to which they refer.

The figures below show the correct way to set up a drawing and shows the minimum details that shall be included.

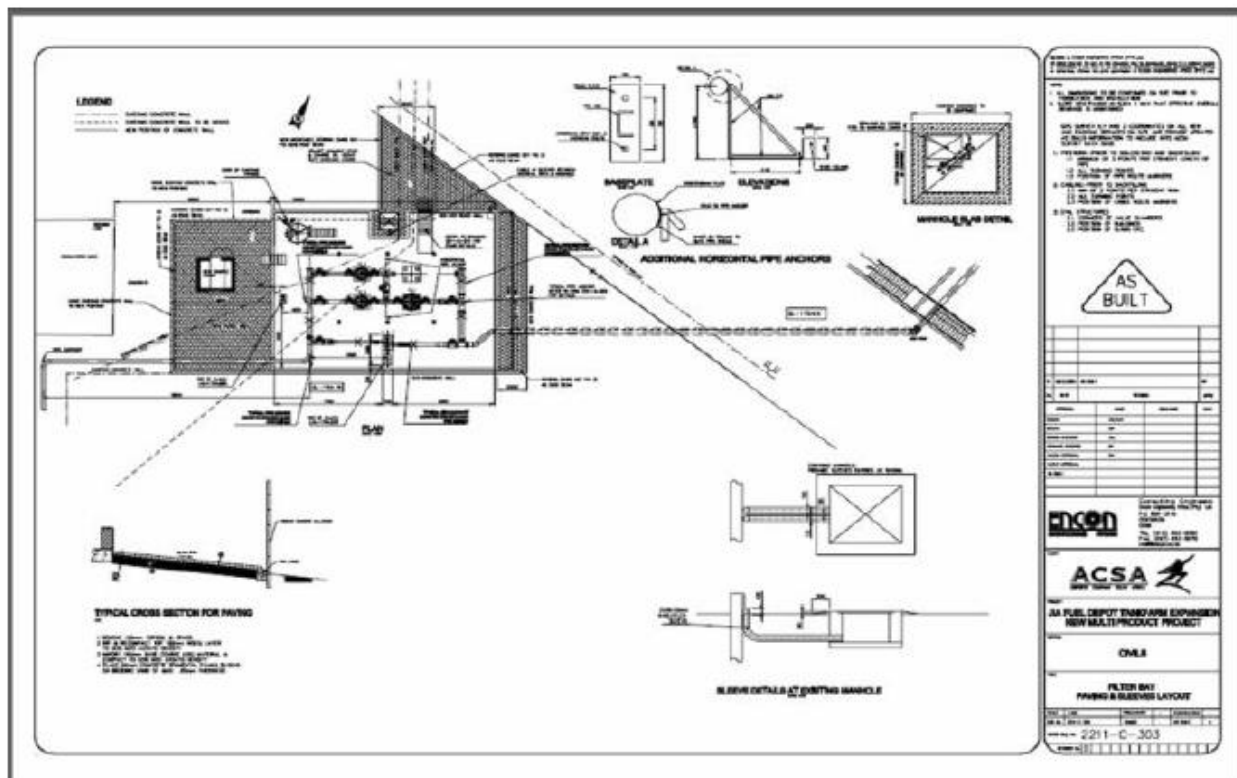


Figure 3 – Drawing correctly set up with frame and details

Coordinate system details and cadastral notes to be included

Drawing date to be included

Status of drawing to be indicated

Consultant name, contact details and logo to be included

ACSA Project name and ACSA logo to be included

Unique drawing number and revision to be indicated

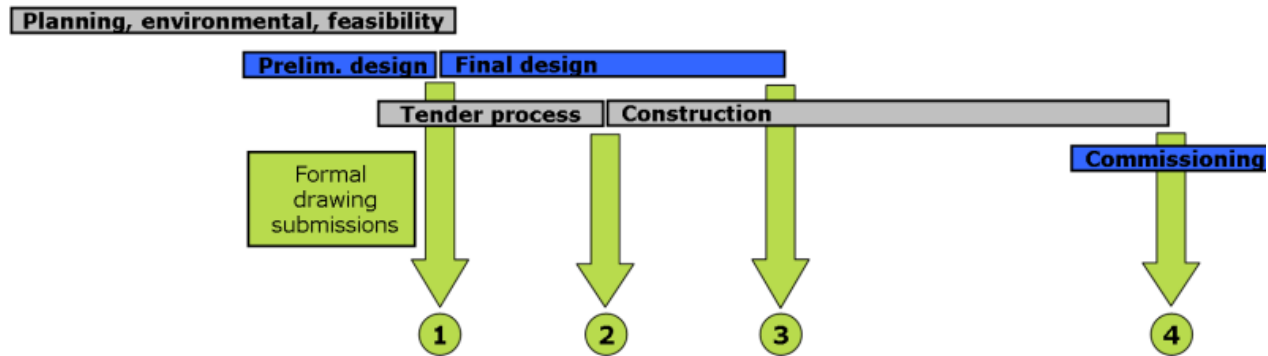
CAD filename to be included in small text

genlayout.dwg

Figure 4 – Minimum requirement for details on drawing frame

DETAIL – SUBMISSION TO THE COMPANY

It is essential that CAD drawings be submitted to the Company correctly and formally. These submissions shall be done at logical points in the development of a Company project and shall be submitted in logical batches, identified by the Company project name. The project process below illustrates typical drawing submission point, but this may vary due to the nature of different projects.



1. Final planning, feasibility and preliminary design drawings to be submitted.
2. Set of tender drawings to be submitted.
3. Final design drawings to be submitted. Can be submitted in logical batches per phase of the project completed. Revisions of design drawings to be submitted during the course of design and construction period to be submitted as required.
4. Final As built drawings to be submitted. ***These are the most valuable submission to Company and all projects shall be concluded with a formal submission of these as built drawings***

Any drawings sent to the Company staff informally during the course of a project, usually by email and with special relevance to preliminary drawings used for discussion shall not be considered as a formal submission. Final versions of these drawings shall be included in one of the above formal project CAD drawing submissions to the Company.

All formal submissions shall be made per project on a single set of CD's or DVD. See 5.4 for example CD/DVD Label.

PDF electronic hard copy

Each submission shall include a PDF electronic hard copy of each drawing set up in paper or viewport space. Naming of the PDF electronic hard copies shall be the drawing no and the revision number. E.g. C0920-ACSA-NORTH PIER-001_REV0.pdf

The electronic hard copies shall be printed as close to full size as possible, but with to a minimum paper size of A3. At the same time file sizes of the PDFs are not to exceed 500kB as far as possible. PDF printer resolutions shall be set to ensure that this file size is not exceeded.

Most modern CAD packages have built in PDF printers but shall this not be the case these can be obtained freely off the internet at the following sources.

SUBMISSION

A submission form shall accompany any batch of drawings submitted to the Company. A pro-forma of the submission form is show below. The standard for the submission for is in Microsoft Excel if at all possible

COMPANY CAD DRAWING SUBMISSION FORM		
AIRPORT:- PROJECT NAME:- SUBMITTED BY:- CONTACT NO:- CONTACT NAME:- SUBMISSION STATUS:	OR Tambo International Airport Echo Apron Extension ENCON Engineers 011 – 555 5555 Joe Soap Final Design	
PDF Filename	CAD file name	Drawing Title
C0920-NORTH PIER-001_REV0.pdf	genlayout.dwg	Northern elevation of pier
C0920-NORTH PIER-002_REV0.pdf	genlayout.dwg	Drainage details on second floor
C0920-NORTH PIER-003_REV0.pdf	genlayout.dwg	Reinforcing of roof
C0920-NORTH PIER-004_REV0.pdf	genlayout.dwg	Layout of air-bridges
C0920-NORTH PIER-005_REV0.pdf	mainmodel.dwg	Window and door schedule
C0920-NORTH PIER-006_REV0.pdf	mainmodel.dwg	Eastern layout
C0920-NORTH PIER-007_REV0.pdf	mainmodel.dwg	Western layout
<i>Etc.</i>		

CAD drawing format and reference files

All CAD drawings submitted shall be in an approved CAD format. This extends to the following formats:

- ☐ AutoCAD – DWG extension
- ☐ Bentley Microstation – DGN extension
- ☐ Drawing Exchange format – DXF extension

CAD drawings that make use of reference files referenced into the CAD model from different files (E.g. Contour lines may be referenced into a road design drawing from different survey model contained a different file.) shall be merged into the model before submission. Final CAD files submitted shall be self-contained and shall not contain references to any file of any type.

If the aforementioned reference files are large (E.g. the abovementioned contour lines may extend over an entire metropole or province), these shall be clipped to the extent required for the drawing in question, in order to reduce the file size of the file to be submitted.

Annexure C5.10: Generic Project Specification

C5.11.1 General

1. This General Technical Specification covers the general requirements regarding material, equipment, installation, testing and commissioning of the installation, and shall be read in conjunction with the conditions of tender, conditions of contract and the Description of Services (Section C3.3) for the specific installation
2. The complete installation shall comply with the requirements of this specification. Should any differences or contradictions exist between this specification and Description of Services (Section C3.3) for the specific installation, then the latter shall take preference.
3. It is a requirement that the equipment being offered is designed and manufactured to comply with the general standards applicable to typical electro-mechanical drive systems as issued by one or more of the following organisations:
 - a. The South African Bureau of Standards SABS and documents issued as SANS specifications
 - b. The British Standards Organisation (BS) and documents issued as BS specifications where appropriate SANS specifications do not exist.
 - c. The International Standards Organisation (ISO) where imported equipment uses these standards.
 - d. The “Deutsche Industrie Normen” (DIN). and documents issued as DIN specifications where imported equipment uses these standards.
 - e. The European Committee for Standardisation (CEN). and documents issued as EN specifications where imported equipment uses these standards.
4. When referring to the aforementioned specifications, the abbreviations, BS, SABS (or SANS), ISO, IEC and DIN will be stated. When a specific specification number is specified, the latest applicable issue and amendment shall be consulted.
5. Upon being requested to do so by the Project Manager the Contractor shall supply a certificate of a recognised Research Laboratory or Bureau of Standards for materials used.
6. Specifically the Contractor must apply the standards applicable for typical electro-mechanical drive systems. Further standard requirements shall also include requirements covered in the abovementioned specifications in respect of electrical-, electronic-, mechanical and steel structural installations in buildings including the special finishes and painting of all equipment to be installed.
7. The complete installation shall comply with the equipment components and items as included as per the offer detailed in the Returnable Schedules of this specification. Should any differences or

contradictions exist between of that which has been installed and that offered the Contractor may have to acquire the correct equipment as offered

8. It is in the interest of the Contractor to notify the Project Manager when the installation reaches various stages of completion so that the Project Manager may inspect the installation and point out deficiencies. These inspections will under no circumstances partly or wholly invalidate the requirements of the documents. Any costs incurred in correcting deficiencies shall be for the Contractor's account.

C5.11.2 Compliance with Regulations

1. The installation shall be erected and commissioned in compliance with the latest amendments of the following acts and regulations:
 - a. The Occupational Health and Safety Act, Act No 85 of 1993.
 - b. The Minerals Act, Act No 50 of 1991, which includes the Mines and Works Regulations.
 - c. The local Municipal bye-laws and regulations as well as the regulations of the local Supply Authority.
 - d. The local Fire Regulations.
 - e. The National Building Regulations and Building Standards Act including the Code of Practice for the Application of the Regulations, SABS 10400.
 - f. The regulations of SATRA.
 - g. The standard regulations of any Government Department or public service company, where applicable, specifically:
 - h. The Construction Regulations No 1010, promulgated in the Government Gazette of 18 July 2003 during the construction period of the contract
2. All enclosures, being either metal or of synthetic material shall not warp, deform or be damaged in any way during such conditions.

C5.11.3 Program

1. The Contractor shall submit a program for completing the installation in agreement with the requirements of this document. Before finalising the program the Contractor shall obtain from the User Client (Employer) certain projected information about aircraft movement which may need to travel on the taxiway, to reach certain areas of the airport stopping and parking areas for aircraft.
2. The latter is most important while the Building Contractor is busy with the trench work close to the position where the new rail track shall be installed in the taxiway surface. The Contractor shall work in close co-operation with the Building Contractor for the installation of electrical power supply and control cables in the sleeves and conduit to be installed across the taxiway, while the Building Contractor is busy of installing the new support track and concrete base.

3. When preparing such a document he shall enter into discussion with the Project Manager and User Client (Employer), in respect of the time and nature of obtaining access to the working areas.
4. It may occur that the program would need re-adjustment while the Contractor is in progress with the installation. When such adjustment needs to be done at the request of the management of the User Client (Employer), the Project Manager shall be immediately informed thereof, in agreement with the conditions of contract.
5. The Contractor shall do all site work in the most efficient and dedicated way to this program (or adjusted program) which he has to submit to the Project Manager for approval immediately after the tender has been accepted. This program shall include the aforementioned dates as the start and completion dates of work to be done on site. He shall strictly adhere to the target dates of this program.

C5.11.4 Quality Control

1. The Contractor shall apply the principles and procedures as prescribed by the codes of practice for quality systems as outlined in SABS ISO 9000 to SABS ISO 9004. Should the Contractor have an ISO rating, this must be disclosed when submitting a tender.
2. A formal quality control plan to manage the inspection process of design, manufacturing, delivery to site and installation and commissioning on site shall be developed. This quality control plan shall at any time be available for perusal by the Project Manager. The Inspector of the Employer may perform a separate quality control process on behalf of the Employer to ensure that the Employer's quality expectations are met on site.
3. The minimum requirement for the quality control plan shall be:
 - a. Nominate in writing a quality control officer for the various disciplines.
 - b. Prepare a program of inspection tasks and define what will be inspected (section of project, activity), when and by whom this should be done.
 - c. Sign the quality control check lists on completion of the tasks.
4. On completion of scheduled inspections, short inspection report of the works with comments on the following shall be prepared:
 - d. Progress on check list inspections
 - e. List progress of the construction work
 - f. Comment on safety
 - g. Labour intensive compliance.

C5.11.5 Compliance of Mechanical Electrical and Electronic Components And Circuits With Standard Equipment And Material Specifications

The following SANS standards shall apply:

General requirements

	SABS SANS specification	Alternative specification
Standard voltages, currents and insulation levels for electricity supply	1019	
Earth rods and couplers	1063	
Installation, inspection and maintenance of electrical equipment used in explosive atmospheres	10086	
Code of Practice for the Wiring of Premises	10142	

Protection against lightning and power surges

	SABS SANS specification	Alternative specification
Standard voltages, currents and insulation levels for electricity supply.	1019	
Protection of structures against lightning.	10313	
Protection of structures against lightning: General Principles.	IEC 61024-1	
Protection against lightning electromagnetic impulse: General principles.	IEC 61312-1	
Protection against lightning electromagnetic impulse (LEMP) Shielding of structures, bonding inside structures and earthing.	IEC TS 61312-2	
Protection against lightning electromagnetic impulse Requirements of surge protection devices (SPD's).	IEC TS 61312-3	
Protection against lightning electromagnetic impulse Protection of equipment in existing structures.	IEC TS 61312-4	
Low voltage surge protective devices	61643-1, 12, 21 and 22	
Protection against lightning; General principles	62305-1	
Protection against lightning: electrical and electronic systems within structures	62305-4	

Transformers and transformer equipment

	SABS SANS specification	Alternative specification
Safety of power transformers, power supply units and similar devices	61558-1 to 23	
Current transformers		IEC 185
Voltage transformers		IEC 186

Distribution and control switchgear, busbars, terminal boxes and enclosures

	SABS SANS specification	Alternative specification
Low-voltage switchgear and control gear assemblies(distribution boards) with a rated short-circuit withstand strength up to and including 10 kA	1765	General Technical Specification
Degrees of protection provided by enclosures (IP code)	60529	
Low-voltage switchgear and control gear assemblies Part 1: Type-tested and partially tested assemblies	60439-1	
Low-voltage switchgear and control gear assemblies Part 2: Particular requirements for busbar trunking systems (busways)	60439-2	
Low-voltage switchgear and control gear assemblies Part 3: Particular requirements for low voltage switchgear and control gear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards	60439-3	
Electrical apparatus for explosive gas atmospheres: General requirements	60079	

Control Equipment

	SABS SANS specification	Alternative specification
Moulded case circuit breakers	156	VC 8036
Low voltage switchgear and control gear assemblies Part 1 Type-tested, partially type-tested and specially tested assemblies with a rated short-circuit withstand strength above 10 kA.	1473-1	IEC 439
Low-voltage fuses Part 1 and 2: General requirements and Supplementary requirements for fuses for use by authorised persons (fuses mainly for industrial applications)	60269-1	
Low-voltage fuses Part 2: Supplementary requirements for fuses for use by authorised persons (fuses mainly for industrial applications)	60269-2	
Low-voltage fuses Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications)	60269-3	
Low voltage switchgear and control gear Part 1 up to Part 8	60947-1 to 60947-8	General technical spec. of this doc.
Surge protective devices connected to low-voltage power distribution systems Part 1: Performance requirements and testing methods	61643-1	
Low-voltage surge protective devices Part 12: power distribution systems Part 12: Surge protective devices connected to low-voltage power distribution systems - Selection and application principles	61643-12	
Components for surge protection devices Part 321: Specification for avalanche breakdown diode (ABD)	61643-321	

	SABS SANS specification	Alternative specification
Manually operated air-break switches (Schedule No 1)		VC 8003
Push buttons		BS 3955 VDE 0660
Specification for low voltage switchgear and control gear for industrial use. Position switches 42,5x80. Dimensions and characteristics		BS 6518
Specification for low voltage switchgear and control gear for industrial use, inductive proximity switches, identification of connections		BS 6519
Specification for coding of indicating devices and actuators by colours and supplementary means		BS EN 60073

Instruments and Measuring devices

	SABS SANS specification	Alternative specification
Direct acting indicating analogue electrical measuring in- struments and their accessories		BS 89 Parts 1-9 IEC 51
Electricity meters		BS 5685 Parts 1, 3-5 & 8
Current transformers		BS 7626
Potential transformers	60186	BS 7625

Cables and Conductors

	SABS SANS specification	Alternative specification
Materials of insulated electric cables and flexible cords Part 1 to 7	1411 1 to 7	
Electric cables with extruded solid di-electric insulation for fixed installations - 300/500V to 1900/3300V	1507 1 to 6	
Electric cables - flexible cords	1574	
Specification for particular types of winding wires	60317 Six parts	
Specification for copper for electrical purposes Rod and bar		BS 1433
Compression joints in copper conductors		BS 4579 Part 1
Flexible cords for power and lighting appliances (Schedule No 4)		VC 8006

Conduit and conduit fittings

	SABS SANS specification	Alternative specification
Unplasticized polyvinyl chloride (PVC) rigid conduit and fittings for use in electrical installations	950	
Conduit systems for electrical installations	61386-Five Parts	

Sockets, couplers and connectors

	SABS SANS specification	Alternative specification
Plugs and socket outlets for household and similar purposes	164-1 and 2	
Plugs, socket outlets, and couplers for industrial purposes	1239	
Wall outlet boxes for the enclosure of electrical accessories	1085	
Plugs, socket outlets and couplers for industrial purposes Part 1	60309-1	
Plugs, socket outlets and socket outlet adaptors (Schedule No 6)		VC 8008

Electric motors and generators

	SABS SANS specification	Alternative specification
Induction motors	1804-1 to 4	
Rotating electrical machines		IEC 34 The General Technical Specification
General requirements for rotating electrical machines		BS 4999
Rotating electrical machines of particular types or for particular applications		BS 5000

Appliances and general equipment

	SABS SANS specification	Alternative specification
Pressure-sensitive adhesive tapes for electrical purposes	122	
Electrical terminals and connectors	1433-1 and 2	
Cable trunking and ducting systems for electrical installations	61084-1 and 2	

Standard equipment and material specification for structural steelwork

	SABS SANS specification	Alternative specification
Fasteners (Bolts, screws nut and accessories)	1700- 1 to 22	
Structural steelwork	1200 AH	
Corrosion protection of structural steelwork	1200 HC	
High-strength bolts, nuts and washers for friction grip joints	1282	
Specification and approval of welding procedures for metallic materials	9956-1 to 4	
General procedures and loadings to be adopted in the design of buildings	10160	
The structural use of steel	10162-1 to 4	
Specification for weldable structural steels		BS 4360
Fasteners, clearance holes for bolts and screws		BS EN 20273

Standard equipment and material specification for mechanical equipment and components

	SABS SANS specification	Alternative specification
Hot-dip (galvanized) zinc coatings on steel wire	935	
Keys and keyways and taper pins		BS 46
Stranded steel wire ropes		BS 302
Spur and helical gears		BS 436
Specification for bevel gears		BS 545
Specification for power driven overhead travelling cranes, semi-goliath and goliath cranes for general use		BS 466
Specification for wrought steels for mechanical and allied engineering purposes		BS 970
Specification for straight-sided splines and serrations		BS 2059
Specifications for steel castings for general engineering purposes		BS 3100
Rope rollers, pulleys, mountings and assemblies for colliery track haulage		BS 3876

Material specification of paints and preparation of surfaces

	SABS SANS specification	Alternative specification
Decorative high gloss paints	630	
Zinc-chromate primers for steel	679	
Structural steel paint	684	
Wash primer (metal etch primer)	723	
Epoxy tar paints	801	
Two pack zinc rich epoxy primer	926	
National colour standard	1091	
Coatings applied by the powder-coating process	1274	
Paints and varnishes - Resistance to impact of paint films	5146	
Preparation of steel substrates before the application of paints and related products. Tests for the assessment of cleanliness of blast cleaned steel surfaces	5770 to 5775	
Painting of buildings Part 1 to Part 6	10305-1 to 10305-6	
Paints and varnishes - Corrosion protection of steel structures by protective paint systems Part 1 to Part 8	12944-1 to 12944-8	

Standard specification for safety equipment

	SANS SABS specification	Alternative specification
Symbolic safety signs Part 1 to Part 5	1186-1 to 1186-5	
Graphical symbols - Safety signs - Safety way guidance systems (SWGS)		ARP 064

C5.11.6 Equipment, Material And Apparatus

Standards of Workmanship

1. All work for this installation shall be executed according to the latest professional standards and industry best practice.
2. The Contractor shall nominate a senior and competent member of his staff to supervise all his staff on site throughout the period of installation in order that standards of craftsmanship are maintained and safety regulations are adhered to.
3. Site staff shall be experienced and competent personnel, adequately trained to execute the various duties assigned to them
4. Before equipment is installed, all installed wiring shall be checked to ensure that routes are correctly followed, category segregation is maintained, and that no accidental damage has occurred to the cables during installation. All metal conduits, frames, chassis shall be connected by a low impedance path to earth.
5. Welding:
 - a. Welding must be done under the supervision of a qualified person, who must decide on the sequence and welding procedure to be adhered to.
 - b. The welders employed by the Contractor during manufacture and erection must, if required by the Project Manager, produce necessary welding certification.
 - c. Welds shall be of full strength without flaws, grooves or pits. Crater effects shall be prevented at the end of all welding joints.
 - d. All welds shall have adequate root fusion and shall be free from cracks, porosity or other irregularities and any undercutting shall be made good by the deposition of additional runs of weld metal. Any completed welds showing cracks, cavities or other defects shall be cut out and made good at the Contractor's own cost
 - e. All welding joints must be thoroughly cleaned after welding.
6. Where steel components must be fixed to concrete floors or sleepers, the steel must be fixed by means of holding down bolts as specified by the design engineer or alternatively by means of the "Chemset" type anchoring system or expansion bolts.

Control and Distribution boards

1. The boards shall be manufactured with a steel angle section framework and shall be equipped with sheet steel removable panels fitted to the framework.
2. The sheet steel shall have a minimum thickness of 1.6 mm.
3. Conductors:

Conductors of the internal wiring shall be large enough to carry the current in each respective circuit. Current ratings shall comply with the regulations as specified in the General Technical Specification
4. Removable cable gland support brackets shall be fitted at the bottom just below the terminal strips and approximately 200 mm above the base of the board.
5. Panels:
 - a. Panels shall be of sheet steel, suitably stiffened with machine punched slots to allow for flush mounting of circuit breakers and isolators, such that toggles only protrude at the front panel.
 - b. Punched slots for future circuit breakers shall be fitted with blank plates. The space allowed for future installation of circuit breakers and isolators shall be provided with steel cover plates which shall be fixed to the panels by means of epoxy type adhesive.

6. Doors:

- a. Doors must have a smooth flat finish and shall be suitably braced to ensure stiffness. Doors must generally be manufactured similar to panels as specified.
- b. The width of single doors must not exceed 600 mm and each door must be provided with suitable hinges supplied complete with latching washers to prevent doors from opening more than 120 ° such that paintwork on adjacent doors or panels cannot be damaged.
- c. All doors shall be constructed of sheet steel with a minimum thickness of 2,0 mm.
- d. When doors are opened it must be possible to remove the doors from the hinges
- e. The doors must be provided with a latch flush mounted in the door panel and shall be provided with a rectangular 6 mm pin utilizing a normal standard rectangular key for opening the door.

7. Isolator

- a. The main isolating switch or main isolator on the control board must be interlocked with the door panel such that the door panel can only be opened when the isolating switch is switched to the "OFF" position.
- b. Display control equipment, such as PLC's or equivalent control equipment having built-in diagnostic display features shall not be installed in the section of the control board housing the main switch. This is to allow a technician access to vital diagnostic display units, without having to switch off the main switch.
- c. A plexiglass opening on the door which gives visibility of the diagnostic display features is preferred.

8. Busbars

- a. Busbars for each phase and neutral shall be of solid copper, each with a minimum cross section of 18 x 6 mm.
- b. The current density shall not exceed 1,5 A/mm².
- c. Busbars shall be mounted horizontally with the long edges of cross sections vertical and as a group, one above the other, in a vertical plane not less than 50 mm apart and 150 mm away from the nearest equipment. Each board must be provided with an earth busbar. Should the equipment installed on the board or console be provided with control equipment which must be connected to a separate insulated or technical earth, the board and console shall be provided with an earth bar which is insulated from the metal framework of the board or console.
- d. Connections to busbars shall be effected by means of lugs, sweated or crimped to wire and cable ends and bolted to busbars by means of cadmium plated 6 mm steel bolts and nuts. Bolts shall be of the hexagonal head type, with 6 mm (minimum) thread, and shall be provided with washers, spring washers and hexagonal nuts.
- e. Three spare bolts, complete with washers and nuts, shall be mounted on each busbar to allow for future connections.

9. Wiring

- a. Wiring shall be done by means of PVC insulated conductors neatly arranged in horizontal and vertical rows, and bound by means of suitable plastic band or installed in PVC type wiring ducts provided complete with snap-in type PVC plates.
- b. The colour of the insulated conductors of the internal wiring of the boards shall be done according to a colour code used throughout the installation and the following colours must be utilized in agreement with the regulations.
 - i. Alternating voltage phase conductors — red, white and blue.
 - ii. Neutral conductor — black.
 - iii. Earth continuity conductor — green or green/yellow.
 - iv. Control wiring — grey.
 - v. DC voltage conductors — orange.
- c. All wiring shall be kept free and away from any exposed terminals, or other insulated current carrying components. All ends of wiring connected to circuit breakers shall be soldered or must be provided with tinned lugs which are fixed and clamped to the conductor ends by means of the hydraulic or crimping method before insertion into the terminals.
- d. The boards shall be completely wired before installation. All external connections to the boards and consoles shall terminate in terminal strips.

10. Labelling

- a. Identification labels shall be installed for identifying the main function of the equipment or group of components or equipment within the area assigned to that equipment.
- b. Control components such as contactors, relays, etc, shall each have an identification label corresponding to the identification letter and/or number shown on the schematic diagram.
- c. Each individual control board shall have an identification label on the door stating which equipment or group of control equipment is housed in that particular board.
- d. All labels shall consist of engraved plastic strips of the "Traffolik" type black letters or numerals on a white background and shall be fixed to or on the panel framework or below components with a non-ageing adhesive such as an epoxy type adhesive.
- e. For individual components or equipment the size of the letters or numerals must be 6 mm.

11. Finish

- a. All metal parts shall be degreased, rinsed, pickled, rinsed, phosphated, neutralised and then thoroughly dried.
- b. Within 48 hours the metal parts shall be painted with one layer of a zinc chromate or other suitable primer utilized for an epoxy based paint, followed by two coats of good quality epoxy based paint.
- c. The consoles shall be finished with a cured epoxy based poly-urethane paint, ensuring that the surface finish of the console is very smooth and has good wear and tear properties.
- d. In general the paint finish of control boards and control consoles shall comply with the general requirements as specified for steelwork.
- e. After the boards and consoles have been installed on site, any damage done to the paintwork shall be neatly repaired by means of the specified epoxy based paint to the satisfaction of the Project Manager.
- f. The general external colour of the boards or consoles shall be orange code RAL 2000 (Electric Orange) unless otherwise specified. The inside surfaces shall be cloud white code RAL 9003 (Signal white). Samples of all colours must be provided to the Project Manager for approval. The finish of the paint must comply with the general requirements as specified for paintwork.
- g. Cable gland support brackets shall be repainted after holes have been made in these panels to ensure that the openings made in the gland plate support brackets might not be the cause of future corrosion of these panels and consoles.

Earthing

1. General lightning protection shall be maintained in accordance with the Code of Practice for the Protection of Structures against Lightning, SANS 10313.
2. The Contractor shall appoint a lightning protection specialist to advise and specify the appropriate lightning protection solution.
3. The lightning protection specialist shall measure earth resistivity, specify an appropriate earth mat under the GMMC, and earth connectivity of the equipment and sensors to the earth mat.
4. The Contractor shall ensure that electronic equipment is suitably protected against lightning surges and voltage transient surges emanating from or via power supply networks.
5. The correct type and rating of surge protection devices (SPD's) shall be installed to protect electronic control circuits and interconnections. Where appropriate avalanche diode protection devices shall be incorporated in the SPD's included for the protection of digital control circuits for any application used in the particular installation.
6. These devices shall be suitable to divert the surge currents which might occur in the network and inflict damage on the devices. These SPD's shall respond in the shortest time possible, the time generally being equal or less than 8µsA lightning protection specialist shall advise and specify adequate lightning protection to be installed.
7. The lightning protection specialist shall provide a certificate that the lightning protection, earth mat and earth connections have been completed in accordance with his specification.

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Software and PLC Programs

1. It is a requirement that the Contractor must ensure that the total software documentation and support equipment of the programme software is correctly utilized and maintained in compliance with the requirements of this specification.
2. Should the Contractor wish to employ another Subcontractor to maintain and ensure the correct operation of the software he shall by approval of the representative of the Employer and Project Manager employ such a Subcontractor for any work to be undertaken in respect of maintaining the software programmes and database.
3. Should micro controller software updates be developed, new updated micro controller chips/memory chips shall be made available to the Employer. Such future development must be offered to the Employer, such that they could consider acquiring such updates.
4. Should such future development be offered to the Employer by the original supplier of the software the Employer might consider acquiring such updates. This information submission shall include all documented and printed material describing in detail the improved features which could in future be incorporated in the present control systems as offered.
5. The Contractor shall deliver the as-built source code of the software.

Spare Parts

1. One (1) month before completion of the installation, the Contractor shall supply to the Project Manager a recommendation containing a list of components which should be acquired as spares for maintenance purposes. The list shall include the number of components which should be kept in stock as well as the unit price of such components (The date and exchange rate of prices, if applicable, shall be stated).\
2. The following information shall be submitted with the list:
 - a. The exact code or identification number of the component.
 - b. The firm or agency in South Africa from whom or through which an additional number of the components could (if necessary) be acquired.
 - c. Cross-reference numbers of such components referring to identification numbers given in the maintenance and instruction manuals. When tendering, the tenderer shall recommend which component values shall be acquired as spares for the installation.
3. The Tenderer shall make a provision in the Bill of Quantity for the supply of spares.
4. The Project Manager shall select the spares to be supplied by the Contractor to the value of the provision in the Bill of Quantity. These spares shall be delivered latest on the date of final acceptance.

Corrosion Protection

1. The Mechanical Trolleys shall be hot-dip galvanised for corrosion protection.
2. All surfaces of other (non-Trolley) structural steel members, components and general components manufactured of cast iron, steel or any other alloy which under normal environmental conditions would be subject to corrosion shall be suitably protected with paint.
3. Paint shall be supplied in containers clearly marked with the manufacturer's name and the identifying brand number or name
4. All painting shall be done on dry surfaces which have been thoroughly power wire brushed or sand blasted so as to be free from rust, scale, grease or any other foreign matter to the satisfaction of the Project Manager.
5. The type of paint utilized for structural steelwork and mechanical components shall comply with the requirements of the appropriate SABS specification and the correct primer coat shall be utilized with the appropriate final coat of paint as specified.
6. Galvanised components to be painted must initially be rinsed with a galvanised metal cleaner and thereafter a galvogrip calcium plumbate metal primer shall be applied before the final coat of paint to the surfaces is applied.

Corrosion Protection – Hot-Dip Galvanising

1. Galvanizing of the trolleys and trolley components shall be heavy duty hot dip galvanizing to a thickness of at least 85µm. Electroplated components in zinc or cadmium are not acceptable.

Corrosion Protection - Paint

2. Before despatch from the factory, all structural steelwork used in the installation shall be painted with a zinc chromate or equivalent primer coat suitable for an epoxy based paint in compliance with the requirements of the appropriate SANS specification for structural steelwork. The paint shall be applied within 4 hours after wire-brushing or sand-blasting. The minimum film thickness shall be 0,025 mm.
3. A type 1 grade 1 primer shall be used throughout. The primer coat shall be applied before any portions are assembled.
4. Structural steelwork must be covered with a single layer of corrosion inhibiting primer coat and thereafter with two separate coats of paint in agreement with SANS 1200. Structural steel exposed to the atmosphere must be provided with such coats of paint as specified in clause 5.8 of SANS 1200 HC and special care must be taken that the requirements of this specification are complied with.
5. All field bolting and welds and abrasions of the initial coats of paint shall be spot painted with the paint used for the final coat.

Workshop Assembly And Testing

1. Components, equipment and subsystems must be assembled in the workshop, after manufacture.
2. Assembled subsystems must be tested in the workshop as extensively as possible before shipment to site.
3. Records of inspection and testing of components, equipment and subsystems must be filed in the Quality Assurance file, and be made available to the Project Manager.
4. Assembled subsystems shall be clearly marked by employing an identification code in such a manner that actual re-assembly, erection and installation on site is done in a minimum of time with a minimum of fitting and adjustment on site.
5. The Project Manager shall be invited to inspect components, equipment and subsystems at the factory as well as any factory acceptance tests.
6. Such inspections shall not exempt the Contractor from his responsibility in respect of the control of quality of equipment and workmanship of the final deliverable.
7. The Contractor shall provide all test equipment, test apparatus and other auxiliary equipment and must prepare test certificates as specified or as reasonably requested by the Project Manager for all engineering products or components to be tested.
8. The Contractor must report to the Project Manager on a routine basis regarding the progress of manufacturing the equipment and the progress of installing the equipment on site, so that the Project Manager may decide when progress inspections should be undertaken as necessary to inspect workmanship and quality of material.

Inspection and Testing on Site

1. The Contractor shall provide the Project Manager with valid calibration certificates of all test equipment to be used for acceptance tests.
2. The system test to be performed shall be in accordance with the test procedures submitted by the Contractor, and reviewed and accepted by the Project Manager.
3. The Contractor shall present following subsystems for inspection to the Project Manager, complete with measurement results:
 - a. Rail installation (with measurement results indicating tolerances of the rail installation)
 - b. Mechanical trolleys (with measurement results indicating tolerances of the trolley manufacture)
 - c. Mechanical drive (with measurement results indicating tolerances of the drive assembly)
 - d. Electrical GMCC
4. After the equipment has been installed on site, the Contractor shall undertake performance tests of the equipment to ensure that the equipment is fully operational in compliance with the requirements of this specification. These tests shall be undertaken during and after the commissioning of the equipment on site
5. Should the Contractor be satisfied that such tests meet all the requirements of the specification, the Project Manager shall be informed thereof so that inspections and tests may be undertaken by the Project Manager and representatives of the Employer to determine whether the specified requirements have been met.
6. All equipment, instruments and test equipment, including all interconnections for executing such tests, must be supplied by the Contractor.
7. Should the results of such tests prove that the equipment does not comply with the requirements of this specification, the Contractor shall, without delay, at his own cost undertake modifications and adjustments as required, to ensure that the installation and equipment is modified to comply with the requirements of this specification. These modifications and adjustments shall be carried out with the full knowledge and approval of the Project Manager.
8. The full set of acceptance test shall then be repeated, to ensure that any modification has not impacted on other performance parameters.
9. When the Gate System has been successfully tested, the Contractor shall submit the Test Dossier to the Project Manager containing:
 - a. All factory inspection and test procedures with result sheets
 - b. All site inspection and test procedures with result sheets
 - c. Final gate system handover inspection and test procedure with result sheets.

Site Works – Health and Safety

1. The Contractor shall comply with all Airports Company Health and Safety requirements.
2. **Safety Plan**
The Contractor shall prepare a construction safety plan in terms of the Construction Regulation in co-operation with a competent person in the industry for the construction works, including
 - a. A risk assessment.
 - b. A safety plan to address the construction risks identified.
 - c. A program of activities to implement, control, manage and audit the safety plan
3. **A safety file**
A safety file shall be kept on site with all the records of the safety plan, program, reports, incidents, etc. The file shall be handed over formally to the Employer for safekeeping at the end of the project.

Site Works – Staff

1. The Contractor shall provide a list of all key staff that will contribute to the project execution. The following information shall be included on the list:
 - a. Contractor project managers and engineers listed in the Tender
 - b. Replacement Contractor project managers and engineers to those listed in the Tender
 - c. Additional key technical and administration staff that will contribute to the project, and that may interact with the Project Manager
 - d. All site staff
 - e. Identity documents, Qualifications and Professional Registration Certificates, Contact Information
2. The key staffing list shall be issued to the Project Manager within 2 weeks after the Contract award. Any changes to the list shall be submitted to the Project Manager for approval.

Site Works – Method Statements

1. To ensure all site works are carried out in compliance with airport rules and procedures, the Contractor shall submit for review and approval method statements for all work to be carried out on site.

Site Works - Access

1. The Contractor shall be responsible and liable for all staff and subcontractors working at the site.
2. The Contractor shall obtain airside permits for all staff and subcontractors that require access to the Site. Costs for permits shall be for the account of the Contractor.
3. The Contractor shall arrange for permits (access for staff and airside driving and vehicle permits) timeously to ensure that the project is not delayed.

Site Works – Cranes

1. The Contractor shall supply or hire all cranes, scaffolding hoisting and transportation apparatus required for off-loading and transporting equipment on site

Site Works – General

1. All structures (Trolleys, Motor Drive Frame, Posts for CCTV and Sensors) shall be manufactured, welded in the factory.
2. No welding shall be permitted on site, unless explicitly approved by the Project Manager.
3. All site assembly shall use bolted connections.
4. Where machine base frames or steel structural members are supported on concrete foundations and floors or fixed against concrete walls, the steel structures shall be properly aligned by installing supporting steel plate shims and then bolting the machine frames and steel structures to the concrete by means of the specified anchor bolts. Timber wedges shall not be acceptable.
5. Gaps between steel mounting plates and concrete bases shall be filled with shrink-free grouting of 30 MPa strength.

Drawings and Technical Information – for approval prior to manufacture and delivery to site

1. Four weeks after award of the contract, the Contractor shall submit drawings, specifications of items and parts to be supplied by others, and design reports to the Project Manager for approval. The cost thereof shall be included in the tender price. These drawings and reports shall be approved by the Project Manager prior to commencement of manufacture or prior to purchasing any equipment or components. The approval of any drawings, material or equipment, shall not in any way relieve the Contractor of his responsibilities for the successful and correct operation of the installation.

Drawings and reports shall be submitted in original (MW Word, Excel, AutoCAD) and in PDF format.

- a. General layout (plans and sections) of the new drive system of the gate including peripheral equipment such as the new electrical panel layout of control equipment, and infra red sensors to be installed.
- b. Drawings showing Civil works.
- c. Drawings showing Mechanical works including any structural requirements of the installation, showing support steelwork of new mounting brackets for the gate drive unit.
- d. Drawings showing Electrical works, including routing of conduits, schedule of cable sizes, connection to the primary power feed, and connection to Airports ICT (fibre) infrastructure.
- e. Schematic electrical/electronic diagrams showing functionality of the installation, including operation including flow charts, logic diagrams, PLC code, sensor positions, GUI displays, lamps, fault level responses, failure modes and manual operation.
- f. The Contractor shall carefully study all drawings and shall give information regarding structural changes, additional structural provisions, e.g. holes in concrete, modifications, etc, and any other information having an influence on the structure which will be newly cast as shown on the drawings
- g. Approval of interim drawings or reports does not in any way relieve the Contractor of his responsibilities for the successful and correct operation of the complete installation.

Drawings And Technical Information – Final and As-Built

1. A full set of documents submitted for approval described above shall be re-submitted as final and as-built status prior to acceptance and completion of the project and payment of final milestone. Included in this document set is

Included in this documentation set shall be:

- a. All engineering drawings, reports, specifications of components used in the system as submitted for approval in the design phase, including a list of drawings, reports and specifications supplied
- b. List of components and equipment included in the system, including serial numbers of major items
- c. Acceptance test procedures and result sheets, signed by the Project Manager
- d. Operating and Maintenance Manuals
- e. List of spares delivered, signed by the Project Manager
- f. A full set of PLC programs,

2. All final drawings, reports and schedules shall be certified as correct by the Contractor's by a Professional Engineers.
3. Drawings and reports shall be submitted in original (MW Word, Excel, AutoCAD) and in PDF format.

Operating and Maintenance Manuals

1. The Operating manuals shall include the information as required for safe and reliable operation of the system, including:
 - a. Resetting emergency stop and reactivation of the gate system
 - b. Safe engaging and operation of the manual modes
2. The Maintenance manual shall include the information as required to maintain the installation to meet all mandatory requirements. The manuals shall include technical features of the mechanical, electrical / electronic equipment of the gate drive system. The manual shall include:
 - a. Fault and error indications and instructions for fault recovery/clearing
 - b. Clear instructions to make the system safe prior to maintenance.
 - c. Clear instructions for regular, routine (daily, weekly, monthly) system checks and inspections to ensure that the gate is safe to operate
 - d. Clear instructions for preventative and routine maintenance (lubrication, cleaning etc)
 - e. Clear instructions for repairs and replacement
 - f. Reorder information of primary bought-out components including supplier contact details.
3. A set of documents and templates to record maintenance work. The documents shall be in the form of a checklist to be completed and signed-off by maintenance technician:
 - a. Routing maintenance check list
 - b. Preventative maintenance check list
 - c. Repair maintenance check list (that will be used to capture repairs and components used for the repairs)

Defects Liability Period

1. The defects liability period shall be 12 months, commencing on the date of final completion.

The Contractor shall be responsible for all remedial works required to repair defects during that period, including:
 - a. Replacing all failed parts and components
 - b. Revise and execute remedial works for defective designs
2. The Contractor may request spare parts held by the Employer to expedite the repairs. Any spare parts used by the Contractor for such repairs will be expeditiously replaced by the Contractor.
3. The Contractor shall ensure that the spares held by the Employer at the end of the Defects Liability equates to the spares provided to the Employer at the commencement of the Defects Liability period.
4. The Contractor shall not be liable for the repair or replacement of parts damaged by misuse of the Gate System by the Employer or third parties during the Defects Liability period.

Maintenance Support

1. The Tenderer shall offer Maintenance and Repair support for a period of 2 years after final completion and hand-over.

The Contractor shall be responsible for all maintenance and repairs of the Taxiway Gate system during that period, including:

- a. Executing all Preventative Maintenance tasks listed in the Maintenance Manuals. The Contractor shall thus be on site for the maintenance activities specified at the time and period intervals specified.
 - b. Replacing all failed parts and components
 - c. To ensure continuity, training and hand-over of knowledge, a Employer Maintenance Technician shall at all times accompany the Contractor.
2. It is noted and intentional that the Maintenance support period runs concurrently with the 1 year Liability Defects period.

This is intentional to ensure that the Contractor is responsible for all Preventative Maintenance tasks and activities, the documentation (recording) of all Preventative and Remedial Maintenance, on-the-job-training of Employer maintenance staff as well as all works resulting from Defects Liability.

3. Response time

The Contractor shall respond to maintenance requests as follows:

- a. Respond to maintenance telephone calls on a 24 hour / 7 days per week
 - b. Provide verbal (telephone) diagnostic and remedial recommendation
 - c. If the verbal (telephone) diagnostic and remedial recommendation does not solve the issue, the Contractor shall dispatch a technician to arrive on site within 4 hours of the end of the first call
4. The Contractor shall complete and sign off all Maintenance and Repair forms on completion of the maintenance work. These forms shall be counter-signed by the supervisor nominated by the Employer. The Employer shall ensure that this supervisor is present and witnesses all Maintenance and Support works carried out by the Contractor.
 5. Unwarranted calls and callouts
The Employer shall reimburse the Contractor for all call-out work performed for following reasons:
 - a. Repair of damage caused by Employer or other third parties
 - b. Call out caused by incorrect operation. This includes typically:
 - Main power supply issues (power outage)
 - Main power supply issues (, excessively long power outage that results in the depletion of the UPS
 - incorrect engagement and execution of manual mode of operation
 - c. The Tenderer shall provide a rate for unnecessary call-outs in the Tender.
 6. The Contractor shall not be responsible for the operation of the gate

Training

1. The Tenderer shall provide training of Employer Staff as follows:
2. Training of operators
 - a. The Training shall be "Train-the Trainer"
The Employer staff shall, once trained, able to provide training for other Employer staff that need to operate the gate.

- b. Provide theoretical classroom training for an understanding of the principles, safety, security of the operation of the gates
 - c. Practical training of the operation of the gates including all applicable manual modes of operation
 - d. Provide training aids (documents and presentation material) to be used by ACSA staff to train future ACSA operators
3. Training of Maintenance Staff
 - a. The Training shall be "Train-the Trainer"
The Employer staff shall, once trained, be able to provide training for other Employer staff that need to maintain the gate.
 - b. Provide theoretical classroom training for an understanding of the principles, safety, security of the operation and maintenance of the gates
 - c. Practical training of the operation and maintenance of the gates including all applicable manual modes of operation
 - d. Provide training aids (documents and presentation material) to be used by ACSA staff to train future ACSA operators
 - e. The Employer staff shall obtain further training and maintenance exposure by accompanying the Contractor's maintenance staff during the 2 year maintenance support period.

Labelling and signage

The function of control equipment and components shall be fitted with identification labels, as specified in Annexure C11 of this specification.

Where possible, all identification of control push buttons and control components shall be provided with logically internationally known acceptable symbols to identify the particular function and control features.

1. Where terminology must be included, this shall be in the English language.
2. When required, the Contractor shall submit a complete schedule of such terminology and symbols with a complete list of the identification and functional features represented by these symbols for approval.
3. All safety labelling and signage required by applicable Codes and Regulations shall be provided by the Contractor.

Environmental Conditions

1. The following information is given as a general guide to environmental conditions, which might prevail in the areas where equipment will be installed.

a. Average daily maximum temperature (summer conditions)	28,6 °C
b. Average daily minimum temperature (winter conditions)	14,3 °C
c. Absolute minimum temperature	-0,1 °C
d. Absolute maximum temperature	36,7 °C
e. Maximum relative humidity during summer conditions	53,1% at +28,6 °C
f. Minimum relative humidity during winter conditions	42% at + 14,3 °C
g. Extreme relative humidity (during winter conditions)	94% at 0.9 °C
h. Altitude of the site	5 metres above sea level
i. Maximum wind speed	160 km/h
2. Any new electrical and electronic equipment to be supplied and installed and equipment which has been repaired shall function with extreme stability, correctly and reliably under such conditions whether these conditions are experienced separately or in part or combined over a lengthy period.

Site Work

- 1) To minimise interruption of airport operations and to complete the work in the shortest time possible, the Contractor shall price for:
 - a) Adequate site manpower
 - b) Use of mechanised equipment (earth moving, cranes) where appropriate
 - c) Parallel execution of all site work (Civil, Mechanical installation, Electrical installation)
 - d) Factory commissioning and testing of mechanical, electrical and PLC equipment as extensively as possible, prior to delivery to site
- 2) The information presented has been prepared such that a particular Contractor or Contractors specializing in that type of work could offer their resources and services for that particular section of work only, but the total tender must be submitted as a single tender offer, if need be the tender price submitted on a Joint Venture basis, one Contractor being the Selected Principal Tenderer /Contractor of the Joint Venture
- 3) The Contractor must, in association with the user Employer and Project Manager, be involved in the final evaluation and review of the control system to ensure that all parties agree on the control protocols and implementation procedures.

Site Arrangements to Accommodate Traffic

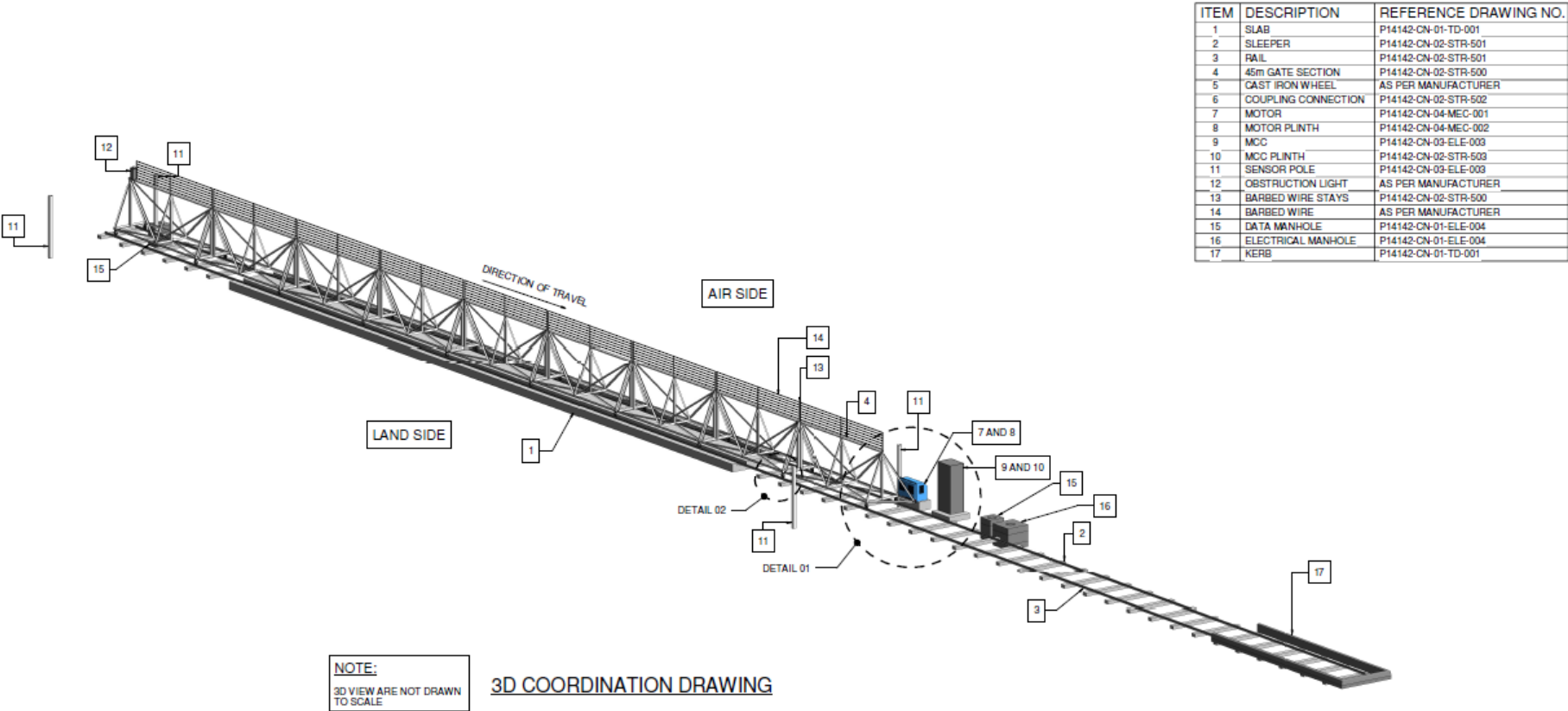
- 1) To minimise interruption of airport operations and to complete the work in the shortest time possible, the Contractor shall price for:
 - a) Adequate site manpower
 - b) Use of mechanised equipment (earth moving, cranes) where appropriate
 - c) Parallel execution of all site work (Civil, Mechanical installation, Electrical installation)
 - d) Factory commissioning and testing of mechanical, electrical and PLC equipment as extensively as possible, prior to delivery to site
- 2) An alternative route for aircraft to bypass the construction area shall be prepared comprising:
 - a) Remove a portion of the fence 60m wide
 - b) Prepare a paved surface with sufficient strength to carry the design aircraft with safety. The design aircraft is the B737-800.

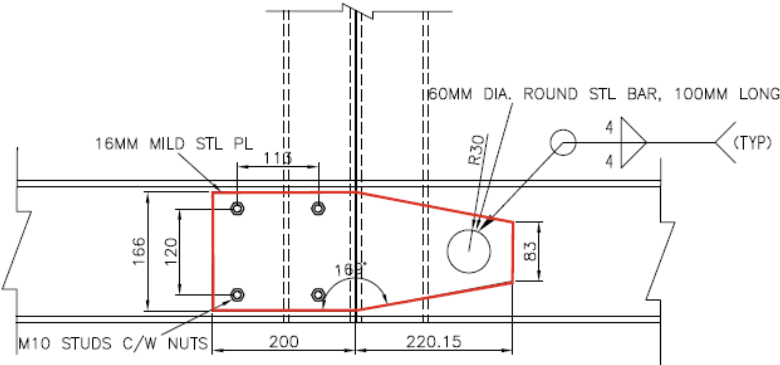
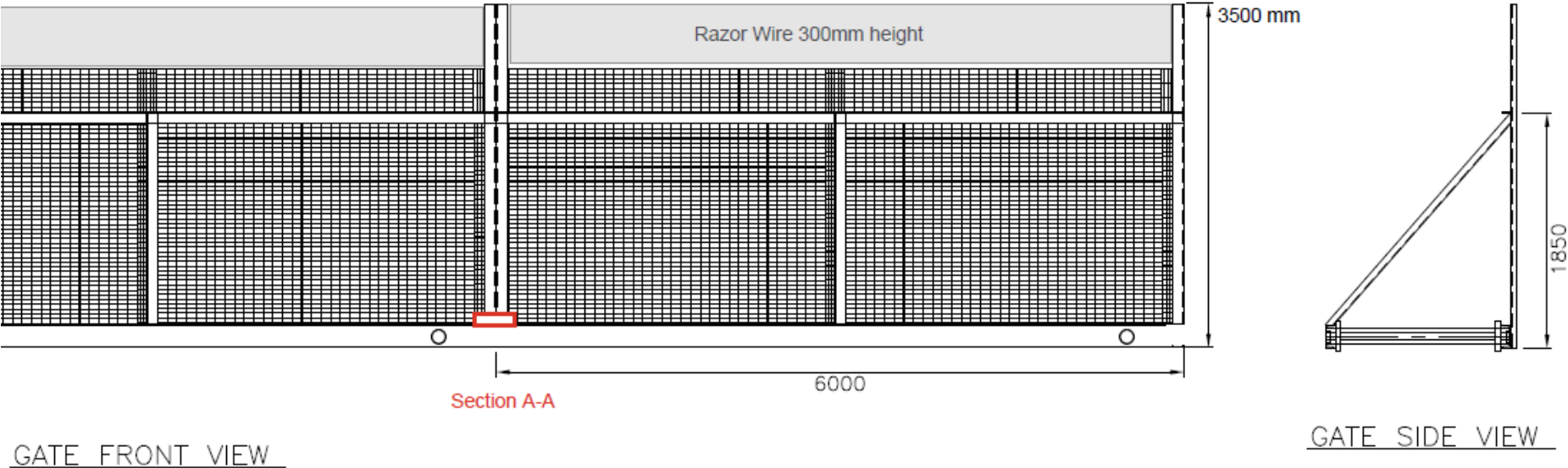
Annexure C5.11: Drawings – Indicative details

Following drawings are typical details.

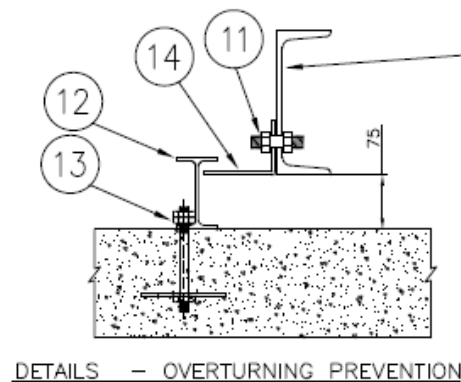
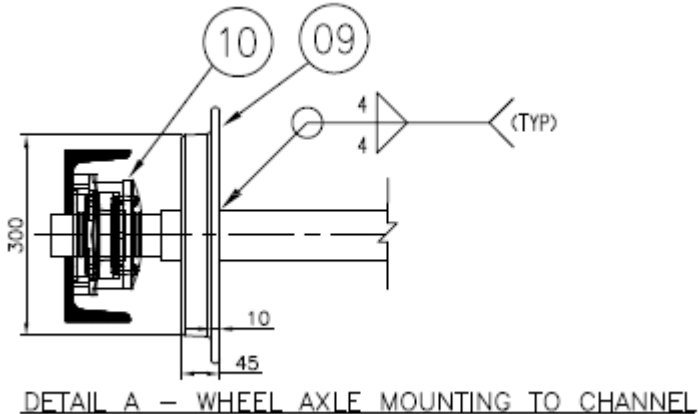
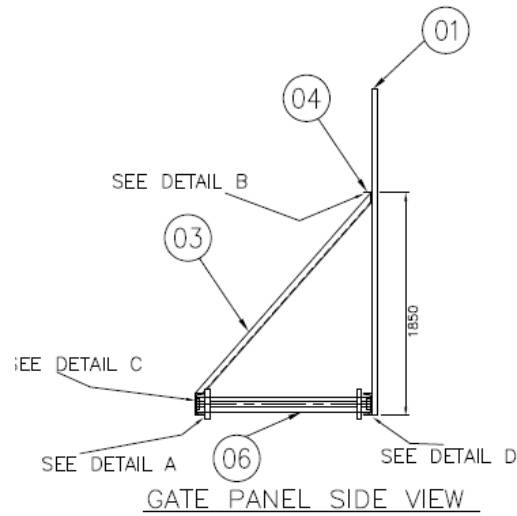
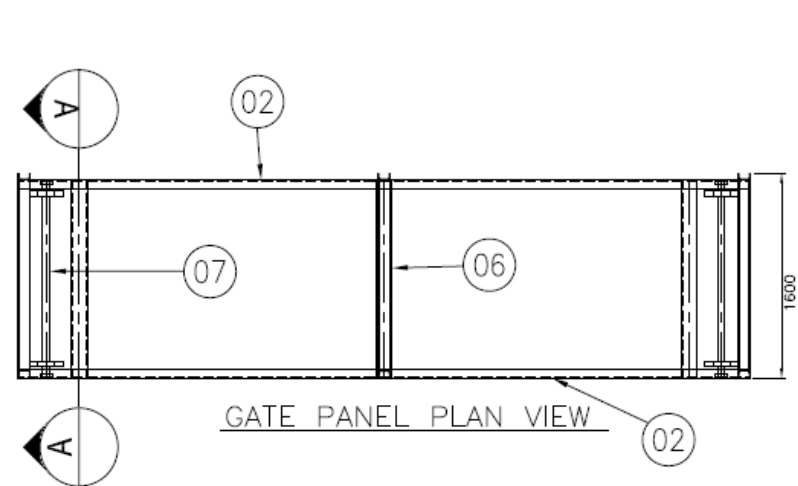
Dimensions are indicative only.

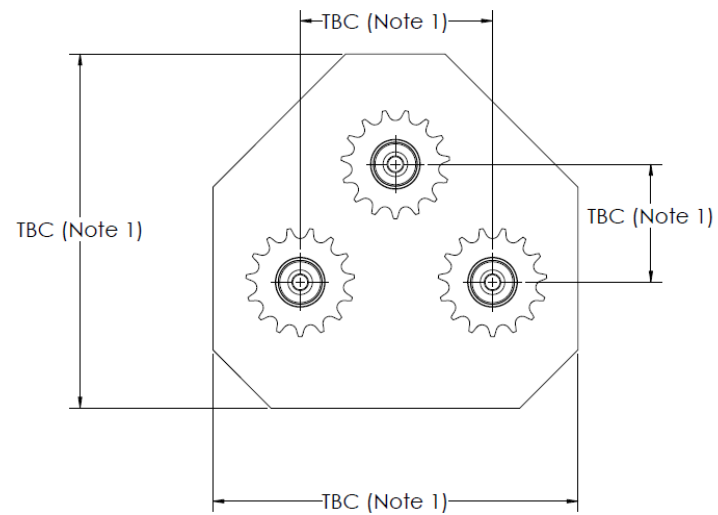
The Contractor's Engineer shall design and specify the detail and dimensions to ensure that the gate meets the expected system performance.



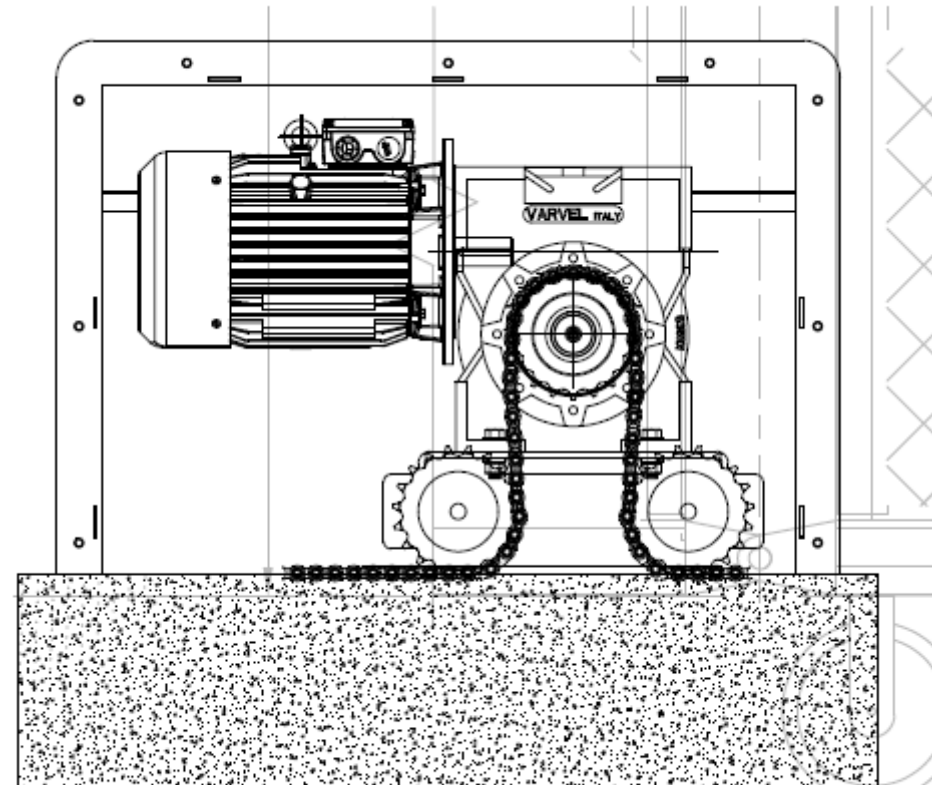


TYPICAL SECTION A-A SHOWING GATE PANEL CONNECTING PIECE

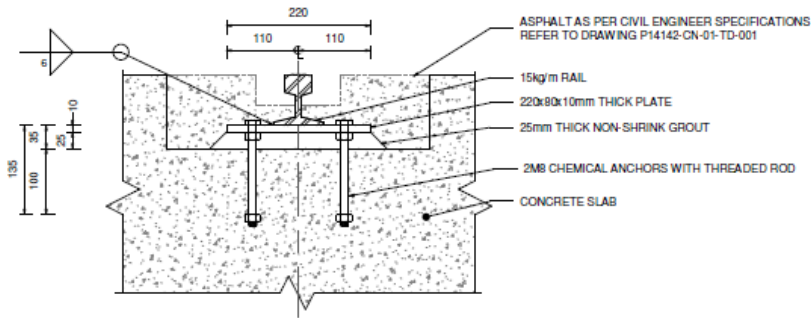




TITLE: DRIVE AND IDLER
SPROCKET FLANGE

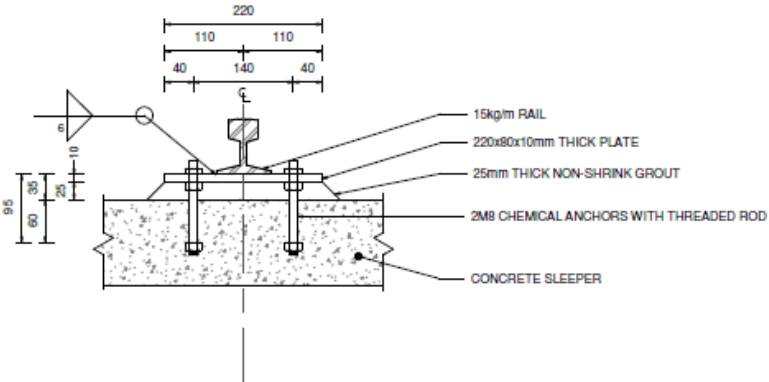


TOP VIEW
(MOTOR COVER BOX)
SCALE 1:10



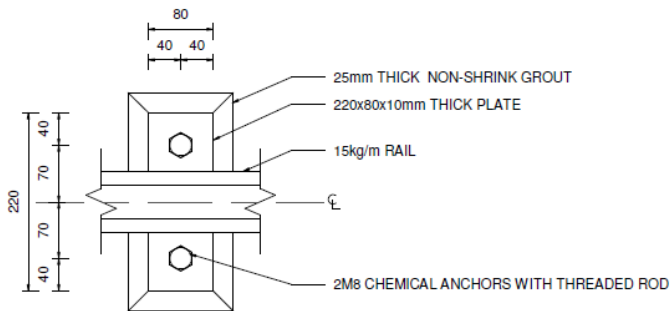
TYPICAL RAIL ON CONCRETE SLAB SECTION

1 : 5



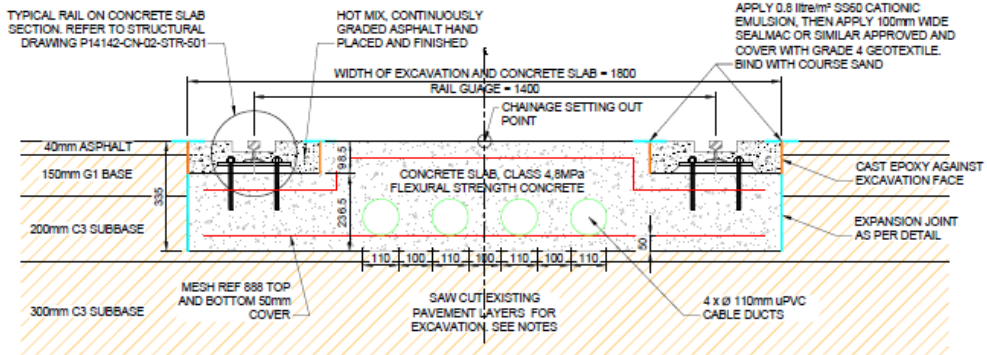
TYPICAL RAIL ON SLEEPER SECTION

1 : 5



DETAIL

1 : 5



**CROSS SECTION B-B THROUGH
CONCRETE SLAB**

SCALE 1:10